PORT OF BROOKINGS HARBOR
Regular Commission Meeting
Wednesday, July 20, 2022 at 2:00pm
Teleconference / Meeting Room
16350 Lower Harbor Road Suite 202, Harbor OR, 97415

Teleconference Call-In Number: 1 (253) 215-8782
Meeting ID: 771 205 4017 Passcode: 76242022 (to mute/unmute: * 6)

TENTATIVE AGENDA

1. **CALL MEETING TO ORDER** **PAGE**
   - Pledge of Allegiance
   - Roll Call
   - Modifications, Additions, and Changes to the Agenda
   - Declaration of Potential Conflicts of Interest

2. **APPROVAL OF AGENDA**

3. **ELECTION OF COMMISSION OFFICERS**
   A. One-year term of office from July 1 until June 30.
   - President
   - Vice President
   - Secretary/Treasurer

4. **APPROVAL OF MEETING MINUTES**
   A. Approve Minutes of Budget Hearing Meeting Wednesday June 15, 2022.....3
   B. Approve Minutes of Regular Commissioner Meeting Wednesday June 15, 2022.....7

5. **PUBLIC COMMENTS** – Limited to a maximum of three minutes per person. Comments by teleconference, please email your comments to danielle@portofbrookingsharbor.com prior to the meeting.

6. **MANAGEMENT REPORTS / APPROVAL**
   A. June 2022 Safety, Security & Environmental Report.....9
   B. June 2022 Harbormaster Report.....11
   C. June 2022 Financial & Manager Report.....13

7. **ACTION ITEMS**
   A. Boat Yard Building Plan.....48
   B. Zola's on the Water Lease Amendment No. 2.....53

8. **INFORMATION ITEMS**
   A. Curry County Storm Drain Master Plan Draft April 2022 Review – Curry County Commissioners and Port Commissioners Meeting Date.....56
   B. Dog Leash Law Enforcement.....276
   C. Small Debris Left Behind on the Jetty from Fireworks Show.....277
   D. Boat Ramp and Boat Parking Area.....278

9. **COMMISSIONER COMMENTS**

A request for an interpreter for the hearing impaired, for those who want to participate but do not have access to a telephone, or for other accommodations for persons with disabilities should be made at least 48 hours in advance of the meeting to Port of Brookings Harbor Office at 541-469-2218.

This Institution is an Equal Opportunity Provider

PORT OF BROOKINGS HARBOR
Regular Commission Meeting
Wednesday, July 20, 2022 at 2:00pm
Teleconference / Meeting Room
16350 Lower Harbor Road Suite 202, Harbor OR, 97415

10. NEXT REGULAR MEETING DATE – Wednesday August 17, 2022, at 2:00pm

11. ADJOURNMENT

A request for an interpreter for the hearing impaired, for those who want to participate but do not have access to a telephone, or for other accommodations for persons with disabilities should be made at least 48 hours in advance of the meeting to Port of Brookings Harbor Office at 541-469-2218.

This Institution is an Equal Opportunity Provider

DRAFT MINUTES
BUDGET HEARING AND REGULAR MEETINGS OF THE BOARD OF COMMISSIONERS
PORT OF BROOKINGS HARBOR DISTRICT

Wednesday, June 15, 2022

This is not an exact transcript. The audio of the session is available on the Port's website.

The Port of Brookings Harbor District met in Budget Hearing and Regular session on the above date at 2:00pm. Open session at the Port Conference Room, 16350 Lower Harbor Road Suite 202, Harbor OR, 97415, teleconference and webinar.

FISCAL YEAR 2022-23 BUDGET HEARING (ORS 294.430)
Commission President Richard Heap called the Budget Hearing Meeting of the Port of Brookings Harbor of Commissioners to order at 2:00pm.

1. **Pledge of Allegiance**
   - All participants stated the Pledge of Allegiance

2. **Call to Order**
   - **Commissioners Present:**
     Joseph Speir, Vice-President (Pos. #1); Sharon Hartung Secretary/Treasurer (Pos. #2); Larry Jonas (Pos. #3); Richard Heap, President (Pos. #4) and Kenneth Range (Pos. #5).
   - **Management and Staff:**
     Gary Dehlinger, Port Manager; Travis Webster, Harbormaster; and Danielle King, Safety/Administrative

3. **Public Comment** – Audio time 0:01:43
   - There were no public comments.

4. **Action Items** – Audio time 0:02:02
   A. **Resolution 2022-06 Adopting the 2022-23 Fiscal Year Budget, Making Appropriations and Levying and Categorizing the Tax**
   Heap explained this is a formal process to approve the budget. Dehlinger stated there were no changes from the budget committee. There was a question from the Board regarding the Port debt and the estimated dollar amount for fuel sales.

   A Motion was made by Hartung and seconded by Speir to approve Resolution No. 2022-06 Adopting the 2022-2023 Fiscal Year Budget, making appropriations, and imposing and categorizing the tax. Motion passed 5 - 0.

5. **Adjournment from Budget Hearing** – Audio time 0:06:03
   - Having no further business, the meeting adjourned at 2:05 pm

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REGULAR MEETING – Audio time 0:06:08

1. CALL MEETING TO ORDER

Commission President Richard Heap called the Regular Meeting of the Port of Brookings Harbor of Commissioners to order at 2:05pm.

- **Commissioners Present:**
  Joseph Speir, Vice-President (Pos. #1); Sharon Hartung Secretary/Treasurer (Pos. #2); Larry Jonas (Pos. #3); Richard Heap, President (Pos. #4) and Kenneth Range (Pos. #5).
- **Management and Staff:**
  Gary Dehlinger, Port Manager; Travis Webster, Harbormaster; and Danielle King, Safety/Administrative.
- There was no modifications or additions to the agenda.
- There was no declaration of potential conflicts of interest.

2. **APPROVAL OF AGENDA** – Audio time 0:06:56
   - **A motion was made by Speir and seconded by Hartung to approve the agenda as written. The motion passed 5 – 0.**

3. **APPROVAL OF MEETING MINUTES** – Audio time 0:07:25
   A. **Approve Minutes of Budget Committee Meeting Tuesday May 10, 2022.**
   B. **Approve Minutes of Regular Commissioner Meeting Wednesday, May 18, 2022.**

   A Motion was made by Speir and seconded by Jonas to approve the meeting minutes for the Budget Committee Meeting Tuesday May 10 and the Regular Commissioner Meeting Wednesday May 18 as discussed. The motion passed 5 – 0.

4. **PUBLIC COMMENTS** – Audio time 0:08:10
   - There was one public comment by Tony Parrish regarding Stout Mountain Railway location in the Port.

5. **MANAGEMENT REPORTS** – Audio time 0:14:36
   A. **May 2022 Safety & Security Report** - Audio time 14:39
   King reported on staff safety training, incidents, accidents, security issues that happened for the month of May and upcoming events for June.

   B. **May 2022 Harbormaster Report** - Audio time 0:16:58
   Webster reported on projects that were completed in the month of May in the RV Park, marina, and equipment services. There was a discussion among the Board and staff regarding the commercial basin restrooms door code being handed out and the vandalism happening in that bathroom.

   C. **May 2022 Financial & Manager Report** - Audio time 0:26:16
   Dehlinger reported on the financials for the month of May. Dehlinger reviewed the status of the RV Park project, FEMA Projects, the condition of the Hallmark Dock, and the status of the boat yard warehouse. Since the start of cleaning up the boatyard 6 years ago we have demolished or sold 40 boats, and we finally demolished the last boat. Dehlinger also informed the board of the 4th of July activities being planned.

   A motion was made by Jonas and seconded by Speir to approve the management reports. The motion passed 5 – 0.

6. **ACTION ITEMS**
   A. **Vessel and/or Trailer Storage Agreement** – Audio time 0:37:43
   Dehlinger reviewed with the Board what items Port Counsel has added to the agreement. There was a question from the Board regarding why these boats aren't required to have insurance.

   A motion was made by Speir and seconded by Range to approve draft vessel and/or trailer storage agreement for the boat and trailer storage area to be put into effect immediately. The motion passed 5 –0.

   B. **Vessel Miss Stacey Moorage Renewal** – Audio time 0:41:11
   Dehlinger reviewed the status of the vessel with the Board. The marine survey still has not been completed, and there is still a lien on the crab pots and crab permit.

A motion was made by Jonas and seconded by Speir to approve Miss Stacey Moorage agreement from January 1, 2022 to December 31, 2022. Update the Board at the November 2022 regular meeting on the status of the vessel for consideration on the next moorage agreement. The motion passed 5 – 0.

C. **Charters and Guides Sign Agreement Form** – Audio time 0:44:31
Dehlinger reviewed this would be for anyone who wants to be on the sign. There was a discussion among the Board and staff of the location of the signs, what sign concept the Board likes, and if they would like a "You are Here" map. The Board allowed public comment.

A motion was made by Heap and seconded by Hartung to approve proceeding with the sign concept design size without "You Are Here" map and locations as discussed and limit the number of signs to 24 individual signs. Sign locations at the RV Park, Boat Ramp and somewhere near the Port Office determined by the Port Manager. The motion passed 4 – 1. Yes: Jonas, Range, Hartung, & Heap. No: Speir.

7. **INFORMATION ITEMS**

A. **BOEM Wind Energy Farm Off the Coast of Brookings Oregon, Presentation by Oregon Trawl Commission** – Audio time 1:02:49
Yelena Nowak, Executive Director of Oregon Trawl Commission gave a presentation to the Board regarding BOEM Offshore Wind Energy Farm off the coast of Brookings Oregon, and the impacts this will have on our fishing fleet. Brad Pettinger, Vice Chair of Pacific Fishery Management Council, Leonard Krug President of Oregon Anglers Alliance and William Goergen Owner of Catalyst Seafood gave the Board their opinion on the Offshore Wind Energy Farm being presented by BOEM. Commissioner Heap informed the Board of his support for the Resolution being presented to the Board. Board agreed to have a Special Meeting the following week to approve the Resolution.

B. **Pacific Seafood Request for Dock Hoist** – Audio Time 2:04:52
Dehlinger informed the Board that the hoist is back in place, the yellow hoist is not used.

C. **Zola's on the Water Concrete Patio Outside Leased Premises** – Audio Time 2:06:18
Dehlinger just wanted to inform the Board that Zola's had poured concrete outside of their leased area, didn't notify Port Management, and a letter has been sent to Zola's regarding the violation. It was agreed upon the Board and Management that if another violation happens with Zola's the next letter will come from Port Council terminating their lease.

D. **Cable TV and Wi-Fi at Beachfront RV Park** – Audio Time 2:09:26
Dehlinger asked for the opinion of the Board on Wi-Fi since the Wi-Fi service is not currently covering the whole park and the cable tv is becoming harder and harder to repair. Board agreed to invest in a Wi-Fi system.

E. **USDA Civil Rights Compliance Review & Response** – Audio Time 2:11:46
Dehlinger informed the Board there were some changes that needed to be made in the Port Office and RV Park Office to be compliant with USDA Civil Rights.

F. **Boat Yard Building(s) and Port Office Proposal** – Audio Time 2:13:21
Dehlinger asked for an open discussion regarding what is being proposed, then reviewed the proposal. There was a discussion regarding the loan, and how the money will be recovered. It was suggested to look into quotes for the warehouse building and investigate the other structures at a later date.

G. **RV Park New Fence Dividers** – Audio Time 2:33:49
Dehlinger informed the Board that the RV Park project does not include site dividers and are looking into new fence ideas, and asked for the Boards opinions or different suggestions.

H. Summer Food Dine-In Bus Route – Audio Time 2:38:10
Commissioner Hartung discussed the food dine-in bus program, the Board and Port Management didn't see an issue or liability with the bus being on Port property.

I. Travel Lift Ramp Sediment Impacts – Audio Time 2:41:09
Dehlinger informed the board that this issue has presented itself again and we can only haul out boats during high tide. Dehlinger has been in contact with the Curry County Roadmaster to discuss what the next steps are. The Board suggested having a meeting with the County Commissioners on how to fix this.

J. Beach Cam for Website – Audio Time 2:45:31
Dehlinger is suggesting a beach camera due to the survey's received back from the RV Park guests; it would be posted on the Beachfront RV Park website.

8. COMMISSIONER COMMENTS – Audio time 2:47:19

- Commissioner Heap commented that the budget looked great and was easy to read.

9. NEXT REGULAR MEETING DATE – Wednesday, July 20, 2022, at 2:00pm.

10. ADJOURNMENT – Audio time 2:47:56
Having no further business, the meeting adjourned at 4:47 pm.

_____ _____
Richard Heap, President Date Signed

_____ _____
Sharon Hartung, Secretary/Treasurer Date Signed

An audio recording was made of these proceedings. The recording and the full commission packet are available on the Ports website: www.portofbrookingsharbor.com.

DRAFT MINUTES
SPECIAL MEETING OF THE BOARD OF COMMISSIONERS
PORT OF BROOKINGS HARBOR DISTRICT

Tuesday, June 21, 2022

This is not an exact transcript. The audio of the session is available on the Port's website.

The Port of Brookings Harbor District met in Special session on the above date at 2:00pm. Open session at the Port Conference Room, 16350 Lower Harbor Road Suite 202, Harbor OR, 97415, teleconference and webinar.

1. CALL MEETING TO ORDER

Commission Vice-President Joseph Speir called the Special Meeting of the Port of Brookings Harbor of Commissioners to order at 2:00pm.

- **Commissioners Present:**
  Joseph Speir, Vice-President (Pos. #1); Sharon Hartung Secretary/Treasurer (Pos. #2); Larry Jonas (Pos. #3); Richard Heap, President (Pos. #4) via telephone, and Kenneth Range (Pos. #5).
- **Management and Staff:**
  Gary Dehlinger, Port Manager; Travis Webster, Harbormaster; and Danielle King, Safety/Administrative.
- There was no modifications or additions to the agenda.
- There was no declaration of potential conflicts of interest.

2. APPROVAL OF AGENDA – Audio time 0:00:57

- **A motion was made by Range and seconded by Hartung to approve the agenda. The motion passed 5 – 0.**

3. PUBLIC COMMENTS – Audio time 0:01:25

- There were six public comments regarding Resolution No. 2022-07 from Yelena Nowak, Executive Director of the Oregon Trawl Commission; Dan Fraser; Leonard Krug, President of Oregon Anglers Alliance; Josh Whaley with F/V Miss Sarah comments were read into the record; Karie Silva with F/V Jeanette Marrie, INC comments were read into the record; and Heather Mann with Midwater Trawlers Cooperative letter was read into the record.

4. ACTION ITEMS

A. Approval of Resolution No. 2022-07 Regarding Offshore Wind – Audio time 0:23:42
Commissioner Heap informed the Board that what you see is what you get, BOEM is asking about where the call areas are located and asking for public feedback on those call areas. The Board allowed public comments.

A motion was made by Range and seconded by Jonas to approve Resolution No. 2022-07 Regarding Offshore Wind. The motion passed 5 – 0.

5. INFORMATION ITEMS

A. None

6. COMMISSIONER COMMENTS – Audio time 0:31:01

- No Commissioner comments.

7. NEXT REGULAR MEETING DATE – Wednesday, July 20, 2022, at 2:00pm.

8. ADJOURNMENT – Audio time 0:31:14

Having no further business, the meeting adjourned at 2:31 pm.

Richard Heap, President

Date Signed

Sharon Hartung, Secretary/Treasurer

Date Signed

An audio recording was made of these proceedings. The recording and the full commission packet are available on the Ports website: www.portofbrookingsharbor.com.

SAFETY, SECURITY, AND ENVIRONMENTAL MONTHLY REPORT

Date: July 20, 2022
Period: June 2022
To: Gary Dehlinger, Port Manager
Issued By: Danielle King, Safety, Security, & Environmental Coordinator

Safety

Port staff discussed OSHA's new rules for high ambient temperatures, the Port's heat illness prevention plan, why high heat is a risk and what practices must be in place at certain temperatures.

Incidents

POBH recorded (8) incidents for the month of June bringing the year total to (55). Incidents included:

1. (2) separate dates, needles were found in the commercial basin restroom, men's side. Port staff properly picked up and disposed needles into the Port's hazardous waste container.
2. Moorage holder reported that someone got onto their vessel sometime within the month and stole a 5-gallon bucket.
3. A blue and white Ford drove on the Kite Field grass and tore up the grass doing donuts. Curry County Sherriff's were notified of the incident and to trespass the individual.
4. RV customer had a stroke in their site, emergency personnel was called, and RV customer was taken to the hospital.
5. South Coast Tours had their security cables cut and a kayak stolen. Security cameras was not able to identify the individual. Luckily the kayak was reported found up the Chetco River by another boater.
6. A musician was playing on the boardwalk and was asked to stop due to not having an event permit with the Port. The following week the same musician was set up behind Blue Fin Reality and was asked again to stop playing due to not having permission with the Port. Blue Fin was notified the musician will have to fill out an event permit to play on Port property. The following week the same musician was set up on Blue Fin Reality's leased deck, Blue Fin's lease does not allow live music and again told to leave.
7. Shower door in the commercial basin restroom, men's side, was kicked in. Maintenance was able to fix the door and frame.

Security

Four Aces Security Solutions and POBH recorded (240) security issues for the month of June bringing the year total to (721). Issues included:

- (114) Overnight parking tickets.
- (95) Unauthorized visitors on Port Property after hours
- (10) Vehicles missing or unable to read boat launch ticket.
- (8) Parking violations in boat launch parking lot.
- (3) No camping
- (1) Unhitched trailer.
- (6) Maintenance report.
- (2) Emergency Vehicles to the RV Park
- (1) Non-operational vehicle

Environmental / DEQ 1200-Z Industrial Stormwater
Monthly inspections were completed as required by our Stormwater Pollution Control Plan (SWPCP).

An oil sheen was found in Basin II. Port investigated its source but was not able to pinpoint the cause. The Port reported the spill to National Response Center and Oregon Emergency Response System.

A vehicle parked at the Sportshaven Beach/Beachfront RV Park Public Parking leaked engine oil. Turns out the individual just left the mechanic for an oil charge and the plug was not put back in. Port cleaned up the spill.

Upcoming Events
Bigfoot Blues Festival is July 23 on the boardwalk.

Art on the Coast Festival is August 6 – 7 on the boardwalk.

Pirates of the Pacific Festival is August 11 - 14 on the boardwalk.

HARBORMASTER
MONTHLY REPORT

Date: July 20th, 2022
Period: June 2022
To: Gary Dehlinger, Port Manager
Issued By: Travis Webster, Harbormaster

RV Park

Tidewater construction cleared and rocked the area by the public fishing pier and dry camping. This new space will be for RV park guests' extra trailers. This will help keep parking lots free of unhitched trailers. Port purchased 6 new picnic tables for the day use area.

Occupancy Percent by Month & Year

	2019	2020*	2021	2022	Change from 2021	Forecast**
January	10.3	7.5	19	17	(2)	
February	7.3	16	23	26	3	
March	16.8	16.4	39	29	(10)	
April	13.5	0	27.5	23	(4.5)	
May	26.4	5.7	43.1	31	(12.1)	
June	39.9	71.1	59.5	45	(14.5)	
July	61.3	84.7	85			59
August	60.8	70	77			41
September	45.4	51	64			20
October	25.4	68	34			4
November	15.2	22	21			0
December	8.5	15	11			0
Average	**27.5**	**35.6**	**41.9**			

* April & most of May 2020 RV Park was closed due to COVID-19.
** Forecast – Park allows for guests to reserve 6 months in advance.

Marina

Chain link fence was replaced at the boat yard along Lower Harbor Road. The fence was rotted at the bottom and during high winds the fence leaned over and broke. Staff has added more tanks at the boat rinse station to allow more settling time to let heavy solids fall out before entering the treatment system. Removing brush and overgrowth on the banks will be a summer long project.

Boat Launches Paid through Launch Machine

	2019	2020	2021	2022	Change from 2021
January	66	5	27	190	163
February	47	102	70	195	125
March	66	204	178	196	18
April	122	244	386	162	(244)
May	276	282	233	161	(72)
June	303	697	759	475	(284)
July	794	1095	826		

August	875	768	716		
September	350	583	713		
October	518	713	518		
November	352	109	70		
December	53	40	60		
Totals	**3,822**	**4,842**	**4,556**	**1379**	**(294)**

Equipment Services Performed by Port Staff

Telehandler Jobs

	2019	2020	2021	2022
January	4	2	0	8
February	1	6	3	2
March	6	4	6	5
April	7	10	5	7
May	6	3	7	6
June	3	0	3	4
July	1	5	0	
August	3	4	1	
September	3	3	1	
October	10	6	5	
November	3	9	13	
December	15	5	3	
Totals	**62**	**57**	**47**	**32**

Travel Lift Haul-Outs

	2019	2020	2021	2022
January	2	1	0	2
February	2	5	1	6
March	4	5	6	6
April	7	5	6	7
May	13	9	5	8
June	16	15	12	6
July	15	14	7	
August	8	4	7	
September	7	6	8	
October	9	8	4	
November	8	5	12	
December	5	1	0	
Totals	**96**	**78**	**68**	**35**

Commercial Receiving Dock

Pacific seafood has fixed their hoist and is now back operating on their leased area. USACE Yaquina was here to dredge the federal channel. They requested that the camel be installed, and the south hoist be removed to avoid any damages. Now that they have came and gone, the camel was removed and the hoist reinstalled. Port repaired the ladder at Bornstein leased area.

Commercial Retail Building

Bell and Whistle reported their air conditioner was not working. Franks Heating and Air was able to come out and get it working again. We were told that replacements for that style are no longer available, and, in the future, we will need to put in a different and more modern piece of equipment.

Maintenance Crew

Maintenance completed 68 work orders throughout the port. Mowing and weed eating were done weekly. Prep work for the 4th of July included meetings with the 4th of July committee lead by Henry, (Manager of Fred Myers). These meetings were so we could go over the plan for fallout zones and areas that needed to be managed. Staff also cleaned up gear storage area, removing old pallets, rope, and debris.

1,000-hour maintenance was completed on telehandler. Travelift annual inspection has been scheduled for July 18th.

FINANCIAL SUMMARY & MANAGER REPORT

Date: July 20, 2022

Period: Month End Report for June 2022 and Fiscal Year End

To: Honorable Board President and District Board Members

Issued by: Gary Dehlinger, Port Manager

June 2022 Financial Report - Overview

Balance Sheet

End of the month unrestricted cash and equivalents totaled $381,420. Restricted cash and equivalents totaled $918,254 with Total Checking/Savings (cash) at $1,299,674.

June Profit & Loss

	By Fund - Description	Revenue	Expenses	Net
1	General Fund	$306,304	$374,187	($67,883)
2	USDA Revenue Bond Fund	$10,920	$0	$10,920
3	Debt Service Fund	$31,986	$83,624	($51,638)
4	RV Park Improvement Debt Service Fund	$4,810	$4,810	$0
5	Capital Project Fund	$0	$8,960	($8,960)
6	Port Construction Fund	$440	$0	$440
7	Reserve Fund	$2,165	$0	$2,165
	June Totals	$356,625	$471,580	($114,955)

Total revenue from all funds was $356,625. Total expense was $471,580. The net income for June was ($114,955).

June Revenue Centers			Expenses	Net	Debt Assigned for Payments	Debt Paid this Month
Marina	$78,059		$64,431	$13,627	$14,115	$15,941
Beachfront RV Park	$36,179		$39,479	($3,300)	$1,140	$8,231
Commercial / Retail	$47,653		$31,020	$16,634	$21,421	$64,262
Fuel Dock	$123,446		$189,604*	($66,157)	$0	$0
						$88,434

* Fuel purchased for resale $168,199.
Debt is listed under each revenue center which it occurred.

Unusual expenses this month include:

	Amount	Company	Description
1	$7,822	Edwards Roofing	Repair Commercial Basin Restroom Roof
2	$3,234	Tidewater Contractors	Grade and Compact RV Park Trailer Storage Space
3	$2,382	5-R Excavation	Repair water line break at RV Park, fill and grade potholes along RV Park Road, equipment rental to grade boat yard, and auger holes for new fence at boat yard.

4	$1,000	Gowman Electric	Repair RV Park Pedestal and materials to hookup boat wash system to power

Fiscal Year Profit & Loss vs. Budget Performance (July 1, 2021 thru June 30, 2022)
We have completed the fiscal year 2021-2022.

- **Income**
  Any number above 100% is ahead of budget.

  Total Income 76.7% or **23.3% below budget.**
  Port's overall income is below budgeted expectations. This is due to the FEMA Project funding approval delay.

  General Fund Program Revenue is 104.1% or **4.1% ahead of budget.**
  Port's general revenue centers ended above budgeted expectations.

- **Expenses**
  Any number below 100% is ahead of budget.

  Total Expense 59.8% or **40.2% below budgeted expectations.**
  This is due to FEMA Project approval delay.

  General Fund Expenditure is 97.4% or **2.6% ahead of budgeted expectations.**
  Port's general fund expenditures ended ahead of budgeted expectations.

Fiscal Year 2021-2022 – Revenue Centers Summary

Revenue Centers		Expenses	Net
Marina	$762,357	$1,219,158 *	($456,801)
Beachfront RV Park	$757,536	$318,514	$439,022
Commercial / Retail	$566,280	$247,095	$319,185
Fuel Dock	$1,011,876	$1,096,202 **	($84,326)

* 7 months with all administrative costs. Began separating administrative costs in March 2022.

** Purchased 255,559 gallons of dyed diesel and 12,465 gallons of premium gasoline for a total of $950,056. Average cost to purchase fuel was $3.54 per gallon, last year was $2.06 per gallon.

ATTACHMENTS

- Port Balance Sheet as of June 30, 2022, 2 pages
- Profit & Loss June 2022, 3 pages
- Profit & Loss June 2022 per Fund, 8 pages
- Profit & Loss Revenue Centers June 2022, 2 pages
- June 2022 Check Register, 3 pages
- Profit & Loss Budget Performance, July 2021 thru June 2022, 4 pages
- Profit & Loss Revenue Centers Fiscal Year 2021-2022, 2 pages
- Vendor Summary for January through December 2022, 3 pages
- Financial Debt Summary, 2nd Quarter Report, 1 page

Depreciation expense is not included in the budget or in our financial reports. If depreciation expense was included in the budget it would be difficult to balance the budget, and deprecation is not a cash expense, required under Generally Accepted Accounting Principles (GAAP), but not Governmental Accounting Standards Board (GASB).

FEMA
Continue working with EMC to finalize construction drawings for Board approval. FEMA continued its review of the budget and damages submitted during the 2019 storms.

Port Items
Attend Southern Oregon Coast Port Tabletop Exercise Cascadia Rising with Curry and Coos County Emergency Management teams and local Coast Guard Station senior officers about tsunami planning and recovery. Curry County Emergency Management is working on a response and recovery plan for all natural emergencies to acquire funding for materials and equipment.

Oregon Department of Environmental Quality contacted the Port to conduct a 1200-Z inspection. The inspection covered 3-years of reporting and testing. Over 1,000 pages of documents were submitted for review. Onsite inspection was conducted as well. The close out meeting will occur in July.

EPA Region 10 Community Grants Team responded with a list of items that the Port can begin working on prior to the award. EPA intends to provide final application guidance and instructions in the coming months. There is a list of items they recommend to start working on:

1. Review EPA Grants Management Training for Applicants and Recipients.
2. Obtain a Unique Entity Identifier (UEI).
3. Register at Grants.Gov.
4. Identify Cost Share Funding.
5. Environmental Information. Each community grant project will need to comply with the National Environmental Policy Act (NEPA), which requires EPA to review and assess environmental information relating to the project prior to awarding any grants. Recipients may begin to identify project information that will support the environmental review process including:

    - Preparing a project summary, including a description of the needs the project addresses, the scope, and project implementation plans.
    - Describing any potential environmental impacts of the proposed project (such as addressing water quality and quantity problems, public health concerns, inadequate systems, more stringent effluent limits, etc.).
    - Describing the project details (such as planning area description; planning period; description of construction phases; owner and operator of the facilities; location of facilities, including a map).
    - Describing project costs, including funding from EPA and all other sources.

Port of Brookings Harbor
Balance Sheet

Cash Basis

	Jun 30, 22	
ASSETS		
Current Assets		
Checking/Savings		
100 · UNRESTRICTED CASH & EQUIVALENTS		
101 · GENERAL FUND CHECKING & LGIP		
10103 · General Funds Ckg Umpqua 3634	132,277.66	
10104 · RCU Business Ownership 0687	18.05	
10105 · RCU Business Savings 0600	10.00	
10106 · General Fund LGIP 6017	214,247.74	
10107 · Dredging Fund LGIP 6254	32,743.03	
Total 101 · GENERAL FUND CHECKING & LGIP		379,296.48
10101 · Petty Cash		413.99
10102 · COUNTER CASH		
10102.1 · Office/Reception Cash Drawer	400.00	
10102.2 · RV Park Cash Drawer	510.00	
10102.3 · Fuel Dock Cash Drawer	800.00	
Total 10102 · COUNTER CASH		1,710.00
Total 100 · UNRESTRICTED CASH & EQUIVALENTS		381,420.47
110 · RESTRICTED CASH & EQUIVALENTS		
104 · RESTRICTED MONEY MKT & CHECKING		
20104 · USDA BOND Umpqua MM 9529	2,520.85	
30104 · Debt Service Umpqua MM 8627	2,516.08	
40104 · Capital Projects Umpqua 8018	2,500.00	
Total 104 · RESTRICTED MONEY MKT & CHECKING		7,536.93
105 · RESTRICTED LGIP		
20105 · USDA Bond Fund LGIP 6021	100,320.93	
30105 · IFA Debt Service Fund LGIP 6020	20,577.99	
50105 · Reserve Fund LGIP 6018	215,799.89	
70105 · Capital Projects LGIP 6273		
70105.2 · Port Construction Fund	574,018.64	
Total 70105 · Capital Projects LGIP 6273	574,018.64	
Total 105 · RESTRICTED LGIP		910,717.45
Total 110 · RESTRICTED CASH & EQUIVALENTS		918,254.38
Total Checking/Savings		1,299,674.85
Accounts Receivable		
120 · ACCOUNTS RECEIVABLE		-14,264.01
Total Accounts Receivable		-14,264.01
Other Current Assets		
130 · DUE FROM TRANSFERS		
40130 · Due From Capital Projects		103,119.09
Total 130 · DUE FROM TRANSFERS		103,119.09
Total Other Current Assets		103,119.09
Total Current Assets		1,388,529.93
TOTAL ASSETS		**1,388,529.93**
LIABILITIES & EQUITY		
Liabilities		
Current Liabilities		
Credit Cards		
106.1 · RCU Business Ownership 0687		18.05
106.2 · RCU Business Savings 0600		10.00

Port of Brookings Harbor
Balance Sheet

Cash Basis

	Jun 30, 22	
Total Credit Cards		28.05
Other Current Liabilities		
100222 · Payroll Liabilities		
10222 · HealthCare Premium - Dependent	-599.84	
Total 100222 · Payroll Liabilities		-599.84
10226 · Lodging Tax Payable		33,413.63
230 · DUE TO TRANSFERS		
40230 · Due To General Fund from CP	103,119.09	
Total 230 · DUE TO TRANSFERS		103,119.09
Total Other Current Liabilities		135,932.88
Total Current Liabilities		135,960.93
Total Liabilities		135,960.93
Equity		
300 · Fund Balance		
301 · Unappropriated Balance		
10301 · General Fund Unappropriated Bal	532,465.33	
20301 · Revenue Bond Unappropriate Bal	102,351.92	
30301 · Debt Service Unappropriated Bal	22,758.51	
40301 · Capital Project Unappropriated	40,430.77	
50301 · Reserve Fund Unappropriated Bal	186,938.63	
70301 · Port Const. Fund Unappropriated	569,448.67	
Total 301 · Unappropriated Balance	1,454,393.83	
302 · Appropriated Carryover		
10302 · General Fund Appropriated Carry	-532,465.33	
20302 · Revenue Bond Appropriated Carry	-102,351.92	
30302 · Debt Service Appropriated Carry	-22,758.51	
40302 · Capital Proj Appropriated Carry	-40,430.77	
50302 · Reserve Fund Appropriated Carry	-186,938.63	
70302 · Port Const. Fund Appropriated	-569,448.67	
Total 302 · Appropriated Carryover	-1,454,393.83	
Total 300 · Fund Balance		0.00
Net Income		1,252,569.00
Total Equity		1,252,569.00
TOTAL LIABILITIES & EQUITY		**1,388,529.93**

Port of Brookings Harbor
Profit & Loss

Cash Basis — June 2022

		Jun 22
Income		
400 · REVENUES		
401 · GENERAL FUND REVENUES		
10412 · Property Tax Current		4,694.16
10413 · Property Tax Prior		589.83
10414 · Interest General Fund		222.93
10418 · Miscellaneous		15,459.38
Total 401 · GENERAL FUND REVENUES		20,966.30
402 · GENERAL FUND PROGRAM REVENUES		
10421 · MARINA		
10421.2 · MOORAGE		
10421.3 · Commercial Slip Rent	12,670.56	
10421.4 · Recreational Slip Rent	43,003.07	
10421.5 · Transient	639.10	
10421.6 · Other Moorage	1,110.00	
Total 10421.2 · MOORAGE		57,422.73
10422 · Boat Launch		2,760.00
10423 · STORAGE		
10423.1 · Gear Storage	6,894.84	
10423.2 · Boat Storage	3,763.00	
Total 10423 · STORAGE		10,657.84
10424 · ADMINISTRATIVE FEES		1,024.75
10425 · MARINE SERVICES		
10425.1 · Travelift	2,926.00	
10425.2 · 12 K Telehandler	726.00	
10425.3 · Other Sales & Fees	440.50	
Total 10425 · MARINE SERVICES		4,092.50
10426 · EVENTS ON PORT PROPERTY		2,101.00
Total 10421 · MARINA		78,058.82
10427 · BEACHFRONT RV PARK		
10427.1 · Space Rental	33,069.17	
10427.2 · Other Sales & Fees	3,110.00	
Total 10427 · BEACHFRONT RV PARK		36,179.17
10428 · COMMERCIAL RETAIL		
10428.1 · Retail Property	30,847.30	
10428.2 · Docks	14,298.60	
10428.3 · CPI and Other Fees	2,507.40	
Total 10428 · COMMERCIAL RETAIL		47,653.30
10429 · FUEL DOCK		123,446.38
Total 402 · GENERAL FUND PROGRAM REVENUES		285,337.67
420 · USDA REVENUE BOND FUND		
20414 · Interest Revenue Bond Fund		76.94
20419 · Transfer to USDA Bond Fund		10,843.00
Total 420 · USDA REVENUE BOND FUND		10,919.94
430 · DEBT SERVICE FUND REVENUE		
30414 · Interest Debt Service Fund		27.30
30419 · Transfer to Debt Service Fund		31,958.71
Total 430 · DEBT SERVICE FUND REVENUE		31,986.01
450 · RESERVE FUND REVENUE		
50414 · Interest Reserve Fund		165.42

Port of Brookings Harbor
Profit & Loss

Cash Basis — June 2022

	Jun 22	
50419 · Transfer to Reserve Fund	2,000.00	
Total 450 · RESERVE FUND REVENUE		2,165.42
460 · DEBT SERV. RV PARK IMPROV. FUND		
60419 · Transfer OR FFC 2020 Debt Serv.	4,809.87	
Total 460 · DEBT SERV. RV PARK IMPROV. FUND		4,809.87
470 · PORT CONSTRUCTION FUND REVENUE		
70414 · Interest Port Construction Fund	440.01	
Total 470 · PORT CONSTRUCTION FUND REVENUE		440.01
Total 400 · REVENUES		356,625.22
Total Income		356,625.22
Gross Profit		356,625.22
Expense		
600 · GENERAL FUND EXPENDITURES		
10900 · Operating Transfers Out General		49,611.58
500 · PERSONNEL SERVICES		
10502 · Office Staff	28,414.78	
10504 · Operations Staff	27,733.13	
10506 · Overtime	164.45	
10508 · Payroll Taxes/Costs/Benefits		
10508.1 · Paid Holidays	2,473.76	
10508.2 · Sick Leave Benefit	887.64	
10508.3 · Vacation	3,350.28	
10508.4 · Payroll Taxes	6,652.40	
10508.5 · SEP Retirement	6,183.09	
Total 10508 · Payroll Taxes/Costs/Benefits	19,547.17	
10510 · Health Care and Dental	8,835.64	
Total 500 · PERSONNEL SERVICES		84,695.17
601 · GENERAL FUND Material & Service		
10601 · ADVERTISING & NOTIFICATIONS	455.00	
10602 · REPAIRS & MAINTENANCE		
10602.1 · Equip. Repair/Maintenance	644.85	
10602.2 · Supplies	7,667.10	
10602.3 · Services	18,126.37	
Total 10602 · REPAIRS & MAINTENANCE	26,438.32	
10603 · FUEL purchased for resale	168,198.90	
10605 · UTILITIES		
10605.1 · Electric	8,524.86	
10605.2 · RV Park Cable TV	595.08	
10605.3 · Sanitary	4,050.12	
10605.5 · Telecommunications	1,539.40	
10605.6 · Waste Removal	5,827.44	
10605.7 · Water	1,552.16	
Total 10605 · UTILITIES	22,089.06	
10606 · OFFICE EXPENSE	1,730.49	
10607 · BANK SERVICE & FINANCE FEES	4,451.43	
10608 · TRAINING & TRAVEL	0.00	
10609 · PERMITS, LICENSES, TAXES & MISC	19.95	
10610 · INSURANCE; PROP & CAS, BOND	10,328.58	
10611 · PROFESSIONAL FEES		
10611.1 · Accounting/Auditing	500.00	
10611.3 · Engineering	5,170.00	
10611.4 · Other Support/Consultant	498.09	

Port of Brookings Harbor
Profit & Loss

Cash Basis — June 2022

		Jun 22
Total 10611 · PROFESSIONAL FEES		6,168.09
Total 601 · GENERAL FUND Material & Service		239,879.82
Total 600 · GENERAL FUND EXPENDITURES		374,186.57
630 · DEBT SERVICE FUND EXPENDITURES		
30802P · IFA PRINCIPAL		
30802.1 · OBDD #520139/Boardwalk Prin	3,793.46	
30802.2 · OBDD #525172/RV Park Prin.	3,420.92	
30802.3 · OBDD #525176/Green Bldg Prn	6,024.09	
30802.4 · OBDD #525181/EurekaFish Prn	3,912.98	
30802.5 · SPWF #L02009/Cold Strg Prin	55,663.62	
30802.9 · SPWF X03004/Eureka Fishery Prin	4,684.93	
Total 30802P · IFA PRINCIPAL		77,500.00
801 · Principal		
30803P · 50 BFMII Travelift Principal	4,301.00	
30804P · 2018 Genie Forklift Principal	1,235.10	
Total 801 · Principal		5,536.10
810 · Interest Payments		
30813I · 50 BFMII Travelift Interest	358.00	
30814I · 2018 Genie Forklift Interest	229.61	
Total 810 · Interest Payments		587.61
Total 630 · DEBT SERVICE FUND EXPENDITURES		83,623.71
640 · CAPT. PROJ. EXPENDITURES		
740 · CAPT. PROJ. CAPITAL OUTLAY		
40702 · Land Improvement - Capt Proj		
40702.1 · Engineering/Consultants	8,960.00	
Total 40702 · Land Improvement - Capt Proj	8,960.00	
Total 740 · CAPT. PROJ. CAPITAL OUTLAY		8,960.00
Total 640 · CAPT. PROJ. EXPENDITURES		8,960.00
660 · DEBT SERV. RV PARK EXPENDITURES		
60806P · RV Park Improv. Loan Principal	3,272.44	
60815I · RV Park Improv. Loan Interest	1,537.43	
Total 660 · DEBT SERV. RV PARK EXPENDITURES		4,809.87
Total Expense		471,580.15
Net Income		-114,954.93

Port of Brookings Harbor
Profit & Loss General Fund
June 2022

	Jun 22
Income	
400 · REVENUES	
401 · GENERAL FUND REVENUES	
10412 · Property Tax Current	4,694.16
10413 · Property Tax Prior	589.83
10414 · Interest General Fund	222.93
10418 · Miscellaneous	15,459.38
Total 401 · GENERAL FUND REVENUES	20,966.30
402 · GENERAL FUND PROGRAM REVENUES	
10421 · MARINA	
10421.2 · MOORAGE	
10421.3 · Commercial Slip Rent	12,670.56
10421.4 · Recreational Slip Rent	43,003.07
10421.5 · Transient	639.10
10421.6 · Other Moorage	1,110.00
Total 10421.2 · MOORAGE	57,422.73
10422 · Boat Launch	2,760.00
10423 · STORAGE	
10423.1 · Gear Storage	6,894.84
10423.2 · Boat Storage	3,763.00
Total 10423 · STORAGE	10,657.84
10424 · ADMINISTRATIVE FEES	1,024.75
10425 · MARINE SERVICES	
10425.1 · Travelift	2,926.00
10425.2 · 12 K Telehandler	726.00
10425.3 · Other Sales & Fees	440.50
Total 10425 · MARINE SERVICES	4,092.50
10426 · EVENTS ON PORT PROPERTY	2,101.00
Total 10421 · MARINA	78,058.82
10427 · BEACHFRONT RV PARK	
10427.1 · Space Rental	33,069.17
10427.2 · Other Sales & Fees	3,110.00
Total 10427 · BEACHFRONT RV PARK	36,179.17
10428 · COMMERCIAL RETAIL	
10428.1 · Retail Property	30,847.30
10428.2 · Docks	14,298.60
10428.3 · CPI and Other Fees	2,507.40
Total 10428 · COMMERCIAL RETAIL	47,653.30
10429 · FUEL DOCK	123,446.38
Total 402 · GENERAL FUND PROGRAM REVENUES	285,337.67
Total 400 · REVENUES	306,303.97
Total Income	306,303.97
Gross Profit	306,303.97
Expense	
600 · GENERAL FUND EXPENDITURES	
10900 · Operating Transfers Out General	49,611.58
500 · PERSONNEL SERVICES	
10502 · Office Staff	28,414.78
10504 · Operations Staff	27,733.13
10506 · Overtime	164.45
10508 · Payroll Taxes/Costs/Benefits	
10508.1 · Paid Holidays	2,473.76

Port of Brookings Harbor
Profit & Loss General Fund
June 2022

	Jun 22
10508.2 · Sick Leave Benefit	887.64
10508.3 · Vacation	3,350.28
10508.4 · Payroll Taxes	6,652.40
10508.5 · SEP Retirement	6,183.09
Total 10508 · Payroll Taxes/Costs/Benefits	19,547.17
10510 · Health Care and Dental	8,835.64
Total 500 · PERSONNEL SERVICES	84,695.17
601 · GENERAL FUND Material & Service	
10601 · ADVERTISING & NOTIFICATIONS	455.00
10602 · REPAIRS & MAINTENANCE	
10602.1 · Equip. Repair/Maintenance	644.85
10602.2 · Supplies	7,667.10
10602.3 · Services	18,126.37
Total 10602 · REPAIRS & MAINTENANCE	26,438.32
10603 · FUEL purchased for resale	168,198.90
10605 · UTILITIES	
10605.1 · Electric	8,524.86
10605.2 · RV Park Cable TV	595.08
10605.3 · Sanitary	4,050.12
10605.5 · Telecommunications	1,539.40
10605.6 · Waste Removal	5,827.44
10605.7 · Water	1,552.16
Total 10605 · UTILITIES	22,089.06
10606 · OFFICE EXPENSE	1,730.49
10607 · BANK SERVICE & FINANCE FEES	4,451.43
10608 · TRAINING & TRAVEL	0.00
10609 · PERMITS, LICENSES, TAXES & MISC	19.95
10610 · INSURANCE; PROP & CAS, BOND	10,328.58
10611 · PROFESSIONAL FEES	
10611.1 · Accounting/Auditing	500.00
10611.3 · Engineering	5,170.00
10611.4 · Other Support/Consultant	498.09
Total 10611 · PROFESSIONAL FEES	6,168.09
Total 601 · GENERAL FUND Material & Service	239,879.82
Total 600 · GENERAL FUND EXPENDITURES	374,186.57
Total Expense	374,186.57
Net Income	**-67,882.60**

Port of Brookings Harbor
Profit & Loss USDA Revenue Bond Fund
June 2022

	Jun 22
Income	
400 · REVENUES	
420 · USDA REVENUE BOND FUND	
20414 · Interest Revenue Bond Fund	76.94
20419 · Transfer to USDA Bond Fund	10,843.00
Total 420 · USDA REVENUE BOND FUND	10,919.94
Total 400 · REVENUES	10,919.94
Total Income	10,919.94
Gross Profit	10,919.94
Expense	0.00
Net Income	**10,919.94**

Port of Brookings Harbor
Profit & Loss Debt Service Fund
June 2022

		Jun 22
Income		
400 · REVENUES		
430 · DEBT SERVICE FUND REVENUE		
30414 · Interest Debt Service Fund	27.30	
30419 · Transfer to Debt Service Fund	31,958.71	
Total 430 · DEBT SERVICE FUND REVENUE		31,986.01
Total 400 · REVENUES		31,986.01
Total Income		31,986.01
Gross Profit		31,986.01
Expense		
630 · DEBT SERVICE FUND EXPENDITURES		
30802P · IFA PRINCIPAL		
30802.1 · OBDD #520139/Boardwalk Prin	3,793.46	
30802.2 · OBDD #525172/RV Park Prin.	3,420.92	
30802.3 · OBDD #525176/Green Bldg Prn	6,024.09	
30802.4 · OBDD #525181/EurekaFish Prn	3,912.98	
30802.5 · SPWF #L02009/Cold Strg Prin	55,663.62	
30802.9 · SPWF X03004/Eureka Fishery Prin	4,684.93	
Total 30802P · IFA PRINCIPAL		77,500.00
801 · Principal		
30803P · 50 BFMII Travelift Principal	4,301.00	
30804P · 2018 Genie Forklift Principal	1,235.10	
Total 801 · Principal		5,536.10
810 · Interest Payments		
30813I · 50 BFMII Travelift Interest	358.00	
30814I · 2018 Genie Forklift Interest	229.61	
Total 810 · Interest Payments		587.61
Total 630 · DEBT SERVICE FUND EXPENDITURES		83,623.71
Total Expense		83,623.71
Net Income		**-51,637.70**

Port of Brookings Harbor
Profit & Loss Debt Service RV Park Fund
June 2022

		Jun 22
Income		
400 · REVENUES		
460 · DEBT SERV. RV PARK IMPROV. FUND		
60419 · Transfer OR FFC 2020 Debt Serv.	4,809.87	
Total 460 · DEBT SERV. RV PARK IMPROV. FUND		4,809.87
Total 400 · REVENUES		4,809.87
Total Income		4,809.87
Gross Profit		4,809.87
Expense		
660 · DEBT SERV. RV PARK EXPENDITURES		
60806P · RV Park Improv. Loan Principal	3,272.44	
60815I · RV Park Improv. Loan Interest	1,537.43	
Total 660 · DEBT SERV. RV PARK EXPENDITURES		4,809.87
Total Expense		4,809.87
Net Income		0.00

Port of Brookings Harbor
Profit & Loss Capital Projects Fund
June 2022

		Jun 22
Expense		
640 · CAPT. PROJ. EXPENDITURES		
740 · CAPT. PROJ. CAPITAL OUTLAY		
40702 · Land Improvement - Capt Proj		
40702.1 · Engineering/Consultants	8,960.00	
Total 40702 · Land Improvement - Capt Proj	8,960.00	
Total 740 · CAPT. PROJ. CAPITAL OUTLAY	8,960.00	
Total 640 · CAPT. PROJ. EXPENDITURES		8,960.00
Total Expense		8,960.00
Net Income		-8,960.00

Port of Brookings Harbor
Profit & Loss Port Construction Fund
June 2022

	Jun 22
Income	
400 · REVENUES	
470 · PORT CONSTRUCTION FUND REVENUE	
70414 · Interest Port Construction Fund	440.01
Total 470 · PORT CONSTRUCTION FUND REVENUE	440.01
Total 400 · REVENUES	440.01
Total Income	440.01
Gross Profit	440.01
Expense	0.00
Net Income	**440.01**

Port of Brookings Harbor
Profit & Loss Reserve Fund
June 2022

		Jun 22
Income		
400 · REVENUES		
450 · RESERVE FUND REVENUE		
50414 · Interest Reserve Fund	165.42	
50419 · Transfer to Reserve Fund	2,000.00	
Total 450 · RESERVE FUND REVENUE		2,165.42
Total 400 · REVENUES		2,165.42
Total Income		2,165.42
Gross Profit		2,165.42
Expense		0.00
Net Income		**2,165.42**

Port of Brookings Harbor
REVENUE CENTERS Profit & Loss
June 2022

	BEACHFRONT RV PARK (GENERAL FUND)	COMMERCIAL RETAIL (GENERAL FUND)	FUEL DOCK (GENERAL FUND)	GRANTS (GENERAL FUND)	MARINA (GENERAL FUND)	GENERAL FUND - Other (GENERAL FUND)	Total GENERAL FUND	TOTAL
Income								
400 · REVENUES								
401 · GENERAL FUND REVENUES								
10412 · Property Tax Current	0.00	0.00	0.00	0.00	0.00	4,694.16	4,694.16	4,694.16
10413 · Property Tax Prior	0.00	0.00	0.00	0.00	0.00	589.83	589.83	589.83
10414 · Interest General Fund	0.00	0.00	0.00	0.00	0.00	222.93	222.93	222.93
10418 · Miscellaneous	0.00	0.00	0.00	0.00	0.00	15,459.38	15,459.38	15,459.38
Total 401 · GENERAL FUND REVENUES	0.00	0.00	0.00	0.00	0.00	20,966.30	20,966.30	20,966.30
402 · GENERAL FUND PROGRAM REVENUES								
10421 · MARINA								
10421.2 · MOORAGE								
10421.3 · Commercial Slip Rent	0.00	0.00	0.00	0.00	12,670.56	0.00	12,670.56	12,670.56
10421.4 · Recreational Slip Rent	0.00	0.00	0.00	0.00	43,003.07	0.00	43,003.07	43,003.07
10421.5 · Transient	0.00	0.00	0.00	0.00	639.10	0.00	639.10	639.10
10421.6 · Other Moorage	0.00	0.00	0.00	0.00	1,110.00	0.00	1,110.00	1,110.00
Total 10421.2 · MOORAGE	0.00	0.00	0.00	0.00	57,422.73	0.00	57,422.73	57,422.73
10422 · Boat Launch	0.00	0.00	0.00	0.00	2,760.00	0.00	2,760.00	2,760.00
10423 · STORAGE								
10423.1 · Gear Storage	0.00	0.00	0.00	0.00	6,894.84	0.00	6,894.84	6,894.84
10423.2 · Boat Storage	0.00	0.00	0.00	0.00	3,763.00	0.00	3,763.00	3,763.00
Total 10423 · STORAGE	0.00	0.00	0.00	0.00	10,657.84	0.00	10,657.84	10,657.84
10424 · ADMINISTRATIVE FEES	0.00	0.00	0.00	0.00	1,024.75	0.00	1,024.75	1,024.75
10425 · MARINE SERVICES								
10425.1 · Travelift	0.00	0.00	0.00	0.00	2,926.00	0.00	2,926.00	2,926.00
10425.2 · 12 K Telehandler	0.00	0.00	0.00	0.00	726.00	0.00	726.00	726.00
10425.3 · Other Sales & Fees	0.00	0.00	0.00	0.00	440.50	0.00	440.50	440.50
Total 10425 · MARINE SERVICES	0.00	0.00	0.00	0.00	4,092.50	0.00	4,092.50	4,092.50
10426 · EVENTS ON PORT PROPERTY	0.00	0.00	0.00	0.00	2,101.00	0.00	2,101.00	2,101.00
Total 10421 · MARINA	0.00	0.00	0.00	0.00	78,058.82	0.00	78,058.82	78,058.82
10427 · BEACHFRONT RV PARK								
10427.1 · Space Rental	33,069.17	0.00	0.00	0.00	0.00	0.00	33,069.17	33,069.17
10427.2 · Other Sales & Fees	3,110.00	0.00	0.00	0.00	0.00	0.00	3,110.00	3,110.00
Total 10427 · BEACHFRONT RV PARK	36,179.17	0.00	0.00	0.00	0.00	0.00	36,179.17	36,179.17
10428 · COMMERCIAL RETAIL								
10428.1 · Retail Property	0.00	30,847.30	0.00	0.00	0.00	0.00	30,847.30	30,847.30
10428.2 · Docks	0.00	14,298.60	0.00	0.00	0.00	0.00	14,298.60	14,298.60
10428.3 · CPI and Other Fees	0.00	2,507.40	0.00	0.00	0.00	0.00	2,507.40	2,507.40
Total 10428 · COMMERCIAL RETAIL	0.00	47,653.30	0.00	0.00	0.00	0.00	47,653.30	47,653.30
10429 · FUEL DOCK	0.00	0.00	123,446.38	0.00	0.00	0.00	123,446.38	123,446.38
Total 402 · GENERAL FUND PROGRAM REVEN...	36,179.17	47,653.30	123,446.38	0.00	78,058.82	0.00	285,337.67	285,337.67
Total 400 · REVENUES	36,179.17	47,653.30	123,446.38	0.00	78,058.82	20,966.30	306,303.97	306,303.97
Total Income	36,179.17	47,653.30	123,446.38	0.00	78,058.82	20,966.30	306,303.97	306,303.97
Gross Profit	36,179.17	47,653.30	123,446.38	0.00	78,058.82	20,966.30	306,303.97	306,303.97
Expense								
600 · GENERAL FUND EXPENDITURES								
10900 · Operating Transfers Out General	0.00	0.00	0.00	0.00	0.00	49,611.58	49,611.58	49,611.58
500 · PERSONNEL SERVICES								
10502 · Office Staff	9,913.72	4,915.03	4,915.03	0.00	8,671.00	0.00	28,414.78	28,414.78
10504 · Operations Staff	4,297.97	7,811.17	7,811.17	0.00	7,812.82	0.00	27,733.13	27,733.13
10506 · Overtime	81.91	19.14	19.14	0.00	34.26	0.00	164.45	164.45
10508 · Payroll Taxes/Costs/Benefits								
10508.1 · Paid Holidays	609.84	531.66	531.66	0.00	800.60	0.00	2,473.76	2,473.76
10508.2 · Sick Leave Benefit	10.41	275.57	275.60	0.00	326.06	0.00	887.64	887.64
10508.3 · Vacation	830.31	839.98	839.94	0.00	840.05	0.00	3,350.28	3,350.28
10508.4 · Payroll Taxes	1,683.43	1,514.17	1,514.17	0.00	1,960.63	0.00	6,652.40	6,652.40
10508.5 · SEP Retirement	1,458.24	1,439.21	1,439.23	0.00	1,848.41	0.00	6,183.09	6,183.09
Total 10508 · Payroll Taxes/Costs/Benefits	4,570.23	4,600.59	4,600.60	0.00	5,775.75	0.00	19,547.17	19,547.17
10510 · Health Care and Dental	2,409.72	1,807.29	1,807.29	0.00	2,811.34	0.00	8,835.64	8,835.64
Total 500 · PERSONNEL SERVICES	21,283.55	19,153.22	19,153.23	0.00	25,105.17	0.00	84,695.17	84,695.17

Port of Brookings Harbor
REVENUE CENTERS Profit & Loss
June 2022

	BEACHFRONT RV PARK (GENERAL FUND)	COMMERCIAL RETAIL (GENERAL FUND)	FUEL DOCK (GENERAL FUND)	GRANTS (GENERAL FUND)	MARINA (GENERAL FUND)	GENERAL FUND - Other (GENERAL FUND)	Total GENERAL FUND	TOTAL
601 · GENERAL FUND Material & Service								
10601 · ADVERTISING & NOTIFICATIONS	113.75	113.75	113.75	0.00	113.75	0.00	455.00	455.00
10602 · REPAIRS & MAINTENANCE								
10602.1 · Equip. Repair/Maintenance	0.00	0.00	0.00	0.00	644.85	0.00	644.85	644.85
10602.2 · Supplies	2,239.70	240.65	130.69	41.57	5,014.49	0.00	7,667.10	7,667.10
10602.3 · Services	5,796.95	1,050.08	0.00	0.00	11,279.34	0.00	18,126.37	18,126.37
Total 10602 · REPAIRS & MAINTENANCE	8,036.65	1,290.73	130.69	41.57	16,938.68	0.00	26,438.32	26,438.32
10603 · FUEL purchased for resale	0.00	0.00	168,198.90	0.00	0.00	0.00	168,198.90	168,198.90
10605 · UTILITIES								
10605.1 · Electric	2,160.57	471.04	73.53	0.00	5,819.72	0.00	8,524.86	8,524.86
10605.2 · RV Park Cable TV	595.08	0.00	0.00	0.00	0.00	0.00	595.08	595.08
10605.3 · Sanitary	515.36	1,718.20	33.14	0.00	1,783.42	0.00	4,050.12	4,050.12
10605.5 · Telecommunications	355.50	176.39	215.03	0.00	792.48	0.00	1,539.40	1,539.40
10605.6 · Waste Removal	1,890.34	0.00	0.00	0.00	3,937.10	0.00	5,827.44	5,827.44
10605.7 · Water	245.42	391.80	0.00	0.00	914.94	0.00	1,552.16	1,552.16
Total 10605 · UTILITIES	5,762.27	2,757.43	321.70	0.00	13,247.66	0.00	22,089.06	22,089.06
10606 · OFFICE EXPENSE	352.08	352.05	352.08	0.00	674.32	0.00	1,730.49	1,730.49
10607 · BANK SERVICE & FINANCE FEES	2,654.92	0.00	975.47	0.00	821.04	0.00	4,451.43	4,451.43
10608 · TRAINING & TRAVEL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
10609 · PERMITS, LICENSES, TAXES & MISC	0.00	0.00	0.00	0.00	19.95	0.00	19.95	19.95
10610 · INSURANCE; PROP & CAS, BOND	676.84	1,982.58	158.17	0.00	7,310.99	0.00	10,328.58	10,328.58
10611 · PROFESSIONAL FEES								
10611.1 · Accounting/Auditing	125.00	125.00	125.00	0.00	125.00	0.00	500.00	500.00
10611.3 · Engineering	0.00	5,170.00	0.00	0.00	0.00	0.00	5,170.00	5,170.00
10611.4 · Other Support/Consultant	273.76	74.76	74.77	0.00	74.76	0.00	498.09	498.09
Total 10611 · PROFESSIONAL FEES	398.76	5,369.76	199.77	0.00	199.76	0.00	6,168.09	6,168.09
Total 601 · GENERAL FUND Material & Service	18,195.27	11,866.30	170,450.51	41.57	39,326.17	0.00	239,879.82	239,879.82
Total 600 · GENERAL FUND EXPENDITURES	39,478.82	31,019.52	169,603.74	41.57	64,431.34	49,611.58	374,186.57	374,186.57
Total Expense	39,478.82	31,019.52	169,603.74	41.57	64,431.34	49,611.58	374,186.57	374,186.57
Net Income	-3,299.85	16,633.78	-66,157.36	-41.57	13,627.45	-26,645.26	-67,882.60	-67,882.60

Port of Brookings Harbor
Check Registers
Cash Basis — **As of June 30, 2022**

Type	Num	Date	Name	Memo	Debit	Credit
100 · UNRESTRICTED CASH & EQUIVALENTS						
101 · GENERAL FUND CHECKING & LGIP						
10103 · General Funds Ckg Umpqua 3634						
Bill Pmt -Check	DEBIT	06/01/2022	Tyree Oil, Inc	Account # 56851 Fuel Purchase for Resale		32,852.00
Bill Pmt -Check	DEBIT	06/06/2022	US Bank Equipment Finance	Contract No. 500-0623925-000 RICOH IMC6000 Copier		223.20
Check	DEBIT	06/10/2022	ADP	Advice of Debit 607207183 Payroll Date: 06/01/2022		148.31
Check	DEBIT	06/01/2022	Edward Jones	Employer Contribution 06/01/2022 ConfirmationSTNV4-SK32G		133.51
Check	DEBIT	06/01/2022	Edward Jones	Employer Contribution 06/01/2022 ConfirmationSTNV4-SKZ16		215.38
Check	DEBIT	06/01/2022	Edward Jones	Employer Contribution 06/01/2022 ConfirmationSTNV4-SL0MS		147.73
Check	DEBIT	06/01/2022	Edward Jones	Employer Contribution 06/01/2022 ConfirmationSTNV4-SL2D8		326.40
Check	DEBIT	06/01/2022	Edward Jones	Employer Contribution 06/01/2022 ConfirmationSTNV4-SL687		144.56
Check	DEBIT	06/01/2022	Edward Jones	VOID/STOP PAYMENT: Employer Contribution 06/01/2022 ConfirmationSTNV4-SL9NZ	0.00	
Check	DEBIT	06/01/2022	Edward Jones	Employer Contribution 06/01/2022 ConfirmationSTNV4-SLC6W		168.49
Check	DEBIT	06/01/2022	Edward Jones	Employer Contribution 06/01/2022 ConfirmationSTNV4-SLFLB		136.11
Check	DEBIT	06/01/2022	Edward Jones	Employer Contribution 06/01/2022 ConfirmationSTNV4-SLHL9		131.36
Check	DEBIT	06/01/2022	Edward Jones	Employer Contribution 06/01/2022 ConfirmationSTNV4-SLHL9		303.68
Check	DEBIT	06/01/2022	TD Ameritrade	Employer Contribution 06/01/2022 ConfirmationSTNV4-SLMCR		181.48
Check	DEBIT	06/02/2022	Elavon	MAY 2022 MERCHANT SERVICE FEE ACCT#316		747.04
Check	DEBIT	06/02/2022	Elavon	MAY 2022 MERCHANT SERVICE FEE ACCT#873 Ventek Boat Launch		73.80
Check	DEBIT	06/02/2022	Elavon	MAY 2022 MERCHANT SERVICE FEE ACCT#951		975.47
Check	DEBIT	06/06/2022	BL/ RV Park	STRIPE DEBIT - REFUNDS issued 6/2/2022		888.11
Bill Pmt -Check	DEBIT	06/17/2022	Tyree Oil, Inc	Account # 56851 Fuel Purchase for Resale		19,697.94
Bill Pmt -Check	DEBIT	06/07/2022	Pitney Bowes Global Lease	Lease Account #0013096249 Billing Period: MAR 30 2022 - JUN 29 2022		423.08
Bill Pmt -Check	DEBIT	06/22/2022	Tyree Oil, Inc	Account # 56851 Fuel Purchase for Resale		18,526.00
Check	DEBIT	06/15/2022	Edward Jones	Employer Contribution 06/15/2022 ConfirmationSVNGM-2NH09		142.06
Check	DEBIT	06/15/2022	Edward Jones	Employer Contribution 06/15/2022 ConfirmationSVNGM-2P40V		301.55
Check	DEBIT	06/15/2022	Edward Jones	Employer Contribution 06/15/2022 ConfirmationSVNGM-2P796		146.65
Check	DEBIT	06/15/2022	Edward Jones	Employer Contribution 06/15/2022 ConfirmationSVNGM-2P9P3		326.40
Check	DEBIT	06/15/2022	Edward Jones	Employer Contribution 06/15/2022 ConfirmationSVNGM-2PC9T		147.35
Check	DEBIT	06/15/2022	Edward Jones	Employer Contribution 06/15/2022 ConfirmationSVNGM-2PDTD		73.44
Check	DEBIT	06/15/2022	Edward Jones	Employer Contribution 06/15/2022 ConfirmationSVNGM-2PFSD		170.55
Check	DEBIT	06/15/2022	Edward Jones	Employer Contribution 06/15/2022 ConfirmationSVNGM-2PH3D		135.96
Check	DEBIT	06/15/2022	Edward Jones	Employer Contribution 06/15/2022 ConfirmationSVNGM-2PJQT		132.33
Check	DEBIT	06/15/2022	Edward Jones	Employer Contribution 06/15/2022 ConfirmationSVNGM-2PL3N		303.68
Check	DEBIT	06/15/2022	TD Ameritrade	Employer Contribution 06/15/2022 ConfirmationSVNGM-2PMB9		189.45
Check	DEBIT	06/13/2022	BL/ RV Park	STRIPE DEBIT - $3,946.97 - Daily Transactions June 9, 2022		3,946.97
Bill Pmt -Check	DEBIT	06/24/2022	Tyree Oil, Inc	Account # 56851 Fuel Purchase for Resale		18,526.00
Check	DEBIT	06/14/2022	Edward Jones	Employer Contribution 06/14/2022 to replace check#0000995926, payroll date: June 1, 2022 - Confi...		47.53
Check	DEBIT	06/14/2022	Edward Jones	Employer Contribution 06/14/2022 - ConfirmationSVS9F-7RTR8		686.61
Check	DEBIT	06/24/2022	ADP	Advice of Debit 608387503 Payroll Date: 06/15/2022		150.78
Bill Pmt -Check	DEBIT	06/21/2022	Pitney Bowes, Inc.	Power Postage Acct# 8000-9000-0324-9186		300.00
Bill Pmt -Check	DEBIT	06/21/2022	Tyree Oil, Inc	Account # 56851 Fuel Purchase for Resale		17,826.00
Bill Pmt -Check	DEBIT	06/17/2022	Chevron Business Card	Account #: 0496007075666 Fuel Purchases for Port Vehicles/Equipment		933.25
Check	DEBIT	06/21/2022	BL/ RV Park	STRIPE DEBIT - Refunds issued June 16, 2022		1,046.28
Bill Pmt -Check	DEBIT	06/22/2022	Quill Corporation	ACCT#1932158 Office Supplies		94.20
Bill Pmt -Check	DEBIT	06/23/2022	Spectrum Business 8752 19 060 0247029	Internet & Voice for Port Meeting Room 06/19/22 - 07/18/22		124.98
Bill Pmt -Check	DEBIT	06/27/2022	Amazon Capital Services	Business Account #A2VUC5YWS42764 - Supplies/Materials		9.99
Check	DEBIT	06/29/2022	TD Ameritrade	Employer Contribution 06/29/2022 ConfirmationSX2DR-LRKRZ		190.36
Bill Pmt -Check	DEBIT	06/28/2022	Chevron Business Card	Account #: 0496007075666 Fuel Purchases for Port Vehicles/Equipment		356.11
General Journal	DEBT 06/01	06/01/2022		Transfer to Debt Service Fund for Travelift Payment		4,659.00
General Journal	DEBT 06/01	06/01/2022		Transfer to Debt Service Fund for Fork Lift Payment		1,464.71
General Journal	DEBT 06/01	06/01/2022		Transfer to Debt Serv. RV Park for Umpqua Bank Loan Acct#97748040835 Payment		4,809.87
General Journal	PAY 06/01	06/01/2022		Rec 06/012022 payroll		15,797.98
General Journal	TAX 06/01	06/01/2022		Rec 06/01/2022 payroll		6,281.65
General Journal	CP 06/10	06/10/2022		Transfer to Capital Projects for payment to EMC Engineering inv#91009-2174		8,960.00
General Journal	PAY 06/15	06/15/2022		Rec 06/15/2022 payroll		16,795.74

Port of Brookings Harbor
Check Registers
Cash Basis — As of June 30, 2022

Type	Num	Date	Name	Memo	Debit	Credit
General Journal	TAX 06/15	06/15/2022		Rec 06/15/2022 payroll		6,668.29
General Journal	GF 06/28	06/28/2022		Transfer $50,000 from LGIP to Umpqua Bank - General Funds	50,000.00	
General Journal	PAY 06/29	06/29/2022		Rec 06/29/2022 payroll		15,862.52
General Journal	TAX 06/29	06/29/2022		Rec 06/29/2022 payroll		6,312.55
Check	10972	06/03/2022	Dixon, Christian	REFUND for Commercial Monthly Moorage MAR - MAY 2022		176.30
Check	10973	06/03/2022	Bigfoot Blues Festival	REFUND to Customer for cancelled event		315.00
Bill Pmt -Check	10995	06/03/2022	Brookings Harbor Chamber of Commerce	Annual Memebership (Class 3 Gold (10-14 employees) 06/01/2022 - 05/31/2023		450.00
Bill Pmt -Check	10996	06/03/2022	Curry Transfer & Recycling	Account #2040-2434-001 Trash Dumpsters		6,006.44
Bill Pmt -Check	10997	06/03/2022	Four Aces Security Solutions LLC	May 2022 - Security Patrol - 34%Marina, 33%Beachfront RV Park, 33%Commercial Retail		2,873.70
Bill Pmt -Check	10998	06/03/2022	Gowman Electric, Inc.	CCB: 198999 Electrical Repair		1,000.00
Bill Pmt -Check	10999	06/03/2022	Harbor Sanitary District	MAY 2022 Sanitary Bill		4,050.12
Bill Pmt -Check	11000	06/03/2022	Spec Dist Assoc of OR- Prop & Cas	Policy#31P16414-203 Customer ID: 01-16414 - 2021 PROPERTY & CASUALTY POLICY		10,328.58
Bill Pmt -Check	11001	06/03/2022	Suburban Propane	Delivery of Propane for Beachfront RV Park		180.51
Check	11002	06/10/2022	Mott, Ted	REFUND for Annual Moorage		1,938.00
Bill Pmt -Check	11003	06/10/2022	5-R Excavation, LLC	CCB: 155657 Service/Equipment Rental/Repairs 4/18/22-water break at RV Park, 4/22/22 - Repair t...		2,382.50
Bill Pmt -Check	11004	06/10/2022	Del-Cur Supply Co-op	Customer No. 38700 Hardware & Other Supplies		275.91
Bill Pmt -Check	11005	06/10/2022	EMC-Engineers/Scientists, LLC	31.8 Hrs Port Engineering RE Wastewater Treatment Plant & 9.7 Hrs Port Engineering and Consulti...		5,170.00
Bill Pmt -Check	11006	06/10/2022	George's Auto & Diesel Electric	Belts purchased for Repair EQ#3705 EQ#3705 Port Work Boat		57.25
Bill Pmt -Check	11007	06/10/2022	Harbor Logging Supply, Inc.	6' 2" SHIP CHANNEL ALUM for RV Park fence divider display		105.00
Bill Pmt -Check	11008	06/10/2022	In-Motion Graphics and Design, LLC	Installation of decals on EQ#1112 & EQ#1111 - 2022 Ford Maverick		170.00
Bill Pmt -Check	11009	06/10/2022	Pacific Rim Copy Center	Copies		318.00
Bill Pmt -Check	11010	06/10/2022	Spec Dist Assoc of OR- Healthcare	Customer #: 03-0016414 - HEALTHCARE PREMIUM		10,251.50
Bill Pmt -Check	11011	06/10/2022	Wes' Towing	TOWING SERVICES		300.00
Bill Pmt -Check	11012	06/10/2022	Highway Specialities, LLC	Yellow Delineators for Gear Storage Project		1,809.60
Bill Pmt -Check	11013	06/15/2022	Curry Equipment	Account#1052 Equip Repair & Maint. Supplies		259.96
Bill Pmt -Check	11014	06/15/2022	Del-Cur Supply Co-op	Customer No. 38700 Hardware & Other Supplies		602.77
Bill Pmt -Check	11015	06/15/2022	Gerald W. Burns, CPA	Financial Consultant Agreement		500.00
Bill Pmt -Check	11016	06/15/2022	John Kellum/John's Portable Welding	06/01/2022 - LABOR to remove wires on Bornstein Seafoods Hoist		75.00
Bill Pmt -Check	11017	06/15/2022	Metro Media	Advertisement Brookings Directory 2022-½ page		455.00
Bill Pmt -Check	11018	06/15/2022	NAPA Auto Part	ACCT#60285 Vehicle/Equip Maint. & Supplies		42.06
Bill Pmt -Check	11019	06/21/2022	Amazon Capital Services	Business Account #A2VUC5YWS42764 - Supplies/Materials		10.99
Bill Pmt -Check	11020	06/21/2022	BI-MART	Account #931481 Water & Supplies		11.96
Bill Pmt -Check	11021	06/21/2022	Fastenal Industrial Supplies	Customer No.ORBRK0013 Toiletries & Supplies		239.27
Bill Pmt -Check	11022	06/21/2022	NAPA Auto Part	ACCT#60285 Vehicle/Equip Maint. & Supplies		27.64
Bill Pmt -Check	11023	06/21/2022	Pacific Rim Copy Center	Copies		35.50
Bill Pmt -Check	11024	06/21/2022	Tyree Oil, Inc	Account # 56851 Fuel Purchase for Resale		38,102.00
Bill Pmt -Check	11025	06/21/2022	Tyree Oil, Inc	Account # 56851 Fuel Purchase for Resale		22,193.94
Bill Pmt -Check	11026	06/21/2022	Thermo Fluids, Inc.	Account # PO24273 Removal of Used Oil and Oily Water		55.00
Bill Pmt -Check	11027	06/27/2022	BI-MART	Account #931481 Water & Supplies		11.97
Bill Pmt -Check	11028	06/27/2022	Coos-Curry Electric Cooperative, Inc.	ACCT # 67601 Electrical Service		8,524.86
Bill Pmt -Check	11029	06/27/2022	Curry Equipment	Account#1052 Equip Repair & Maint. Supplies		28.00
Bill Pmt -Check	11030	06/27/2022	Del-Cur Supply Co-op	Customer No. 38700 Hardware & Other Supplies		117.98
Bill Pmt -Check	11031	06/27/2022	Edwards Roofing	06/21/2022 - Re-roof per bid proposal Commerical Restroom		7,822.00
Bill Pmt -Check	11032	06/27/2022	Gold Beach Lumber Yard, Inc.	Account #776 Hardware Supplies & Materials		2,707.04
Bill Pmt -Check	11033	06/27/2022	Pacific Rim Copy Center	Copies		30.00
Bill Pmt -Check	11034	06/27/2022	Rogue Credit Union	Membership #306 Acct#6000189521 CC Ending#7681		3,887.88
Bill Pmt -Check	11035	06/27/2022	Tidewater Contractors, Inc.	Customer Code: 000061 - 6/17/2022 - PREP & ROCK RV Park Trailer Storage Area		3,233.76
Check	11036	06/29/2022	Edward Jones	Employer Contribution 06/29/2022		111.36
Check	11037	06/29/2022	Edward Jones	Employer Contribution 06/29/2022		215.38
Check	11038	06/29/2022	Edward Jones	Employer Contribution 06/29/2022		146.63
Check	11039	06/29/2022	Edward Jones	Employer Contribution 06/29/2022		326.40
Check	11040	06/29/2022	Edward Jones	Employer Contribution 06/29/2022		142.46
Check	11041	06/29/2022	Edward Jones	Employer Contribution 06/29/2022		66.78
Check	11042	06/29/2022	Edward Jones	Employer Contribution 06/29/2022		172.32
Check	11043	06/29/2022	Edward Jones	Employer Contribution 06/29/2022		136.95
Check	11044	06/29/2022	Edward Jones	Employer Contribution 06/29/2022		133.38

Port of Brookings Harbor
Check Registers
Cash Basis — As of June 30, 2022

Type	Num	Date	Name	Memo	Debit	Credit
Check	11045	06/29/2022	Edward Jones	Employer Contribution 06/29/2022		303.68
Bill Pmt -Check	11048	06/27/2022	Harbor Water District P.U.D.	05/21/2022 - 06/25/2022 SERVICE/WATER BILL		1,552.16
Total 10103 · General Funds Ckg Umpqua 3634					50,000.00	350,804.93
Total 101 · GENERAL FUND CHECKING & LGIP					50,000.00	350,804.93
10101 · Petty Cash						
Check	Cash	06/24/2022	Chilcote, George	CASH Refund for overpayment		50.00
Bill Pmt -Check	CASH	06/21/2022	Tyree Oil, Inc	Account # 56851 Fuel Purchase for Resale		0.02
Total 10101 · Petty Cash					0.00	50.02
Total 100 · UNRESTRICTED CASH & EQUIVALENTS					50,000.00	350,854.95
110 · RESTRICTED CASH & EQUIVALENTS						
104 · RESTRICTED MONEY MKT & CHECKING						
20104 · USDA BOND Umpqua MM 9529						
Total 20104 · USDA BOND Umpqua MM 9529						
30104 · Debt Service Umpqua MM 8627						
60104 · OR FFC 2020 Debt Service						
Check	DEBIT	06/15/2022	Umpqua Bank/OR FFC Agreement 2020	OR FFC Agreement 2020 Payment #23		4,809.87
General Journal	DEBT 06/01	06/01/2022		Transfer to Debt Serv. RV Park for Umpqua Bank Loan Acct#97748040835 Payment	4,809.87	
Total 60104 · OR FFC 2020 Debt Service					4,809.87	4,809.87
30104 · Debt Service Umpqua MM 8627 - Other						
Check	DEBIT	06/15/2022	Umpqua Bank/Loan#747041620	Genie Reach Forklift Loan#747041620 Payment #52		1,464.71
Check	DEBIT	06/22/2022	m2 Lease LLC	Customer #107104 Loan#110561 Pmt #68 - 50 BFMII Travelift		4,659.00
General Journal	DEBT 06/01	06/01/2022		Transfer to Debt Service Fund for Travelift Payment	4,659.00	
General Journal	DEBT 06/01	06/01/2022		Transfer to Debt Service Fund for Fork Lift Payment	1,464.71	
Total 30104 · Debt Service Umpqua MM 8627 - Other					6,123.71	6,123.71
Total 30104 · Debt Service Umpqua MM 8627					10,933.58	10,933.58
40104 · Capital Projects Umpqua 8018						
40104.1 · Government Funds						
General Journal	CP 06/10	06/10/2022		Transfer to Capital Projects for payment to EMC Engineering inv#91009-2174	8,960.00	
Bill Pmt -Check	424	06/10/2022	EMC-Engineers/Scientists, LLC	52 Hrs. & Reimbursement to CAD Graphics- PW162-1 FEMA 4432 & 4452		8,960.00
Total 40104.1 · Government Funds					8,960.00	8,960.00
40104 · Capital Projects Umpqua 8018 - Other						
Total 40104 · Capital Projects Umpqua 8018 - Other						
Total 40104 · Capital Projects Umpqua 8018					8,960.00	8,960.00
Total 104 · RESTRICTED MONEY MKT & CHECKING					19,893.58	19,893.58
Total 110 · RESTRICTED CASH & EQUIVALENTS					19,893.58	19,893.58
TOTAL					**69,893.58**	**370,748.53**

3

Port of Brookings Harbor
Profit & Loss Budget Performance
Cash Basis — July 2021 through June 2022

	Jul '21 - Jun 22	Budget	% of Budget
Income			
400 · REVENUES			
401 · GENERAL FUND REVENUES			
10411 · Cash Carry Over	532,465.33	532,000.00	100.1%
10412 · Property Tax Current	256,624.30	260,000.00	98.7%
10413 · Property Tax Prior	10,231.76	9,000.00	113.7%
10414 · Interest General Fund	2,244.63	2,000.00	112.2%
10415 · Loans - General Fund	0.00	0.00	0.0%
10417 · Assets Sales	18,520.00	20,000.00	92.6%
10418 · Miscellaneous	113,637.04	51,720.00	219.7%
10420 · Grants & Other Funding - GF	10,000.00	20,000.00	50.0%
Total 401 · GENERAL FUND REVENUES	943,723.06	894,720.00	105.5%
402 · GENERAL FUND PROGRAM REVENUES			
10421 · MARINA			
10421.2 · MOORAGE			
10421.3 · Commercial Slip Rent	151,991.65		
10421.4 · Recreational Slip Rent	376,553.38		
10421.5 · Transient	12,872.04	0.00	100.0%
10421.6 · Other Moorage	9,585.00		
10421.2 · MOORAGE - Other	0.00	735,000.00	0.0%
Total 10421.2 · MOORAGE	551,002.07	735,000.00	75.0%
10422 · Boat Launch	28,173.10		
10423 · STORAGE			
10423.1 · Gear Storage	65,841.82		
10423.2 · Boat Storage	29,586.24		
Total 10423 · STORAGE	95,428.06		
10424 · ADMINISTRATIVE FEES	9,213.04	0.00	100.0%
10425 · MARINE SERVICES			
10425.1 · Travelift	32,456.50	0.00	100.0%
10425.2 · 12 K Telehandler	11,449.40	0.00	100.0%
10425.3 · Other Sales & Fees	22,746.33		
10425.4 · Public Hoist	5,389.00		
10425 · MARINE SERVICES - Other	0.00	0.00	0.0%
Total 10425 · MARINE SERVICES	72,041.23	0.00	100.0%
10426 · EVENTS ON PORT PROPERTY	6,499.50		
10421 · MARINA - Other	0.00	0.00	0.0%
Total 10421 · MARINA	762,357.00	735,000.00	103.7%
10427 · BEACHFRONT RV PARK			
10427.1 · Space Rental	713,267.32	800,000.00	89.2%
10427.2 · Other Sales & Fees	44,268.37	0.00	100.0%
10427 · BEACHFRONT RV PARK - Other	0.00	0.00	0.0%
Total 10427 · BEACHFRONT RV PARK	757,535.69	800,000.00	94.7%
10428 · COMMERCIAL RETAIL			
10428.1 · Retail Property	344,932.11	0.00	100.0%
10428.2 · Docks	183,248.08	0.00	100.0%
10428.3 · CPI and Other Fees	38,099.70	0.00	100.0%
10428 · COMMERCIAL RETAIL - Other	0.00	590,280.00	0.0%
Total 10428 · COMMERCIAL RETAIL	566,279.89	590,280.00	95.9%
10429 · FUEL DOCK	1,011,876.23	850,000.00	119.0%
Total 402 · GENERAL FUND PROGRAM REVENUES	3,098,048.81	2,975,280.00	104.1%
420 · USDA REVENUE BOND FUND			
20411 · Cash Carry Over - USDA Revenue	102,351.92	102,380.00	100.0%
20414 · Interest Revenue Bond Fund	493.86	500.00	98.8%
20419 · Transfer to USDA Bond Fund	130,116.00	130,120.00	100.0%

Port of Brookings Harbor
Profit & Loss Budget Performance
Cash Basis — July 2021 through June 2022

	Jul '21 - Jun 22	Budget	% of Budget
Total 420 · USDA REVENUE BOND FUND	232,961.78	233,000.00	100.0%
430 · DEBT SERVICE FUND REVENUE			
30411 · Cash Carry Over - Debt Service	22,758.51	27,420.00	83.0%
30414 · Interest Debt Service Fund	315.56	450.00	70.1%
30419 · Transfer to Debt Service Fund	398,320.52	423,485.00	94.1%
Total 430 · DEBT SERVICE FUND REVENUE	421,394.59	451,355.00	93.4%
440 · CAPITAL PROJECTS FUND REVENUE			
40411 · Cash Carry Over - Capt Proj	40,430.77	40,000.00	101.1%
40416 · Government Funding			
40416.2 · FEMA Funding	0.00	0.00	0.0%
40416.3 · State Lottery Funding	0.00	0.00	0.0%
40416 · Government Funding - Other	0.00	1,860,000.00	0.0%
Total 40416 · Government Funding	0.00	1,860,000.00	0.0%
40419 · Transfer to Capital Project	0.00	0.00	0.0%
Total 440 · CAPITAL PROJECTS FUND REVENUE	40,430.77	1,900,000.00	2.1%
450 · RESERVE FUND REVENUE			
50411 · Cash Carry Over - Reserve Fund	186,938.63	186,575.00	100.2%
50414 · Interest Reserve Fund	1,157.26	1,200.00	96.4%
50419 · Transfer to Reserve Fund	27,704.00	34,000.00	81.5%
Total 450 · RESERVE FUND REVENUE	215,799.89	221,775.00	97.3%
460 · DEBT SERV. RV PARK IMPROV. FUND			
60411 · Cash Carry Over - OR FFC 2020	0.00	0.00	0.0%
60419 · Transfer OR FFC 2020 Debt Serv.	57,718.44	57,718.00	100.0%
Total 460 · DEBT SERV. RV PARK IMPROV. FUND	57,718.44	57,718.00	100.0%
470 · PORT CONSTRUCTION FUND REVENUE			
70411 · Cash Carry Over - Port Const.	569,448.67	575,000.00	99.0%
70414 · Interest Port Construction Fund	3,274.24	2,000.00	163.7%
70419 · Transfers to Port Const. Fund	100,000.00	100,000.00	100.0%
Total 470 · PORT CONSTRUCTION FUND REVENUE	672,722.91	677,000.00	99.4%
Total 400 · REVENUES	5,682,800.25	7,410,848.00	76.7%
Total Income	5,682,800.25	7,410,848.00	76.7%
Gross Profit	5,682,800.25	7,410,848.00	76.7%
Expense			
600 · GENERAL FUND EXPENDITURES			
10900 · Operating Transfers Out General	713,858.96	745,323.00	95.8%
500 · PERSONNEL SERVICES			
10502 · Office Staff	259,901.79	279,270.00	93.1%
10504 · Operations Staff	241,386.46	250,000.00	96.6%
10506 · Overtime	5,256.33	7,255.00	72.5%
10508 · Payroll Taxes/Costs/Benefits			
10508.1 · Paid Holidays	15,582.08	0.00	100.0%
10508.2 · Sick Leave Benefit	8,659.33	0.00	100.0%
10508.3 · Vacation	37,912.96	0.00	100.0%
10508.4 · Payroll Taxes	57,208.01	0.00	100.0%
10508.5 · SEP Retirement	49,990.44		
10508 · Payroll Taxes/Costs/Benefits - Other	0.00	165,775.00	0.0%
Total 10508 · Payroll Taxes/Costs/Benefits	169,352.82	165,775.00	102.2%
10510 · Health Care and Dental	101,870.44	99,500.00	102.4%
10512 · Workers Compensation	14,548.35	15,000.00	97.0%
Total 500 · PERSONNEL SERVICES	792,316.19	816,800.00	97.0%
601 · GENERAL FUND Material & Service			

Port of Brookings Harbor
Profit & Loss Budget Performance
Cash Basis — July 2021 through June 2022

	Jul '21 - Jun 22	Budget	% of Budget
10601 · ADVERTISING & NOTIFICATIONS	5,408.37	8,680.00	62.3%
10602 · REPAIRS & MAINTENANCE			
10602.1 · Equip. Repair/Maintenance	26,186.80	0.00	100.0%
10602.2 · Supplies	175,257.62	0.00	100.0%
10602.3 · Services	129,372.81	0.00	100.0%
10602 · REPAIRS & MAINTENANCE - Other	0.00	436,155.00	0.0%
Total 10602 · REPAIRS & MAINTENANCE	330,817.23	436,155.00	75.8%
10603 · FUEL purchased for resale	950,056.40	805,000.00	118.0%
10605 · UTILITIES			
10605.1 · Electric	111,186.83	0.00	100.0%
10605.2 · RV Park Cable TV	7,093.26	0.00	100.0%
10605.3 · Sanitary	50,765.68	0.00	100.0%
10605.5 · Telecommunications	13,655.22	0.00	100.0%
10605.6 · Waste Removal	88,513.61	0.00	100.0%
10605.7 · Water	21,773.38	0.00	100.0%
10605 · UTILITIES - Other	0.00	292,964.00	0.0%
Total 10605 · UTILITIES	292,987.98	292,964.00	100.0%
10606 · OFFICE EXPENSE	42,032.29	60,000.00	70.1%
10607 · BANK SERVICE & FINANCE FEES	58,217.03	60,482.00	96.3%
10608 · TRAINING & TRAVEL	5,862.51	7,500.00	78.2%
10609 · PERMITS, LICENSES, TAXES & MISC	33,278.01	37,000.00	89.9%
10610 · INSURANCE; PROP & CAS, BOND	121,204.86	120,530.00	100.6%
10611 · PROFESSIONAL FEES			
10611.1 · Accounting/Auditing	23,725.00	0.00	100.0%
10611.2 · Attorney	47,254.00	0.00	100.0%
10611.3 · Engineering	27,780.00	0.00	100.0%
10611.4 · Other Support/Consultant	27,731.57	0.00	100.0%
10611 · PROFESSIONAL FEES - Other	0.00	138,266.00	0.0%
Total 10611 · PROFESSIONAL FEES	126,490.57	138,266.00	91.5%
Total 601 · GENERAL FUND Material & Service	1,966,355.25	1,966,577.00	100.0%
710 · GENERAL FUND CAPITAL OUTLAY			
10702 · Land Improvements	52,237.04	73,000.00	71.6%
10703 · Buildings	0.00	0.00	0.0%
10704 · Equipment	79,570.72	80,000.00	99.5%
710 · GENERAL FUND CAPITAL OUTLAY - Other	0.00	0.00	0.0%
Total 710 · GENERAL FUND CAPITAL OUTLAY	131,807.76	153,000.00	86.1%
920 · OPERATING CONTINGENCY	0.00	20,000.00	0.0%
Total 600 · GENERAL FUND EXPENDITURES	3,604,338.16	3,701,700.00	97.4%
620 · USDA REVENUE BOND EXPENDITURES			
20801P · USDA Revenue Bond Principal	79,895.12	79,917.00	100.0%
20810I · USDA Revenue Bond Interest	50,224.88	50,203.00	100.0%
Total 620 · USDA REVENUE BOND EXPENDITURES	130,120.00	130,120.00	100.0%
630 · DEBT SERVICE FUND EXPENDITURES			
30802P · IFA PRINCIPAL			
30802.1 · OBDD #520139/Boardwalk Prin	15,173.84	0.00	100.0%
30802.2 · OBDD #525172/RV Park Prin.	13,683.68	0.00	100.0%
30802.3 · OBDD #525176/Green Bldg Prn	24,096.36	0.00	100.0%
30802.4 · OBDD #525181/EurekaFish Prn	15,651.92	0.00	100.0%
30802.5 · SPWF #L02009/Cold Strg Prin	172,331.25	0.00	100.0%
30802.7 · SPWF L98004/Dock Impr Prin	0.00	0.00	0.0%
30802.8 · SPWF L02001/MarineFuel Dock Prn	65,139.23	0.00	100.0%
30802.9 · SPWF X03004/Eureka Fishery Prin	18,739.72	0.00	100.0%
30802P · IFA PRINCIPAL - Other	0.00	350,000.00	0.0%
Total 30802P · IFA PRINCIPAL	324,816.00	350,000.00	92.8%

Port of Brookings Harbor
Profit & Loss Budget Performance
Cash Basis — July 2021 through June 2022

	Jul '21 - Jun 22	Budget	% of Budget
801 · Principal			
30803P · 50 BFMII Travelift Principal	50,396.54	50,447.00	99.9%
30804P · 2018 Genie Forklift Principal	14,467.63	14,469.00	100.0%
Total 801 · Principal	64,864.17	64,916.00	99.9%
810 · Interest Payments			
30813I · 50 BFMII Travelift Interest	5,511.46	5,461.00	100.9%
30814I · 2018 Genie Forklift Interest	3,108.89	3,108.00	100.0%
Total 810 · Interest Payments	8,620.35	8,569.00	100.6%
Total 630 · DEBT SERVICE FUND EXPENDITURES	398,300.52	423,485.00	94.1%
640 · CAPT. PROJ. EXPENDITURES			
40602 · Materials & Services Capt Proj	0.00	0.00	0.0%
740 · CAPT. PROJ. CAPITAL OUTLAY			
40702 · Land Improvement - Capt Proj			
40702.1 · Engineering/Consultants	139,525.28	0.00	100.0%
40702.2 · Supplies	1,524.58	0.00	100.0%
40702 · Land Improvement - Capt Proj - Other	0.00	1,897,500.00	0.0%
Total 40702 · Land Improvement - Capt Proj	141,049.86	1,897,500.00	7.4%
Total 740 · CAPT. PROJ. CAPITAL OUTLAY	141,049.86	1,897,500.00	7.4%
Total 640 · CAPT. PROJ. EXPENDITURES	141,049.86	1,897,500.00	7.4%
650 · RESERVE FUND EXPENDITURES			
50200 · RESERVE for FUTURE EXPENDITURE	0.00	0.00	0.0%
Total 650 · RESERVE FUND EXPENDITURES	0.00	0.00	0.0%
660 · DEBT SERV. RV PARK EXPENDITURES			
60806P · RV Park Improv. Loan Principal	38,749.68	38,751.00	100.0%
60815I · RV Park Improv. Loan Interest	18,968.76	18,967.00	100.0%
Total 660 · DEBT SERV. RV PARK EXPENDITURES	57,718.44	57,718.00	100.0%
670 · PORT CONST FUND EXPENDITURES			
70100 · PORT CONST. CAPITAL OUTLAY			
70700 · Land Improvement - Port Const.			
70701.1 · Engineering/Consultants	11,257.64		
70701.2 · Supplies	4,304.76		
70701.3 · Services	83,141.87		
70700 · Land Improvement - Port Const. - Other	0.00	677,000.00	0.0%
Total 70700 · Land Improvement - Port Const.	98,704.27	677,000.00	14.6%
70100 · PORT CONST. CAPITAL OUTLAY - Other	0.00	0.00	0.0%
Total 70100 · PORT CONST. CAPITAL OUTLAY	98,704.27	677,000.00	14.6%
Total 670 · PORT CONST FUND EXPENDITURES	98,704.27	677,000.00	14.6%
930 · Fund Balances			
10930 · Unappropriated Balance GF	0.00	168,300.00	0.0%
20930 · Unappropriated Balance-USDA	0.00	102,880.00	0.0%
30930 · Unappropriated Balance Debt	0.00	27,870.00	0.0%
40930 · Unappropriated Balance Capt Pro	0.00	2,500.00	0.0%
50930 · Unappropriated Balance Reserve	0.00	221,775.00	0.0%
Total 930 · Fund Balances	0.00	523,325.00	0.0%
Total Expense	4,430,231.25	7,410,848.00	59.8%
Net Income	1,252,569.00	0.00	100.0%

Port of Brookings Harbor
REVENUE CENTERS Profit & Loss
July 2021 through June 2022

	BEACHFRONT RV PARK (GENERAL FUND)	COMMERCIAL RETAIL (GENERAL FUND)	FUEL DOCK (GENERAL FUND)	GRANTS (GENERAL FUND)	MARINA (GENERAL FUND)	GENERAL FUND - Other (GENERAL FUND)	Total GENERAL FUND	TOTAL
Income								
400 · REVENUES								
401 · GENERAL FUND REVENUES								
10411 · Cash Carry Over	0.00	0.00	0.00	0.00	0.00	532,465.33	532,465.33	532,465.33
10412 · Property Tax Current	0.00	0.00	0.00	0.00	0.00	256,624.30	256,624.30	256,624.30
10413 · Property Tax Prior	0.00	0.00	0.00	0.00	0.00	10,231.76	10,231.76	10,231.76
10414 · Interest General Fund	0.00	0.00	0.00	0.00	0.00	2,244.63	2,244.63	2,244.63
10417 · Assets Sales	0.00	0.00	0.00	0.00	0.00	18,520.00	18,520.00	18,520.00
10418 · Miscellaneous	0.00	0.00	0.00	0.00	0.00	113,637.04	113,637.04	113,637.04
10420 · Grants & Other Funding - GF	0.00	0.00	0.00	10,000.00	0.00	0.00	10,000.00	10,000.00
Total 401 · GENERAL FUND REVENUES	0.00	0.00	0.00	10,000.00	0.00	933,723.06	943,723.06	943,723.06
402 · GENERAL FUND PROGRAM REVENUES								
10421 · MARINA								
10421.2 · MOORAGE								
10421.3 · Commercial Slip Rent	0.00	0.00	0.00	0.00	151,991.65	0.00	151,991.65	151,991.65
10421.4 · Recreational Slip Rent	0.00	0.00	0.00	0.00	376,553.38	0.00	376,553.38	376,553.38
10421.5 · Transient	0.00	0.00	0.00	0.00	12,872.04	0.00	12,872.04	12,872.04
10421.6 · Other Moorage	0.00	0.00	0.00	0.00	9,585.00	0.00	9,585.00	9,585.00
Total 10421.2 · MOORAGE	0.00	0.00	0.00	0.00	551,002.07	0.00	551,002.07	551,002.07
10422 · Boat Launch	0.00	0.00	0.00	0.00	28,173.10	0.00	28,173.10	28,173.10
10423 · STORAGE								
10423.1 · Gear Storage	0.00	0.00	0.00	0.00	65,841.82	0.00	65,841.82	65,841.82
10423.2 · Boat Storage	0.00	0.00	0.00	0.00	29,586.24	0.00	29,586.24	29,586.24
Total 10423 · STORAGE	0.00	0.00	0.00	0.00	95,428.06	0.00	95,428.06	95,428.06
10424 · ADMINISTRATIVE FEES	0.00	0.00	0.00	0.00	9,213.04	0.00	9,213.04	9,213.04
10425 · MARINE SERVICES								
10425.1 · Travellift	0.00	0.00	0.00	0.00	32,456.50	0.00	32,456.50	32,456.50
10425.2 · 12 K Telehandler	0.00	0.00	0.00	0.00	11,449.40	0.00	11,449.40	11,449.40
10425.3 · Other Sales & Fees	0.00	0.00	0.00	0.00	22,746.33	0.00	22,746.33	22,746.33
10425.4 · Public Hoist	0.00	0.00	0.00	0.00	5,389.00	0.00	5,389.00	5,389.00
Total 10425 · MARINE SERVICES	0.00	0.00	0.00	0.00	72,041.23	0.00	72,041.23	72,041.23
10426 · EVENTS ON PORT PROPERTY	0.00	0.00	0.00	0.00	6,499.50	0.00	6,499.50	6,499.50
Total 10421 · MARINA	0.00	0.00	0.00	0.00	762,357.00	0.00	762,357.00	762,357.00
10427 · BEACHFRONT RV PARK								
10427.1 · Space Rental	713,267.32	0.00	0.00	0.00	0.00	0.00	713,267.32	713,267.32
10427.2 · Other Sales & Fees	44,268.37	0.00	0.00	0.00	0.00	0.00	44,268.37	44,268.37
Total 10427 · BEACHFRONT RV PARK	757,535.69	0.00	0.00	0.00	0.00	0.00	757,535.69	757,535.69
10428 · COMMERCIAL RETAIL								
10428.1 · Retail Property	0.00	344,932.11	0.00	0.00	0.00	0.00	344,932.11	344,932.11
10428.2 · Docks	0.00	183,248.08	0.00	0.00	0.00	0.00	183,248.08	183,248.08
10428.3 · CPI and Other Fees	0.00	38,099.70	0.00	0.00	0.00	0.00	38,099.70	38,099.70
Total 10428 · COMMERCIAL RETAIL	0.00	566,279.89	0.00	0.00	0.00	0.00	566,279.89	566,279.89
10429 · FUEL DOCK	0.00	0.00	1,011,878.23	0.00	0.00	0.00	1,011,878.23	1,011,878.23
Total 402 · GENERAL FUND PROGRAM REVEN...	757,535.69	566,279.89	1,011,878.23	0.00	762,357.00	0.00	3,098,046.81	3,098,046.81
Total 400 · REVENUES	757,535.69	566,279.89	1,011,878.23	10,000.00	762,357.00	933,723.06	4,041,771.87	4,041,771.87
Total Income	757,535.69	566,279.89	1,011,878.23	10,000.00	762,357.00	933,723.06	4,041,771.87	4,041,771.87
Gross Profit	757,535.69	566,279.89	1,011,878.23	10,000.00	762,357.00	933,723.06	4,041,771.87	4,041,771.87
Expense								
600 · GENERAL FUND EXPENDITURES								
10600 · Operating Transfers Out General	0.00	0.00	0.00	0.00	0.00	713,858.96	713,858.96	713,858.96
500 · PERSONNEL SERVICES								
10502 · Office Staff	87,711.40	16,007.27	16,007.27	0.00	160,175.85	0.00	259,901.79	259,901.79
10504 · Operations Staff	13,108.51	24,480.08	34,680.09	0.00	169,117.78	0.00	241,386.46	241,386.46
10506 · Overtime	1,552.37	129.76	129.77	0.00	3,444.43	0.00	5,256.33	5,256.33
10508 · Payroll Taxes/Costs/Benefits								
10508.1 · Paid Holidays	991.84	864.37	864.37	0.00	12,871.70	0.00	15,582.08	15,582.08
10508.2 · Sick Leave Benefit	41.64	389.74	389.76	0.00	7,878.17	0.00	8,659.33	8,659.33
10508.3 · Vacation	2,095.90	2,240.48	2,240.48	0.00	31,336.12	0.00	37,912.96	37,912.96
10508.4 · Payroll Taxes	5,001.98	4,643.20	4,643.20	0.00	42,919.82	0.00	57,208.01	57,208.01
10508.5 · SEP Retirement	4,361.53	4,371.26	4,371.31	0.00	36,886.34	0.00	49,990.44	49,990.44
Total 10508 · Payroll Taxes/Costs/Benefits	12,482.70	12,489.05	12,488.12	0.00	131,891.95	0.00	169,352.82	169,352.82

Port of Brookings Harbor
REVENUE CENTERS Profit & Loss
July 2021 through June 2022

	BEACHFRONT RV PARK (GENERAL FUND)	COMMERCIAL RETAIL (GENERAL FUND)	FUEL DOCK (GENERAL FUND)	GRANTS (GENERAL FUND)	MARINA (GENERAL FUND)	GENERAL FUND - Other (GENERAL FUND)	Total GENERAL FUND	TOTAL
10610 · Health Care and Dental	24,834.35	21,938.68	21,938.68	0.00	33,158.72	0.00	101,870.44	101,870.44
10612 · Workers Compensation	3,637.09	3,637.08	3,637.08	0.00	3,637.09	0.00	14,548.35	14,548.35
Total 500 · PERSONNEL SERVICES	123,325.42	78,681.92	88,852.03	0.00	501,425.82	0.00	792,316.19	792,316.19
601 · GENERAL FUND Material & Service								
10601 · ADVERTISING & NOTIFICATIONS	1,226.18	167.16	167.15	0.00	3,847.90	0.00	5,408.37	5,408.37
10602 · REPAIRS & MAINTENANCE								
10602.1 · Equip. Repair/Maintenance	0.00	0.00	0.00	0.00	26,186.80	0.00	26,186.80	26,186.80
10602.2 · Supplies	25,609.84	27,344.51	6,926.76	9,509.62	103,867.88	0.00	175,257.62	175,257.62
10602.3 · Services	20,261.48	33,192.68	17,474.80	0.00	58,443.85	0.00	129,372.81	129,372.81
Total 10602 · REPAIRS & MAINTENANCE	45,870.32	60,537.19	26,401.56	9,509.62	188,498.54	0.00	330,817.23	330,817.23
10603 · FUEL purchased for resale	0.00	0.00	950,056.40	0.00	0.00	0.00	950,056.40	950,056.40
10605 · UTILITIES								
10605.1 · Electric	27,249.19	8,390.25	935.75	0.00	74,611.84	0.00	111,186.83	111,186.83
10605.2 · RV Park Cable TV	7,093.26	0.00	0.00	0.00	0.00	0.00	7,093.26	7,093.26
10605.3 · Sanitary	10,301.05	20,304.65	406.61	0.00	19,753.37	0.00	50,765.68	50,765.68
10605.5 · Telecommunications	2,356.01	231.36	668.53	0.00	10,369.32	0.00	13,655.22	13,655.22
10605.6 · Waste Removal	36,364.35	172.50	0.00	0.00	51,976.76	0.00	88,513.61	88,513.61
10605.7 · Water	4,142.46	4,815.40	0.00	0.00	12,815.52	0.00	21,773.38	21,773.38
Total 10605 · UTILITIES	87,506.32	33,914.16	2,040.89	0.00	169,526.61	0.00	292,987.98	292,987.98
10606 · OFFICE EXPENSE	4,767.55	3,953.95	3,700.58	0.00	29,590.23	0.00	42,032.29	42,032.29
10607 · BANK SERVICE & FINANCE FEES	31,154.44	0.00	14,017.37	0.00	13,045.22	0.00	58,217.03	58,217.03
10608 · TRAINING & TRAVEL	27.74	20.09	20.13	0.00	5,794.55	0.00	5,862.51	5,862.51
10609 · PERMITS, LICENSES, TAXES & MISC	1,590.64	24,722.10	278.00	0.00	6,687.27	0.00	33,278.01	33,278.01
10610 · INSURANCE; PROP & CAS, BOND	7,282.54	21,447.97	4,140.52	0.00	88,333.83	0.00	121,204.86	121,204.86
10611 · PROFESSIONAL FEES								
10611.1 · Accounting/Auditing	500.00	500.00	500.00	0.00	22,225.00	0.00	23,725.00	23,725.00
10611.2 · Attorney	3,922.75	6,066.24	3,922.74	0.00	33,342.27	0.00	47,254.00	47,254.00
10611.3 · Engineering	1,675.00	12,965.00	1,675.00	0.00	11,465.00	0.00	27,780.00	27,780.00
10611.4 · Other Support/Consultant	3,256.47	4,119.39	399.66	0.00	19,956.05	0.00	27,731.57	27,731.57
Total 10611 · PROFESSIONAL FEES	9,354.22	23,650.63	6,497.40	0.00	86,988.32	0.00	126,490.57	126,490.57
Total 601 · GENERAL FUND Material & Service	188,769.93	188,413.25	1,007,319.98	9,509.62	592,312.47	0.00	1,986,355.25	1,986,355.25
710 · GENERAL FUND CAPITAL OUTLAY								
10702 · Land Improvements	0.00	0.00	0.00	0.00	52,237.04	0.00	52,237.04	52,237.04
10704 · Equipment	6,387.94	0.00	0.00	0.00	73,182.78	0.00	79,570.72	79,570.72
Total 710 · GENERAL FUND CAPITAL OUTLAY	6,387.94	0.00	0.00	0.00	125,419.82	0.00	131,807.76	131,807.76
Total 600 · GENERAL FUND EXPENDITURES	318,514.29	247,095.17	1,096,202.01	9,509.62	1,219,158.11	713,858.96	3,804,338.16	3,804,338.16
Total Expense	318,514.29	247,095.17	1,096,202.01	9,509.62	1,219,158.11	713,858.96	3,804,338.16	3,804,338.16
Net Income	439,021.40	319,184.72	-84,325.78	490.38	-456,801.11	219,864.10	437,433.71	437,433.71

Port of Brookings Harbor
Purchases by Vendor Summary
Cash Basis — January through June 2022

	Jan - Jun 22
5-R Excavation, LLC	4,605.07
Adobe	74.95
ADP	3,048.57
Amazon Capital Services	4,424.87
Amber Espinoza	585.00
Aquarius Environmental, LLC	7,220.00
Asurion Wireless Insurance	19.00
Beautiful Blinds Shutters & Shades	835.00
BI-MART	356.14
Black & Rice LLP	817.00
BOARDWALK MAIL SERVICE	117.00
Boat Launch Kiosk	120.00
Boat Shop & More LLC	920.00
BoatU.S. Boat Graphics & Lettering	217.15
BoomTech	77.47
Brookings Glass, Inc.	1,996.00
Brookings Harbor Chamber of Commerce	450.00
Cascade Auto Recycling, LLC	486.40
Chetco Automotive	97.36
Chevron Business Card	4,919.49
CHEVRON/Shell	60.73
Coos-Curry Electric Cooperative, Inc.	59,165.41
Costco	104.47
Country Media, Inc.	647.55
Crescent ACE Hardware	564.27
Crescent City Harbor District	1,000.00
Crow/Clay & Associates, Inc	1,778.15
Curry County Road Department	250.00
Curry Equipment	559.40
Curry Transfer & Recycling	28,390.80
Del-Cur Supply Co-op	7,266.23
DF Supply, Inc.	2,646.81
Dish Network	3,570.48
DMV2U/Dept. of Transporation	0.35
EBay	34.74
Edwards Roofing	7,822.00
Elavon	12,676.13
EMC-Engineers/Scientists, LLC	108,854.58
Englund Marine Supply Co.	98.14
Fastenal Industrial Supplies	11,548.81
Ferguson Enterprises, Inc.	473.78
Firefly Reservations	1,194.00
Flags.com	924.00
Forte Clothing Company	2,143.00
Four Aces Security Solutions LLC	11,124.00
FRED MEYER	73.48
Freeman Rock, Inc.	1,709.34
Gaylord Klinefelter Contracting	1,880.00
George's Auto & Diesel Electric	57.25
Gerald W. Burns, CPA	3,000.00
Gold Beach Lumber Yard, Inc.	18,510.35
Gowman Electric, Inc.	1,425.00
Grainger	2,284.53
Grants Pass Water Lab, Inc.	4,960.00
Grating Pacific, LLC	1,132.00
Harbor Logging Supply, Inc.	2,805.12
Harbor Sanitary District	22,857.69
Harbor Water District P.U.D.	11,642.52

Port of Brookings Harbor
Purchases by Vendor Summary
Cash Basis — January through June 2022

	Jan - Jun 22
Hartwick Automotive	60.99
HD SUPPLY FACILITIES	814.08
Highway Specialities, LLC	1,809.60
Home Depot	685.86
homesquare	417.98
Honeybee Bakery	29.61
In-Motion Graphics and Design, LLC	528.00
Industrial Steel & Supply Co. Inc.	332.57
Intuit	1,149.99
John Kellum/John's Portable Welding	2,625.00
K&K Insurance Group, Inc.	400.00
Kaman Industrial Technologies	1,595.22
Kendrick Equipment USA LLC	3,797.19
Les Schwab Tire Center	208.98
Lithia Ford of Klamath Falls	46,441.32
Mascott Equipment	932.74
McLennan Excavation, Inc.	113,077.55
Metro Media	455.00
Miller Nash LLP	40,144.00
Motion Industries	1,404.21
My Parking Permit	416.50
NAPA Auto Part	567.72
Office Depot	38.38
Oil Can Henry's	14.00
ONLINE Purchases	1,277.41
Orcal Security Consulting LLC	5,649.53
Oregon Alarm	7,525.00
Oregon Coast Magazine	675.00
Oregon Department of Agriculture	278.00
Pacific Office Automation	1,611.64
Pacific Rim Copy Center	1,127.00
Pape Material Handling	2,092.37
Pitney Bowes Global Lease	846.17
Pitney Bowes, Inc.	1,013.04
Platt	916.47
Pressure Washers Direct	49.99
Pump Pipe & Tank Services, LLC	4,524.02
Quill Corporation	912.69
Rentprep Enterprise/Fidelis Screening	379.05
RiteAid	14.38
SimpliSafe	74.95
SmartSign	1,379.61
Spec Dist Assoc of OR- Healthcare	62,170.38
Spec Dist Assoc of OR- Prop & Cas	63,117.52
Spectrum Business 8752 19 060 0025169	626.32
Spectrum Business 8752 19 060 0226494	759.86
Spectrum Business 8752 19 060 0247029	799.86
Spectrum Business 8752 19 060 0251369	825.79
Stadelman Electric, Inc.	3,345.10
Strahm's Sealcoat & Striping, Inc.	335.00
Suburban Propane	180.51
SUPPLYHOUSE.COM	239.34
T. George Podell & Co.,Inc/Hot And Mighty	2,159.44
Thermo Fluids, Inc.	871.22
Tidewater Contractors, Inc.	20,687.60
Traffic Safety Supply Co.	1,249.86
Tyree Oil, Inc	557,107.98
ULine	740.72

Port of Brookings Harbor
Purchases by Vendor Summary
Cash Basis — January through June 2022

	Jan - Jun 22
United Rentals, Inc.	1,105.00
US Bank Equipment Finance	1,339.20
US Postal Service	198.00
US Relay/HD Relay	594.00
Valvoline	165.47
Ventek International	2,070.00
VERIZON WIRELESS	2,011.94
Vonage	1,354.34
WeatherTech	69.95
WEEBLY-CHARGE.COM	910.00
Wes' Towing	375.00
Ziply Fiber 541-412-7930-102902-5	232.05
Ziply Fiber 541-469-5867-121516-5	440.48
Zoom Video Communications Inc.	74.95
Zoro	124.81
TOTAL	1,341,196.08

Financial Debt Summary

DATE: July 20, 2022

RE: Report of Debt for 2nd Qtr. 2022

TO: Gary Dehlinger, Port Manager

ISSUED BY: Kim Boom, Director of Finance & Accounting

Total Debt as of June 30, 2022 $5,824,607.94

IFA Debt Service and USDA Revenue Bond Payments – *Maturity Date: March 2030*

- IFA - $77,500 Paid 06/07/2022
    - **L98004/Basin 2 Dock Improvement**
      PRINCIPAL BALANCE $0.00 -PRINCIPAL PAID IN FULL
      INTEREST BALANCE…$312,338.92
    - **X03004/Eureka Fishery-Property Improvement**
      PRINCIPAL BALANCE …$141.390.35 INTEREST BALANCE…$197,881.55
    - **520139/Boardwalk**
      PRINCIPAL BALANCE …$15,173.71 INTEREST BALANCE…$175,540.26
    - **525172/RV Park Improvement**
      PRINCIPAL BALANCE …$82,102.00 INTEREST BALANCE…$138,594.25
    - **525176/Green Bldg.**
      PRINCIPAL BALANCE …$210,843.50 INTEREST BALANCE…$263,665.71
    - **525181/Eureka Fishery-Property Purchase**
      PRINCIPAL BALANCE …$140,867.04 INTEREST BALANCE…$347,562.39
    - **L02001/Marine Fueling Dock**
      PRINCIPAL BALANCE $0.00 – PRINCIPAL PAID IN FULL 3rd Qtr. 2021
      INTEREST BALANCE…$240,371.49
    - **L02009/Cold Storage**
      PRINCIPAL BALANCE …$419,299.07 INTEREST BALANCE…$1,025,118.15

      IFA TOTAL PRINCIPAL BALANCE as of June 30, 2022…$1,009,675.67
      IFA TOTAL ACCURED INTEREST as of June 30, 2021…$3,148,768.01
- **USDA Revenue Bond** – *Maturity Date: November 2030* - $130,120 paid November 6,2021 to USDA (79,895.12 to Principal)
  BALANCE…$924,602.54

Other Notes Payable

- **Travelift** – *Maturity Date: November 2023* - $13,977.00 paid to m2Lease
  BALANCE…$71,684.44
- **2018 Genie Reach Forklift** - *Maturity Date: February 2025*- $4,394.13 paid to Umpqua Bank
  BALANCE…$43,165.32
- **RV Park Restroom & Improvement Loan** - *Maturity Date: July 2035* - $14,429.61 pd to Umpqua Bank
  BALANCE…$626,711.96

APPROXIMATE END OF MONTH BALANCES

2022 Commissioner Meeting Review

#	Meeting Date	Action Item	Information Item	Commission Vote Approve / Fail / Hold	Notes
1	Tuesday, January 11, 2022		Non-Moorage Charter Fees		
2			Port Best Management Practices Amendment		
3			Oregon State Marine Board Maintenance Assistance Grant (MAG) Grant Application		
4			ODEQ Tier 2 Corrective Actions and Notification to Gear Storage Users		
5			Pelican Bay Arts Association Request for 5-year Agreement		
6			POBH Employee Handbook 2022		
7			Business Oregon FEMA Matching for DR-4432 and DR-4452		
8			Sale of Business – Bounder Fresh Crab Consent to Assignment and Assumption of Lease		
9			North Jetty Access		
10			Stormwater Test Results for December 13, 2021		
11			Boardwalk Condition and Modifications		
12			Fuel Dock – Fuel Tank Control Box Repair and Protective Structure		
13			South Coast Credit Accounts		
14			Vessel Miss Stacey		
15			Financial Consultant Contract		
16			Curry County Sheriff Substation Office MOU		
17			Zola's on the Water Late-Night Activities		
18			SDAO Annual Conference 2022		
19			Blue Fin Realty Lease Renewal Amendment No. 1		
20			Hallmark Receiving Dock Condition		
21			4th of the July Fireworks		
22			Basin 1 Storm Damage to Vessels		
23			Mountain View Custom Cycles LLC and Rebel Ink Tattoo Studio LLC and Barber Shop Lease		
24			Tidewinds Sportfishing Request for Signage Space		
25			2022 SDIS Property / Casualty Insurance Renewal and Longevity Credit and Rate Lock Guarantee		
26	Wednesday, January 19, 2022	Best Management Practices Amendment		Approved	
27		Oregon State Marine Board Maintenance Assistance Grant (MAG) Grant Ap		Approved	
28		Notification to Gear Storage Users		Approved	
29		Pelican Bay Arts Association Request for 5-year Agreement		Approved	
30		POBH Employee Handbook 2022		Hold	Under Port Legal Counsel Review
31		Sale of Business Bounder Crab Shack Consent to Assign. and Assum. of Lease		Approved	
32		North Jetty Access and Crab Dock Removal		Approved	Close Jetty Access and remove dock when project warrants
33		Boardwalk Condition and Modification		Approved	Separate damage section and extend handrailing
34		CBN Enterprises		Approved	Allow Southern Oregon Credit Services / Collect Northwest to proceed with litigation
35		Financial Consultant Contract		Approved	
36		Blue Fin Realty Lease Renewal Amendment No. 1		Approved	
37		Vessel Miss Stacey Update		Approved	Placing Lien on vessel, crab pots, gear and crab pot permit
38			Budget Calendar for Fiscal Year 2022-23		
39			Tsunami January 15, 2022, Update		

2022 Commissioner Meeting Review

#	Meeting Date	Action Item	Information Item	Commission Vote Approve / Fail / Hold	Notes
40	Friday, January 28, 2022	DEQ Tier 2 Corrective Action Report		Approved	
41			Moorage License Agreement – Recommended Revisions		
42	Wednesday, February 16, 2022	Non-Moorage Charter Fees		Approved	
43		Budget Officer Appointment		Approved	Approved Kim Boom
44			Next Workshop Meeting Date		
45	Thursday, February 24, 2022		Vessel Miss Stacey		
46			Derelict Vessels		
47			Moorage License Agreement Revisions		
48			Port Rates July 1, 2022, to June 30, 2023		
49			Boat Yard Warehouse Condition		
50			Budget Committee Applications – Selection Process		
51			Fuel Tank Control Box Protective Structure		
52			2022 Events at the Port		
53			RV Park Project Delay		
54			Delinquent Account Write Off Request		
55			Congressman DeFazio Earmark for WWTP Update		
56	Wednesday, March 16, 2022	Moorage License Agreement Revisions		Hold	Reviewing live-aboard and marine survey
57		Budget Committee Selection		Approved	Filled 3 vacancies
58		Delinquent Account Write Off Request		Approved	
59		Boat & Trailer Storage Area(s)		Approved	
60		Port Rates July 31, 2022 to June 30, 2023		Approved	
61		Commercial Fillet Station		Approved	
62		Port Manager Employment Agreement Amendment No. 2		Approved	
63			FEMA Project Update		
64			2022 Salmon Season Update		
65			Vessel Miss Stacey Update		
66			Stormwater Test Results		
67			Wastewater Treatment Plant		
68	Thursday, March 24, 2022	Special District Insurance Services Employee Health Care Plan Renewal		Approved	
69		Budget Committee Members		Approved	Filled 1 vacancy
70		FEMA Project Preliminary Drawings & Update		Approved	
71	Monday, April 4, 2022	Wastewater Treatment Plant Information		Motions failed	
72			Stout Mountain Railway Proposal		
73			Tidewinds Sportfishing Signage Request		
74			POBH Employee Handbook 2022		
75			Boat Yard Warehouse Condition		
76			Hallmark Dock Condition		
77			Supplemental Budget		
78			SCKS Consent to Assignment		
79			Business Oregon FEMA Matching Project L22009 Contract		
80			Business Oregon FEMA Matching Project L22008 Contract		
81			Live-Aboard Policy Update		
82			Moorage License Agreement Revisions		

2022 Commissioner Meeting Review

#	Meeting Date	Action Item	Information Item	Commission Vote Approve / Fail / Hold	Notes
83			Non-Moorage Charter Boat Launch Fee		
84			Curry County Tourism and Promotions Committee		
85			MOU - Port and Curry County Sheriff Department		
86	Wednesday, April 20, 2022	Stout Mountain Railway Proposal		Fail	Possible at other Port areas
87		Tidewind Sportfishing Signage Request		Approved	Angle existing sign and add sign
88		POBH Employee Handbook 2022		Approved	
89		First Supplemental Budget FY 2021-22		Approved	
90		SCKS Consent to Assignment		Approved	
91		Business Oregon FEMA Matching Project L22009 Contract		Approved	
92		Business Oregon FEMA Matching Project L22008 Contract		Approved	
93		Moorage License Agreement Revisions		Approved	
94		Non-Moorage Charter and Guide Boat Launch Fee		Approved	Launch fee not included
95		MOU Curry County Sheriff Substation		Approved	
96		Live-Aboard Policy Revisions		Approved	
97		C.J. Huntsman Engagement Letter		Approved	
98		Wastewater Treatment Plant Timelne		Approved	EMC Engineering to start on design
99		RV Park Septic Tank on Drawing Clarification		Approved	Connect sewer to Harbor Sanitary
100		Commissioner and Staff Relations		Approved	
101			Charter and Guide Boat Sign Concept		
102			RV Park Change Order		
103			USACE Maintenance Dredging		
104			Fish Cleaning Building Repairs		
105	Friday, May 6, 2022	RV Park Change Order and Payment Request		Approved	C.O., time extension, payment
106		Crab Dock		Approved	Keep crab dock
107		SDAO Insurance Claim - Replacement of Broken Dock Pile		Approved	Repair pile and prepare contract
108			Commissioner and Staff Communications and Relations		
109	Tuesday, May 10, 2022	Budget Committee Meeting - FY 2022-2023 Budget Presentation		Approved	
110	Wednesday, May 18, 2022	Billeter Marine Public Improvement Contract			
111		Boat Yard Warehouse Engineering Report			
112		Richard Cortez Delinquent Account Write Off Request			
113		Charles Case Delinquent Account Write Off Request			
114		Charter and Guide Boat Sign			
115			April Stormwater Test Results and Tier 1 Report		
116	Wednesday, June 15, 2022	Budget Hearing		Approved	
117	Wednesday, June 15, 2022	Vessel and/or Trailer Storage Agreement		Approved	
118		Vessel Miss Stacey Moorage Renewal		Approved	
119		Charters and Guides Sign Agreement Form		Approved	
120			BOEM Wind Energy Farm Off the Coast of Brookings Oregon		
121			Pacific Seafood Request for Dock Hoist		
122			Zola's on the Water Concrete Patio outside Leased Premises		
123			Cable TV and Wi-Fi at Beachfront RV Park		
124			USDA Civil Rights Compliance Review & Response		
125			Boat Yard Building(s) and Port Office Proposal		
126			RV Park New Fence Dividers		

2022 Commissioner Meeting Review

#	Meeting Date	Action Item	Information Item	Commission Vote Approve / Fail / Hold	Notes
127			Summer Food Dine-In Bus Route		
128			Travel Lift Ramp Sediment Impacts		
129			Beach Cam for Website		
130	Tuesday, June 21, 2022	Approval of Resolution No. 2022-07 Regarding Offshore Wind		Approved	

ACTION ITEM – A

DATE: July 20, 2022

RE: Boat Yard Building Plan

TO: Honorable Board President and Harbor District Board Members

ISSUED BY: Gary Dehlinger, Port Manager

OVERVIEW

- May 18, 2022 meeting, the board approved seeking possible funding and to develop replacement proposal for the warehouse for board review.

- June 15, 2022 meeting, the board reviewed the initial replacement proposal with estimated cost to install the new buildings. During this review, suggestions were made to provide more information on estimated costs, review all port debt, and list of future projects that may require loans or other additional funding.

- Business Oregon provided the Port with a General Application for a loan up to $1.2 million. Deadline to submit the application is August 3, 2022.

- Port staff contacted contractors, prefabricated metal building manufacture and venders to provide a turnkey cost estimate. What we have found out, trying to get more detailed pricing requires complete construction drawings.

- Staff recommends deciding on the type, size and function of the building(s). Then acquire a designer/engineer to produce the design drawings for bidding purposes or future grant opportunities.

- Staff has provided two options for the boat yard. We are open to other suggestions. Both options allow for the new building to be built without displacing current tenants.

    - Option 1 is one large building that will require fire sprinkler system due to the size of the building. Buildings larger than 5,000 square feet require fire sprinkler system.
    - Option 2 is two buildings that may require fire sprinkler system due to type of businesses inside the spaces.

- Proposed administrative schedule to develop the construction drawings:
    1. Board to decide of type, size, and function of the buildings.
    2. Request for proposal (RFP) for designer or engineering company to develop construction drawings for the approval on design/building(s) concept.
    3. Decide to search for grants or place project out to bid.
    4. Develop grant documents or bidding package.

- Development of the construction drawings would be funded by Port General Fund. Estimated cost at $50,000 and could take 6 months to complete.

- Attached is a summary of Port debt as of July 2022 with future projects that may need loan type of funding.

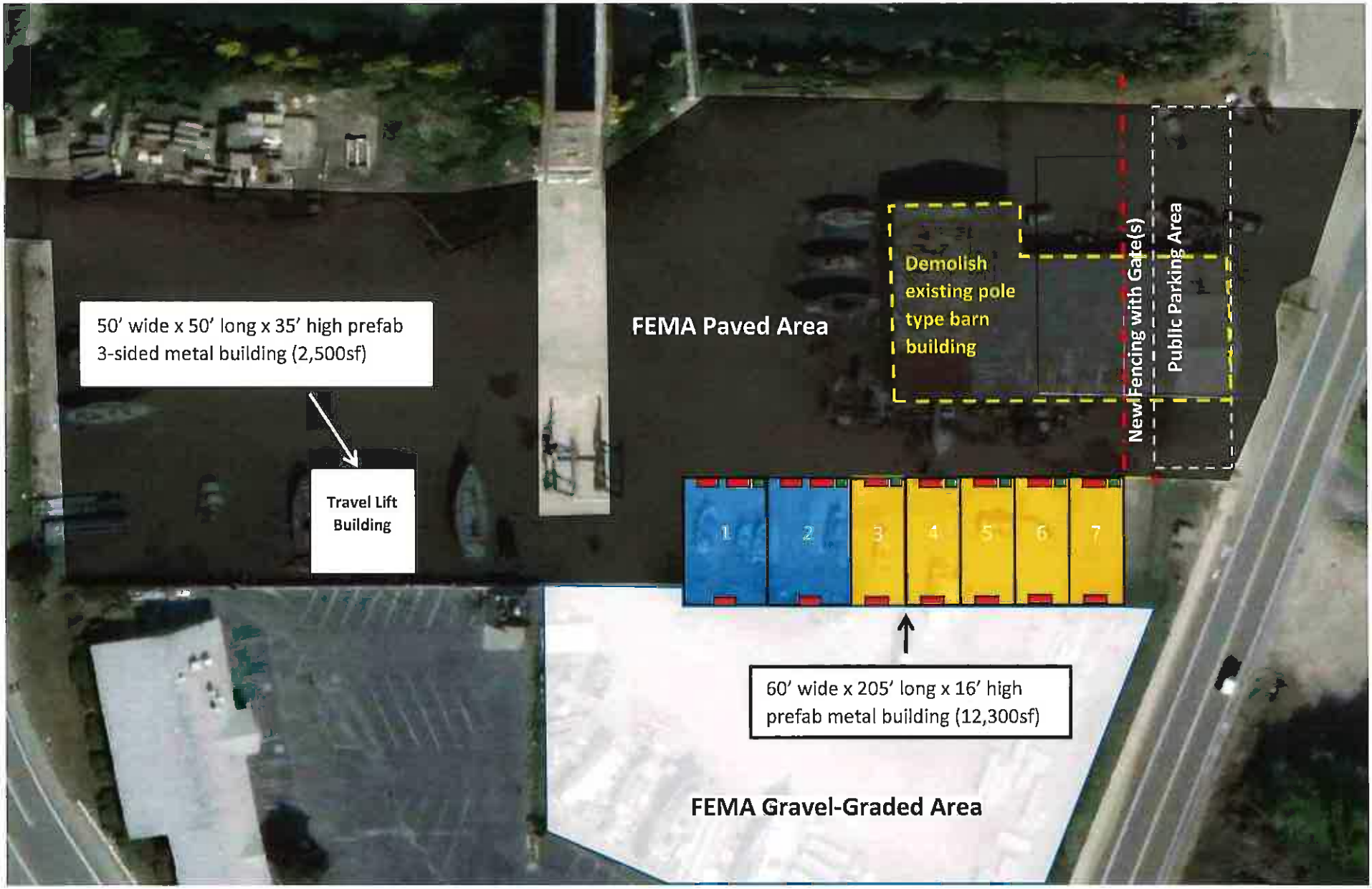
DOCUMENTS

- Proposed Boat Yard Building(s), 2 pages
- Summary of Port Debt, as of July 2022 with Future Port Projects, 1 page

COMMISSIONERS ACTION

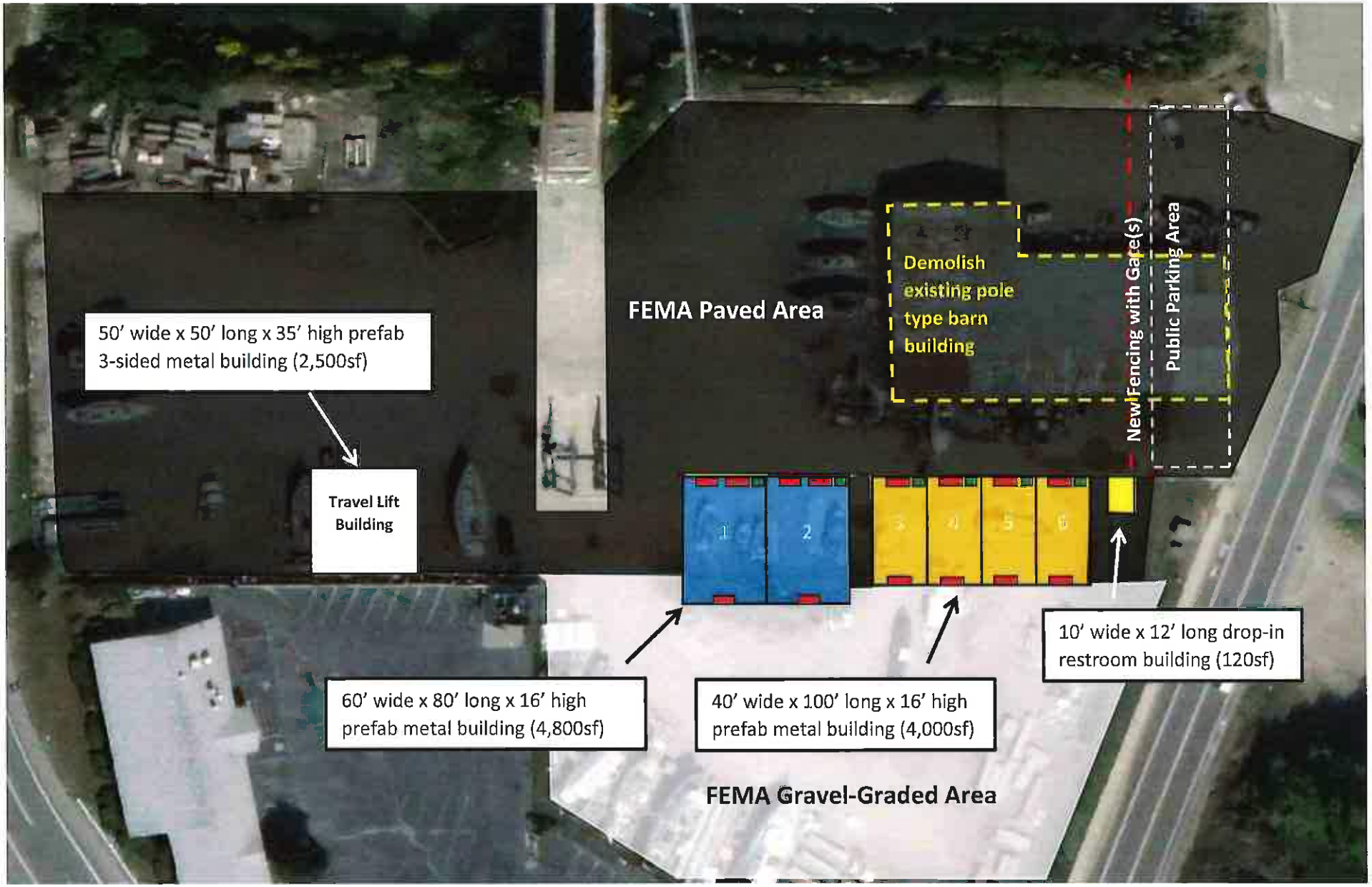
- **Recommended Motion:**
  Motion to approve the Port Manager to seek proposals for a designer/engineer company to prepare construction drawings for the new boat yard buildings. Postpone Business Oregon General Application Loan until further notice.

Proposed New Boat Yard Warehouse Building Layout – Option 1



12' wide x 14' high roll-up door Walk-in Door Spaces 1 & 2 = 40ft x 60ft Spaces 3 – 6 = 25ft x 60ft Space 7 would include Restroom (200sf)

Proposed New Boat Yard Warehouse Building Layout – Option 2



12' wide x 14' high roll-up door

Walk-in Door

Spaces 1 & 2 = 40ft x 60ft

Spaces 3 – 6 = 25ft x 40ft

Port Debt as of July 2022

Business Oregon - IFA Debt

	Description	Principal Balance	Interest Balance	Balance	Monthly Payment	Maturity Date
1	L98004/Basin 2 Dock Improvement	-	312,338.92	312,338.92		March - 2030
2	X03004/Eureka Fishery-Property Improvement	141,390.35	197,881.55	339,271.90		March - 2030
3	520139/Boardwalk	15,173.71	175,540.26	190,713.97		March - 2030
4	525172/RV Park Improvement	82,102.00	138,594.25	220,696.25		March - 2030
5	525176/Green Bldg	210,843.50	263,665.71	474,509.21		March - 2030
6	525181/Eureka Fishery-Property Purchase	140,867.04	347,562.39	488,429.43		March - 2030
7	L02001/Marine Fueling Dock	-	240,371.49	240,371.49		March - 2030
8	L02009/Cold Storage	419,299.07	1,025,118.15	1,444,417.22		March - 2030
					25,833.33	
	Total Accrued Interest (Frozen)	1,009,675.67	3,148,768.01			March - 2030

USDA Revenue Bond

	Description	Balance	Monthly Payment	Maturity Date
1	Basin 1 Renovation	924,602.54	10,844.16	November - 2030

Umpqua Bank

	Description	Balance	Monthly Payment	Maturity Date
1	RV Park Restroom & Improvement	626,711.96	4,809.87	July - 2035
2	2018 Genie Forklift	43,165.32	1,464.71	February - 2025

M2 Lease

	Description	Balance	Monthly Payment	Maturity Date
1	50 BFMII Travel Lift	71,684.44	4,659.00	November - 2023

Current - Total Monthly Payment 47,611.07

Total Debt 5,824,607.94 as of July 2022

Future Projects Possible Loans

	Description	Estinated Loan Amount	Monthly Payment at 5% APR
1	Boat Yard Warehouse & Buildings	1,200,000.00	6,334.04
2	Wastewater Treatment Plant - Matching	700,000.00	4,092.13
3	RV Park Expansion - Utilities & Amenities	750,000.00	4,384.43
4	Travel Lift Ramp	1,000,000.00	5,845.90
5	Receiving Dock Replacements	3,000,000.00	17,537.70
6	Boardwalk & Slope Repairs	500,000.00	2,922.95
7	RV Park Backrow Site Upgrades	750,000.00	4,384.43
8	Dock Renovations	4,000,000.00	23,383.60
9	All Basin Slope and Shoring Repairs	2,000,000.00	11,691.80
10	RV Park Drainage and Paving	750,000.00	4,384.43
11	Storage Buildings	2,000,000.00	11,691.80
12	Third Retail Building	1,500,000.00	8,768.85
13	Culvert Replacements	1,000,000.00	5,845.90
14	RV Park Protection Wall	750,000.00	4,384.43
15	New Boat Wash Station	250,000.00	1,461.48
16	Public Amenities	300,000.00	1,753.77
17	Dock Power Repairs / Replacement	1,500,000.00	8,768.85

ACTION ITEM – B

DATE:	July 20, 2022
RE:	Zola's on the Water ease Amendment No. 2
TO:	Honorable Board President and Harbor District Board Members
ISSUED BY:	Gary Dehlinger, Port Manager

OVERVIEW

- Zola's on the Water decided to upgrade outdoor area and use existing parking area for storage.
- These two areas are exclusively being used by Zola's on the Water. Amendment No. 2 includes these areas in the lease.
- Port legal reviewed and approved Zola's on the Water Commercial Lease Amendment No. 2.

DOCUMENTS

- Draft Lease Amendment No. 2, 2 pages

COMMISSIONERS ACTION

- **Recommended Motion:**
  Motion to approve Zola's on the Water Commercial Lease Amendment No. 2.

COMMERCIAL LEASE AGREEMENT
AMENDMENT NO. 2

This lease amendment ("Amendment") is entered into by and between the Port of Brookings Harbor ("Landlord") and Zola's on the Water, LLC ("Tenant") to amend the terms of the Amended and Restated Commercial Lease Agreement dated December 31, 2019, as amended by that Commercial Lease Agreement Amendment No. 1 dated September 21, 2020 (collectively, the "Lease").

1. AMENDMENTS. The following terms of the Lease are amended as follows:

A. The premises description in Paragraph 1 is amended to read as follows:

Approximately 3,795 sq. ft. of bare ground, 2,500 sq. ft. of concrete patio, 1,114 sq. ft. consisting of bare ground and storage space, and 2,379 sq. ft. of outdoor seating and storage all shown on Exhibit A, attached hereto and made a part hereof, located at 16374 Lower Harbor Road, Brookings, Oregon (referred to herein as the "Leased Premises").

B. Subparagraph d of paragraph 2 is amended to read as follows:

Rental Rate. The base rental rate for the Leased Premises is One Thousand Seven Hundred Twenty-Seven 02/100 Dollars ($1,727.02) per month. The building and all building improvements are the property of the Tenant.

C. Exhibits A and B to the Lease are deleted and replaced with Exhibit A to this Amendment.

2. OTHER TERMS AND CONDITIONS. All other terms and conditions of the Lease remain in full force and effect and remain unaffected hereby.

3. EFFECTIVE DATE. This Amendment shall be effective as of the date that it is executed.

IN WITNESS WHEREOF, the parties have entered into this agreement as of the date last below written at Brookings, Oregon.

PORT OF BROOKINGS HARBOR, Landlord	**Zola's on the Water, LLC Tenant**
Dated: _____	Dated: _____
By: _____ Richard Heap, Board President	By: _____ Eian Savas Managing Partner
ATTEST: _____ Commissioner	

S4

Zola's on the Water
Exhibit "A" – Updated July 20, 2022

Building = 3,795 SF
Outdoor Seating = 2,500 SF
Storage Area = 1,114 SF
Outdoor Seating & Storage = 2,379 SF

INFORMATION ITEM – A

DATE:	July 20, 2022
RE:	Curry County Storm Drain Master Plan Draft April 2022 Review – Curry County Commissioners and Port Commissioners Meeting Date
TO:	Honorable Board President and Harbor District Board Members
ISSUED BY:	Gary Dehlinger, Port Manager

OVERVIEW

- Curry County Roadmaster Richard Christensen requested to have a meeting to review the County's Storm Drain Master Plan with both board of commissioners.
- The Storm Drain Master Plan is attached for review prior to the meeting. The Ports storm drain detailed information begins on page 259 of the packet.
- Requesting to hold a Special Meeting the last week of July or as soon as possible that works for both boards. Meeting would be held at the Port Meeting Room.

DOCUMENTS

- The Dryer Partnership Engineers & Planners, Inc. Curry County Road Department, Storm Drain Master Plan Draft April 2022, 220 pages

THE DYER PARTNERSHIP
ENGINEERS & PLANNERS, INC.

July 1, 2022

Richard Christensen, Roadmaster
Curry County Road Department
28425 Hunter Creek Road
Gold Beach, OR 97444

Subject: AOC-CRP Federal Grant Application Support Program
Project No. 117.00

Dear Richard:

This letter is to outline projects that are eligible for the AOC-CRP Federal Grant Application Support Program. Below is a brief summary and preliminary costs for storm or bridge related projects that meet the criteria described by the AOC Road Program. All projects provided in the summary are listed in the Curry County Road Department's Six Year Capital Improvement Plan or Storm Drain Master Plan.

1. **Willow Creek Bridge** – Timber bridge that was constructed in 1961 and located on Floras Lake Loop Road. Willow Creek Bridge was considered in fair condition when previously inspected in 2018 by the Oregon Department of Transportation (ODOT), but has deteriorated significantly since the last bridge inspection. The County considers the bridge a high priority for replacement. Total Preliminary Cost Range $2.5 to $3.5 million.

2. **Lower Hunter Creek Bridge** – Concrete bridge constructed in 1959 and located on Lower Hunter Creek Road. The 2018 ODOT bridge rating listed the bridge in poor condition. The County rated the bridge as a high priority for replacement.
Total Preliminary Cost Range $7.5 to $10 million.

3. **Upper Crook Creek Bridge** – Concrete/timber bridge constructed in 1959 and located on North Bank Pistol River Road. Upper Crook Creek Bridge has low clearance between the creek bed and the bottom of bridge deck. Silt and gravel build up creates capacity issues. Maintenance in a designated salmon stream is difficult due regulatory requirements. The new bridge needs to be elevated and lengthened to accommodate high flow levels and allow silt and gravel to disperse under the bridge.
Total Preliminary Cost Range $3 to $4.5 million.

4. **North Bank Chetco River Road (MP 0.902 & MP 3.342)** – An 84-inch corrugated steel culvert in poor condition that conveys flows from Ferry Creek and a 48-inch corrugated steel culvert that conveys flows from Market Creek. Each creek fills up with rock and sediment frequently and are difficult for the County to access for maintenance. Ferry Creek and Market Creek are designated fish streams. The proposed plan is to remove both culverts and replace with new precast bridges.
Total Preliminary Cost Range $3 to $4.5 million.

1330 TEAKWOOD AVENUE
COOS BAY, OREGON 97420
TELEPHONE: 541-269-0732
FAX: 541-269-2044
WEB: www.dyerpart.com

5. **Lower Harbor Road (MP 0.142, MP 0.322, MP 0.551, MP 0.853, & MP 0.900)** – This project consists of five storm drain projects located along Lower Harbor Road. Improvements include removal and replacement of culvert infrastructure that is undersized and/or in poor condition. Culverts in the Lower Harbor area experience high volumes of sediment from the upper harbor hills. Proposed recommendations include installation of four sedimentation basins. The new sediment basins will allow the County to cleanout sediment prior to entering the port, where it is difficult to maintain due to regulatory requirements.
   Total Preliminary Cost Range $3 to $4 million.

Sincerely,

Andrew Hall, PE
Project Engineer

Curry County Road Department

Curry County, Oregon

STORM DRAIN MASTER PLAN

DRAFT

APRIL 2022

The Dyer Partnership Engineers & Planners, Inc.

Project No. 117.24

1330 Teakwood Avenue
Coos Bay, Oregon 97420
(541) 269-0732
www.dyerpart.com

759 West Central Avenue
Sutherlin, Oregon 97479
(541) 459-4619

481 South Main Street
Lebanon, Oregon 97355
(541) 405-4520

Curry County Road Department

Curry County, Oregon

Storm Drain Master Plan

DRAFT

April 2022

Project No. 117.24

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Engineers & Planners, Inc.

1330 Teakwood Avenue
Coos Bay, Oregon 97420
(541) 269-0732
www.dyerpart.com

60

Table of Contents

SECTION 1: INTRODUCTION

1.1 Overview 1-1
Purpose 1-1
Objectives 1-1
Scope of Study 1-1
Authorization 1-2

1.2 Background 1-2
Previous Studies and Information 1-2

1.3 Goals and Course of Action 1-3

1.4 Acknowledgements 1-3

SECTION 2: STUDY AREA

2.1 Location 2-1

2.2 Curry County Regions 2-2

2.3 Study Area Characteristics 2-3
Climate 2-3
Topography 2-4
Natural Drainage Courses 2-4
Floras Creek 2-6
Sixes River 2-6
Elk River 2-6
Euchre Creek 2-6
Rogue River 2-6
Hunter Creek 2-6
Pistol River 2-6
Chetco River 2-6
Winchuck River 2-6
Smith River 2-7
Coastal Creeks 2-7
Soils 2-7
Geologic Hazards 2-8
Flooding 2-8
Landslides 2-8
Earthquakes 2-8
High Ground Water 2-8
Shoreline Erosion 2-9
High Winds 2-9
Environmentally Sensitive Areas 2-9

Riparian Zones 2-9
Wild and Scenic River Areas 2-9

2.4 Population 2-9

2.5 Land Use 2-10
Open Space Lands 2-11
Timber Lands 2-11
Forest Grazing 2-11
Agricultural Lands 2-12
Residential Land Use 2-12
Industrial Land Use 2-12
Commercial Land Use 2-12
Special Uses 2-12

SECTION 3: EXISTING SYSTEM

3.1 Overall System 3-1
Piped Systems 3-1
Open Channels 3-2

3.2 Existing County Culvert Inventory 3-2
Culvert Inventory 3-2
Road Number, Name, and Milepost (MP) 3-2
Placement 3-3
Material 3-3
Culvert Diameter and Length 3-3
Culvert Condition Ratings 3-4

3.3 Existing Drainage System Deficiencies 3-5
Common Culvert Deficiencies 3-5
Abrasion 3-5
Corrosion 3-6
Cracks 3-7
Deflection 3-7
Dented or Crushed Ends 3-8
Joints 3-9
Natural Occurrences 3-9
Rock and Sediment Accumulations 3-10
Scouring at Inlet or Outlet 3-10
Other Deficiencies 3-11
Structural Deficiencies 3-11
Road Ditching Deficiencies 3-12

3.4 Existing Regional System Mapping 3-12
Langlois Existing System Map 3-12
Wedderburn Existing System Map 3-18
Harbor Existing System Map 3-24

3.5 Problem Areas 3-33
County Identified Problem Areas 3-33

Old Coast Road MP 0.169 3-33
Old Coast Road MP 0.314 3-33
Wedderburn Loop MP 0.984 3-34
97940 West Benham Driveway (Lucas Mobile Home Park) 3-34
Curry County Bridges 3-34
Public Identified Problem Areas 3-34

SECTION 4: COST BASIS & PLANNING CRITERIA

4.1 Cost Estimating 4-1
Construction Costs 4-1
Engineering Costs 4-2
Contingencies 4-2
Legal and Administrative Cost 4-3
Additional Cost Factors 4-3
Geotechnical Engineering 4-3
Environmental Permits 4-3
Archeological Review 4-4
Easements 4-4

4.2 Federal Regulations and Permits 4-4
Clean Water Act 4-4
Endangered Species Act 4-4
US Army Corps of Engineers Permitting Authority 4-5
Section 10 of the Rivers and Harbors Act 4-6
Section 404 Clean Water Act 4-6
Safe Drinking Water Act 4-6
NPDES Permit Requirements 4-6
Total Maximum Daily Loads 4-7

4.3 State Regulations and Permits 4-7
Oregon Department of Fish and Wildlife 4-7
Oregon Drainage Law 4-7
Oregon Removal and Fill Regulations 4-8
Oregon Department of Environmental Quality 4-9
State Historic Preservation Office 4-9
Ocean Shores Permit 4-9
No Obstruction Across State Waters 4-9
Statewide Planning Goals 4-9
Public Facility Plans 4-10

4.4 Local Drainage Regulations and Review Procedures 4-10
Curry County Zoning Ordinance 4-10
Riparian Buffer Corridor Overlay Zone 4-10
Erosion Prevention and Sediment Control 4-11
Storm Surface Water Management Standards 4-11
Curry County Design and Construction Standards 4-11

4.5 Future Regulations and Requirements 4-12

4.6 Stormwater Planning History 4-12

Curry County Water Quality Implementation Plan (2006) 4-12
Storm and Surface Water Facilities Plan for Brookings-Harbor Area (2007) 4-13

4.7 Planning Recommendations 4-13
Curry County Zoning Ordinance Recommended Revisions 4-13
Brookings Municipal Code 13.35.020 System Improvements 4-14
Design Requirements for New Development 4-15
Design and Construction Standards Recommended Revisions 4-15
Best Management Practices 4-15
Culvert Installation, Replacement and Repair (Activity P2275) . 4-16

SECTION 5: MAINTENANCE & MANAGEMENT

5.1 Storm Drain System Maintenance & Management Program 5-1
GIS Mapping 5-1
Inspection Reports 5-1
Television Inspection 5-2
Storm Inlet and Outfall Maintenance and Inspection 5-2
Manhole and Grate Maintenance and Inspection 5-2
Road Maintenance Plan 5-2
Ditch Maintenance Plan 5-2
Routine Maintenance 5-2
Non-routine Maintenance 5-3

5.2 Drainage System Replacement, Rehabilitation & Repair Methods 5-3
Storm Drain Pipe Replacement Methods 5-3
Open Trench Construction 5-4
Pipe Bursting 5-4
Culvert Inlet and Outlet Repair and Modification 5-5
Storm Drain Pipe Repair and Rehabilitation Methods 5-5
Chemical Grouting 5-6
Culvert Invert Lining 5-6
Slip Lining 5-7
Cured in Place Pipe (CIPP) 5-8
Infrastructure Repairs 5-9
Maintenance 5-9
Repair 5-9
Replacement 5-9
Ditch Restoration 5-9
Road Appearance 5-9
Ditch Erosion or Soil Instability 5-10
Water Flow 5-10

5.3 Recommended Stand Operating Procedures 5-10
Cleaning Culverts 5-10
Employee Prerequisites 5-11
Equipment and Materials 5-11
Procedures 5-11
Jetting of Storm Infrastructure 5-12

Employee Prerequisites 5-12
Equipment and Materials 5-12
Procedures 5-12
Ditch Maintenance and Restoration 5-13
Employee Prerequisites 5-13
Equipment and Materials 5-14
Procedures 5-14

SECTION 6: HYDROLOGICAL ANALYSIS

6.1 Storm Frequency 6-1

6.2 Basin Analysis Method 6-2
Rational Method 6-2
Runoff Coefficients 6-3
Rainfall Intensity 6-3
Time of Concentration 6-3
Area 6-4
Soil Conservation Service Method 6-4
Synthetic Storm Distribution 6-4
Soil Classification and Curve Number 6-6
Rainfall 6-7
Time of Concentration 6-7
Time to Peak 6-7
Peak Runoff 6-7
Unit Hydrograph 6-7
Runoff Generation 6-8
Hydrograph Routing 6-8
Streamstats 6-8

6.3 Infrastructure Analysis 6-9
Channelization 6-9

6.4 System Modeling and Capacity Evaluation 6-10

SECTION 7: STORM DRAIN MODEL

7.1 Identified Modeling Criteria 7-1

7.2 Culvert Model Results 7-1
Road Number and Name 7-2
Milepost 7-2
Storm Frequency for Modeling 7-2
Existing Culvert Size, Type, and Length 7-2
Depth of Existing Culvert 7-2
Recommended Culvert Size and Type 7-3
Slope 7-3
Structure 7-3
Capital Improvement Plan Projects 7-3
Cost 7-4

7.3 Regional Basin Model Results 7-17
Langlois Model Results 7-17
Langlois Bench 7-17
Langlois Hills 7-17
Wedderburn Model Results 7-20
Wedderburn Bench 7-20
Wedderburn Hills 7-20
Rogue River North 7-20
Harbor Model Results 7-23
Boat Basin 7-23
Developed Hills 7-23
Harbor Bench 7-23
Harbor Hills 7-24

SECTION 8: RECOMMENDED PLAN

8.1 Proposed Storm Drain Improvement Projects 8-1

8.2 Capital Improvement Plan Project Priority 8-2

8.3 Capital Improvement Plan Project Description 8-10

SECTION 9: FINANCING

9.1 Project Cost Summary 9-1

9.2 Funding Sources 9-1
System Development Charges 9-2
Oregon Watershed Enhancement Board 9-2
National Fish Passage Program 9-2
Fish America Foundation 9-2
Federal Emergency Management Agency 9-2
Water and Waste Disposal Program (Rural Development) 9-2

9.3 Financial Strategy 9-3

LIST OF TABLES

2.3.1 Soil Permeability 2-8
2.4.1 Population Estimates for Curry County 2-9
2.5.1 Zone Designation 2-10
2.5.2 Summary of Plan Designation 2-11

3.1.1 Existing Culvert Size Summary 3-1
3.1.2 Existing Culvert Materials Summary 3-2
3.2.1 Culvert Placement 3-3
3.2.2 Culvert Material 3-3
3.2.3 Culvert Condition Ratings 3-4
3.2.4 County Culvert Condition Ratings 3-4
3.3.1 Common Pipe Materials 3-5

bdo

3.5.1 Public Identified Problem Areas 3-35

4.1.1 ENR Construction Cost Index – Years 2011 to 2021 4-1
4.1.2 Assumptions for Additional Cost Factors 4-3
4.3.1 Statewide Planning Goals 4-10
4.6.1 Summary of Water Quality Implementation Plan 4-13

5.2.1 Key Criteria for New Pipe Installation 5-4
5.3.1 Agency Contact Information 5-10

6.1.1 Design Storm Rainfall Totals and Analysis Areas 6-1
6.2.1 Common Runoff Coefficients 6-3
6.2.2 Typical SCS CN Values 6-6
6.3.1 Typical Manning's Roughness Coefficients 6-9

7.2.1 Structure Abbreviations 7-3
7.2.2 Northern Region Modeling Results 7-5
7.2.3 Central Region Modeling Results 7-8
7.2.4 Southern Region Modeling Results 7-12
7.3.1 Langlois Modeling Results 7-18
7.3.2 Wedderburn Modeling Results 7-21
7.3.3 Harbor Modeling Results 7-24

8.1.1 CIP Projects by Construction Category 8-2
8.2.1 Capital Improvement Plan Projects 8-3

9.1.1 CIP Project Costs and Priorities 9-1
9.1.2 Regional Culvert Project Costs 9-1

LIST OF FIGURES

2.1.1 Location Map 2-1
2.2.1 Curry County Regions Map 2-2
2.3.1 25-Year 24-Hour Precipitation for Oregon 2-3
2.3.2 50-Year 24-Hour Precipitation for Oregon 2-4
2.3.3 Natural Drainage Basins of Curry County 2-5

3.3.1 Bottom of Culvert Rusted Out – Oak Flat Road MP 2.41 3-6
3.3.2 Corroded Pipe – Jerry's Flat Road MP 1.955 3-6
3.3.3 Concrete Crack – Ponderosa Road MP0.016 3-7
3.3.4 Deflection – County Shop Road MP 0.171 3-8
3.3.5 Crushed End – Silver Butte Road MP 0.137 3-8
3.3.6 Separated Joint – Winchuck River Road MP 0.321 3-9
3.3.7 Beaver Dam – Old Coast Road MP 0.784 3-9
3.3.8 Rock & Sediment Accumulation – Jerry's Flat Road MP 8.701 3-10
3.3.9 Scouring at Outlet – Hillside Acres MP 0.299 3-11
3.4.1 Langlois Existing System Index Map 3-13
3.4.2 Langlois Existing System Map 3-14
3.4.3 Langlois Existing System Map 3-15
3.4.4 Langlois Existing System Map 3-16
3.4.5 Langlois Existing System Map 3-17

3.4.6 Wedderburn Existing System Index Map 3-19
3.4.7 Wedderburn Existing System Map 3-20
3.4.8 Wedderburn Existing System Map and Basin Map 3-21
3.4.9 Wedderburn Existing System Map 3-22
3.4.10 Wedderburn Existing System Map 3-23
3.4.11 Harbor Existing System Index Map 3-25
3.4.12 Harbor Existing System Map 3-26
3.4.13 Harbor Existing System Map 3-27
3.4.14 Harbor Existing System Map 3-28
3.4.15 Harbor Existing System Map 3-29
3.4.16 Harbor Existing System Map 3-30
3.4.17 Harbor Existing System Map 3-31
3.4.18 Harbor Existing System Map 3-32
3.5.1 Overgrown Drainage Path to Ocean – Old Coast Road MP 0.314 . 3-33
3.5.2 Sediment Under Bridge – Upper Crook Creek Bridge 3-34
4.2.1 USACE Regulatory Jurisdiction 4-5

5.2.1 Culvert Endwall Structure 5-5
5.2.2 Typical Concrete Invert Section 5-7
5.2.3 Typical Slip Lining Section 5-8

6.2.1 Area NRCS Rainfall Distributions 6-5
6.2.2 Rainfall Distribution for a Type 1A 24-Hour Storm 6-5

7.2.1 Northern Curry County Basin Map 7-8
7.2.2 Central Curry County Basin Map 7-9
7.2.3 Southern Curry County Basin Map 7-10
7.3.1 Langlois Basin – Storm Model 7-19
7.3.2 Wedderburn Basin – Storm Model 7-22
7.3.3 Harbor Basin – Storm Model 7-26

8.2.1 Northern Curry County – CIP Location Map 8-6
8.2.2 Central Curry County – Part 1 - CIP Location Map 8-7
8.2.3 Central Curry County – Part 2 - CIP Location Map 8-8
8.2.4 Southern Curry County – CIP Location Map 8-9
8.3.1 Langlois Mtn Road at MP 7.316 8-11
8.3.2 Cemetery Loop Road.at MP 1.256 8-12
8.3.3 Childers Road at MP 0.128 8-13
8.3.4 Elk River Road at MP 3.583 and 3.585 8-14
8.3.5 Elk River Road at MP 4.049 8-15
8.3.6 Elk River Road at MP 6.562 8-16
8.3.7 Elk River Road at MP 7.396 8-17
8.3.8 Floras Creek Road at MP 2.069 8-18
8.3.9 Floras Creek Road at MP 2.107 8-19
8.3.10 Floras Creek Road at MP 2.164. 8-20
8.3.11 Floras Creek Road at MP 2.926 8-21
8.3.12 Floras Creek Road at MP 3.970 8-22
8.3.13 Floras Creek Road at MP 5.165 8-23
8.3.14 Floras Creek Road at MP 5.725 8-24
8.3.15 Floras Lake Loop at MP 0.513 8-25
8.3.16 County Shop Road at MP 0.171 8-26
8.3.17 Sixes River Road at MP 0.173 8-27

8.3.18 Sixes River Road at MP 2.733 8-28
8.3.19 Sixes River Road at MP 7.279 8-29
8.3.20 Sixes River Road at MP 7.376. 8-30
8.3.21 Sixes River Road at MP 8.738 8-31
8.3.22 Grassy Knob Road at MP 0.591. 8-32
8.3.23 Agness-Illahe Road at MP 1.841 8-33
8.3.24 Oak Flat Road at MP 2.047 8-34
8.3.25 Oak Flat Road at MP 2.410 8-35
8.3.26 Ponderosa Road at MP 0.016 8-36
8.3.27 Nesika Road at MP 0.071 8-37
8.3.28 Nesika Road at MP 0.24 8-38
8.3.29 A Street at MP 0.12 8-39
8.3.30 N Bank Rogue River Road at MP 1.582 8-40
8.3.31 N Bank Rogue River Road at MP 7.548 and 7.550 8-41
8.3.32 Old Coast Road at MP 0.586 to 0.784 8-42
8.3.33 Old Coast Road at MP 2.207, 2.210 and 2.212 8-43
8.3.34 Jerry's Flat Road at MP 0.987 8-44
8.3.35 Jerry's Flat Road at MP 1.285 8-45
8.3.36 Jerry's Flat Road at MP 1.955 8-46
8.3.37 Jerry's Flat Road at MP 3.717 to 4.472 8-47
8.3.38 Jerry's Flat Road at MP 8.701 8-48
8.3.39 Jerry's Flat Road at MP 9.460 8-49
8.3.40 Hunter Creek Loop at MP 1.092 and 1.101 8-50
8.3.41 Grizzly Mountain Road at MP 0.960 8-51
8.3.42 N Bank Pistol River Road at MP 4.824 8-52
8.3.43 Pistol River Loop at MP 0.226 8-53
8.3.44 S Bank Pistol River Road at MP 1.005 8-54
8.3.45 N Bank Chetco River Road at MP 0.902 8-55
8.3.46 N Bank Chetco River Road at MP 3.342. 8-56
8.3.47 N Bank Chetco River Road at MP 5.116 8-57
8.3.48 N Bank Chetco River Road at MP 6.516 8-58
8.3.49 N Bank Chetco River Road at MP 6.744 8-59
8.3.50 N Bank Chetco River Road at MP 6.974 8-60
8.3.51 S Bank Chetco River Road at MP 0.99 to 1.16 8-61
8.3.52 S Bank Chetco River Road at MP 1.872 8-62
8.3.53 S Bank Chetco River Road at MP 3.850 8-63
8.3.54 S Bank Chetco River Road at MP 4.792 8-64
8.3.55 Lower Harbor Road at MP 0.142 8-65
8.3.56 Lower Harbor Road at MP 0.332 8-66
8.3.57 Lower Harbor Road at MP 0.551 8-67
8.3.58 Lower Harbor Road at MP 0.853 8-68
8.3.59 Lower Harbor Road at MP 0.900. 8-69
8.3.60 Oceanview Drive at MP 1.369 8-70
8.3.61 Oceanview Drive at MP 1.852 8-71
8.3.62 Museum Road at MP 0.094 8-72
8.3.63 Winchuck River Road at MP 2.721 8-73
8.3.64 Winchuck River Road at MP 4.287 8-74
8.3.65 Azalea Lane and Iris Street at Rogue Hills Subdivision 8-75
8.3.66 Bayview Drive and Driftwood Drive at Rogue Hills Subdivision 8-76
8.3.67 Hillside Terrace at Rogue Hills Subdivision 8-77

APPENDICES

Appendix A Improvement Questionnaire
Appendix B Road Standards
Appendix C Environmental
Appendix D Cost Estimates & Funding
Appendix E Maps

70

SECTION 1:

INTRODUCTION

SECTION 1: INTRODUCTION

1.1 Overview

Purpose

The Curry County Storm Drain Master Plan was developed to guide the Curry County Road Department with stormwater related priorities and a capital improvement projects over the next twenty years and update the Harbor area previous Storm Drain Master Plan adopted in October 2007.

The purpose of this Curry County Storm Drain Master Plan is to provide the Owner with a storm drain planning document to outline storm drain improvements and consider alternatives to prepare against future impacts. The Master Plan analyzes Curry County drainage infrastructure and natural systems. The study area for the Master Plan covers the infrastructure in the unincorporated communities of Langlois, Wedderburn, and Harbor and also includes drainage areas to the receiving water bodies of Floras Creek, Elk River, Sixes River, Illinois River, Rogue River, Pistol River, Chetco River, and the Winchuck River.

Objectives

In order to protect both public and private lands from the impacts of stormwater the overall objectives of this Storm Drain Master Plan are to:

- Provide a basis for cost estimates including construction, engineering, permitting, legal and administrative.
- Prioritize improvements and provide cost estimates. Provide potential pre-treatment areas and methods to be incorporated into improvement projects.
- Identify projects that are likely to require Oregon Division of State Lands (DSL) or US Army Corps of Engineers (USACE) permits for construction.
- Identify new and upcoming stormwater regulations, permits and funding requirements pertaining to projects that may be constructed by the County.
- Provide recommendations for the County to update and develop a Stormwater Management Plan to address the Oregon Department of Environmental Quality (DEQ) requirements for Stormwater Management Strategies.
- Provide a stormwater maintenance plan for County's Staff to maintain the entire system.

Scope of Study

- **Study Area Characteristics.** Study area characteristics were identified and include climate, drainage systems, topography, soils, and flooding hazards.
- **Existing System.** The stormwater system will be described. The County's Geographic Information System (GIS) database will be utilized. Data was collected with the County and survey crews were used to obtain pipe slopes on the existing key storm drain segments. The system does not include existing storm drain systems located within the cities or Highway 101 rights-of-way.

- **Planning Criteria.** Planning criteria includes federal and state regulations that pertain to stormwater systems, local ordinances, and storm drain ordinances for development. A review of pretreatment needs for implementation includes the use of sediment basins.

- **Hydrological Analysis.** The hydrological analysis will provide storm frequency, channelization, analysis methods, runoff coefficients, rainfall intensity, time of concentration and peak flows, unit hydrograph and runoff generation reports, hydrograph routing and computer modeling for a 25-year and 50-year storm event based on road category. Analysis will be developed in a two part method. StreamStats will be used to analyze 500 to 600 specific basins for design flows. HydroCad will be used for site specific analysis on critical storm drain sections using field acquisition data and the County's GIS database.

- **Storm Drain Model.** Evaluate the storm drain system for present and built-out conditions. Develop storm drain matrix that identifies deficient pipes and structures based on the County's existing GIS database of the existing culverts. Provide discharge estimates and review potential re-direction of stormwater flows away from deficient areas. Provide storm drain alternatives.

- **Recommendations and Capital Improvement Plan**. A recommendation plan was developed to enable the County to meet their present and future demands and requirements of their wastewater facilities. This Master Plan includes preliminary design data, Capital Improvement Plan (CIP), operational costs, and a preliminary financing strategy.

Authorization

The Curry County Road Department authorized The Dyer Partnership Engineers and Planners, Inc. to proceed with this Curry County Storm Drain Master Plan in March, 2021.

1.2 Background

The Curry County Road Department manages over 35 miles of stormwater infrastructure, including significant areas of aging systems. The County has experienced ongoing issues with their existing storm drain systems that serve the entire County. Certain areas within the County have experienced storm drain overflows in undersized storm drain pipes or pipes with significant sediment build-up as well as failure of Corrugated Metal Pipe (CMP) pipes due to corrosion. The County will need to secure permits from the appropriate agencies to address the removal of the sediment buildup in the existing pipes. The resultant overland flooding has caused significant damage to both public and private properties throughout the County. The County is in the process of developing a GIS database of the existing storm drain system of the entire County. To the GIS database is a proactive tool to address the aging and deficient storm drain system. The Master Plan will also provide a basis for future growth and new development in areas within the County.

Previous Studies and Information

The following studies, reports, and other sources of information have been used in preparation of this Storm Drain Master Plan:

- Storm and Surface Water Facilities Plan for Brookings-Harbor Area, Curry County and City of Brookings (HGE, Inc., 2007)

- Water Quality Implementation Plan (Curry County, June 30, 2006)
- Curry County Zoning Ordinance - Amended (Curry County, August 2018)
- Curry County Comprehensive Plan (Curry County, 2009)

1.3 Goals and Course of Action

The Curry County Storm Drain Master Plan provides the County with a comprehensive planning tool to improve the storm drain system. The Master Plan is organized to be a reference and guide to facilitate and prioritize capital improvement projects within Curry County.

The ideal outcome of the Master Plan is to develop planning tools the County can use to maintain their system and is capable of accommodating growth with future regulations considered. To accomplish these goals, it is of greatest importance that the Plan meets the long-term needs of the County in the most cost-effective way.

1.4 Acknowledgements

The development of the Curry County Storm Drain Master Plan is the result from the combined efforts of a number of individuals, agencies, and public comment. The participation of these parties providing and collecting data, answering questions, reviewing drafts, attending meetings, and providing guidance for the Plan is greatly appreciated.

The Dyer Partnership Engineers and Planners, Inc. wishes to acknowledge the efforts of Richard Christensen, Roadmaster, Gary Wolford, Rob Schafer, Allan Avery, and the Road Department Staff.

SECTION 2:

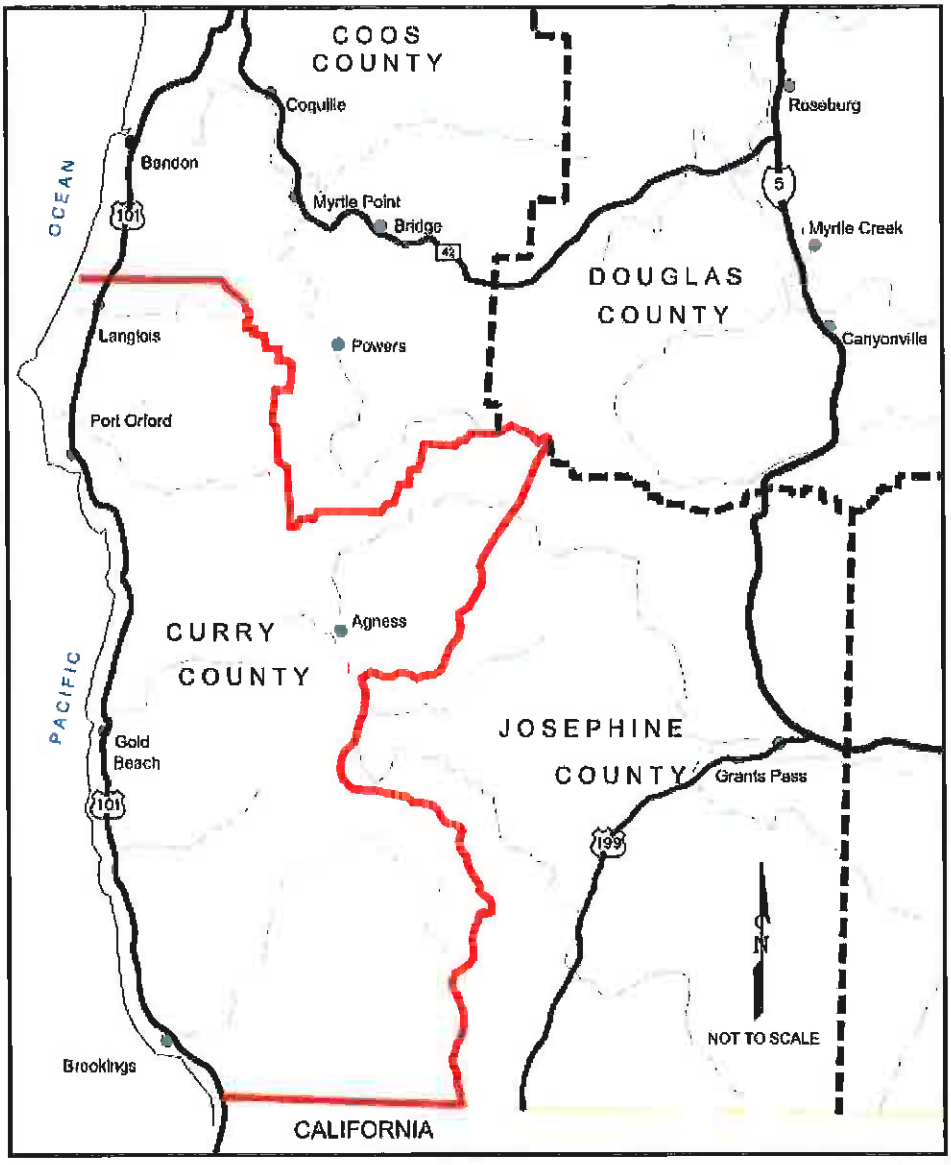
STUDY AREA

SECTION 2: STUDY AREA

2.1 Location

Curry County is located in southwestern Oregon, just north of the border with California. Highway 101 runs along the entire coast throughout the County. The Curry County Road Department is responsible for the public storm drain infrastructure outside of the Urban Growth Boundaries (UGB) for the cities of Brookings, Gold Beach and Port Orford. A location map is shown in Figure 2.1.1.

FIGURE 2.1.1
LOCATION MAP

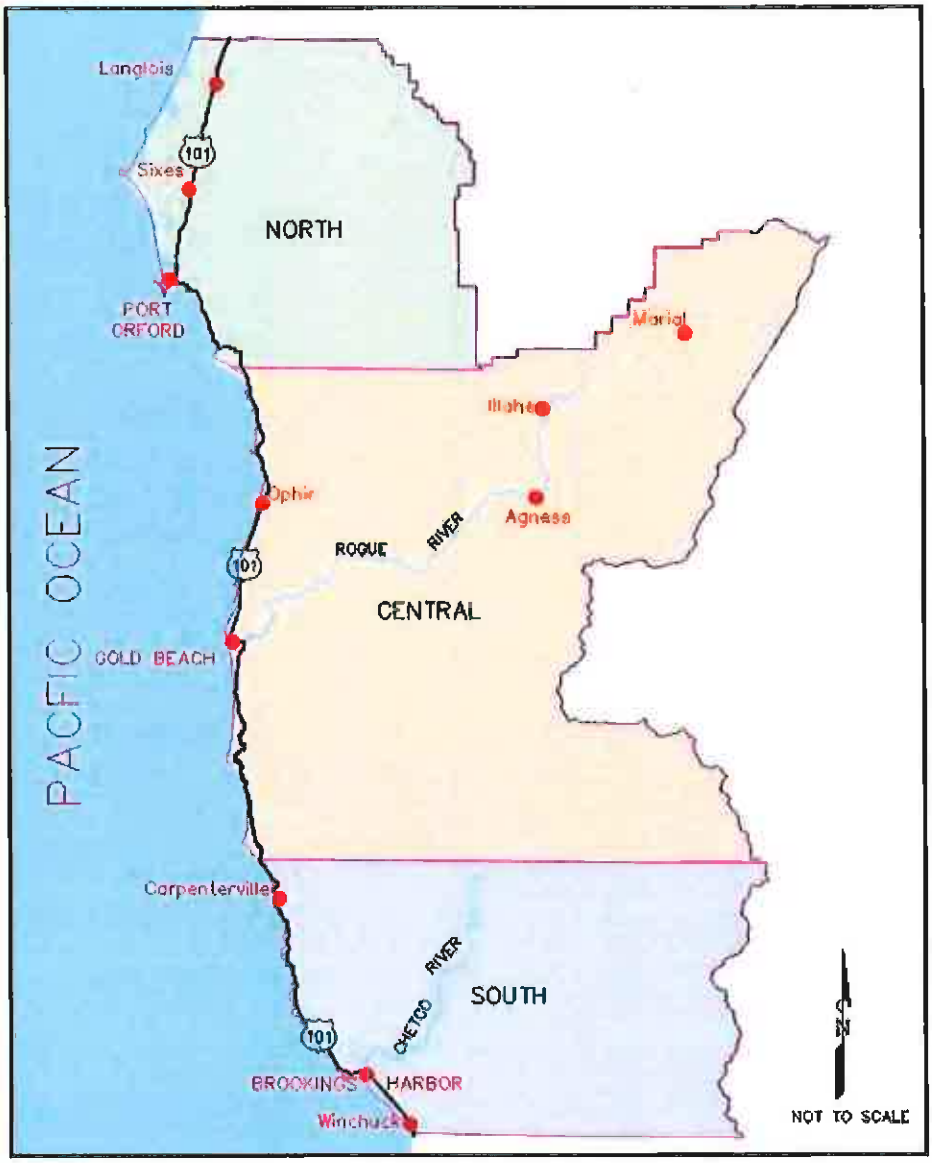


76

2.2 Curry County Regions

The Curry County Road Department breaks the County into three regions: North, Central, and South as shown in Figure 2.2.1. Breaking the County up into the three separate areas ensures the necessary maintenance work, recommended projects improvements, and funding are distributed equally throughout the County. Schedule for maintenance and improvement projects is completed by region and typically rotated annually.

FIGURE 2.2.1
CURRY COUNTY REGIONS MAP



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2.3 Study Area Characteristics

Climate

Curry County has a humid climate with wet but mild winters and generally dry warm summers. Along the coast, temperatures are influenced by a cool marine climate. Mean temperatures generally vary by location. Mean daily temperatures range from 42 to 54 degrees Fahrenheit in winter months and 52 to 67 degrees Fahrenheit in summer months. Inland temperatures range depending on elevation. Winter lows are as low as twenty degrees Fahrenheit to as high as 100 degrees Fahrenheit in the summer.

The effect of elevation heavily influences precipitation patterns in the County. In general, annual precipitation averages around 75 inches along the coast. Inland at higher elevations, annual precipitation are over 80 inches. Snowfall in winter generally occurs only inland from the coast at higher elevations and beyond the direct influence of warm offshore ocean currents.

Isopluvial maps show the precipitation depth of storm for a certain frequency. For example, a 25-year 24-hour precipitation event represents a storm that has a statistical chance of happening one time out of every 25-years or four percent chance annually. Figures 2.3.1 and 2.3.2 include a 25-year and 50-year 24-hour Oregon Precipitation Map produced by MGS Engineering, Inc and Oregon Climate Service.

FIGURE 2.3.1
25-YEAR 24-HOUR PRECIPITATION FOR OREGON

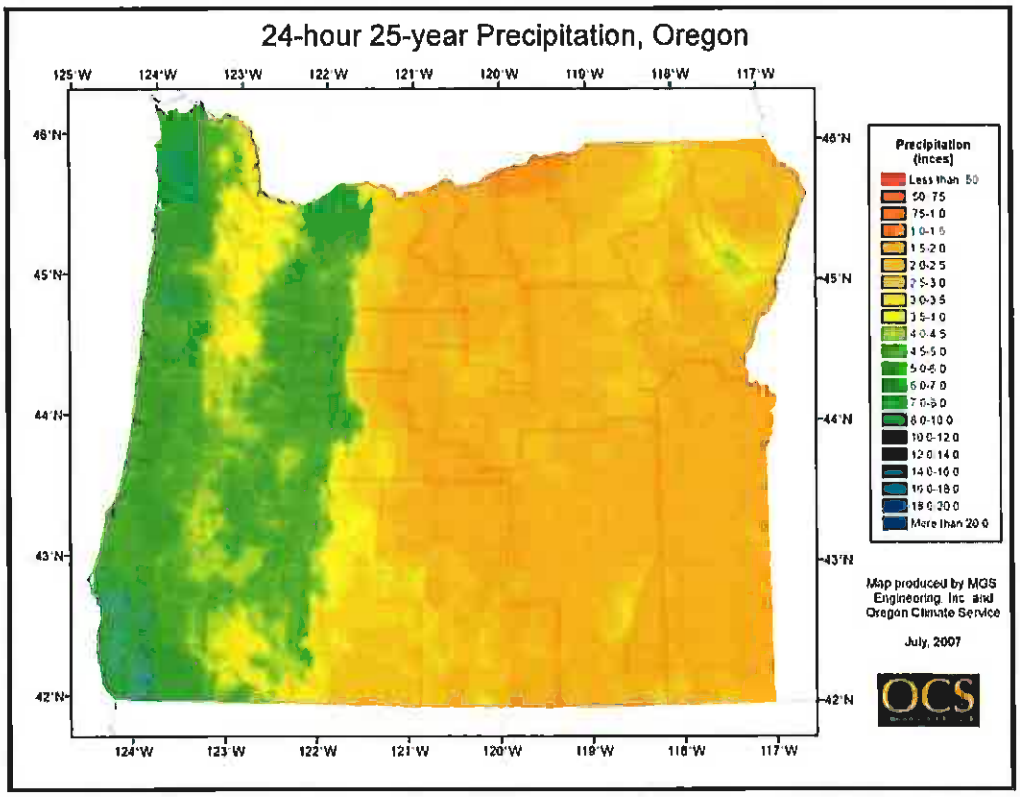

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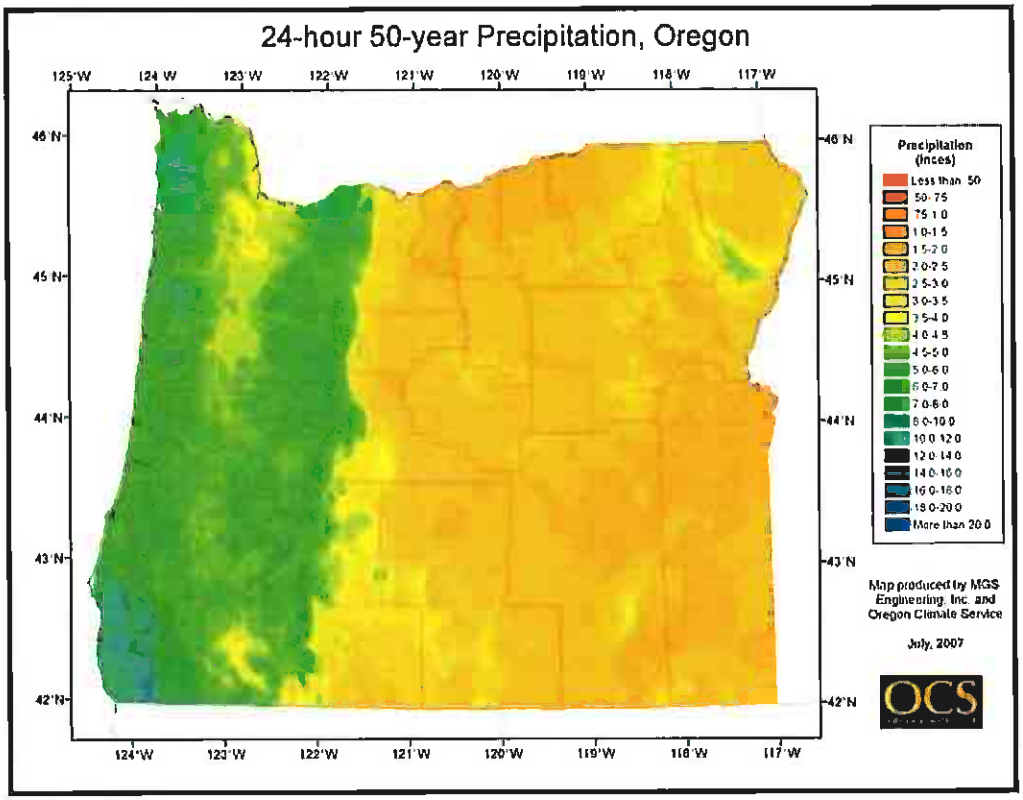
FIGURE 2.3.2
50-YEAR 24-HOUR PRECIPITATION FOR OREGON



Topography

The topography in Curry County is generally mountainous terrain with relatively flat areas near the coast. Elevations range from zero feet (Sea Level) to 5,312 feet (Brandy Peak) with extremely variable topography. Curry County lies within the Klamath Mountain region, which contains high mountain mass that drops off into the ocean in a series of headlands. The land forms within the County are broadly classified as uplands, terraces, and lowland valleys. The eastern part of the County has many mountain ridges and canyons. Terraces are either wave-cut surfaces along the coast or are remnants of elevated flood plains along major streams. Coastal terraces are typically less than two hundred feet in elevation above sea level. Stream terraces are typically less than fifty feet above current day flood plains. The coast is made up of many low lands near the mouth of major streams and rivers. These low land areas are within flood plains, marshes, and beach dune areas.

Natural Drainage Courses

Curry County is home to some of Oregon's most notable rivers including the Chetco River and Rogue River along with countless tributaries and creeks all leading to the Pacific Ocean. Maintaining and improving water quality for these watersheds is a priority for the County. A healthy system creates economic benefits for local residents and tourism. Recreational activities include fishing, boating, and sightseeing. The County's major river and watershed basins are described hereafter and shown in Figure 2.3.3.

FIGURE 2.3.3
NATURAL DRAINAGE BASINS OF CURRY COUNTY

80

Floras Creek

Langlois Mountain and Edson Butte area drain into the Floras Creek drainage system. It is the northern most coastal drainage system located within the County. Floras Creek combines with the outflow of Floras Lake to form New River, where it drains into the Pacific Ocean 3.5 miles north of the Curry County line. The average annual flow for Floras Creek below Guerin Creek is 283 cubic feet per second (cfs).

Sixes River

Edson Butte, Grassy Knob, and Mount Butler areas of northern Curry County drain to the Sixes River drainage system. The average annual flow for Sixes River below Beaver Creek is 590 cfs.

Elk River

The north central coastal mountains including Iron Mountain and Mount Butler drains into the Elk River drainage system eventually to the coastal area on the north and east sides of Port Orford. The average annual flow for the Elk River below Indian Creek is 456 cfs.

Euchre Creek

In the central region of Curry County an area immediately north of the Rogue River and west of Lobster Creek drains to Euchre Creek drainage system. The average annual flow at the mouth of Euchre Creek is 176 cfs.

Rogue River

The Rogue River-Siskiyou National Forest drains into the Rogue River drainage system. The Rogue River is 211 miles in length and has a drainage basin area of 5,160 square miles. The average annual flow of the Rogue River near Agness is 7,398 cfs.

Hunter Creek

The coastal mountains between the Rogue River and Pistol River drain to the Hunter Creek drainage system. The average annual flow of Hunter Creek below York Creek is 228 cfs.

Pistol River

The westerly slope of the coastal mountains from Hunter Creek to the Chetco River drains into the Pistol River drainage system. The average annual flow of the mouth of the Pistol River is 564 cfs.

Chetco River

The average annual flow of the Chetco River below the North Fork is 1,840 cfs.

Winchuck River

The westerly slope of the coastal mountains south of the Chetco River to the California state line drains into the Winchuck River drainage system. The average annual flow of the Winchuck River below Moser Creek is 283 cfs.

Smith River

The southeast corner of Curry County flows in the Smith River drainage system, flows through Northern California and discharges to the Pacific Ocean.

Coastal Creeks

There are numerous small coastal creek drainage systems that drain areas along the coast directly to the Pacific Ocean. Average flows for each of the many coastal creeks vary.

Soils

Curry County has a wide variety of rock types present in the County that make up a relatively complex geologic history. The geologic bedrock consists of standstone, siltstone, various volcanic, and metamorphic rocks. Surficial geologic formations consist of semi-consolidated to un-consolidated terrace and low land deposits, which overlie the bedrock.

Much of the deformation by faulting which has caused the fracturing and partial mechanical disintegration of these rock units has been localized both in time and place. A prominent shear zone (area of localized faulting) consisting of sheared bedrock and serpentine is located in the Cape Ferrelo - Carpenterville area. A second shear zone is located in the northern Curry County coastal area and extends from Cape Blanco south through Port Orford to the Humbug Mountain area. Part of this shear zone lies off shore, but where it comes on shore south of Humbug Mountain it is one to two miles wide with intensely fractured rocks. These faults appear to have been active in the distant geologic past and are no threat in terms of earthquake activity; however, the intensely fractured rock in the shear zone presents a significant landslide hazard in the immediate vicinity of the shear zone. Generally due to the diverse rock types in the County and soils derived from these rocks, the deformation of bedrock units by geologic processes, the high relief topography, and climate, most areas in Curry County are subject to some form of landslide or unstable soil hazards.

There are many general classifications of surficial geologic formations found within the study area. The soil types for Curry County are shown in Appendix XXX. The soil types are divided into four hydrologic groups represented by the letters A, B, C, and D.

Group A soils are identified as deep sand, deep loess, and aggregated silts and are defined as having a minimum infiltration rate of 0.30 to 0.45 inches per hour.

Group B soils include shallow loess and sandy loam with infiltration rates ranging from 0.15 to 0.30 inches per hour.

Group C soils are those low in organic content and usually high in clay, including clay loams and shallow sandy loams with an infiltration rate in the range of 0.05 to 0.15 inches per hour.

Group D soils are those that swell significantly when wet including cohesive and compressible clays of high plasticity and certain saline soils, and are identified as having an infiltration rate less than 0.05 inches per hour.

The US Department of Agriculture (USDA) Natural Resources Conservation Services (NRCS) Soil Survey for Curry County identifies a variety of soils within the study area. For modeling purposes, soil types identified by the Soil Survey are shown in Table 2.3.1. The general geological soil formations within the entire study area and their associated hydrologic group are shown in Appendix XXX.

TABLE 2.3.1
SOIL PERMEABILITY

Soil Type	Permeability
Group A Soils	Very Rapid to Rapid
Group B Soils	Moderately Rapid to Moderate
Group C Soils	Slow to Very Slow
Group D Soils	Very Slow to None

Geologic Hazards

There are several areas within Curry County that are susceptible to geologic hazards. These hazards include flooding, landslides, earthquakes, high groundwater, shore line erosion and high winds. These hazards should be taken into account when planning and constructing projects.

Flooding

The most common flooding in the County is caused by streams, rivers, or oceans.

Stream or river flooding is caused by temporary large increases in discharge or by a variety of modifications of the stream channels which increase the water level of the stream. Urban areas also affect stream flooding by altering infiltration of water into the ground, concentrating the flow of water into artificial drainage systems and increasing peak runoff volumes and levels. Flooding is also related to rapid melting of snowpack in headwaters of a stream.

Ocean flooding is flooding of low-lying coastal areas by the ocean due to natural process including high tides, storm surges, tsunamis, or other storm waves.

Landslides

Landslides are downslope movement of soil and bedrock in response to gravity. Landslides are typically triggered by heavy rain or earthquakes that cause disturbance in the natural stability of the slope.

Earthquakes

Curry County is subject to earthquakes from both near and distant sources. Earthquakes are the products of deep-seated geologic faulting and the subsequent release of large amounts of energy. The earthquake hazards include earthquake induced landslides, liquefaction and shaking amplification. With respect to landslides, medium to high hazard risks exist on coastal hills near creek drainage areas and along the coastlines. The high landslide hazard areas are found on some of the upper ridge areas in the County. The geologic mapping of the County show that all faults with the exception of the Port Orford Shear Zone are inactive.

High Groundwater

High groundwater is apparent in specific areas within the County. This water may be due to land contours, springs, hillside seepage, or saturated soil conditions following periods of wet weather.

Shoreline Erosion

Curry County includes miles of shoreline along the Pacific Ocean and its many rivers. These areas are susceptible to extensive erosion by waves and weather elements.

High Winds

Winds are a regular occurrence in Curry County with high wind occurring only occasionally during severe storms. Significant damages can occur from high winds during winter storm events.

Environmentally Sensitive Areas

Curry County is home to environmentally sensitive areas including the Pacific Ocean, Rogue River and Chetco River. The combination of ocean, rivers, and forests provides a unique environment within the County that should be considered and protected in facilities planning.

Riparian Zones

The transition zones between creeks and uplands are also sensitive, and should be protected for erosion control, shelter for animals, and shade for reducing water temperatures. In addition to exceeding the physical tolerance levels of fish, high temperatures lower the oxygen concentration, increase disease potential for aquatic life, and produce conditions for competing fish.

Wild and Scenic River Areas

The Omnibus Oregon Wild and Scenic Rivers Act of 1988 designated 44.5 miles of the Chetco River as wild and scenic, from its headwaters in the Kalmiopsis Wilderness down to the Rogue River-Siskiyou National Forest boundary just above Loeb State Park.

2.4 Population

The population of Curry County at the time of the 2020 Census was 23,446. Portland State University's Population Research Center (PSU PRC) estimates the 2021 population to be 23,662. The PRC estimates the average Annual Growth Rate (AAGR) to decrease from 0.4 percent to 0.2 percent between the years 2025 and 2035. Forecasted population estimates for the 20-year planning period are shown in Table 2.4.1.

TABLE 2.4.1
POPULATION ESTIMATES FOR CURRY COUNTY

Year	Curry County	Est. Annual Growth Rate
2020	23,446	-
2025	23,595	0.40%
2030	23,983	0.30%
2035	24,280	0.20%
2040	24,491	0.20%
2045	24,743	0.20%

2.5 Land Use

Curry County maintains a website http://www.co.curry. or.us/ which includes interactive Geographic Information System (GIS) map with zoning layers for the County.

Curry County has 26 separate land use zoning districts. Section 3.010 of the Curry County Zoning Ordinance – Amended (Curry County, August 2018) designates the zoning districts. The zone designation is provided in Table 2.5.1.

TABLE 2.5.1
ZONE DESIGNATION

Zone	Abbreviated Designation
Timber	T
Forestry-Grazing	FG
Agricultural	AFD
Exclusive Farm Use	EFU
Rural Residential	RR
Rural Community Residential	RCR
Residential-One	R-1
Residential-Two	R-2
Residential-Three	R-3
Rural Commercial	RC
Rural Resort Commercial	RRC
Commercial-Light	C-1
Commercial-Heavy	C-2
Rural Industrial	RI
Industrial	I
Marine Activity	MA
Public Facilities	PF
Beaches & Dunes Conservation Areas	CON
Estuary Resource Zone	ER
Scenic Waterway Areas Overlay	SW
Shoreland Overlay	SO
Natural Hazards Overlay	NH
Archaeological & Historical Sites	AH
Airport Related Areas	AR
Riparian Corridor Buffer Overlay	RB
Harbor Bench Farm District Overlay	HFO

The Curry County Comprehensive Plan (Curry County, 2009) provides a generalized summary of the area of County land included within each designation and the corresponding implementing zone districts. The

85

table combines zones that are similar in the uses allowed and in the geographic areas in which they have been applied in the County. The table excludes about 8,300 acres, which accounts for the incorporated cities within the County. The generalized summary of plan designation is provided in Table 2.5.2.

TABLE 2.5.2
SUMMARY OF PLAN DESIGNATION

Plan Designation/Zone	Acreage	Percent
Timber (T, FG-80)	929,500	88.0%
Forest Grazing (FG-40, 20, 10)	93,400	8.8%
Agricultural (AFD, EFU)	6,000	0.6%
Residential (RR-5, 2.5, 1, R-1, R-2)	15,800	1.5%
Commercial (C-1, C-2, RC, RCR)	600	0.1%
Industrial (RI, I)	300	0.0%
Special Uses (MA, CON, PF)	11,100	1.1%
Total	1,056,700	100.0%

Open Space Lands

Open space consists of lands used for agricultural or forest uses, and any land area that would if preserved and continued in its present use. Open spaces are areas that are to remain structurally undeveloped other than for support facilities. The open spaces are comprised of both designated open space areas including parks, playgrounds, golf courses, etc., and public and private lands in use for agriculture, forestry, open area recreation.

Most of the open space in Curry County is under federal ownership with 52 percent belonging to the Siskiyou National Forest and five percent under Bureau of Land Management (BLM) ownership. The lands are used for less intensive open space activities including hunting, hiking, timber management, and wildlife which require larger quantities of land. Development on these lands are limited to campgrounds, roads and trails.

Timber Lands

Forest lands represent almost ninety percent of the land area in Curry County and the timber industry has been of central importance in the economic and social development of the region. Forest land, like agricultural land, provides most of the open space area of the County and also are among the most scenic areas of the County. These lands are the single most important resource land to the County on the basis of economics since they form the source of most of the private and public revenue that is returned to the County. The gross value of the forest product exceeds the value of all other sectors of the County economy combined.

Forest Grazing

Forest grazing is a designation applied to lands which either have a combination of agricultural and forest uses or have capability for either use. Forest grazing land represents approximately 93,400 acres within the County.

Agricultural Lands

The agricultural lands of Curry County are defined into three farm districts based on the agricultural practice, soil type, climatic factors, irrigation water availability, and location. Three specific farm districts which recognize the above criteria are defined as Harbor Bench, and Blacklock Cranberry farming area.

Residential Land Use

Most of the land area of Curry County is in forest and open space. Concentrations of housing and population are found mainly along Highway 101. The southern area includes the largest incorporated City of Brookings, as well as the unincorporated community of Harbor, the Harbor Bench Farm District, and rural sections to the north and east. The central area includes the City of Gold Beach, the unincorporated communities of Pistol River, Nesika Beach, Wedderburn and Hunter Creek and the adjoining rural sections. The northern area includes the City of Port Orford, and unincorporated communities including Langlois and Sixes.

Industrial Land Use

The County has approximately 300 acres of industrial zoning. Industrial zoning provides for uses including manufacturing and processing.

Commercial Land Use

Commercially zoned land is primarily located along Highway 101 and are generally in use for tourist facilities (shops, restaurants, hotels, etc.). Curry County has approximately 600 acres of commercially zoned land.

Special Uses

Special uses include marine activity, beaches and dune recreation areas, and public facilities. The County has approximately 11,100 acres zoned for special uses within the County.

SECTION 3:

EXISTING SYSTEM

SECTION 3: EXISTING SYSTEM

3.1 Overall System

The storm drain infrastructure for Curry County is spread out and located in a variety of different settings. County culverts carry drainage from mountain ridges, pasture lands, and housing developments. Some of the culverts drain into tributaries, creeks or the ocean. Major drainage infrastructure for the County is located along Highway 101, downtown areas, private property, and along County maintained roads.

The infrastructure crossing Highway 101 is owned and maintained by the Oregon Department of Transportation (ODOT). The Cities of Brookings, Gold Beach, and Port Orford maintain their own public works projects. A large portion of the drainage infrastructure within County limits is located on private property, and is not maintained by the County. This Master Plan focuses on County maintained culverts and infrastructure only.

Piped Systems

Curry County has an extensive culvert inventory for the conveyance of stormwater runoff throughout the County. The County has over 3,524 culverts comprising of 186,593 lineal feet. Pipe sizes generally vary and are summarized in Table 3.1.1. Typical pipe materials are summarized in Table 3.1.2.

TABLE 3.1.1
EXISTING CULVERT SIZE SUMMARY

Pipe Diameter (inches)	Length (feet)	Length (miles)	Percent of System
10-inches and less	3,450	0.7	1.85%
12	55,278	10.5	29.62%
15[1]	1,340	0.3	0.72%
18[2]	78,113	14.8	41.86%
24[3]	23,197	4.4	12.43%
30	700	0.1	0.38%
36	9,826	1.9	5.27%
48	3,380	0.6	1.81%
60	1,201	0.2	0.64%
72	1,790	0.3	0.96%
96	734	0.1	0.39%
120	450	0.1	0.24%
Unreported	40	0.0	0.02%
Other	7,094	1.3	3.80%
Total	**186,593**	**35.3**	**100%**

[1] Includes pipes with reported diameters of 16-inches
[2] Includes pipes with reported diameters of 17-inches
[3] Includes pipes with reported diameters of 21-inches and 22-inches

TABLE 3.1.2
EXISTING CULVERT MATERIALS SUMMARY

Pipe Material	Length (feet)	Length (miles)	Percent of System
Aluminized Steel (AS)	9600	1.8	5.14%
Corrugated Aluminum (CA)	13,571	2.6	7.27%
Corrugated Steel (CS)	49,452	9.4	26.50%
Cast Iron Pipe (O)	140	0.0	0.08%
Wood (O)	57	0.0	0.03%
Steel Sleeve (O)	310	0.1	0.17%
Precast Concrete (PC)	13,665	2.6	7.32%
Plastic* (PE)	99,252	18.8	53.19%
Unreported	546	0.1	0.29%
Total	**186593**	**35.3**	**100%**

*Includes slip lined pipes.

Open Channels

A significant portion of the County's stormwater conveyance system consists of natural and constructed open channels. These natural and constructed open channels are significant in terms of entire length and capacity within the County. The County does not keep inventory or rate open channels, and the effort to survey and model these would be extensive. Open channels were not evaluated in this Master Plan. The County did not specifically report any significant issues with capacity of open channels within their system; aside from the difficulty to maintain them due to stringent environmental regulations.

3.2 Existing County Culvert Inventory

Culvert Inventory

The County created and manages an extensive Geographic Information System (GIS) mapping database of all the culverts maintained under County jurisdiction. The database provides a mapped culvert location, installation date, material, length, diameter, inspection comments, orientation and condition rating.

Appendix XXX provides a list of all culverts identified and maintained by County Staff. A summary of the information utilized by the County for examination and condition rating of the culverts is provided hereafter.

Road Number, Name, and Milepost (MP)

The roads are categorized into three separate sections. The roads in northern Curry County are numbered from 106 to 280, Central Curry County is numbered from 375 to 695, and southern Curry County is numbered from 703 to 897. Mileposts (Mile Point or MP) provide the location of the culvert along the roadway.

Placement

Placement describes the location of the culvert relative to the roadway. Left and right indicate the left or right side of the roadway in the direction of ascending mileposts. Placement codes are given in Table 3.2.1.

TABLE 3.2.1
CULVERT PLACEMENT

Code	Description
LD	Left Ditch
RD	Right Ditch
CC	Cross Culvert
LUD	Left Underdrain
RUD	Right Underdrain
UD	Underdrain

Material

The material of each pipe is labeled with one of the codes in Table 3.2.2.

TABLE 3.2.2
CULVERT MATERIAL

Code	Description
AS	Aluminized Steel
CA	Corrugated Aluminum
CS	Corrugated Steel
O	Other
PC	Precast Concrete
PE	Polyethylene (plastic)
SEW	Sewer Pipe

Culvert Diameter and Length

The Inside Diameter (ID) of the culvert is provided in inches and is indicated for each pipe. The majority of County culverts are round in shape, but other shapes are utilized depending on need. Other shapes of culverts include flat-bottomed, elliptical, arch, pear-shaped, and box constructions, with single or multiple barrels. Other shapes are typically considered where vertical clearance is limited or for fish culverts applications.

The approximate length of each culvert (end to end) is provided in feet.

Culvert Condition Ratings

Curry County periodically, inspects and rates all of the County maintained culverts. The condition of the 186,593 lineal feet of culverts varies, with those constructed of concrete or aluminized steel in better condition than corrugated steel. The most common issue with corrugated steel culverts includes rusted or

failed culvert bottoms due to abrasion, corrosion and joint separation. These occur because of age, usage, and conditions around these pipes. Many culverts are thirty to seventy years old or older therefore nearing the end of their useful life. New culverts that the County has replaced themselves or contracted out are typically constructed of polyethylene or aluminum coated and are in good condition.

The County's culvert ratings were derived by the County over time from various resources. Condition ranges from 1 to 3 with 3 being the best condition. The County rates their culverts by physical inspections during maintenance activities. The severity of the defects condition rating definitions for culverts are shown in Tables 3.2.3 and 3.2.4.

TABLE 3.2.3
CULVERT CONDITION RATINGS

Condition	Rating	Definition
Good	3	Like new, little to no deterioration, structurally sound, and functionally adequate. Estimated design life of pipe is more than twenty years.
Fair	2	Some deterioration, structurally sound, and functionally adequate. Estimated design life of pipe is ten to twenty years.
Poor	1	Significant or serious deterioration, functionally inadequate, requires, maintenance or repair. Estimated design life of pipe is less than ten years or has already failed.
Not Rated		Not able to rate.

Overall, most of the culverts in the system are in good condition. Seventy seven percent of the culverts in the system are rated as good condition. The poor and fair condition culverts will be evaluated in this Master Plan.

TABLE 3.2.4
COUNTY CULVERT CONDITION RATINGS

Condition	Quantity	Percent of System
Poor (1)	326	9.15%
Fair (2)	481	13.50%
Good (3)	2,744	77.01%
Not Rated	12	0.34%
Total	**3,563**	**100%**

3.3 Existing Drainage System Deficiencies

A wide variety of deficiencies are noted when the County inspects their culverts. Deficiencies can occur to any drainage system. Each of the deficiencies have the potential to contribute significantly to the problems. Pipes are continuously deteriorating and the state of deterioration is unique to each section of

pipe based on the age of the pipe, soil conditions, and characteristics of flows within the pipe. The type of pipe material used can determine the types of deficiencies that occur. Table 3.3.1 provides a list of materials found within the County.

TABLE 3.3.1
COMMON PIPE MATERIALS

Pipe Material	Galvanized Steel Corrugated	Aluminized Steel Corrugated	Aluminum Alloy Corrugated	Plastic (HDPE/PVC)	Concrete
Cost (Total Installed)	$	$	$$	$$	$$$
Average Service Life (Years)*	50	75+	75+	50 - 100	50 - 100
Ideal Soil pH	5.0 - 8.5	4.5 - 9.0	4.0 - 9.0	All	5.0 - 9.0
Disadvantages Weaknesses	Subject to corrosion and abrasion.	Subject to corrosion and abrasion, but advantage over galvanized steel in lower pH and soft water conditions due to formation of oxide film.	Less strength than other materials. Not for use in clay material.	Bends easily and subject to deflection. Subject to damage at low temperatures and ultraviolet degradation.	Heavy. Subject to cracking and deterioration.

*Service life varies widely depending on many factors include application, condition, and installation practices.

If the pipe cannot be accessed for inspection, television inspection may help identify areas where major line failures have occurred. The majority of these failures may be attributed to the age of the pipe and construction materials, improper pipeline installation, and root intrusion.

A brief summary of common deficiencies that the County identifies in their inspections is provided below.

Common Culvert Deficiencies

Abrasion

Abrasion is evident when the surface of the culvert is worn away by flows and the bed load carried by the flow through the culvert. This is most common in the bottom of the culvert or the invert. Metal culverts will develop perforations and/or metal loss. Concrete culverts will develop aggregate loss. Culverts installed on fairly steep gradients, combined with sites that have a high concentration of potentially abrasive bed loads (i.e. sand, gravel, and rock) are susceptible to damage from abrasive materials.

FIGURE 3.3.1
BOTTOM OF CULVERT RUSTED OUT – OAK FLAT ROAD MP 2.41

Corrosion

Corrosion in culverts is due to chemical content of the soil, effluent, or both. Such corrosion is typically evident by rusting, metal loss, and/or perforations in metal culverts. Spalling of concrete and exposed or rusting reinforcing steel is typically seen in concrete culverts subject to corrosion.

FIGURE 3.3.2
CORRODED PIPE – JERRY'S FLAT ROAD MP 1.955

Cracks

Cracks are typically seen in concrete culverts. Metal and plastic pipe culverts can also exhibit cracks on occasion. Cracks in metal culverts are repaired by welding bar stock material compatible with the host pipe wall across the cracks. Such repaired areas should then be coated or painted with a suitable inert coating material for protection. Concrete cracks may be repaired by spot patching.

FIGURE 3.3.3
CONCRETE CRACK – PONDEROSA ROAD MP 0.016

Deflection

Deflection or shape change typically occurs when there is a decrease in the vertical diameter of the pipe and a corresponding increase in horizontal diameter based upon the load on the pipe. Incorrect backfilling and installation procedures lead to poorly compacted soil, which is responsible for most major pipe deformations. Deflection can cause excessive settlement or sags.

FIGURE 3.3.4
DEFLECTION – COUNTY SHOP ROAD MP 0.171

Dented or Crushed Ends

Traffic or maintenance is the most common cause of dented or crushed pipe ends. Culvert ends get ran over by traffic if exposed in shallow ditches, get buried under vegetation, or debris and are dented or crushed by heavy equipment. Bent or broken culvert ends should be repaired to maximize smooth water flow through the pipe.

FIGURE 3.3.5
CRUSHED END – SILVER BUTTE ROAD MP 0.137

Joints

Misaligned, separated, and ill-fitting joints need to be addressed. Evidence of earth exposure or sink holes is common with separated joints.

FIGURE 3.3.6
SEPARATED JOINT – WINCHUCK RIVER ROAD MP 0.321

Natural Occurrences

Natural occurrences include beaver dams, vegetation build up, tree growth, root intrusion, and flooding can cause surcharging and overflows as well as structural damage to infrastructure and piping.

FIGURE 3.3.7
BEAVER DAM – OLD COAST ROAD MP 0.784

Rock and Sediment Accumulations

Rock and sediment accumulation is a common issue with culverts. Rock or sediment issues indicate not enough slope. More serious problems include major holes in the culvert. Significant opening allowing debris to wash in. Excessive accumulation of rock reduces the free area of flow in a pipe and may lead to surcharging and overflows.

FIGURE 3.3.8
ROCK & SEDIMENT ACCUMULATION – JERRY'S FLAT ROAD MP 8.701

Scouring at Inlet or Outlet

Scouring causes erosion detrimental to drainage systems and infrastructure.

Scouring at the inlet is caused by a steeply graded ditch, poor alignment or location, or a clogged pipe. This can lead to undermining or slope erosion.

When water exits the culvert at the outlet, scouring can erode the land if the slope of the pipe is too steep or the pipe is incorrectly sized. The greater the velocity of flow, the greater the impact erosion in the surrounding area.

FIGURE 3.3.9
SCOURING AT OUTLET – HILLSIDE ACRES MP 0.299

Other Deficiencies

Many other deficiencies are observed during field inspections but are not as numerous as deficiencies previously listed. Other deficiencies include, but are not limited to the following:

- Blockages
- Collapses
- Undermining
- Large or Multiple Areas with Earth Exposure
- Coating Loss
- Poorly Constructed and Misaligned Pipe Seems
- Spot Failures

Structure Deficiencies

Over time structures (i.e., manholes, catch basins, headwalls, and endwalls) may develop cracks, fill up with sediment and/or debris, have loose grout, or have other structural issues. Whenever an improvement is proposed for a storm line or culvert, the structure on either side should be replaced or repaired as part of the project. In some cases, grouting techniques can repair the structure without replacement.

Road Ditching Deficiencies

The purpose of a roadside ditch is to protect the integrity of the road. Roads are designed to drain rain and snowmelt away from the road, toward the lower elevation of the roadside ditch. Once the water reaches the ditch, it can flow along the ditch and eventually away from the roadway, protecting the stability of the road subgrade.

A ditch may respond negatively to the following changes:

- Increased Water Flow
- Blocked Ditch Channels
- Blocked Culverts
- Removed Vegetation
- Increased Sediment Load

3.4 Existing Regional System Mapping

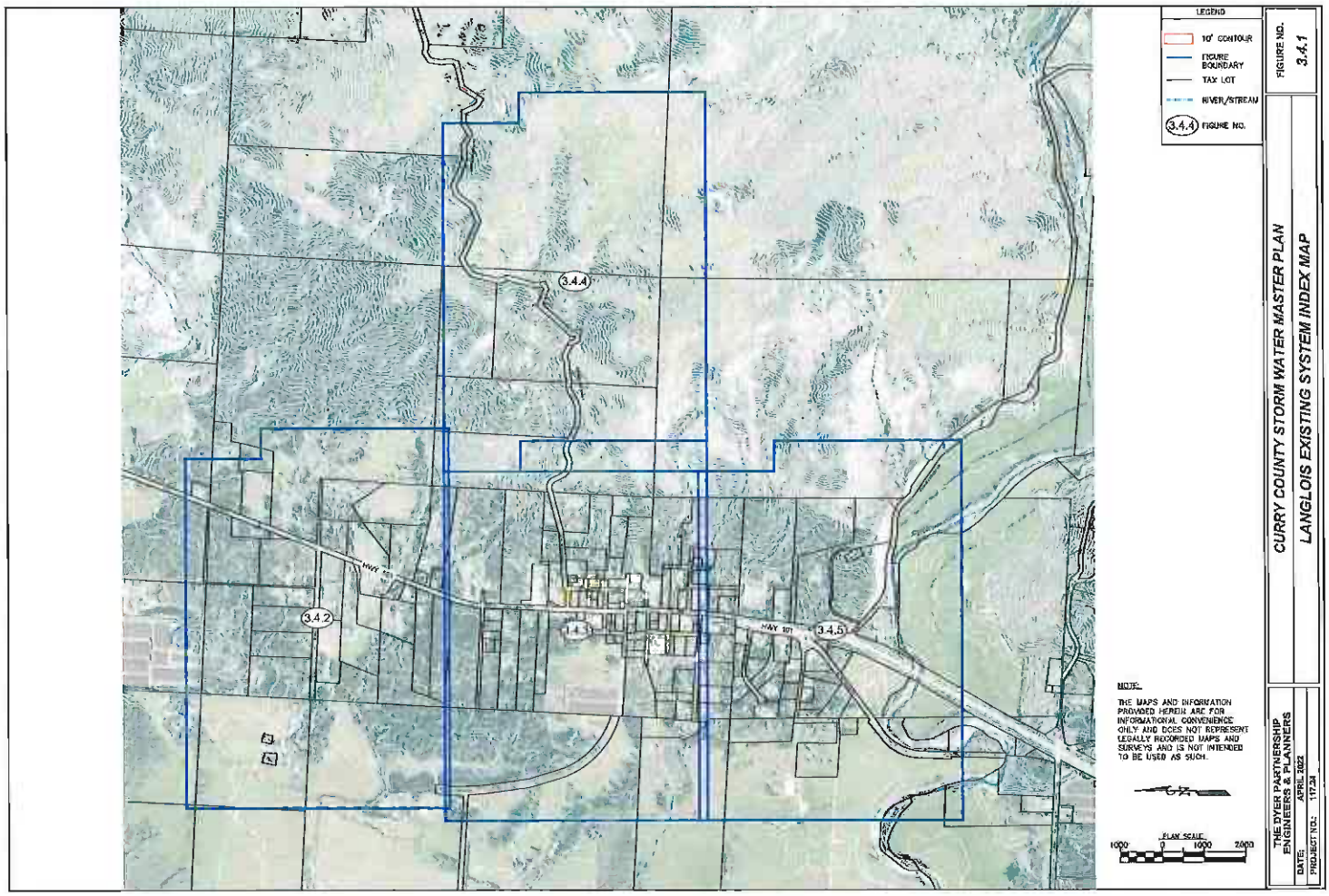
As described in Section 2.2, the Curry County Road Department breaks the County into the North, Central, and South Regions for maintenance purposes. The County requested that each region had the most populated unincorporated community infrastructure mapped and basins modeled. The three communities chosen were Langlois for the northern area, Wedderburn for the central area, and Harbor for the southern area.

Mapping was completed using Curry County GIS as the primary source and supplemented with surveys, ODOT GIS, as-builts, and County input. Lidar was downloaded from the National Oceanic and Atmospheric Administration (NOAA) Coastal Topographic Lidar (10-foot contours) and brought into AutoCAD software. Basins were determined using the 10-foot contours and flow paths were defined by creeks, culverts, drain ways, roadways, and other stormwater features. Figures were created with a map scale of one-inch equals five hundred feet (1" = 500').

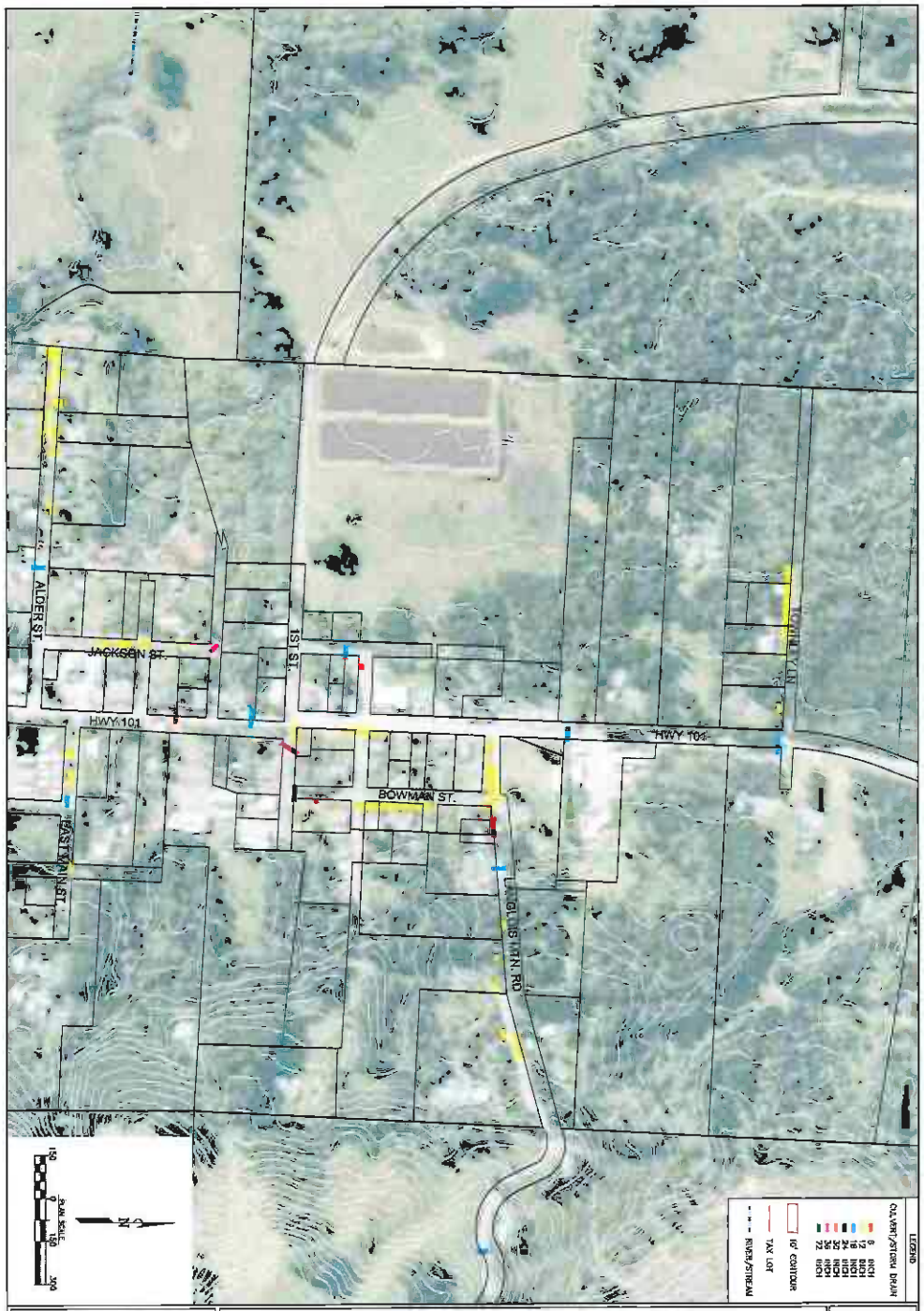
Langlois Existing System Map

The Langlois drainage system mapping includes the area maintained by the County to the north of the City of Gold Beach and south of the City of Bandon, spanning Highway 101. Floras Creek, a tributary to New River, pass through the southern part of the community. Langlois' infrastructure mostly consists of cross and driveway culverts. The County's GIS provided infrastructure mapping in this area.

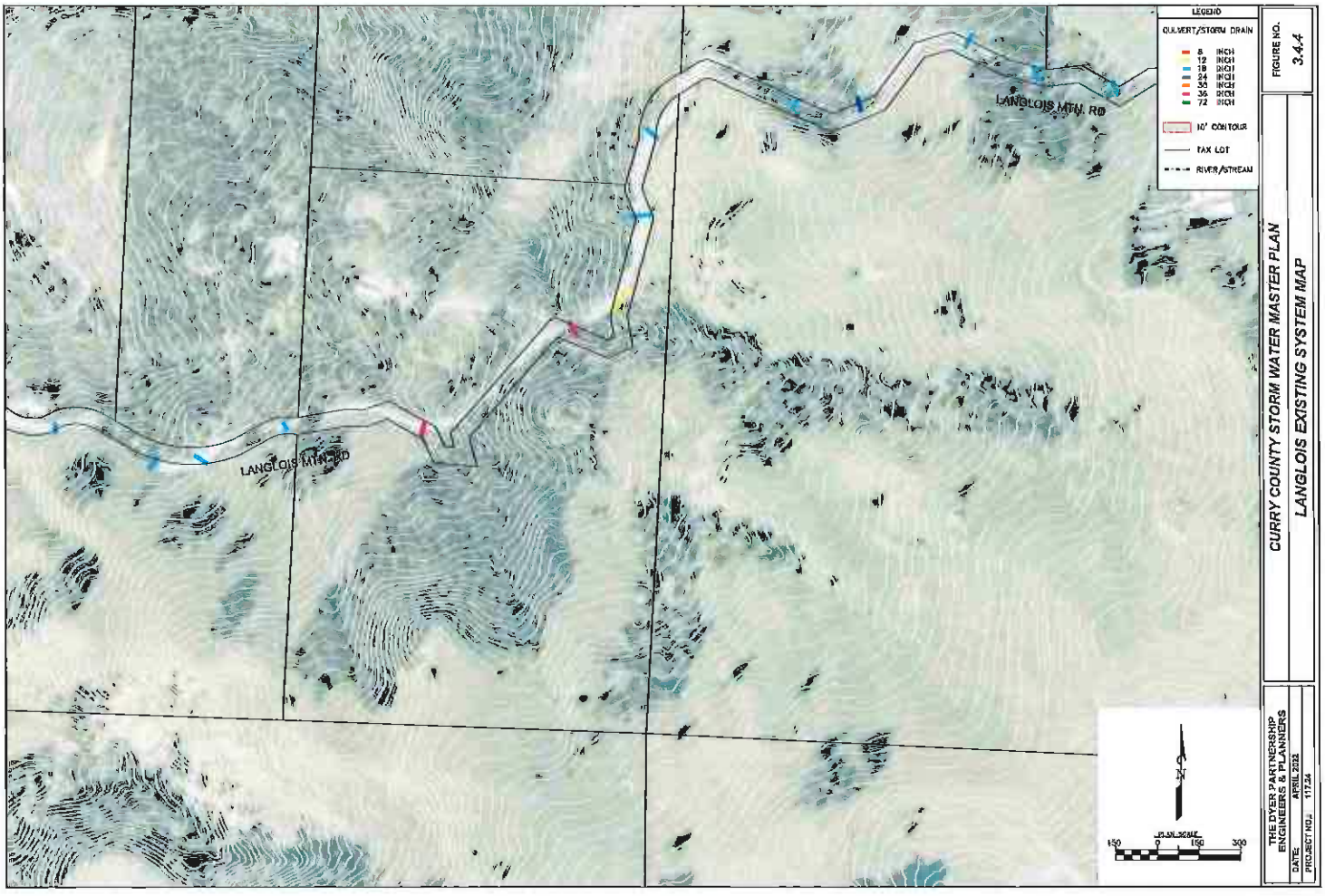
Existing drainage system infrastructure for the Langlois area are shown in Figures 3.4.1 to 3.4.5.


LEGEND
10' CONTOUR
FIGURE BOUNDARY
TAX LOT
RIVER/STREAM
3.4.4 FIGURE NO.
3.4.4
3.4.2
3.4.5
HWY 101
NOTE:
THE MAPS AND INFORMATION PROVIDED HEREIN ARE FOR INFORMATIONAL CONVENIENCE ONLY AND DOES NOT REPRESENT LEGALLY RECORDED MAPS AND SURVEYS AND IS NOT INTENDED TO BE USED AS SUCH.
PLAN SCALE
1000 0 1000 2000
CURRY COUNTY STORM WATER MASTER PLAN
LANGLOIS EXISTING SYSTEM INDEX MAP
FIGURE NO. 3.4.1
THE DYER PARTNERSHIP ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 117.24


LEGEND
CULVERT/STORM DRAIN
6 INCH
12 INCH
18 INCH
24 INCH
30 INCH
36 INCH
72 INCH
10' CONTOUR
TAX LOT
RIVER/STREAM
HWY 101
HWY 101
BONO RD.
N
PLAN SCALE
150 0 150 300
FIGURE NO. 3.4.2
CURRY COUNTY STORM WATER MASTER PLAN
LANGLOIS EXISTING SYSTEM MAP
THE DYER PARTNERSHIP ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 117.24



THE DYER PARTNERSHIP ENGINEERS & PLANNERS DATE: APRIL 2022 PROJECT NO.: 117.24	CURRY COUNTY STORM WATER MASTER PLAN LANGLOIS EXISTING SYSTEM MAP	FIGURE NO. 3.4.3

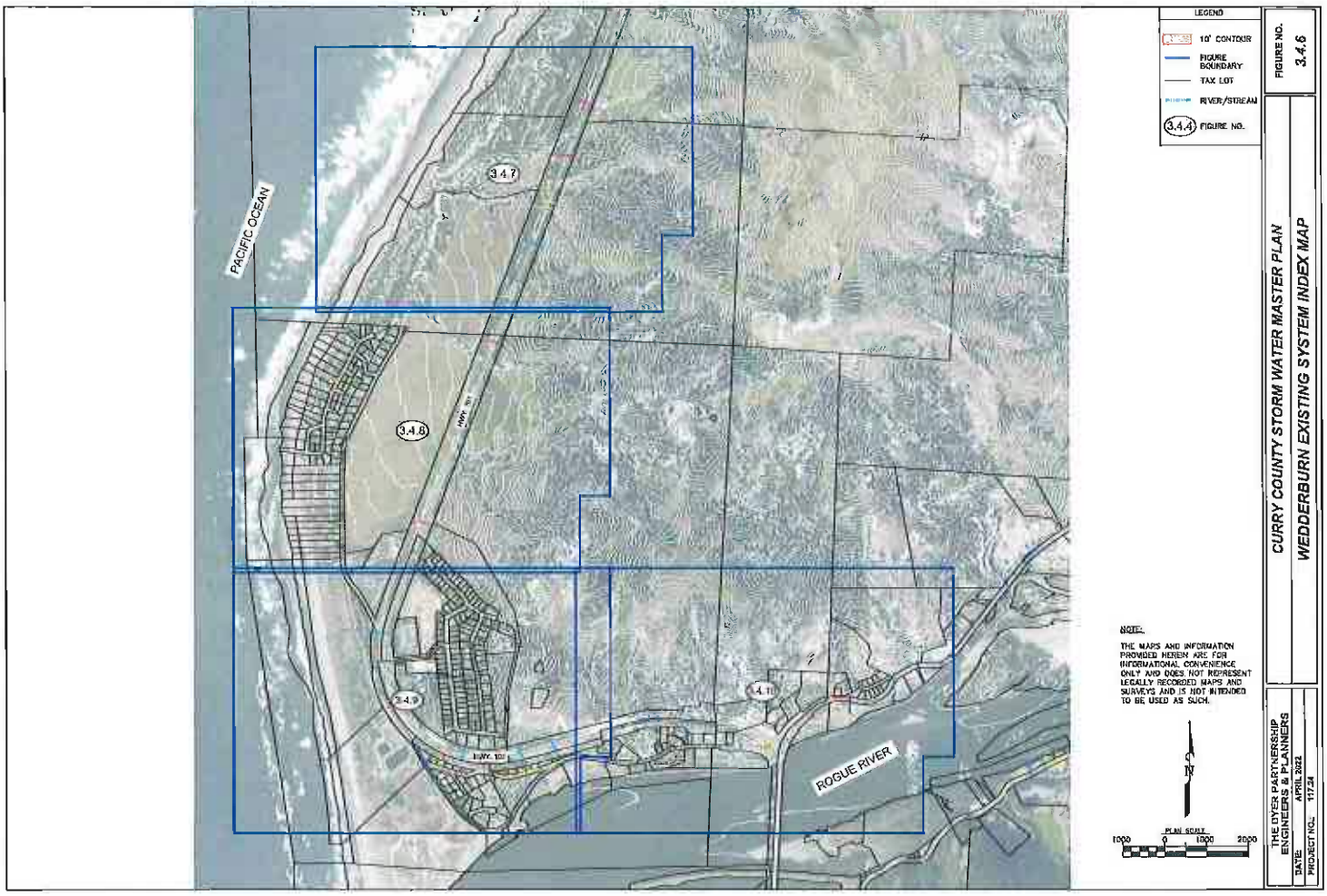

LEGEND
CULVERT/STORM DRAIN
8 INCH
12 INCH
18 INCH
24 INCH
30 INCH
36 INCH
72 INCH
10' CONTOUR
TAX LOT
RIVER/STREAM
LANGLOIS MTN. RD
LANGLOIS MTN. RD
N
GRAPHIC SCALE
150 0 150 300
FIGURE NO.
3.4.4
CURRY COUNTY STORM WATER MASTER PLAN
LANGLOIS EXISTING SYSTEM MAP
THE DYER PARTNERSHIP
ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 1174

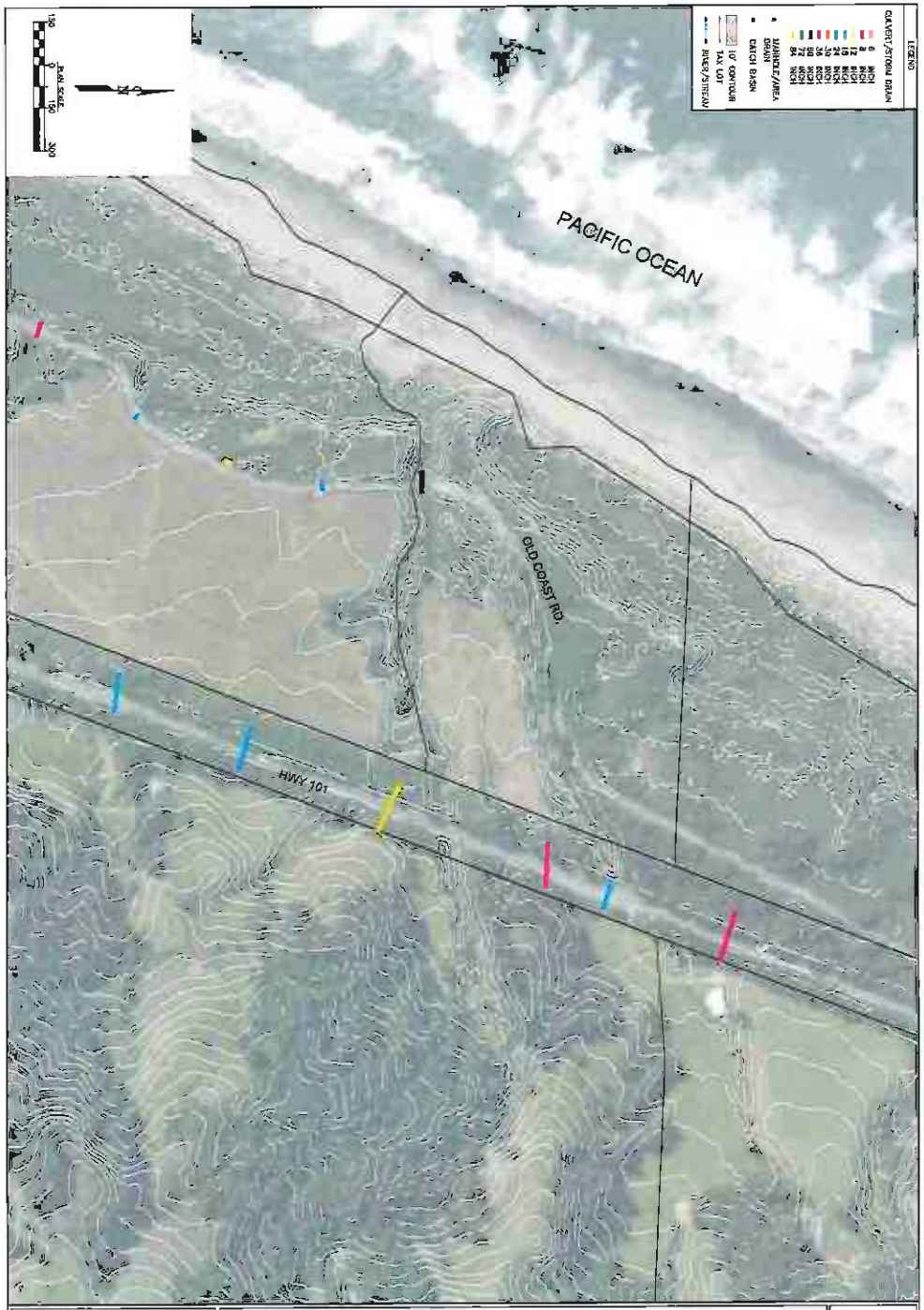

LEGEND
CULVERT/STORM DRAIN
8 INCH
12 INCH
18 INCH
24 INCH
30 INCH
36 INCH
72 INCH
10' CONTOUR
TAX LOT
RIVER/STREAM
WALLACE LN
KERBER ST
HWY 101
ALLEN BOICE DR
FLORAS CREEK
FLORAS CREEK RD
PLAN SCALE
150 0 150 300
THE DYER PARTNERSHIP ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 11124
CURRY COUNTY STORM WATER MASTER PLAN
LANGLOIS EXISTING SYSTEM MAP
FIGURE NO. 3.4.5

Wedderburn Existing System Map

The Wedderburn drainage system mapping includes the area maintained by the County north of, and directly across the mouth of the Rogue River from Gold Beach. The County's GIS system includes information west and south of Highway 101. Little information has been mapped to the north and east of Highway 101, which is known as the Rogue Hills Subdivision. Culverts and drainage facilities were added to the map in these areas. New development in the area includes the Pacifica at Rogue Reef Subdivision, but the storm drainage infrastructure is private and not maintained by the County.

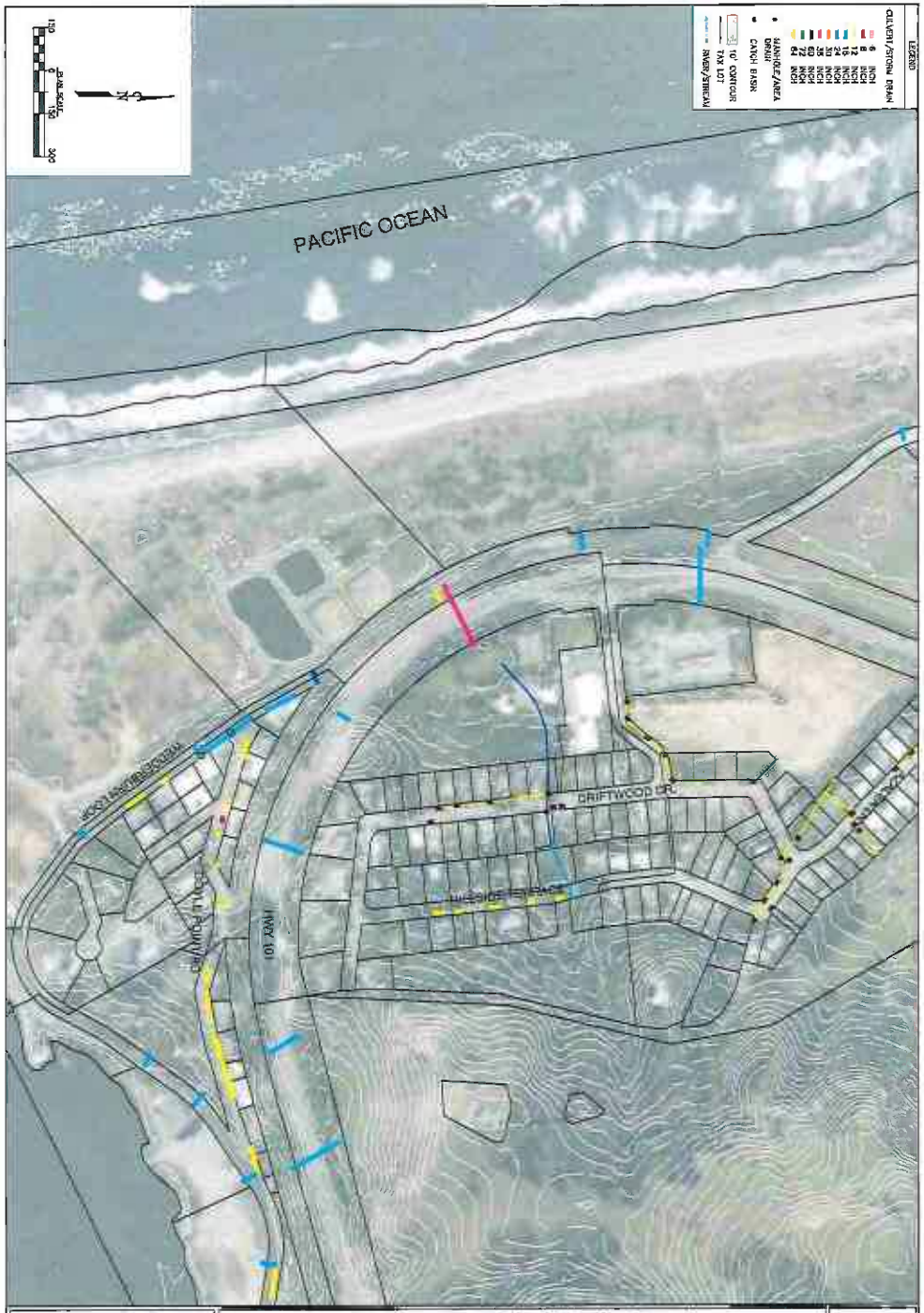
Existing drainage system infrastructure for the Wedderburn area are shown in Figures 3.4.6 to 3.4.10.


LEGEND
10' CONTOUR
FIGURE BOUNDARY
TAX LOT
RIVER/STREAM
3.4.4 FIGURE NO.
PACIFIC OCEAN
3.4.7
3.4.8
3.4.9
3.4.11
HWY. 101
ROGUE RIVER
NOTE:
THE MAPS AND INFORMATION PROVIDED HEREIN ARE FOR INFORMATIONAL CONVENIENCE ONLY AND DOES NOT REPRESENT LEGALLY RECORDED MAPS AND SURVEYS AND IS NOT INTENDED TO BE USED AS SUCH.
PLAN SCALE
1000 0 1000 2000
CURRY COUNTY STORM WATER MASTER PLAN
WEDDERBURN EXISTING SYSTEM INDEX MAP
FIGURE NO. 3.4.6
THE DYER PARTNERSHIP ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 1174

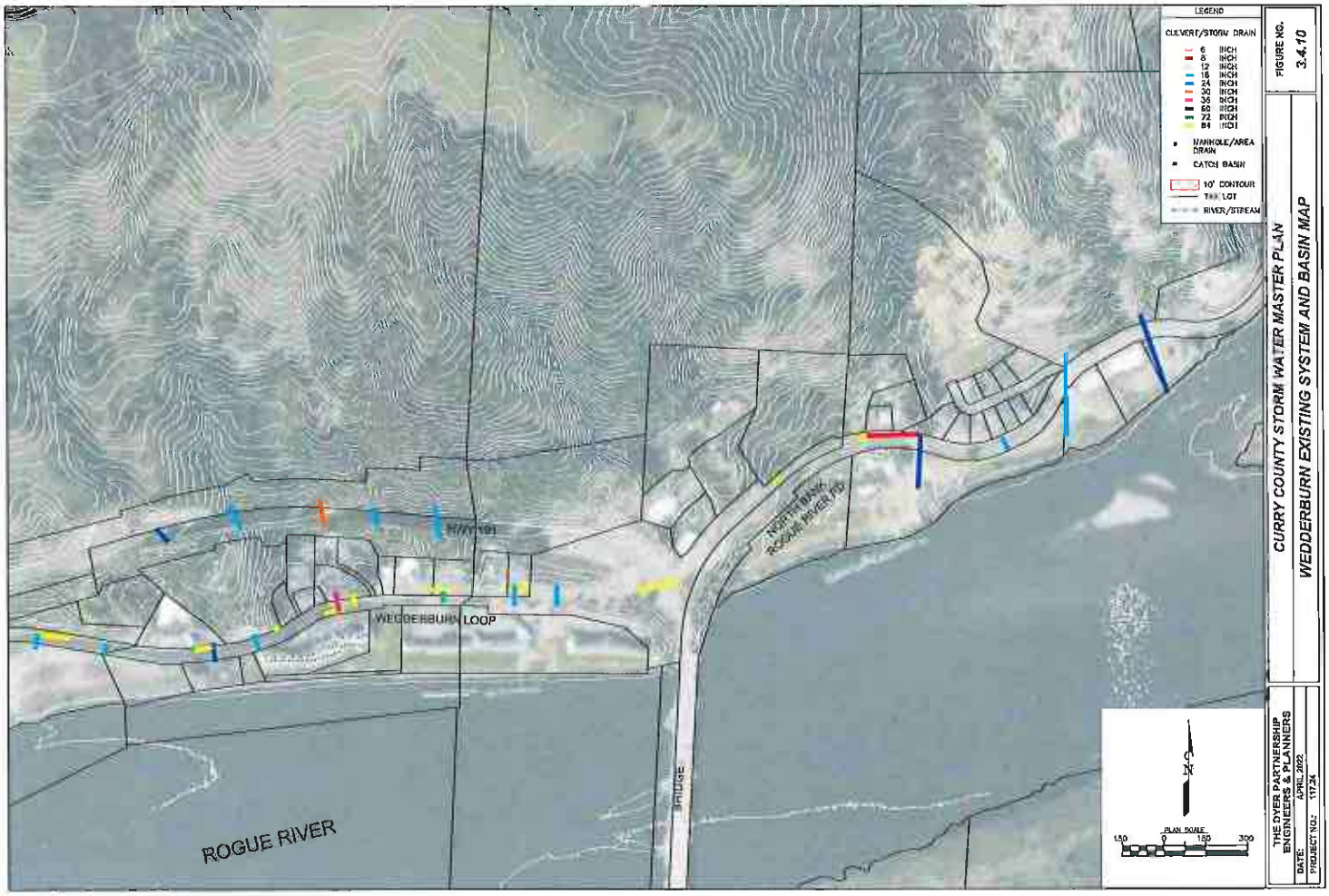


THE DYER PARTNERSHIP ENGINEERS & PLANNERS	CURRY COUNTY STORM WATER MASTER PLAN	FIGURE NO.
DATE: APRIL 2022	WEDDERBURN EXISTING SYSTEM MAP	3.4.7
PROJECT NO.: 117-24		


PACIFIC OCEAN
OLD COAST RD
HWY 101
LEGEND
CULVERT/STORM DRAIN
6 INCH
12 INCH
18 INCH
24 INCH
30 INCH
36 INCH
48 INCH
60 INCH
72 INCH
84 INCH
MANHOLE/AREA DRAIN
CATCH BASIN
10' CONTOUR
TAX LOT
RIVER/STREAM
SCALE
150
0
150
300
N
THE DYER PARTNERSHIP
ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 117.24
CURRY COUNTY STORM WATER MASTER PLAN
WEDDERBURN EXISTING SYSTEM AND BASIN MAP
FIGURE NO.
3.4.8



THE DYER PARTNERSHIP ENGINEERS & PLANNERS	CURRY COUNTY STORM WATER MASTER PLAN	FIGURE NO.
DATE: APRIL 2022	WEDDERBURN EXISTING SYSTEM MAP	3.4.9
PROJECT NO.: 117.24		

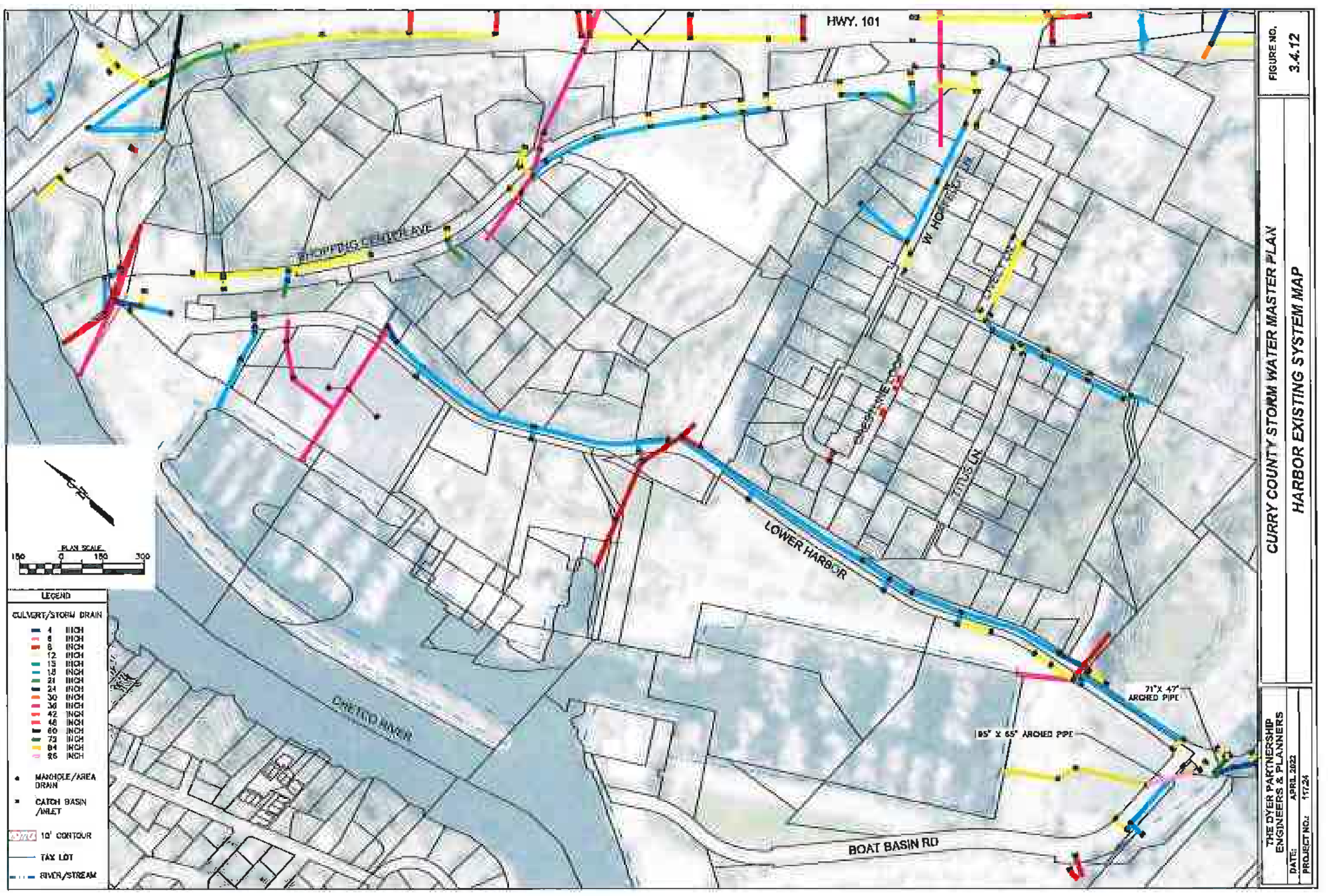

LEGEND
CULVERT/STORM DRAIN
6 INCH
8 INCH
12 INCH
18 INCH
24 INCH
36 INCH
48 INCH
60 INCH
72 INCH
84 INCH
MANHOLE/AREA DRAIN
CATCH BASIN
10' CONTOUR
TAX LOT
RIVER/STREAM
HWY 101
WEDDERBURN LOOP
NORTH BANK ROGUE RIVER RD
BRIDGE
ROGUE RIVER
PLAN SCALE
150 0 150 300
FIGURE NO. 3.4.10
CURRY COUNTY STORM WATER MASTER PLAN
WEDDERBURN EXISTING SYSTEM AND BASIN MAP
THE DYER PARTNERSHIP ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 117.24

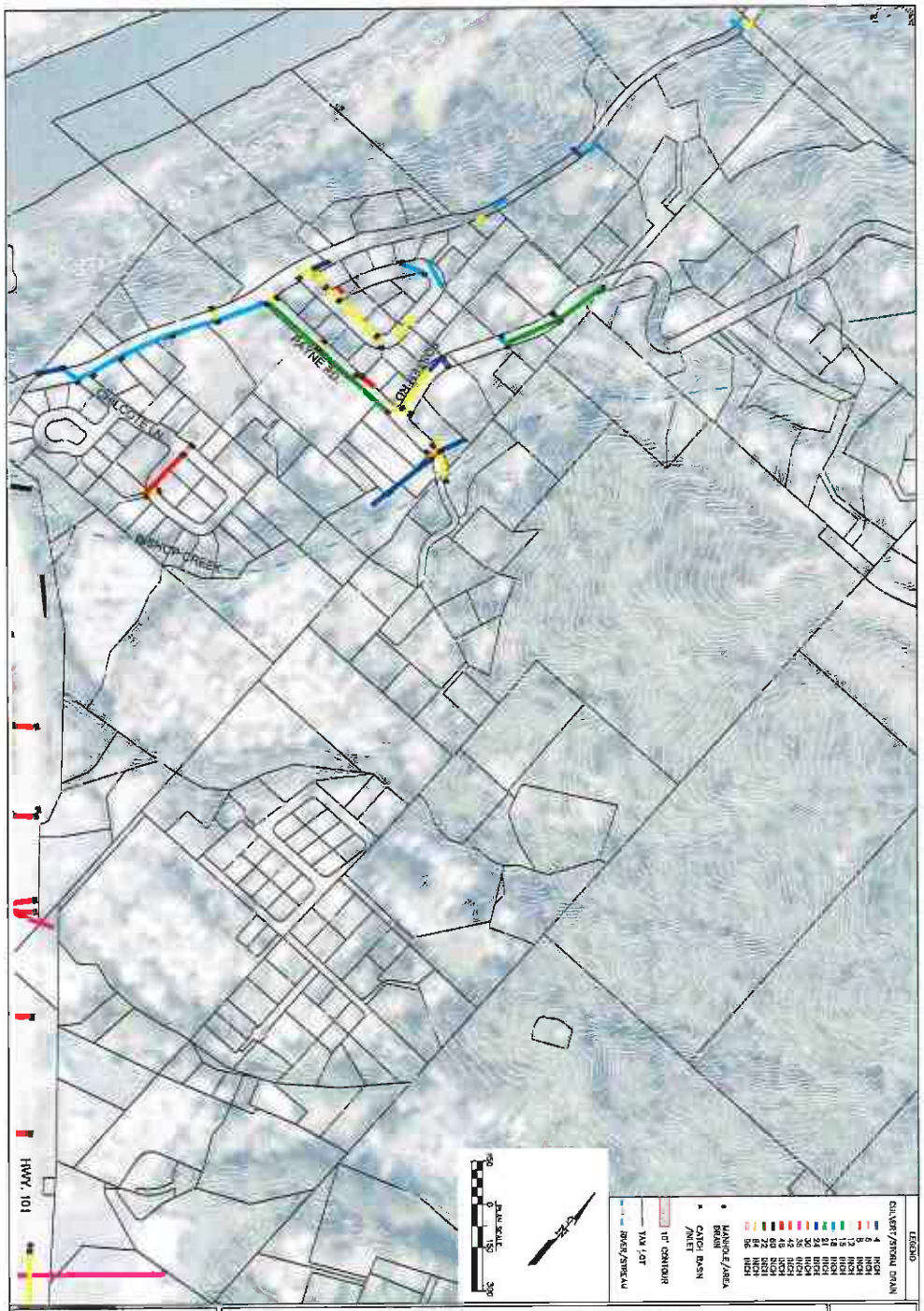
Harbor Existing System Map

The Harbor drainage system mapping includes the area maintained by the County to the south of the City of Brookings and across the Chetco River. The Storm and Surface Water Facilities Plan (HGE Inc., 2007) includes a drainage infrastructure map in the Harbor community that had not been updated since 1985. The County maintains a partial GIS system of the Harbor community infrastructure near the boat harbor. Additional culverts and drainage facilities were added to the drainage map for this Master Plan.

Existing drainage system infrastructure for the Harbor area are shown in Figures 3.4.11 to 3.4.18.


LEGEND
10' CONTOUR
TAX LOT
RIVER/STREAM
FIGURE BOUNDARY
3.4.4 FIGURE NO.
3.4.13
3.4.15
3.4.17
3.4.12
3.4.14
3.4.16
3.4.18
BROOKINGS
PACIFIC OCEAN
NOTE:
THE MAPS AND INFORMATION PROVIDED HEREIN ARE FOR INFORMATIONAL CONVENIENCE ONLY AND DOES NOT REPRESENT LEGALLY RECORDED MAPS AND SURVEYS AND IS NOT INTENDED TO BE USED AS SUCH.
PLAN SCALE
1000 0 1000 2000
FIGURE NO. 3.4.11
CURRY COUNTY STORM WATER MASTER PLAN
HARBOR EXISTING SYSTEM INDEX MAP
THE DYER PARTNERSHIP ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 17124

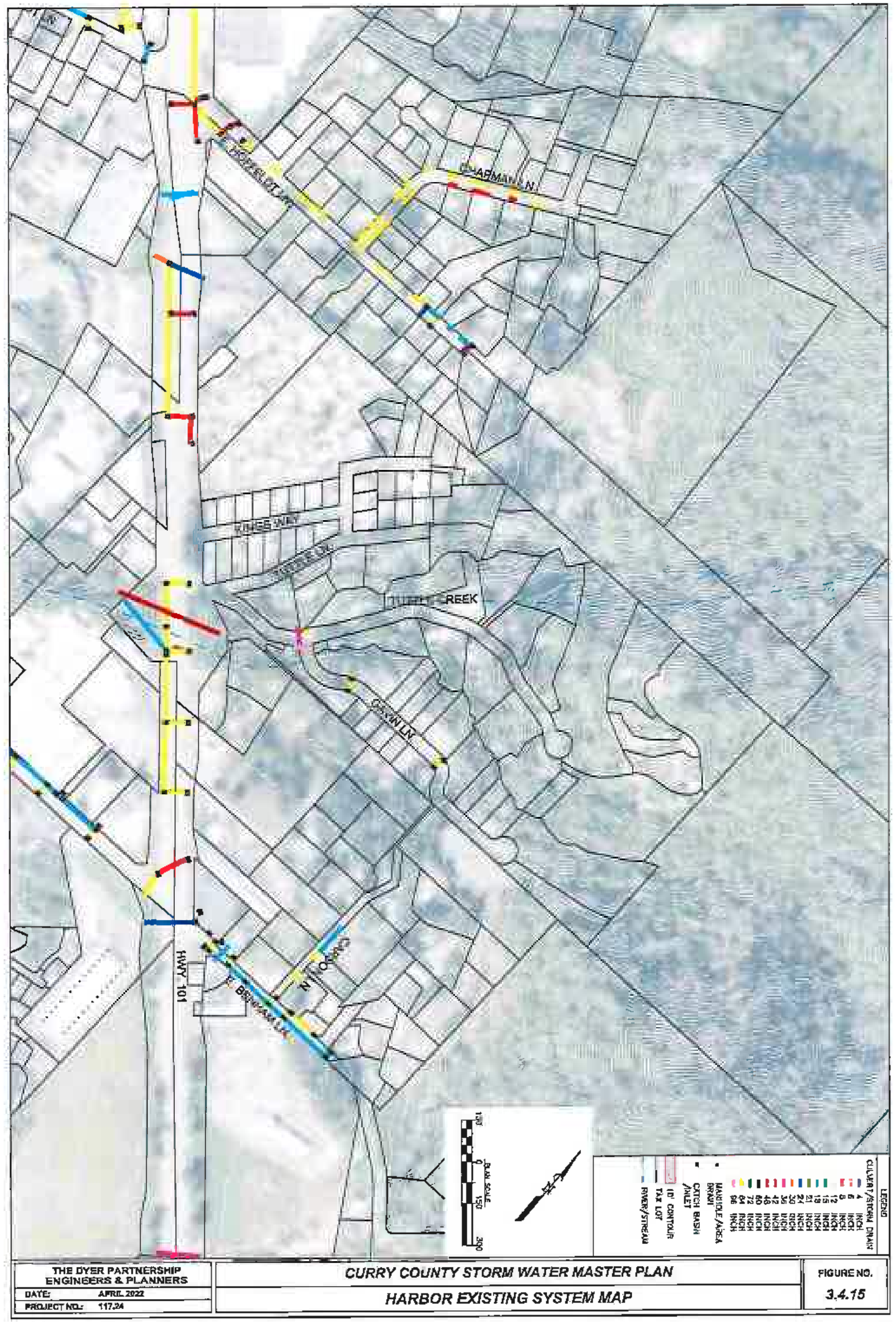

HWY. 101
SHOPPING CENTER AVE
W. HOFFELDT LN
TITUS LN
LOWER HARBOR
CHETCO RIVER
BOAT BASIN RD
71" X 47" ARCHED PIPE
105" X 65" ARCHED PIPE
PLAN SCALE
150 0 150 300
LEGEND
CULVERT/STORM DRAIN
4 INCH
6 INCH
8 INCH
12 INCH
15 INCH
18 INCH
21 INCH
24 INCH
30 INCH
36 INCH
42 INCH
48 INCH
60 INCH
72 INCH
84 INCH
96 INCH
MANHOLE/AREA DRAIN
CATCH BASIN /INLET
10' CONTOUR
TAX LOT
RIVER/STREAM
CURRY COUNTY STORM WATER MASTER PLAN
HARBOR EXISTING SYSTEM MAP
FIGURE NO.
3.4.12
THE DYER PARTNERSHIP ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 117.24



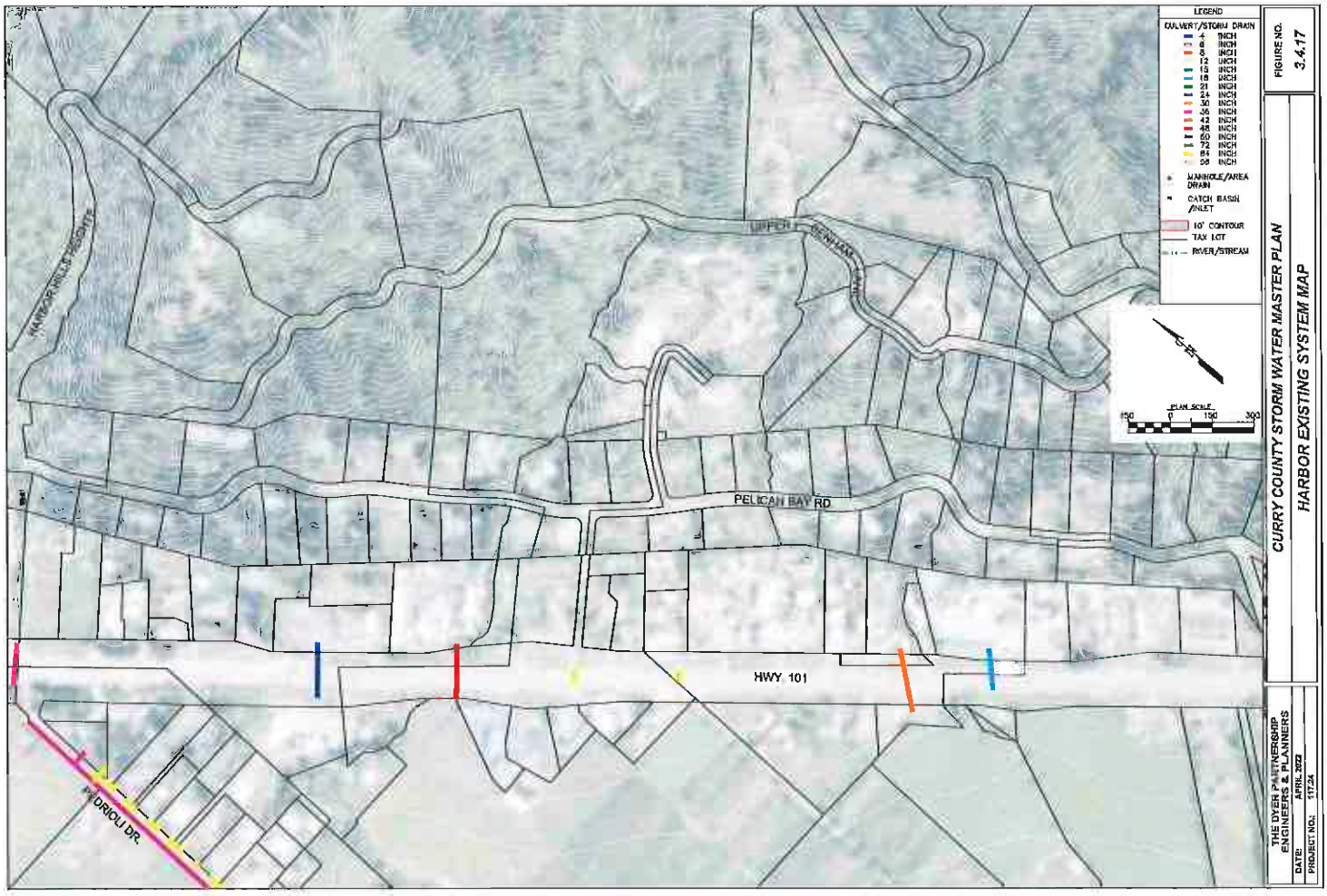
THE DYER PARTNERSHIP ENGINEERS & PLANNERS	CURRY COUNTY STORM WATER MASTER PLAN	FIGURE NO.
DATE: APRIL 2022	HARBOR EXISTING SYSTEM MAP	3.4.13
PROJECT NO.: 117.24		

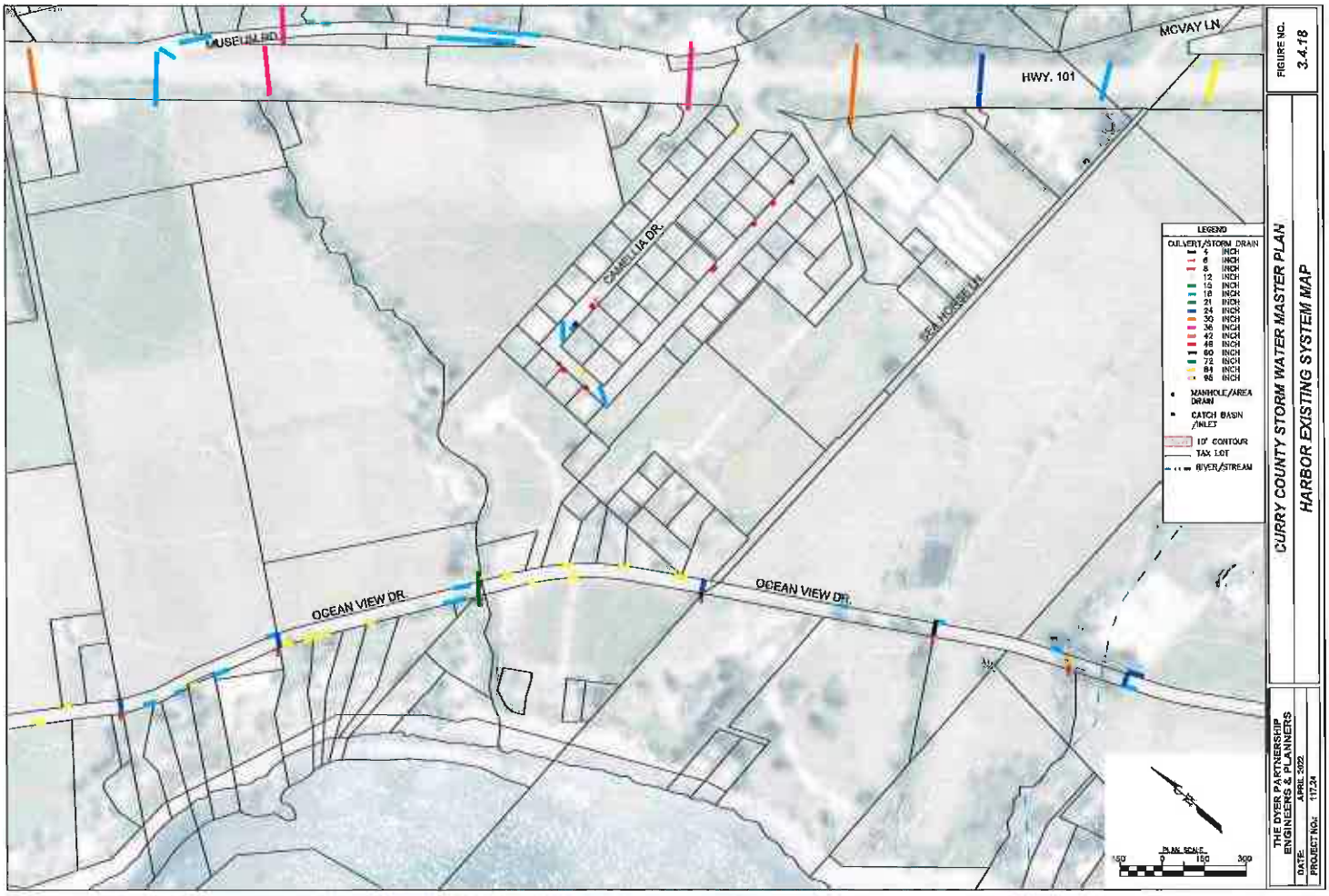
S11


LEGEND
CULVERT/STORM DRAIN
4 INCH
6 INCH
8 INCH
12 INCH
15 INCH
18 INCH
21 INCH
24 INCH
30 INCH
36 INCH
42 INCH
48 INCH
60 INCH
72 INCH
84 INCH
96 INCH
MANHOLE/AREA DRAIN
CATCH BASIN /INLET
10' CONTOUR
TAX LOT
RIVER/STREAM
PLAN SCALE
150 0 150 300
WEYBURNE LN
OCEAN VIEW DR
HOLLY LN
PEDRIOLI DR
CURRY COUNTY STORM WATER MASTER PLAN
HARBOR EXISTING SYSTEM MAP
FIGURE NO.
3.4.14
THE DYER PARTNERSHIP
ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 117.24


HARMAN LN
HOOFELDT LN
KINGS WAY
TUTTLE CREEK
GAVIN LN
CARSON LN
E. BENHAM LN
HWY 101
LEGEND
CULVERT/STORM DRAIN
4 INCH
6 INCH
8 INCH
12 INCH
15 INCH
18 INCH
21 INCH
24 INCH
30 INCH
36 INCH
42 INCH
48 INCH
60 INCH
72 INCH
84 INCH
96 INCH
MANHOLE/AREA DRAIN
CATCH BASIN /INLET
10' CONTOUR
TAX LOT
RIVER/STREAM
PLAN SCALE
150 0 150 300
THE DYER PARTNERSHIP ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 117.24
CURRY COUNTY STORM WATER MASTER PLAN
HARBOR EXISTING SYSTEM MAP
FIGURE NO.
3.4.15


CURRY COUNTY STORM WATER MASTER PLAN
HARBOR EXISTING SYSTEM MAP
FIGURE NO.
3.4.16
THE DYER PARTNERSHIP
ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 117.24
LEGEND
CULVERT/STORM DRAIN
4 INCH
6 INCH
8 INCH
12 INCH
15 INCH
18 INCH
21 INCH
24 INCH
30 INCH
36 INCH
42 INCH
48 INCH
60 INCH
72 INCH
84 INCH
96 INCH
MANHOLE/AREA DRAIN
CATCH BASIN /INLET
10' CONTOUR
TAX LOT
RIVER/STREAM
PLAN SCALE
150
0
150
300
OCEAN VIEW DR.
OCEANVIEW
52" X 60" ARCHED PIPE


LEGEND
CULVERT/STORM DRAIN
4 INCH
6 INCH
8 INCH
12 INCH
15 INCH
18 INCH
21 INCH
24 INCH
30 INCH
36 INCH
42 INCH
48 INCH
60 INCH
72 INCH
84 INCH
96 INCH
MANHOLE/AREA DRAIN
CATCH BASIN /INLET
10' CONTOUR
TAX LOT
RIVER/STREAM
PLAN SCALE
150 0 150 300
HARBOR HILLS HEIGHTS
UPPER PELICAN BAY
PELICAN BAY RD
HWY 101
DRIOLI DR.
THE DYER PARTNERSHIP ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 117.24
CURRY COUNTY STORM WATER MASTER PLAN
HARBOR EXISTING SYSTEM MAP
FIGURE NO. 3.4.17


MUSELUM RD.
HWY. 101
MCVAY LN
CAMELLIA DR.
SEA HORSE LN.
OCEAN VIEW DR.
OCEAN VIEW DR.
LEGEND
CULVERT/STORM DRAIN
4 INCH
6 INCH
8 INCH
12 INCH
15 INCH
18 INCH
21 INCH
24 INCH
30 INCH
36 INCH
42 INCH
48 INCH
60 INCH
72 INCH
84 INCH
96 INCH
MANHOLE/AREA DRAIN
CATCH BASIN /INLET
10' CONTOUR
TAX LOT
RIVER/STREAM
PLAN SCALE
150 0 150 300
CURRY COUNTY STORM WATER MASTER PLAN
HARBOR EXISTING SYSTEM MAP
FIGURE NO.
3.4.18
THE DYER PARTNERSHIP ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 117.24

3.5 Problem Areas

Problem areas start at the beginning of the wet season, which is typically the end of October or early December and progress into the winter months. A combination of winter storm weather with leaves or pine needles covering stormwater infrastructure or sediment and debris build up in pipes limits hydraulic capacity and leads to back-ups or flooding. Minor issues turn into major issues overtime and would be catastrophic without County Staff maintenance regularly maintaining ditches and culverts within County right-of-way.

County Identified Problem Areas

County Staff has identified several maintenance related problem issues. The County typically reacts to and addresses these problems areas in a timely manner to avoid the problem getting larger. However, many drainage ways are a located on private property or are difficult to maintain due to environmental regulations. A list of specific problem areas is identified and described hereafter.

Old Coast Road MP 0.169

The outlet of the pipe and drainage contains silts in with the sand. County will need a maintenance permit to remove willows and provide a drainage ditch to the ocean. Maintenance permitting is required.

Old Coast Road MP 0.314

The outlet of pipe and drainage also contain silts in with the sand. County will need a maintenance permit to remove willows and provide a drainage ditch to the ocean. Maintenance permitting is required.

FIGURE 3.5.1
OVERGROWN DRAINAGE PATH TO OCEAN – OLD COAST ROAD MP 0.314

Wedderburn Loop MP 0.984

County needs easement to maintain outlet ditch along Wedderburn Sanitary District Facility.

97940 West Benham Driveway (Lucas Mobile Home Park)

Driveway access floods on Wenbourne Ln. and County needs to install ditch swale with ditch inlet.

Curry County Bridges

Many bridges within the County have sediment issues and cannot be maintained by the County due to strict environmental regulations. Bridges with sediment issues include Lobster Creek Bridge, Upper Crook Creek Bridge, Myrtle Creek Bridge, and Don Cameron Bridge.

FIGURE 3.5.2
SEDIMENT UNDER BRIDGE - UPPER CROOK CREEK BRIDGE

Infrastructure capacity and condition issues are identified in Sections 6 and 7.

Public Identified Problem Areas

Curry County encompasses a large area and County Staff relies on the public input for information on improvements to be completed. A questionnaire was published on the Curry County Road Department's website, through radio announcements and advertisements in local papers. The media was used to draw attention to the questionnaire. A copy of the questionnaire is located in Appendix XXX.

Table 3.5.1 identifies the Curry County roads and stormwater drainage issues by the mile marker, nearest intersection and/or landmark locations. Stormwater drainage issues include, but are not limited to: roadway flooding, sediment in roadway, culverts not draining, broken culverts, sinkhole, fish passage, and erosion. Specific problem areas identified by the public are described as hereafter.

TABLE 3.5.1
PUBLIC IDENTIFIED PROBLEM AREAS

Road	Location	Stormwater Drainage Issues
Hillside Terrace	Rogue Hills Subdivision	Swales not adequate.
Hillside Terrace	30346 Hillside Terrace	Roadway flooding down street into my driveway and flooding my side and back yards. Really appreciate the new blacktop but it seemed to create a leveling issue that channels more water on my west side of hillside terrace.
Hillside Terrace	Bayview Drive Intersection	Broken pavement and potholes.
Cedar Valley Road	34046 Cedar Valley Rd. (Lat.42.53453, Long.124.36958)	Culvert inhibiting fish passage. The spill is too much of a drop. Too much of a drop from culvert to waterway preventing fry fish migration during high water events. Culverts needs to be lowered. *See ODFW John Weber
Cedar Valley Road	33792 Cedar Valley. Rd. intersection from logging road Squaw Main Line. (Lat. 42.52813, Long. 124.36769)	Culvert failing, forms velocity barrier preventing fish migration. Passage. ODFW John Weber, CAF Joe Janowicz
Hillside Terrace	Hillside Terrace and Bayview Drive	Water flows indiscriminately off of Hillside Terrace when it rains due to lack of proper drainage resulting in soil erosion over time and water where you may not want it. There is a need for improved drainage, curbs and gutters on Hillside Terrace.
Brookside and North Brookside Drive	Cape Ferrelo Rd.	Culverts are all overgrown with vegetation, during heavy rains water flows down Brookside because it cannot flow into culverts. There is also a private driveway very steep that allows rocks, mud, and water to flow across Brookside Dr. There used to be a machine the County Road Crew used to clean and reshape the culverts. This has not been done or used in many years.
Cedar Valley Road	33381 Cedar Valley Rd. (Lat.42.51696, Long.124.36560)	Sinkhole. Appears culvert connection to private culvert caused a sinkhole.
Cedar Valley Road	34400 Cedar Valley Rd. (Lat.42.54500, Long. 124.37409) cross from golf course	Fish migration. Velocity barrier, culvert needs replacement needs larger diameter flow velocity prevents fish passage. ODFW John Weber, CAF Joe Janowicz
Hunter Creek Road	Large pullout at road to the Con Creek Quarry (Lat.42.35712, Long. -124.38013) Wetland area (Lat 42.35712, Long-124.38013)	Culvert clogs preventing fish passage from creek to wetland area. Preventing off channel rearing. ODFW John Weber, CAF Joe Janowicz
Hunter Creek Road	Culvert at York creek @ utility pole VZ577977 (Latitude 42.36742, Lon. -124.40169)	Fish passage the culvert needs to be lowered so fish can get up the pipe to the creek.

Road	Location	Stormwater Drainage Issues
Hunter Creek Road	The waterfall culvert 500 ft west of bridge across hunter creek at 27740 Hunter Creek Rd (Lat. 42.36051, Long. 124.39054) on hillside	Culvert clogs and floods mud and gravel on to Hunter Creek Rd.
West Camellia Drive Loop	West side Hwy 101 and Camellia Drive Loop	Bottom of Camellia Loop is full of sediment and culverts almost covered in sediment are not allowing water to reach large main culvert.
Hunter Creek Rd	Culvert at fire hydrant at 28111 Hunter Creek Rd has a year-round creek re-routed into it.	Needs new culvert going straight across hunter creek Rd instead of doing a 90 degree turn. Existing routing of culvert system can't handle the high flow. Comes down the hill an does a 90 degree turn to a lower culvert. On heavy rain the culvert at the hydrant because of its small size. Floods on to roadway and on to private land below. A new culvert at hydrant going straight across hunter creek road would fix.
Cedar Valley Rd	Right at 5-mile marker (Lat. 42.50644, Long. 124.3664)	Culvert has too much elevation drop to creek, spill drop is too far impeding juvenile fish passage and migration. Observed fish in pool unable to migrate or pass on this date 3/31/22. Joe Janowicz for Curry Anadromous Fishermen. ODFW
Cedar Valley Rd	Culvert at 33166 Cedar Valley Rd. (Lat. 42.51138, Long. 124.3665)	Culvert has too high a spillway drops preventing juvenile fish passage, migration
Cedar Valley Rd	Culvert at 33321 Cedar Valley Rd. (Lat. 42.51556, Long. 124.3662)	Culvert is too steep, water runs to fast, water velocity barrier to fish migration, passage.
Sixes River Rd. 93495	Mile marker 0.7. Just west of utility pole number 5d7, 93495 Sixes River Rd. (Lat. 42.81466, Long. 124.4716)	Too much drop from culvert spillway to water, restricts prevents juvenile salmonid fish passage, migration. Joe j. For Curry Anadromous fishermen. John @ ODFW.
Sixes River Rd	Mile marker approx. 7.5, or culvert at (Lat. 42.81335, Long. -124.3755)	Spillway from culvert is too high. Too much drop inhibits salmonid fish migration or passage. Joe Janowicz For Curry Anadromous fishermen
Sixes River Rd	8.2 miles up Sixes River Rd. (Lat. 42.81603, Long. 124.3609)	Too much drop at spillway drop at culvert. Restricting, preventing fish passage, migration
Elk River Road	Culvert at power pole number 321. (Latitude 42.76417, Long -124.4433	Culvert spillway drop is too high to allow proper juvenile salmonid fish migration or passage. Joe J. For Curry Anadromous Fishermen.
Cedar Valley Rd	Culvert at 33139 Cedar Valley Rd. (Lat. 42.50951, Long. 124.3664) culvert has too severe a drop at spill, hindering, impeding preventing fish migration, passage.	Culvert severe drop at spill, preventing fish passage. Joe J. For Curry Anadromous Fishermen.

Additional information will be added after the questionnaire has been completed by the public.

SECTION 4:

COST BASIS & PLANNING CRITERIA

SECTION 4: COST BASIS & PLANNING CRITERIA

4.1 Cost Estimating

The cost estimates presented in this Storm Drain Master Plan will typically include four components: construction cost, engineering cost, contingency, and legal and administrative costs. Each of the cost components are discussed in this section. The cost estimates presented herein are preliminary and are based on the level and detail of planning presented in this Storm Drain Master Plan. As projects proceed and as site specific information becomes available, the estimates may require updating. Storm drainage improvements that are recommended in the County are detailed in Section 7 along with associated costs.

The cost estimates within the Storm Drain Master Plan were developed based on the American Association of Cost Engineering International (AACEI) criteria for a Class 4 budget estimate. This preliminary estimate class is used for conceptual screening and assumes project definition maturity level below fifteen percent. The expected accuracy range is negative fifteen to negative thirty percent on the low end and positive twenty to positive fifty percent on the high end, meaning the actual cost should fall in the range of thirty percent below the estimate to fifty percent above the estimate.

The cost estimates are consistent with the definition of Oregon Administrative Rules OAR 660-011-0005 (2) and OAR 660-011-035 which define rough cost estimates for facility plan development as approximate costs expressed in current year dollars. These estimates are intended to provide an estimate of the fiscal requirements to support the land use designation and for use by the facility provider in reviewing the provider's existing funding mechanisms. They are intended to be used as guidance in establishing funding requirements based on information available at the time of the estimate. The cost estimates should be reevaluated periodically to account for changes in inflation. It is important to note that routine maintenance is omitted from the costs.

Construction Costs

The estimated construction costs in this Plan are based on actual construction bidding results from similar work, published cost guides, and other construction cost experience. Estimates will be based on preliminary layouts of the proposed improvements.

Future changes in the cost of labor, equipment, and materials may justify comparable changes in the cost estimates presented herein. For this reason, common engineering practices usually tie the cost estimates to a particular index, which varies in proportion to long-term changes in the national economy. The Engineering News Record (ENR) construction cost index is most commonly used. This index is based on the value of 100 for the year 2019.

Future changes in the cost of labor, equipment, and materials may justify comparable changes in the cost estimates presented herein. For this reason, common engineering practices usually tie the cost estimates to a particular index that varies in proportion to long-term changes in the national economy. The Engineering News Record (ENR) Construction Cost Index is most commonly used. This index is based on the value of 100 for the year 1913. Average yearly values for the past ten years are summarized in Table 4.1.1.

TABLE 4.1.1
ENR CONSTRUCTION COST INDEX – 2011 TO 2021*

Year	Index	% Change
2011	9,070	3.08%
2012	9,308	2.62%
2013	9,547	2.57%

Year	Index	% Change
2014	9,806	2.71%
2015	10,054	2.53%
2016	10,338	2.82%
2017	10,737	3.86%
2018	11,061	3.02%
2019	11,290	2.07%
2020	11,439	1.32%
2021	12,237	6.98%
Average Annual		3.05%

*Index based on July of each year

Construction cost estimates presented in this Storm Drain Master Plan are projected at a minimum increase of three percent per year. Future annual ENR Indexes are used to calculate the construction cost of projects for their construction year based on the annual growth in the ENR Index.

Please note that fiscal year 2020 to 2021 inflation rates have been reported to be increasing at a rate of approximately 24.3 percent from the months of May 2020 to May 2021, based on Associated General Contractors of America non-residential construction projects. The current inflation period is very difficult to predict.

It is also recommended in the event the road projects are being performed in the same location, planning priority should be given to combining these storm projects with the projects at hand. By proceeding in this manner, the County will save money by eliminating repetitive mobilization, demolition, and road patching in the same locations.

Engineering Costs

The cost of engineering services for major projects typically includes special investigations, a predesign report, surveying, foundation exploration, preparation of contract drawings and specifications, bidding services, construction management, construction observation, construction staking, start-up services, and the preparation of operation and maintenance manuals. Depending on the size and type of project, engineering costs may range from fifteen to twenty five percent of the contract cost when all of the above services are provided. Typically, in this Plan, engineering costs are established at twenty percent of construction costs. The lower percentage applies to large projects without complicated mechanical systems. The higher percentage applies to small, complicated projects. Additional engineering services may be required for specialized projects. This may include geotechnical evaluations, structural evaluations, and other specialized consulting activities.

Contingencies

A planning level contingency factor equal to approximately twenty percent of the estimated construction cost has been incorporated into the cost estimates. In recognition that the cost estimates presented are based on conceptual planning, allowances must be made for variations in final quantities, bidding market conditions, adverse construction conditions, unanticipated specialized investigation and studies, and other difficulties which cannot be foreseen at this time but may tend to increase final costs.

Legal and Administrative Cost

An allowance of three percent of construction costs has been added for legal and administrative services. This allowance is intended to include internal project planning and budgeting, grant administration, liaison, interest on interim loan financing, legal services, review fees, legal advertising, and other related expenses associated with the project.

Additional Cost Factors

Additional cost factors include geotechnical studies, environment permits, archeological review, and easements.

TABLE 4.1.2
ASSUMPTIONS FOR ADDITIONAL COST FACTORS

Type	Project Construction Cost	Estimated Cost to Project
Geotechnical Engineering	Over $500,000	$25,000
	$100,000 to $500,000	$20,000
	Under $100,00	$15,000
Environmental Permitting	Over $500,000	$20,000
	$100,000 to $500,000	$15,000
	Under $100,00	$10,000
Archeological Reviews	Over $500,000	$25,000
	$100,000 to $500,000	$20,000
	Under $100,000	$15,000
Easements	Over $500,000	$15,000
	$100,000 to $500,000	$10,000
	Under $100,000	$5,000

Geotechnical Engineering

Geotechnical engineering is important to determine stability, including soil density, water flow patterns, and to obtain professional planning and construction recommendations. Without this critical information, infrastructure can settle, slide, and eventually collapse as the earth below shifts. Projects that may require geotechnical engineering were provided with an estimated cost. Geotechnical engineering costs would impact other projects with further review of the project during preliminary design.

Environmental Permits

Permitting is important because many activities associated with constructing and maintaining the storm drainage system require permits to comply with state and federal requirements for work within wetland areas or waterways. Typically, Oregon Department of State Lands (DSL) and United States Army Corps of Engineers (USACE) are required in these instances. Compliance with stormwater, erosion control, flood plain, and other various environmental requirements are often involved with storm drainage projects. For the distribution cost estimates prepared in this Storm Drain Master Plan. For the cost estimates prepared in this Storm Drain Master Plan, estimated costs were added to projects that may be impacted by environmental permits.

Archeological Review

Curry County has many sensitive archeological sites, especially in the Harbor area. Any excavation in archeological sites requires some level of sub-surface archeological sampling that will be undertaken to identify the best route new culverts or infrastructure. The best practice is to avoid impacting archeological sites, if possible. An estimated cost for archeological review is applied to the cost estimates within known sensitive areas, but other projects impact these costs if archeological sites are discovered. The County should create and adopt an inadvertent discovery plan to outline the procedures and requirements for construction and maintenance crews to follow in the event that work unearths any archeological artifacts during normal activities.

For large projects located within especially sensitive areas a Memorandum of Agreement (MOA) with the local tribes is recommended. A MOA establishes a process for the treatment of cultural resources within the project area, coordinate actions of concern in regard to cultural resource management, resolve the adverse effect, and provide a process for the treatment of inadvertent discoveries.

Easements

Any public projects, including roadway embankments, municipal developments, storm drainage systems, or culverts are required to maintain the same natural flow pattern of runoff as before development occurs. It is recommended that easements are acquired to avoid the potential for litigation when the project interferes with the existing flow pattern outside of the county's right of way. In addition to permanent easements there are temporary construction easements that allow for travel and disturbance that may be required during the installation process. Another easement type is a maintenance easement that allow for access to the storm drain to perform regular maintenance such as mowing or sediment removal may need to be obtained to allow for permanent access. For the cost estimates prepared in this Storm Drain Master Plan, estimated costs were added to projects that may require any easement.

4.2 Federal Regulations and Permits

Clean Water Act

The Clean Water Act (CWA) is a law established in 1972 that regulates the discharge of pollutants to navigable waters of the United States. It establishes several programs administered by the Environmental Protection Agency (EPA) to oversee the discharges. These programs are delegated to some states to implement through state regulations.

Endangered Species Act

The Endangered Species Act (ESA) was established in 1973 and provides a program for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing ESA are the US Fish and Wildlife Service (FWS) and the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS).

The law requires federal agencies, in consultation with the FWS and NMFS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of the species. The law also prohibits any action that causes a taking of any listed species of endangered fish or wildlife. Likewise, import, export, interstate, and foreign commerce of listed species are all generally prohibited.

The ESA prohibits the killing, capturing, or harming threatened and endangered aquatic species. Habitat modifications that injure fish by significantly impairing essential behavioral patterns include feeding, migrating, and spawning are included in the definition of harm. Both the discharge of pollutants from the storm drains and alterations to hydrology, include addition of impervious surfaces that change the volume and timing of stormwater runoff which impacts the fish habitat.

The ESA has influence on some of the requirements for the County's capital improvement projects (CIP). A project which discharges to a water of the state below the ordinary high-water mark or creates a fill in a jurisdictional wetland or water of the state may be required to meet more stringent stormwater control standards under a program administered by the USACE.

US Army Corps of Engineers Permitting Authority

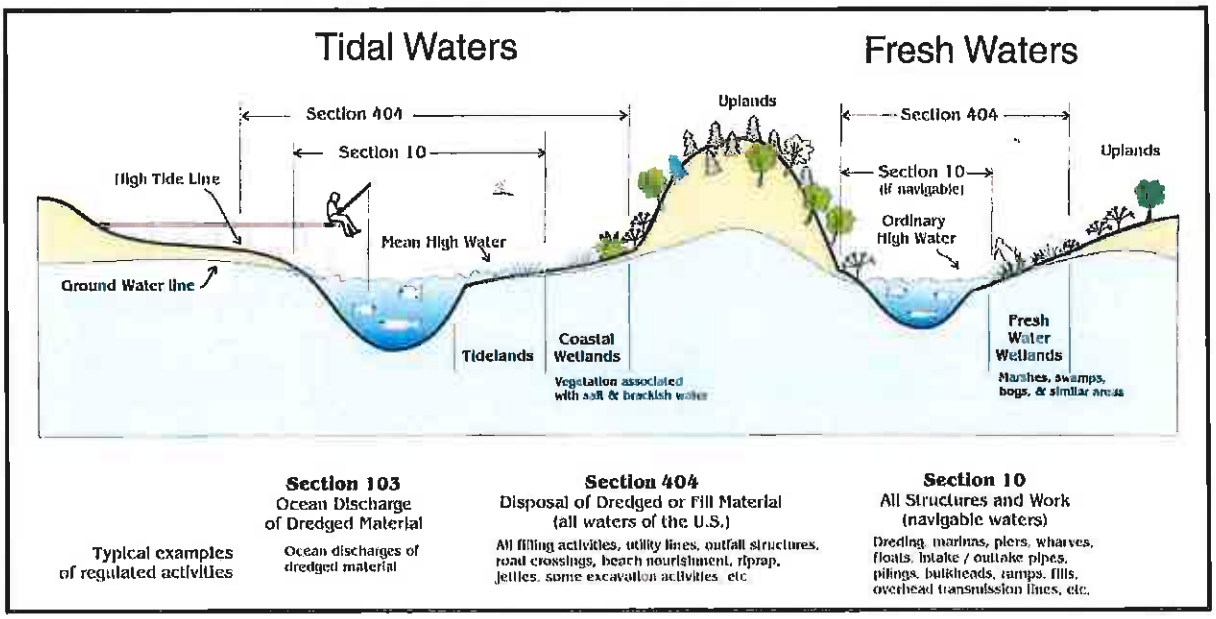
The United States Army Corps of Engineers (USACE) has permitting authority over activities affecting waters of the United States. Waters of the United States include surface waters, navigable waters, and their tributaries, all interstate waters and their tributaries, natural lakes, all wetlands adjacent to other waters, and all impoundments of these waters.

All permits are determined on a case-by-case basis. Consultation with the USACE, local tribes, Oregon Department of Fish and Wildlife (ODFW) and other government agencies are required to determine the feasibility and required size/volumes for the project.

Information on the current definition of "waters of the United States" is provided at: https://www.epa.gov/wotus/current-implementation-waters-united-states.

Additional updates on the "waters of the United States" definition may be found at: https://www.usace.army.mil/missions/civil-works/regulatory-program-and-permits/.

FIGURE 4.2.1
USACE REGULATORY JURISDICTION



130

Section 10 of the Rivers and Harbors Act

Section 10 of the Rivers and Harbors Act of 1899 requires authorization from the Secretary of the Army, acting through the USACE, for the construction of any structure in or over any navigable water of the United States. Structures or work outside the limits defined for navigable waters of the United States require a Section 10 permit if the structure or work affects the course, location, or condition of the water body. The law applies to any dredging or disposal of dredged materials, excavation, filling, rechannelization, or any other modification of a navigable water of the United States, and applies to all structures, from the smallest floating dock to the largest commercial undertaking. It further includes, without limitation, any wharf, dolphin, weir, boom breakwater, jetty, groin, bank protection (i.e. riprap, revetment, bulkhead), mooring structures (i.e. pilings), aerial or subaqueous power transmission lines, intake or outfall pipes, permanently moored floating vessel, tunnel, artificial canal, boat ramp, aids to navigation, and any other permanent or semi-permanent obstacle or obstruction.

Section 404 Clean Water Act

The Clean Water Act (CWA) is the principal federal law in the United States governing water pollution and provides the basis for the US Environmental Protection Agency's (EPA) National Pollutant Discharge Elimination System (NPDES) permit program. This program regulates pollutants discharged from point sources into waters of the United States through water quality based effluent limits. Other regulations related to the mission of the NPDES program include the Safe Drinking Water Act, Endangered Species Act, National Environmental Policy Act, National Historic Preservation Act, Coastal Zone Management Act, Wild and Scenic Rivers Act, Fish and Wildlife Coordination Act, and Essential Fish Habitat Provisions.

The Clean Water Act Section 404 Permit requires studies into wetland delineation, impact assessment, and mitigation plans for projects including filling or dredging existing wetlands. Through Section 404, the USACE also has jurisdiction over the construction of utility crossings including culverts through navigable waters and wetlands. Final construction of projects within the County through wetlands and waterways will need to be coordinated with the USACE.

Safe Drinking Water Act

The federal Safe Drinking Water Act (SDWA) regulates the injection of stormwater into the ground in order to protect the quality of aquifers used for drinking water. In Oregon, Department of Environmental Quality (DEQ) is authorized to regulate stormwater Underground Injection Controls (UICs), which are deep injection wells that discharge stormwater directly to groundwater.

NPDES Permit Requirements

As currently regulated, no areas within Curry County are required by federal law to permit or monitor its stormwater discharges. Stormwater discharges occurring within the County is not regulated by outside agencies. Given the current trends in environmental control, the County should anticipate future requirements on its stormwater discharge points.

However, a NPDES permit must be obtained from the DEQ for construction activities which include clearing, grading, and excavation that disturbs one or more acres of land. The developer must complete NPDES General Permit form 1200-C for stormwater discharge associated with construction activities. For construction activities disturbing twenty or more acres, the plan must be prepared and stamped by an

Oregon Registered Professional Engineer, Oregon Registered Landscape Architect, or Certified Professional in Erosion and Sediment Control.

Additional information regarding the NPDES Stormwater Regulations for Construction Activities may be found at: https://www.oregon.gov/deq/wq/wqpermits/Pages/Stormwater.aspx

Total Maximum Daily Loads

The CWA includes a program for the Total Maximum Daily Loads (TMDLs) to protect water quality when other measures have failed. A TMDL establishes the limit of each pollutant discharged to a water body in order for the water body to achieve or maintain water quality standards. DEQ is responsible for identifying waters that do not meet water quality standards, identified in the 303(d) List, to the Environmental Protection Agency (EPA), under the CWA. Water quality standards are intended to protect human health, aquatic life, and uses of waters for fishing, swimming, and other activities. The DEQ is also responsible for calculating the allowable pollutant loads and developing water quality management plans, which allocate pollutant limits among dischargers and describes how a TMDL will be implemented.

4.3 State Regulations and Permits

Oregon Department of Fish and Wildlife

Stormwater improvements often involve natural streams or rivers. The ODFW and NMFS share responsibility for implementing the ESA. To protect endangered species, they implement a set of guidelines to protect fish passage, water quality and habitat.

Oregon Drainage Law

Storm drainage for non-urbanized areas is not regulated by state or federal agencies. Curry County uses the State of Oregon civil laws pertaining to drainage. The Hydraulics Manual (Oregon Department of Transportation, April 2014) provides a summary of Oregon drainage law. Civil drainage laws describe the entitlement of a property owner to have normal natural drainage ways maintained. Similarly, this law provides that a landowner must not obstruct the natural drainage way if the upper drainage way is properly discharged. A copy of this doctrine is located at www.Oregon.gov/ODOT.

The basic elements of drainage that must be followed, according to civil law, as interpreted by Oregon Department of Transportation (ODOT) are:

- "A *landowner must accept water that naturally flows across their property, but the owner is entitled to not have the natural drainage changed or substantially increased."*
- *"A landowner may not divert water to adjoining land that would not otherwise flow there. Diverted water is further described by ODOT as water routed from one drainage area to another and water collected and discharged that would normally infiltrate, pond, or evaporate.*

- *A landowner may not divert or change the place where water flows onto a lower property. The ODOT interprets this element to limit diversion of water from grading and paving work and/or improvements to stormwater collection systems.*

- *An upper landowner may not accumulate large quantities of water, then release it, greatly accelerating the flow onto a lower property. The ODOT interpretation notes that noncompliance with this element occurs when the flow of water has been substantially increased."*

The County and private land owners must comply with Oregon drainage laws. Any public projects, including roadway embankments, municipal developments, storm drainage systems, or culverts are required to maintain the same natural flow pattern of runoff as before development occurs. In reference to the previous website listed, ODOT recommends that its engineering staff acquire easements to avoid the potential for litigation. Natural drainage ways impacted by development may no longer be evident. For these situations, corrections made by the County should be particularly sensitive to the potential for rerouting drainage to properties that cannot be proven as the original drainage way. Future developments within the County, and County improvements to the existing drainage system, should be required to defer to the County's legal interpretation of the Oregon drainage law. Where questionable conditions may exist, the County should seek or require acquisition of easements.

Oregon Removal and Fill Regulations

Oregon Removal-Fill Law (Oregon Revised Statutes (ORS) 196.795-990 and Oregon Administrative Rules (OAR) 141, Division 85 and 86) requires people who plan to remove or fill material in waters of the state to obtain a permit from the Department of State Lands.

The purpose of the law, enacted in 1967, is to protect public navigation, fishery and recreational uses of the waters. "**Waters of the state**" are defined as *"natural waterways including all tidal and nontidal bays, intermittent streams, constantly flowing streams, lakes, wetlands and other bodies of water in this state, navigable and non-navigable, including that portion of the Pacific Ocean that is in the boundaries of this state."* The law applies to all landowners, whether private individuals or public agencies.

Permits or general authorizations are required for:

- *"Projects requiring the removal or fill of fifty cubic yards or more of material in waters of the state.*

- *The removal or fill of **any material** regardless of the number of cubic yards affected in a stream designated as essential salmon habitat.*

- *The removal or fill of **any material** from the bed and banks of scenic waterways regardless of the number of cubic yards affected."*

Most large water ways within the County's boundary meet this designation. Permits requiring a DSL permit will often require a permit from the USACE, as well. Due to overlapping jurisdictional boundaries, DSL and the USACE have a joint permit application for these requirements and are administrated by both the DSL and USACE.

Oregon Department of Environmental Quality

The CWA and SDWA are the basis for this OAR 340, Division 40 which assigns the DEQ numerous responsibilities pertaining to regulating state waters. The DEQ designates beneficial uses and establishes TMDLs for watersheds falling under these rules. It also outlines the requirements for Underground Injection Control (UIC) facilities as they relate to groundwater quality protection.

The DEQ is authorized to establish TMDLs for local rivers and streams under this rule, which prohibits activities as discharging waste from industrial and commercial activities without a permit.

In addition to establishing TMDLs, this OAR outlines the DEQ's responsibility for issuing NPDES discharge permits intended to limit the release of pollutants to levels the receiving water will sustain. Construction Stormwater Permits (1200-C), and Industrial Stormwater Permits (1200-Z) are authorized through the NPDES program.

Both the construction and industrial permits require site operators to implement stormwater best-management practices and ensure that stormwater runoff leaving their site does not violate in-stream water quality standards.

State Historic Preservation Office

The State Historic Preservation Office (SHPO) requires an Archeological Permit per ORS 390.235 and 358.905-961. The permit is required where any ground will be excavated or historic building altered. The State coordinates with the tribes for the review and may recommend an archeological monitor onsite, usually provided by the tribes, or require more in-depth archeological study by a certified Archeologist.

Ocean Shores Permit

Oregon Parks and Recreation Department (OPRD) require an Ocean Shores Permit for any alterations or construction that is done past the designated vegetation lines along the coast. Examples of the type of work that requires this permit are channel improvement, removal of sediment or invasive species, or installation of a culvert.

No Obstruction Across State Waters

The OAR 635, Division 412 states that no obstruction may be placed across state waters that are currently or historically inhabited by native migratory fish without providing passage for these fish.

For existing culverts, additional verbiage under this rule stipulates that if over fifty percent of an existing fish passage barrier within, below, or above a channel is cumulatively removed, replaced, filled, or added to through time, the existing barrier (i.e., culvert) will require replacement to current standards. This condition should be evaluated for relevancy on a case-by-case basis for any future road widening project lead by the County.

Statewide Planning Goals

The OAR 660, Division 10 is a state rule that establishes Statewide Planning Goals (Goals 5 through 7) to be carried out by the Department of Land Conservation and Development (DLCD). These goals, structured to protect natural resources and conserve scenic and historical areas and open spaces, are summarized in Table 4.3.1.

TABLE 4.3.1
STATEWIDE PLANNING GOALS

Goal	Description
Goal 5	Local governments shall adopt programs that will protect natural resources and conserve scenic, historic, and open space resources for present and future generations. Stream flow and water levels should be protected and managed at a level adequate for fish, wildlife, pollution abatement, recreation, aesthetics and agriculture.
Goal 6	All waste and process discharges from development shall not threaten, degrade or violate applicable environmental quality statutes, rules and standards.
Goal 7	Local governments shall adopt comprehensive plans to reduce risk to people and property from natural hazards, including floods. Local governments should consider programs to manage stormwater runoff as a means to help address flood and landslide hazards.

Public Facility Plans

The OAR 660, Division 11 requires Oregon's cities and counties to adopt pubic facility plans for any Urban Growth Boundary (UGB) areas with a population greater than 2,500. A Public Facility Plan (PFP) helps assure that development within the UGB is guided and supported by the types and levels of urban facilities and services appropriate for the needs and requirements of the areas to be served, and that those facilities and services are provided in a timely, orderly and efficient arrangement, as required by Goal 11 and its implementing administrative rule at OAR 660-011.

4.4 Local Drainage Regulations and Review Procedures

Curry County Zoning Ordinance

The Curry County Zoning Ordinance (CCZO) has ordinances for Riparian Buffer Corridor Overlay Zone (Sections 3.280 through 3.284), Erosion Prevention & Sediment Control (Sections 3.300 through 3.324), and Storm Surface Water Management Standards (Sections 3.400 through 3.450) that apply to this Master Plan. The full document for each ordinance listed is provided in Appendix XX. A summary of key provisions for each ordinance are described as follows.

Riparian Buffer Corridor Overlay Zone

The purpose of this ordinance is to ensure that certain riparian corridors protected as habitat for aquatic life and wildlife, to control erosion and limit sedimentation, and to reduce the effects of flooding. The exact definition of the riparian areas that fall under this provision are given in Section 3.281 of the CCZO. Alteration of protected riparian areas is typically prohibited, except for uses noted in Section 3.283 and 3.284 subsections 3 through 5. It is important to note that any permanent alteration to protected riparian corridors must be designed to minimize intrusion, and they are only allowed if no other options are feasible. Alterations may also be subject to mitigation requirements from ODFW, as stated in Section 3.284 subsections 1 and 2.

Erosion Prevention and Sediment Control

This provision is subject to the area limitations listed in Section 3.301, which states that it is applicable to all lands within the County with some exceptions: lands that lie within the limits of an incorporated city, that are owned by the federal government, or that are within areas subject to the approved stormwater management plan. Section 3.321 defines the development activities that are subject to this provision. Any application for this type of development is required to be submitted with an Erosion Prevention and Sediment Control Plan. Section 3.322 provides the requirements of a plan. In certain cases, noted in Section 3.322(3), the plan must be developed by a Geologist. In other cases, the applicant may prepare the plan using Best Management Practices (BMPs). The plan is subject to review by the Director.

Storm Surface Water Management Standards

The purpose of this provision is to mitigate the effects of new and redevelopment on stormwater infiltration, treatment, and detention on lands within Curry County. Development activities that affect less than 500 square feet (sf) are generally not required to submit stormwater management plans or install mitigation measures. Certain areas under 500 square feet, outlined in Section 3.401, may require review. Development projects with affected areas greater than 500 square feet require varying levels of stormwater management, listed in Section 3.401. If a stormwater management plan is required per Section 3.401, it is subject to the requirements of Section 3.410. Its approval is based on the criteria established in Section 3.420(2). The County may choose to waive certain requirements for stormwater management, subject to the conditions listed in Section 3.440(2).

Section 3.430 outlines certain design requirements for surface water conveyance. For example, it states that culverts on streams with an average flow less than 200 cubic feet per second (cfs) are to be designed according to a 24-hour, 10-year storm. It also gives requirements for what method of analysis is to be used based on the size of the basin.

Section 3.443 establishes standards regarding infiltration, treatment, and detention of stormwater. It also establishes design standards for conveyance systems in general, based on drainage area. If the drainage area is greater than 640 acres, the system must be designed for a 50-year, 24-hour storm; if it is less than 640 acres, it must be designed for a 25-year, 24-hour storm.

Curry County Design and Construction Standards

The Curry County Road Standards - Ordinance No. 17-02 (Curry County, October 3, 2017) Section 3.01.080 contains the following drainage requirements:

"(3) DRAINAGE

(a) The purpose of highway drainage design is to prevent the accumulation and retention of water on and by the highway. Culverts, ditches and other drainage features shall be installed as needed to effectively remove water from the drivable surface under all types of weather conditions. Culverts shall be capable of supporting a single axle load of 32,000 pounds (Highway Loading H-20). Prior to submitting a development application and its related access feature where a stream crossing will be required, the applicant shall submit an Oregon Department of Fish and Wildlife (ODFW) determination to the Building Official indicating whether the stream crossing location is a fish habitat as required by ORS 509.585. If the ODFW determines that there is a potential for fish habitat or there is fish habitat in the stream crossing that will be impacted, fish passage shall be required consistent with Division 412 of the Oregon Administrative Rules (635-412-0005 through 635-412-0040).

(b) Surface water shall be conveyed along rights-of-way by the most direct means considering ease of maintenance with minimum disturbance of natural conditions.

(c) All drainage structures shall be sized for the following design flood frequencies.

Drainage Facility, Design Flood
Bridge, 100 year flood
Culvert, 25 year flood
Low Water Bridges, Optional
Depressed Roadway, 25 year flood
Channel Change, 100 year flood
Storm Sewer, 10 year flood
Ditches, Gutters, Inlets, 10 year flood

The design should be reviewed to ensure that backwater from the 100 year flood will not cause extensive property damage or result in loss of a bridge.

(d) The design of any water carrying system shall meet or exceed the design criteria set by the current ODOT Highway Division Hydraulics Manual.
Cross culverts shall be a minimum of 18 inches in diameter except:

A 12-inch cross culvert may be used to convey water from a catch basin to the closest natural drain if a grated inlet is used.

Connections to existing roadside culverts shall be at the same or greater capacity and must not inhibit the existing discharge of flow in any way."

4.5 Future Regulations and Requirements

The recommendations and permitting requirements for this Storm Drain Master Plan used current permitting procedures and regulations for the Spring of 2022 as the basis of recommendation. In the future new regulations and requirements for water quality, water quantity, and habitat may result in a need for additional policies to implement a fully integrated stormwater program in the County. The County includes several designated wild and scenic rivers and the Pacific Ocean which may be affected by stricter state and federal regulatory requirements in the future.

4.6 Stormwater Planning History

The County has completed two stormwater planning efforts in prior years. Each is described below.

Curry County Water Quality Implementation Plan (2006)

The Water Quality Implementation Plan (WQIP) (Curry County, 2006), focuses on water quality issues throughout the County. The WQIP includes discussion of educational opportunities, including a voucher program to assist land owners replacement of failing or ineffective septic systems, and a description of performance measures for water quality improvement. The performance measures address temperature, excess sediment, nutrients, agricultural chemicals, and coliform bacteria.

Table 4.6.1 summarizes the WQIP Recommendations.

TABLE 4.6.1
SUMMARY OF WATER QUALITY IMPLEMENTATION PLAN

Project	Timeframe	Allotment (2006 Dollars)
Tree Planting in Riparian Areas on Ten Major Rivers	Ten Year Plan	$40,000 per year
Assist In Watershed Council's Sediment Abatement Program	Five Year Plan	$75,000
Water Quality Testing Program	Annual	$20,000 to $30,000

The full document is located in Appendix XX.

Storm and Surface Water Facilities Plan for Brookings-Harbor Area (2007)

The Storm and Surface Water Facilities Plan (HGE, Inc., 2007) encompassed both the City of Brookings and the Brookings-Harbor Area within Curry County. The purpose of the facilities plan was to provide Curry County and the City of Brookings a current and comprehensive stormwater facilities plan of the UGB for the Brookings-Harbor area.

The plan did not list any specific recommendations for constructed improvement projects. Noted problem areas all occurred on private property.

One of the most important projects for the County was to undertake the development of workable design and development policies and standards to minimize and alleviate potential impacts on stressed drain ways and infrastructure.

The facilities plan recommended water courses on the Harbor Bench, in particular the highly modified drain ways, be restored to provide significant benefits in reducing erosion and for increasing groundwater levels on the Harbor Bench. Recommendations for reconstruction of seasonal stream beds include the shaping of the stream bank to promote stability and planting of riparian vegetation to reduce erosion and promote bank stability. The facilities plan stated there were approximately 14,000 lineal feet of water courses in the Harbor Bench subbasins. The estimated cost for reconstruction of the water courses was $2,800,000 (2007 dollars).

4.7 Planning Recommendations

Curry County Zoning Ordinance Recommended Revisions

After review of the Curry County Zoning Ordinance (CCZO), additional measures should be added to protect the County against poor development practices related to stormwater and storm drainage infrastructure. The County should adopt similar ordinances to the City of Brookings Municipal Code.

Section 3.401 of the CCZO should be revised to clarify the requirements for stormwater management plans. The first paragraph states that the level of review is based on the square footage of impervious area in the development. However, Item 4 of Section 3.4.01 says, *"properties between 500 and 4,999 square*

feet," specifies the size of the property governs the level of review required. It is recommended Item 4 be rewritten to clarify the amount of impervious area controls the level of review.

It is also recommended that the County include requirements similar to those found in section 13.35.020 of the Brookings Municipal Code. This section regulates any improvements to the storm drain system and provides limitations for when improvements are the responsibility of the County or the developer. It also provides a minimum sizing requirement for any stormwater infrastructure. The County Ordinance currently has a similar requirement, though it is contradicted in two places.

- Section 3.430 and Section 3.443 subsection 3 state different minimum design requirements for stormwater conveyance systems.

- The 25-year, 24-hour storm listed in Section 3.443 subsection 4 is recommended as the minimum for all stormwater infrastructure.

The County adopting regulations similar that to Section 13.35.027 of Brookings Municipal Code is also recommended. Section 13.35.027 specifically states the following:

- No waterway may be altered without proper approval of a drainage plan prepared by an Oregon Registered Professional Engineer.

- It is the responsibility of the property owner to protect waterways and public stormwater infrastructure for any construction taking place on their property.

Brookings Municipal Code 13.35.020 System Improvements

"A. The improvement of both public and private storm drainage facilities through or adjacent to a new development shall be the responsibility of the developer. The improvement shall comply with all applicable City ordinances, policies and standards.

B. It is the policy of the City of Brookings to participate in improvements to storm drainage facilities when authorized by the City Council. To be considered for approval by the council, a facility must:

1. Be a public facility.

2. Be a substantial benefit to the community.

3. Not detrimentally impact downstream facilities or increase runoff to deficient downstream drainage conveyance.

4. Be designed to convey a minimum of a 25-year storm event and overland escape route as approved by the City's Engineer.

5. Be a replacement or rehabilitation of an existing public facility.

13.35.027 Alteration, change, restriction, blockage or contamination of watercourses, drainage channels, storm drains prohibited – Collection or concentration of surface waters prohibited.

A. No watercourse, drainage channel, or storm drain shall be altered, changed, restricted, contaminated or blocked in any manner, nor shall diffused surface waters be collected or concentrated in any manner until or unless a drainage plan prepared by an Oregon Registered Professional Engineer has been submitted to and approved by the City Manager or his/her designee.

B. Any property owner who causes or allows any type of construction to take place on his or her property will be responsible for the prevention of any debris, contaminant or potential contaminant from entering the city's storm drainage system, and must adhere to and abide by the guidelines for erosion control and sediment prevention, as described in the City of Brookings Engineering Requirements and Standard Specifications for Public Works Infrastructure.

C. The property owner and any other person that has altered or changed a watercourse, or has caused or allowed the restriction, contamination or blockage thereof in any manner whatsoever, or increased the drainage runoff flow so as to cause flooding or damage to other properties, will be liable for damages arising therefrom. [Ord. 13-O-714 § 2.]"

Design Requirements for New Development

The City has standards for pipe material and size that are dictated by depth of pipe, slope, hydrological and geological conditions, and type of pipe and size. Selection shall be approved by the City. Hydraulic and hydrology calculations signed by an Oregon Registered Civil Engineer may also be required. See Municipal Code 18.20.003 for storm gravity mains and 18.20.005 for storm drain manholes.

Design and Construction Standards Recommended Revisions

The following revisions are recommended to the current design criteria after reviewing Curry County Road Standards - Ordinance No. 17-02 (Curry County, October 3, 2017).

It is recommended for additional specifications to be added to storm drainage requirements to strengthen design standards. Standards include minimum slopes, allowable piping materials for main lines and laterals, and testing requirements. Hydraulic and hydrology calculations signed by an Oregon Registered Civil Engineer for review by the County will ensure minimum design requirements are being met.

Details and specifications from the Oregon Standard Specifications for Construction (ODOT, 2021) should be used as a basis of design for the County's standards. It is suggested that the County modify and adopt standards for storm drainage structures based on County needs.

SECTION 5:

MAINTENANCE & MANAGEMENT

SECTION 5: MAINTENANCE & MANAGEMENT

5.1 Storm Drain System Maintenance & Management Program

A Storm Drain System Maintenance and Management program is beneficial to reduce major system overhauls, replacement projects, and costly infrastructure failures. The program should outline proposed activities for stormwater runoff, which is critical to protect creeks and rivers utilizing Best Management Practices (BMPs) and recommended Standard Operating Procedures (SOPs) described in Section 5.3. A good plan is critical to keeping stormwater pollutant free of contaminants because stormwater currently flows directly into water bodies without treatment.

The Curry County Road Department does not currently have a written maintenance program for stormwater maintenance or management. Historically, the County has been reactive to drainage issues as they occur. The last couple of years the County has been proactive by providing the following storm maintenance activities:

- Rent Vactor Truck Equipment for Maintenance of Storm Drain Pipes
- Purchased Vactor Truck Equipment for Maintenance to Arrive in the Summer of 2022
- Annual Ditch Maintenance and Cleaning
- Update Data on Geographic Information System (GIS) Mapping
- Periodic Inspection of Culverts

The County should adopt a written Storm Drain Maintenance and Management program, continuing with their recent maintenance activities, and expand on the following activities.

GIS Mapping

The County should continue to systematically update their mapping information. Adding the information of depth of pipe, slope, and age would be useful for cost of replacement or repair, and to track design life.

The County has interest in providing their Staff with access to portable storm drainage infrastructure mapping to track: size, type, approximate depth, maintenance logs, location, and age of existing infrastructure during inspections. The County's GIS Operator shall keep their base system updated with field data to provide up to date and accurate information.

Inspection Reports

Each region should be inspected by the County every three years, rotating each region annually (The County does not have the Staff to inspect all of their stormwater infrastructure annually). The County should continue to prepare an inspection report that gives the areas inspected and the maintenance activities completed on the stormwater system. The inspection reports will be logged with the portable storm drainage data base logger and transferred to the master GIS data base as described in GIS Mapping above.

Television Inspection

The County does not currently own their own television equipment and budget does not allow the County to contract television inspection on a regular basis. The County does intend to purchase this equipment in the future. When the County purchases equipment they should develop a program to regularly and systematically televise the entire system. Each region shall be inspected by the County every three years, rotating each region annually. The maintenance program should include thoroughly cleaning and televising the existing stormwater system to allow for engineering evaluation and development of projects to correct any deficiencies discovered during inspection.

Storm Inlet and Outfall Maintenance and Inspection

Storm outfalls and intakes should be inspected annually. Inspection shall include evidence of scouring or the presence of significant deposition of silt at the outfall. Scouring problem areas will be noted and stabilized. In areas where silt deposition is evident which is indicative of significant erosion upstream, an inspection will be made of the upstream watershed to identify the source of erosion.

Manhole and Grate Maintenance and Inspection

In areas where storm infrastructure is present, debris at trash grates and catch basins grates should be removed before rainfall events; to provide reasonable assurances that the system will operate in an unobstructed manner during rainfall events. Manholes and catch basins shall be structurally inspected every five years on a rotating basis.

Road Maintenance

The County should sweep curb and gutter streets no less than twice annually and paved streets as needed.

Ditch Maintenance Plan

To keep up with ditch maintenance, the County should create a ditch management plan that includes a ditch inventory and rating system, similar to the culvert inventory. The rating system is based on a combination of vehicle safety, potential for flooding, environmental impacts, customer complaints, etc., but ultimately the rating system should help to prioritize where maintenance time and money are best spent. The County drives routes and records ditch function as Staff develop a ditch maintenance schedule to proactively address major problems. The best way to know if ditch systems are functioning properly is to observe and inspect ditch systems. Inspections during and immediately after rain events, when higher flows occur, indicate the stress level on the ditches.

The plan should divide ditch maintenance into the two categories of routine maintenance and non-routine maintenance.

Routine Maintenance

Work is usually completed by Maintenance Staff in the field without major analysis or engineering. Work includes removing sediment that has filled in the ditch, replacing a damaged or corroded culvert of the same size and type under driveways or small roads, seeding a side slope, clearing brush, and removing invasive species or noxious weeds. The County should mow roadside ditches and mainline channels. Basic field measurements often precede routine maintenance.

Non-routine Maintenance

Work requires professional analysis or engineering and possibly one or more permits. Non-routine maintenance often involves fixing head cuts, altering channel water carrying capacity, replacing culverts with different sizes or types, working in ditches that double as a stream or wetland, and addressing major erosion. If a ditch is perennially wet, flows through a wetland or seem different than a typical upland dry ditch, state and federal permits and other requirements may apply. Proposed projects affecting the course, flow or cross-section of these water bodies may require permits from the US Army Corps of Engineers (USACE) and other agencies.

5.2 Drainage System Replacement, Rehabilitation & Repair Methods

There are many factors in determining whether structures should be replaced versus rehabilitated or repaired. The traditional approach is to replace the pipe by open trench construction. New trenchless technologies allow storm drain systems to be rehabilitated without excavating to replace the old pipe. Expenses associated with new asphalt, sidewalks, landscaping, and other costs resulting from trenching are avoided. If applicable, generally trenchless technology reduce project costs when rehabilitating storm drain systems.

Storm Drain Pipe Replacement Methods

Pipeline replacement by conventional excavation and backfill is normally required when the existing pipeline is deteriorated so badly that other methods of repair or rehabilitation are not feasible. However, complete replacement provides the opportunity to correct any misalignments or low areas, increase the hydraulic capacity of the line, or repair storm drain laterals. Replacing pipelines assists in removal of any incidental or minor leaks that would not individually be cost-effective to remove. A rehabilitation alternative that is similar to complete pipe replacement is point repairs, which involve excavation, pipe replacement, backfill and resurfacing for selected sections only.

The obvious advantage of pipe replacement is that the service life gained with modern materials and methods is generally considered to be more than fifty years. The cost of pipe replacement is generally high, and the associated inconveniences and restoration required are expensive.

There are a number of techniques for installing new storm drain pipe, including the traditional open cut construction, and trenchless techniques including pipe bursting. Open trench construction is considered the preferred method for the replacement of existing storm drain pipes. This construction technique is the most common means of constructing new storm drain lines and is familiar to local contractors. Pipe bursting may be warranted and would be considered if pipe replacement was needed in an area with a deep sewer line and/or in areas where surface disturbance should be minimized.

Key criteria for selecting a method for new pipe installation is given in Table 5.2.1.

TABLE 5.2.1
KEY CRITERIA FOR NEW PIPE INSTALLATION

Criteria	Description
Surface Conditions	Type (paved/unpaved), traffic use, land use (urban/rural), type (forest, water, etc.).
Cost	Pipe installation, surface restoration, subsurface difficulties.
Environmental Considerations	Wetlands, critical habitat, migratory route.
Subsurface Conditions	Installation depth, groundwater level, soil type, existing utilities.
Hydraulics	Needed flow capacity, existing grades.

Typically, the decision process will involve weighing the advantages of avoiding surface disruption against the costs. Surface conditions, depth of installation, subsurface conditions and environmental considerations also will affect the cost analysis. The evaluation and weighing criteria for choosing a particular construction technique will depend on specific site conditions. Brief descriptions of open cut and pipe bursting techniques are given below.

Open Trench Construction

Open trench construction consists of excavating an open trench in the ground for pipe installation. Typically, the width of the trench is at least twelve inches greater than the pipe diameter. The trench depth depends upon the specific application and topography.

Open trench construction is traditionally used in most new storm pipe installations because of cost considerations and availability of local contractors and crews to perform the work. The disadvantages of open trench construction include trench shoring requirements for trenches over five feet in depth or where soils are unstable, dewatering of the trench when high groundwater is present, and increased cost and complexity with deep excavations.

Pipe Bursting

Pipe bursting is a trenchless replacement method that is used in certain circumstances to replace failed pipe or when upsizing of a pipe section is required. Pipe bursting consists of a hydraulically activated cutting head that is pushed or pulled through the inside of the old pipe to be replaced, breaking it up, and forcing the broken fragments into the surrounding ground. The cutting head tows a new pipeline behind it that is simultaneously installed in place as the head bursts the old line. The cutting head has a slightly larger outside diameter than the new pipe and is bigger than the inside diameter of the old pipe. Depending upon the size of the cutting head, new pipes of the same size or up to almost twice the original size are to be installed.

The advantage of pipe bursting is the minimization of trenching and surface restoration. Pipe bursting, however, is generally not used if congestion underground is a question or if the existing pipeline is not of a brittle nature (i.e., concrete). In addition, this technique has major noise and vibration problems and is somewhat uneconomical.

Culvert Inlet and Outlet Repair and Modification

Reinforced concrete headwall and endwall structures are needed to reduce erosion and scour, inhibit seepage, retain fill, improve hydraulic characteristics, filter large debris and provide structure stabilization. Other methods include gabion walls, reinforce modular block walls, reinforced soil masses, and grouted riprap.

FIGURE 5.2.1
CULVERT ENDWALL STRUCTURE

Storm Drain Pipe Repair and Rehabilitation Methods

When a culvert is structurally, geometrically, and hydraulically functional the County should consider methods of repair or rehabilitation. Many repair or rehabilitation methods are specialized and require the use of special equipment. Often, the work associated with repair or rehabilitation of a culvert is significantly less expensive, less time consuming, and less disruptive than with replacement. Brief descriptions of chemical grouting, lining culvert inverts, slip lining, and inversion lining techniques are provided hereafter.

Chemical Grouting

Chemical grouting is commonly used to seal leaking joints in structurally sound pipe and manholes. Typical applications consist of two separate chemicals that are pumped through separate hoses to the joint, crack or manhole being sealed. Once the two chemicals are mixed together, they form a gel or foam that expands out through the defect and into the surrounding earth.

The equipment used for chemical grouting of pipelines includes a joint packer and Television (TV) camera. The entire assembly is pulled inside the pipe with cables and winches. Chemical feed lines are extended from the supply tanks to the packer unit. Chemical injection is performed internally, using robotic equipment without requiring manual entry or excavations unless unique problems develop.

Since manholes are a sizeable component of the collection system, it is often desirable to enhance the grout rehabilitation method by applying an interior coating. This coating increases the effectiveness of a grout repair by providing an interior seal that will last beyond the expected grout life. Successful manhole coatings include cementitious linings, polyethylene linings, epoxy coatings, and cured-in-place fiberglass lining systems.

Chemical grouting does not improve the structural strength of a pipeline; therefore, this method of rehabilitation should not be used on pipes that are badly broken or deteriorated. If the groundwater table drops below the level of the pipe, the chemical grout may become dehydrated and its useful life will be shortened. Many chemical grouts do not have shear strength and will tear or fracture if a load is applied to the surrounding earth. When used appropriately, rehabilitation by chemical grouting should serve a useful life of at least ten to fifteen years.

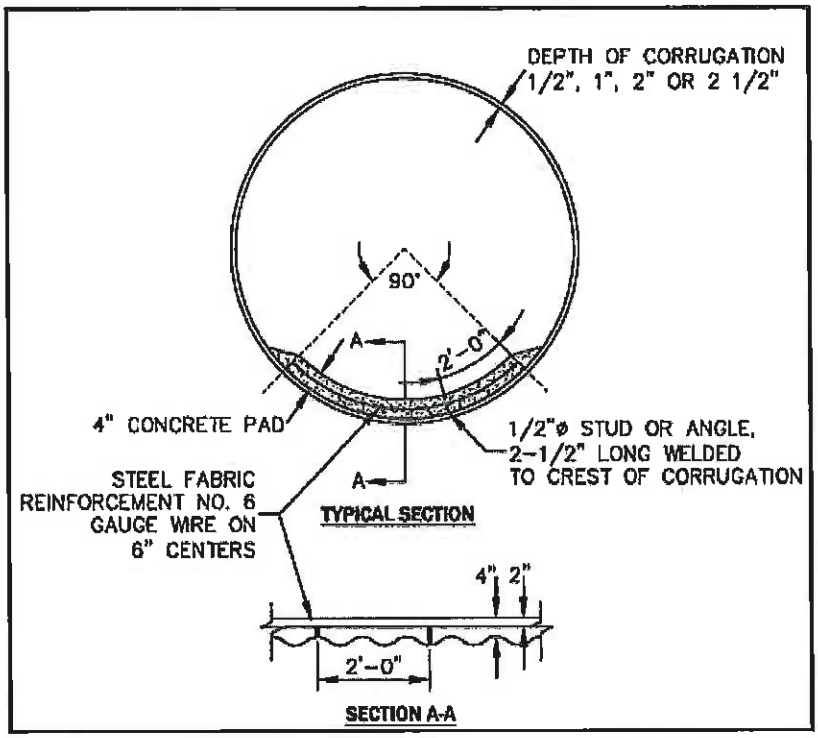
Culvert Invert Lining

This method involves installation of a reinforced concrete invert to repair a deteriorated corrugated metal culvert pipe invert. This method is only feasible where the culvert is in satisfactory structural condition and the bottom invert is damaged or deteriorated. Size of pipe is limited to 48-inches or greater to allow access for the workers. The pipe has to be clear of loose debris and cleaned. Flow has to be diverted around the pipe in order to install the reinforced concrete liner.

To install the reinforced concrete liner a layer of steel reinforcement or wire mesh is placed in the invert and secured to the original culvert bottom. Concrete is placed in the invert. The thickness of the concrete is typically two to four inches over corrugation crests. The surface is troweled smooth and uniform to match existing geometry of the original culvert. A sealant or curing compound is applied to the surface after the concrete is installed and edges of the invert are sealed with mastic or asphalt emulsion.

Shotcrete or gunite applied pneumatically, using compressed air are an alternate to concrete. The disadvantage to using these products instead of concrete is that shotcrete or gunite does not allow for a smooth troweled finish; which creates a higher friction factor and decreased flow capacity.

FIGURE 5.2.2
TYPICAL CONCRETE INVERT SECTION



Slip Lining

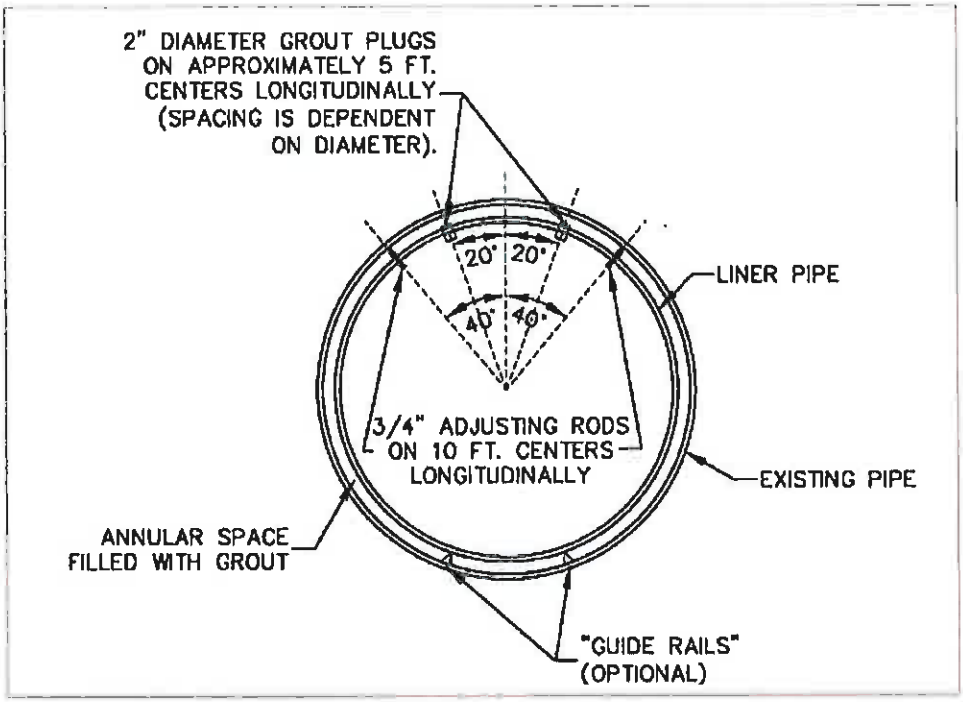
Slip lining involves inserting a slightly smaller new flexible pipeline, usually polyethylene, into the existing pipe. This method is typically used where the existing pipes are extensively cracked, where the lines are badly deteriorating, or in lines with relatively flat grades. Slip lining will reduce the inside diameter of pipe, but typically decrease friction depending on existing pipe material, with minimal effect on flow capacity. Attention needs to be given to hydraulic performance and capacity, along with consideration of required structural capacity and long-term loading capabilities.

Slip lining involves minimum excavation and accompanying dewatering work. Excavations are required only at insertion pits. For this reason, slip lining is advantageous in inaccessible or difficult areas, or under landscaping or structures. Slip lining is installed in existing pipelines having moderate horizontal or vertical deflections. Flows within the pipe may be allowed to continue while slip lining operations occur.

The liner pipe is commonly pulled through the existing pipe with a winch assembly placed at a manhole or end of the pipe and the liner pipe fed into the existing pipe through an insertion pit. The pipe is pulled by steel cable with the cable attached to a pulling head at the pipe end. The polyethylene pipe will stretch during pulling (one foot per 100 feet is common) and a relax procedure is required after pulling and before connection at manholes. Increased temperatures will also tend to stretch the pipe. The void between the existing and new liner is typically filled with a flowable materials including grout or slurry. The liner needs to be supported and secured in place during grouting operations to reduce displacement or distortion.

The service life of a slip lined storm drain pipe is similar to a new storm drain pipe replaced by conventional trench excavation and backfill, which is about fifty years. The new liner pipe is a pressure capable pipe.

FIGURE 5.2.3
TYPICAL SLIP LINING SECTION



Cured in Place Pipe (CIPP)

Cured in Place Pipe (CIPP) is best described as manufacturing a new pipe within an existing pipe. A CIPP installation uses a plastic-lined felt bag that has been impregnated with resins, this process is sometimes referred to as inversion lining. The impregnated bag is inverted (turned inside out) allowing the plastic exterior to be turned inward. Two methods are commonly used to cure the liner. The inner space is either filled with pressurized water or with air as the inverted bag is oriented into the existing pipe. The pressurized water or air drives the bags inversion until the entire section of liner has been turned inside out and the end has been retrieved at the downstream manhole. The water or air pressure forces the resin material against the existing pipe. Then heated water or steam is continuously pumped through the tube, causing the resins in the bag to cure and harden.

The use of CIPP lining is appropriate for pipelines requiring minor structural repair, sealing holes, leaky joints, leaky misalignments, and for correcting corrosion problems. Since this method of rehabilitation does not require excavations, it may be used under highways, railroads, and buildings. If properly completed, the life of an inversion lined pipe, according to several lining manufacturers, is more than fifty years. Due to frictional factors of the lining, the hydraulic capacity of the pipe is increased.

Infrastructure Repairs

Repair of concrete structures include manholes, sedimentation basins, catch basins, other structures are categorized into three methods: maintenance, repair, and replacement.

Maintenance

Maintenance is completed by spreading cement mortar or grout in between cracks or voids in the interior of the structure. This method should be considered a short-term solution and will need to be done on a consistent basis.

Repair & Rehabilitation

Repair of infrastructure can include removing the top sections of newer precast structures where the opening is removable. The repairs can also include replacing concrete rings, grates, lids, frames, bricks, grouting holes or cracks, and rechanneling structures. After repair, new backfill is installed surrounding the structures.

Replacement

In the event, the structure has completely failed it should be replaced. Older or larger structures are typically poured in place structures, while new structures are typically precast in the least number of joints possible for transport and installation. This prevents the probability of weakened areas developing into holes or cracks that may lead to sink holes.

Ditch Restoration

Over time roadside ditches fill in with debris, which alter the flow of the water. Ditches partially filled with sediment, rock or other debris should be cleaned out routinely to regain the original ditch flow capacity. Proper excavation will correct this problem without significantly changing the longitudinal profile of the ditch. If slopes are changed significantly during excavation, a new cycle of sedimentation or erosion may occur in adjacent segments of the ditch.

Best management practices shall be used for seeding and erosion or sediment control during and following excavation. The BMPs are utilized to keep sediment from washing downstream and reduce the velocity ditch. Installed vegetated bar dams will slow water velocities and keep as much sediment as possible out of the waterways. Limit excavation to removing accumulated sediment. In most cases, removing sediment without altering the original shape of the ditch would not require a permit. Note that changing the depth or width of a ditch section may require permits.

The three criteria may cause the need for ditch restoration when inspecting ditches. The criteria are: road appearance, ditch erosion or soil instability, and water flow.

Road Appearance

Potholes, degradation, cracking, rutting, road edge erosion breaking off, and suspicious wear and tear may indicate a ditch is in need of maintenance. Roads also deteriorate because of undersized or clogged culverts or when the subgrade becomes saturated.

Ditch Erosion or Soil Instability

Ditch erosion or soil instability occur in unvegetated banks, sediment deposits in the ditch, unstable or eroding slopes, incision (channel deepening) and head cuts. The County should check if riprap has been undercut or washed away, and signs of scouring near culvert ends when inspecting ditches.

Water Flow

Ditch vegetation needs to be maintained to provide adequate flow. Pools of standing water in a ditch or water ponding between culverts over long periods indicate either a drainage problem or that the ditch may be a wetland or stream. Blockages or flooding problems can divert the drainage flow. Culvert sizes need to be analyzed to determine the culvert is an appropriate size for drainage. Inspect culverts for signs of corrosion, separated joints, sagging bottoms, blockage, piping, fill settling, and sediment buildup.

5.3 Recommended Standard Operating Procedures

Recommended Standard Operating Procedures (SOPs) are directed towards maintaining permanent water quality structures designed and constructed to convey stormwater runoff from Curry County roads and facilities. These facilities include: cleaning culverts, jetting of storm infrastructure, and ditch maintenance and restoration.

Agency contact information is provided in the following table as part of the SOPs for cleaning culverts, jetting of storm infrastructure and ditch maintenance and restoration.

TABLE 5.3.1
AGENCY CONTACT INFORMATION

Local Agency Office	Website	Phone Number
USACE	https://www.nwp.usace.army.mil/missions/regulatory/contact/	(541) 756-2097
DSL	https://www.oregon.gov/dsl/pages/index.aspx	(503) 986-5282
DEQ	https://www.oregon.gov/deq/pages/index.aspx	(541) 269-2721

Cleaning Culverts

Purpose: Provide a set of guidelines in how to effectively clean culverts by hand or machinery; resulting in minimal impacts on the environment.

Location of SOPs: Both an electronic and paper copy will be available to the Curry County Storm Maintenance Crew.

Goals: To provide a set of guidelines for adequate hydraulic flow through the culvert, to prevent flooding, and to aid in providing fish passage upstream and downstream of the culvert, while protecting water quality from sedimentation. Additional caution is needed to reduce impacts to protected fish species and their habitat.

Employee Prerequisites

Employees should attend a general stormwater pollution prevention training where the SOP of cleaning culverts is discussed.

Employees should have an understanding of the County's stormwater infrastructure.

Equipment and Materials

- Culvert Maintenance Schedule
- Culvert System Map
- Vactor Truck
- Cameras or Remotely Operated Underwater Vehicle (ROVs)
- Environmental BMPs shall conform with the Routine Road Maintenance | Water Quality and Habitat Guide (ODOT, Revised 2020) guidelines located at: https://www.oregon.gov/ODOT/Maintenance/Documents/blue_book.pdf

Procedures

Inspect the culvert for the following: sediment or debris located within the culvert, structural integrity, and evidence of illegal dumping. Report any illegal dumping to Department of Environmental Quality (DEQ).

Before conducting any maintenance on the stormwater systems that may result in the discharge of silty and/or turbid waters contact the local USACE, Department of State Lands (DSL), and DEQ to check if any permitting is required to clean the stormwater system. It is recommended that contact for permitting be made at least six months in advance of planned work. Contact information is listed in Table 5.3.1.

Begin stormwater maintenance after all USACE, DSL, and DEQ have been contacted and reviewed the project and issue permission to proceed.

- Install water quality measures, environmental BMPs, plug outlets if permitted, and follow permit requirements.
- Clean culvert using a vactor truck.
- Remove sediment from the bottom and sides of the structure.
- Clean both the inlet and outlet.
- Discharge the vactor truck water at an approved Curry County upland disposal site. Confirm discharging conforms to all federal, state, and local requirements.
- Take any debris found in the catch basin or manhole and dispose of in a landfill or other approved location.

- Inspect the culvert after cleaning is completed. Pay special attention to any areas that had clogs in the original inspection and make sure that the debris did not damage the culvert.
- Remove all construction equipment and environmental BMPs at completion of cleaning activities.
- Provide a report to the permitting agencies, if required.

Jetting of Storm Infrastructure

Purpose: Provide a set of guidelines in how to effectively clean storm infrastructure with jetting; resulting in minimal impacts on the environment.

Location of SOPs: Both an electronic and paper copy will be available to the Curry County Storm Maintenance Crew.

Goals: Jetting is vital to keep storm drainage infrastructure in peak condition, helping to prevent damage and mitigate further deterioration.

Employee Prerequisites

Employees should attend a general Stormwater pollution prevention training were the SOP of jetting storm infrastructure is discussed.

Employees should have an understanding of the County's stormwater infrastructure.

Equipment and Materials

- Storm Drain Maintenance Schedule
- Storm Drain System Map
- Vactor Truck
- Cameras or ROVs
- Environmental BMPs shall conform with the Routine Road Maintenance | Water Quality and Habitat Guide (ODOT, Revised 2020) guidelines located at: https://www.oregon.gov/ODOT/Maintenance/Documents/blue_book.pdf

Procedures

Inspect the stormwater system for structural integrity and evidence of illegal dumping. Report any illegal dumping to DEQ. The areas are prone to sediment accumulation.

Before conducting any maintenance on the stormwater system that may result in the discharge of silty and/or turbid waters contact the local USACE, DSL, and DEQ to verify if any permitting is required to clean the stormwater system. It is recommended that contact for permitting be made at least six months in advance of planned work. Contact information is listed in Table 5.3.1.

Begin stormwater maintenance after USACE, DSL, and DEQ have been made aware of the project and issue permission to proceed.

- Install water quality measures, environmental BMPs, plug outlets if permitted, and follow permit requirements.
- Begin jetting the sediment to the upstream manhole or point of access. Jetting are done from inlets, storm manholes, or catch basins. Make sure to isolate the area with environmental BMPs to prevent sediment being released into receiving waters.
- Use vactor truck to vacuum up the water used for flushing in the upstream catch basin or manhole.
    - Take sample of vactored liquid and send to McCowan Clinical Laboratory (or other approved testing laboratory) at:

      McCowan Clinical Laboratory
      178 W Commercial Ave.
      Coos Bay, OR 97420

    - Discharge the vactor truck water at an approved Curry County upland disposal site. Confirm discharging conforms to all federal, state, and local requirements.
- Take any debris found in the catch basin or manhole and dispose of in a landfill or other approved location.
- Inspect the stormwater system at the completion of jetting activities. Pay special attention to any areas containing clogs in the original inspection and make sure that the debris did not damage the storm line.
- Remove all construction equipment and environmental BMPs at completion of jetting activities.
- Provide a report to the permitting agencies if required.

Ditch Maintenance and Restoration

Purpose of SOPs: Provide a set of guidelines to effectively clean and shape roadside ditches to ensure proper roadside drainage.

Location of SOPs: Both an electronic and paper copy will be available to the Curry County Storm Maintenance Crew.

Goal of SOPs: To maintain ditches in a manner that allows for efficient stormwater passage, storage, and infiltration while minimizing impacts to water quality.

Employee Prerequisites

Employees should attend a general Stormwater pollution prevention training were the SOP of ditch maintenance is discussed.

Employees should be trained on erosion control, ditching, stormwater maintenance activities, inspection practices, erosion and sediment control training, and spill response.

Employees should have an understanding of the County's stormwater infrastructure.

Equipment and Materials

- Ditch Maintenance Schedule
- Storm Drain System Map
- Vactor Truck, if Required to Clean Culvert Inlets and Outlets
- Ditching Equipment and Tools as Required
- Environmental BMPs shall conform with the Routine Road Maintenance | Water Quality and Habitat Guide (ODOT, Revised 2020) guidelines located at: https://www.oregon.gov/ODOT/Maintenance/Documents/blue_book.pdf

Procedures

Inspect existing ditches to determine the required maintenance and if a permit is necessary. If the following items are "true" the ditch may be considered an upland ditch and permits will likely not be required.

- The ditch dries out between rainstorms and does not have standing water other than during or after rainfall events.
- The ditch does not have an open connection to a lake, pond, creek, river, or wetland.
- The ditch does not contain or is not adjacent to wetland vegetation (willows, rushes, cattails) and does not run through wetlands.
- The ditch is not subject to tidal influence.
- The ditch work disturbs less than five acres, or the ditch does not add to or change the existing facility (i.e. adding riprap, culvert extensions, ditch widening or deepening to hold more flow, drain more area, or any new work).

Before conducting any maintenance on the upland ditching or restoration that may result in the discharge of silty and/or turbid waters or if any of the above are "false" contact the local USACE, DSL, and DEQ to see if any permitting is required for ditch maintenance. It is recommended that contact for permitting be made at least six months in advance of planned work. Contact information is listed in Table 5.3.1.

- If required, begin ditch maintenance after all environmental entities listed have been made aware of the project and issue permission to proceed.

- Install water quality measures, install environmental BMPs, and follow any permit requirements.
- Find and mark location of inlets and outfall pipes to ensure ditching equipment does not damage the piping. Clean out inlets and outlets with vactor truck, if feasible.
- Trim trees, shrubs, grass as required.
- Remove trash, sediment, and debris from ditches, inlet pipes, outfall pipes, and other drainage ways. Dispose of all waste materials at appropriate sites.
- Evaluate and modify existing ditch slopes, where feasible and appropriate, to trap sediment and support development of vegetation.
- Reseed drainage ditches and steep slopes as appropriate to prevent erosion and sedimentation.
- Repair areas of riprap as required.
- Dispose of collected ditching material above the ordinary high-water line and not in any water body or wet land.
- Inspect the ditch at the completion of maintenance and restoration activities.
- Remove all construction equipment and environmental BMPs at completion of ditching activities.
- Provide a report to the permitting agencies if required.

SECTION 6:

HYDROLOGICAL ANALYSIS

SECTION 6: HYDROLOGICAL ANALYSIS

6.1 Storm Frequency

An essential part of stormwater analysis is selection of the design storm or storm frequency that will be used. Selection of the design storm includes economic and statistical relations. The frequency chosen for a storm depends upon factors of the existing drainage system, the nature of the contributing areas, and the cost of storm drainage improvements.

The design storm is the total amount of rainfall that will occur over a period of time based on the statistical evaluation of precipitation records. Typical intervals for storm frequencies are two, five, ten, twenty-five, fifty, and one hundred years. A 25-year storm frequency means statistically the storm could occur once during a 25-year time span, meaning it has a four percent chance of occurring each year. A 25-year storm could occur more than once in 25 years, but is not probable.

Economic factors are considered when selecting the design storm for the engineering analysis. For instance, a drainage system sized for the 100-year storm will result in a larger, more costly drainage system sized for a low probability storm. Conversely, a drainage system designed for a frequent storm interval (i.e., two year) though less costly, may not prevent property flooding, damage to public facilities, and potential loss of life in the event of a larger storm. Costs of improvements must be compared to potential risks.

When the County's drainage system is routed under Highway 101 into the Oregon Department of Transportation's (ODOT's) drainage system, ODOT guidance should be utilized as the final storm selection criterion. A 50-year recurrent storm should be utilized for facilities draining through major highways including Highway 101 based upon the Hydraulics Manual (Oregon Department of Transportation, April 2014). A 25-year storm will be utilized for drainage facilities on neighborhoods and streets. In cases where roadway overtopping is a problem, a larger storm, the 100-year storm, should be analyzed to determine if backwater flooding problems will cause property damage.

A 25-year, 24-hour storm will be assigned for most of the County roads and conveyance systems draining less than 640 acres. For major river roads of conveyance systems draining more than 640 acres a 50-year, 24-hour storm will be selected. Table 5.1.1 lists design storm rainfall totals and analysis areas.

TABLE 6.1.1
DESIGN STORM RAINFALL TOTALS AND ANALYSIS AREAS

Design Storm Frequency	24-Hour Rainfall Total	Required For Drainage Basins
2-year, 24-hour	5.0 inches – Coast Line-Inland 6.0 inches – Agness Area	Endangered Species Act - Section 7
25-year, 24-hour	8.0 inches – Coast Line-Inland 9.0 inches – Agness Area	Coastal County Roads, Drainage Areas Under 640 acres.
50-year, 24-hour	9.0 inches – Coast Line-Inland 10.0 inches – Agness Area	Highway 101 Crossings, River Roads, Drainage Areas over 640 acres.
100-year, 24-hour	10.0 inches – Coast Line-Inland 11.0 inches – Agness Area	Highly Critical Areas, Bridges, Structures

Additional information regarding rainfall events is located in Section 2. Figure 2.3.1 includes the Oregon precipitation map (25-year event). Figure 2.3.3 includes the 25-year 24-hour Oregon isopluvial map.

6.2 Basin Analysis Method

Stormwater generally refers to rainfall runoff, snowmelt runoff, and surface runoff and drainage. Effective stormwater management includes the accurate sizing of stormwater conveyance systems, specifically, culverts, catch basins, detention and/or retention ponds, and storm drainage pipelines. Sizing for conveyance systems is generally estimated by using instantaneous peak runoff of specified frequency from a storm.

There are numerous methods for estimating peak runoff. For purposes of this Master Plan, the Rational Method, Soil Conservation Service Runoff Method (SCS TR-20 model), and the United States Geological Survey (USGS) StreamStats Program was used to estimate peak runoff values.

The Rational Method is commonly used for engineering analysis of drainage basins; its use is most applicable for analyzing areas with simple drainage systems. For this Master Plan, an alternate analysis tool, the SCS Method, was used for developed areas with complex drainage systems. StreamStats was used for the larger drainage basins and provided basin area, land coverage percentages and runoff quantities.

The following sections describe the methods in the analysis.

Rational Method

The Rational Method is based upon the concept of mass balance and relates rainfall intensity to runoff intensity. The Rational Method incorporates the use of the Rational Formula:

$$Q = CIA$$

Q = Peak discharge (cfs)
C = Runoff coefficient (dimensionless)
I = Rainfall intensity (in/hr)
A = Watershed area (ac)

Once values for runoff coefficient, rainfall intensity, and watershed area have been determined, peak discharge (Q) values for drainage basins in the area are calculated. Each of the parameters in the formula is described hereafter.

Runoff Coefficients

Values for the runoff coefficient (C), are readily available in most hydrology or engineering handbooks. Runoff coefficients increase with the amount of pervious area that is expected per each area. Some common C values are listed in Table 6.2.1.

TABLE 6.2.1
COMMON RUNOFF COEFFICIENTS

Area Description	Runoff Coefficient
Downtown Business	0.70 to 0.95
Neighborhood	0.50 to 0.70
Single Family (Residential)	0.30 to 0.50
Detached Multi-units (Residential)	0.40 to 0.60
Attached Multi-units (Residential)	0.60 to 0.75
Light Industrial	0.50 to 0.80
Parks, Cemeteries	0.10 to 0.25
Unimproved	0.10 to 0.30

Rainfall Intensity

Rainfall intensity (i) is the intensity measured in inches per hour of rainfall for a given design storm at a given time in the storm. The rainfall intensity is equal to the time of concentration. Intensity is typically determined from Rainfall Intensity Duration Frequency (IDF) curves. The IDF curves are used to determine rainfall intensity associated with a specific storm frequency. The IDF curves for Oregon are located in Chapter 7 of the Hydraulics Manual (Oregon Department of Transportation, April 2014).

Time of Concentration

Rainfall duration in a drainage basin is computed by determining the time of concentration for the drainage basin. Time of concentration (t_c) is defined as the longest travel time it takes a particle of water to reach a discharge point in a watershed from its origin. While traveling towards a discharge point, a water particle may experience sheet flow, shallow concentrated flow, open channel flow, or a combination of these. Once the drainage route and surfaces have been identified, Manning's equation is used to calculate the travel time of a water particle through a drainage basin. Time of concentration used for determining the intensity (i) in the Rational Method is expressed as:

$$t_c = kL^{0.77}s^{-0.385}$$

t_c = time of concentration
k = conversion constant (0.0078 of L in feet, 0.0195 for L in meters)
L = maximum length of flow
s = average slope of watershed

Area

The final variable in the rational formula is the watershed area (A); which is determined from topographic maps. In cases where the drainage basin in question was associated with a river or tributary the USGS StreamStats application was used to develop the drainage basin.

Soil Conservation Service Method

The Soil Conservation Service (SCS) Method, commonly referred to as SCS TR-20, is a more sophisticated stormwater analysis tool than the Rational Method. Rather than simply determining the peak discharge, TR-20 utilizes a synthetic rainfall distribution to generate a hydrograph showing the runoff peak and volume. This method provides a more accurate assessment of the runoff volume because it sums the total volume discharged from the basin, rather than just the peak discharge.

The SCS Method is based on combining unit hydrographs resulting from bursts of rainfall that vary in magnitude, but occur in a predictable pattern. This pattern is defined by SCS as a rainfall distribution curve. Though variations in the storm intensity are synthetic, runoff generated from the storm is based on local characteristics including regional rainfall totals, soil permeability classifications, intensity of development, drainage slopes, area of impact, and even the time lag created by conveyance of flows through the drainage elements.

The benefit of the SCS Method is areas within a basin, called subbasins, are simultaneously modeled with other subbasins by combining hydrographs using excess runoff and time to peak runoff. This process allows for a more accurate prediction of the peak discharge and calculation of the total runoff volume.

In comparison, the simplicity of the Rational Method requires the results to be more conservative than the SCS Method. Consequently, by using the more complex method, smaller pipe may be used if sufficient detail of the basin is available. A brief description of the fundamentals of the SCS Method is provided below.

Synthetic Storm Distribution

The basis of the TR-20 Method is the synthetic storm. This storm is based on SCS research that suggests the intensity of rainfall within a storm occurs in a predictable pattern. The SCS has applied this to the entire continental United States and developed rainfall mass distributions for four geographic locations. Storms occurring in Curry County and most of the Pacific Northwest have been classified as Type 1A storms. Type 1A storms represent the northern Pacific maritime climate with wet winters and dry summers. Rainfall gradually increases until about the 10-hour point and then gradually decreases. The Natural Resources Conservation Service (NRCS) storm type distribution is illustrated in Figure 6.2.1. The rainfall distribution hydrograph for a Type 1A 24-hour storm is illustrated in Figure 6.2.2.

FIGURE 6.2.1
AREA NRCS RAINFALL DISTRIBUTIONS

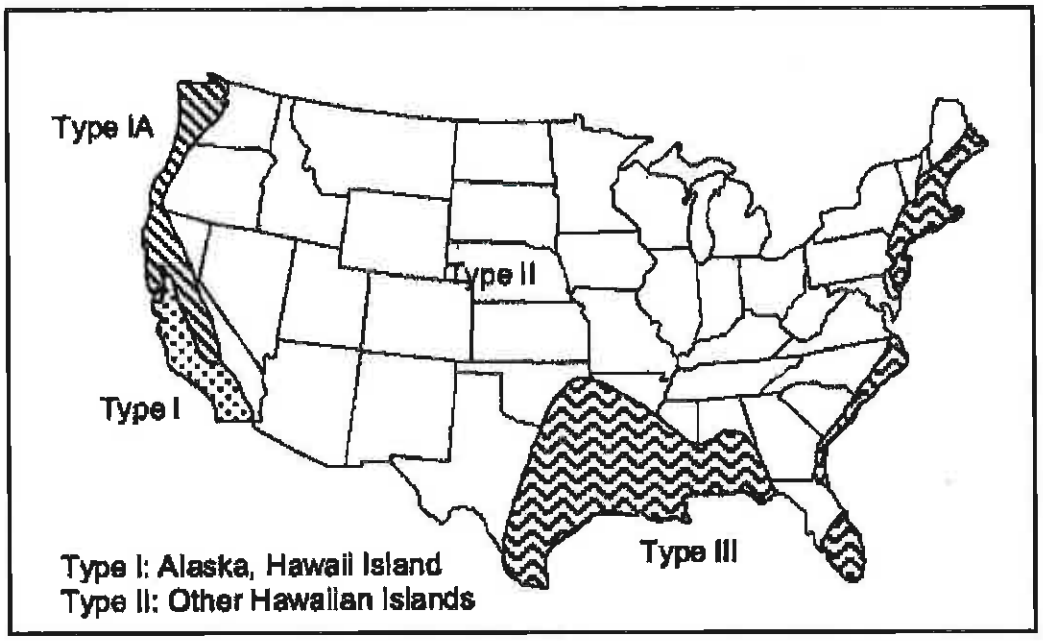
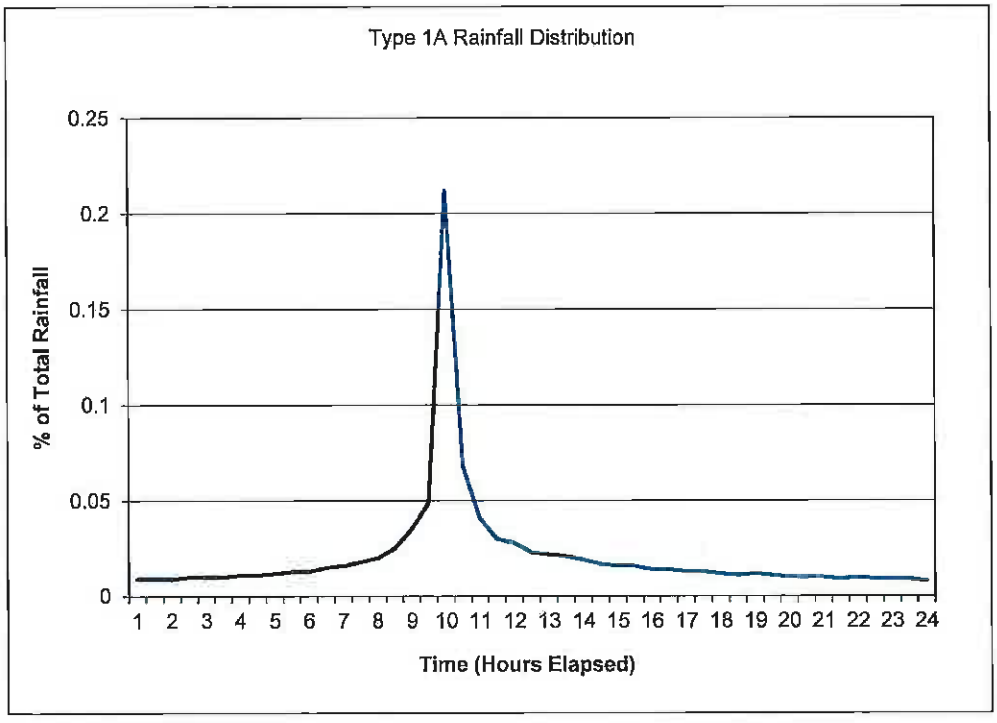


FIGURE 6.2.2
RAINFALL DISTRIBUTION FOR A TYPE 1A 24-HOUR STORM



Soil Classification and Curve Number

The types of soil and groundcover occurring within a basin are used in the SCS Method. This information determines the amount of rainfall retained on the surface and the excess rainfall generating runoff. The soil group are established using the NRCS Web Soil Survey to determine the soils groups of A, B, C or D. Groundcovers are classified by Curve Numbers (CN) and established using the soil group.

Curve Numbers are similar to the runoff coefficient, (C), used with the Rational Method. Curve Numbers range from thirty to one hundred; lower numbers indicate low runoff potential while larger numbers are for increasing runoff potential. The lower the curve number, the more permeable the soil is. The curve number equation demonstrates how runoff cannot begin until the initial abstraction has been met.

The table below shows the CNs used in the analysis of the basins within this project. The ground cover designations that were used during this Master Plan were chosen to match the categories and CN used by the StreamStats program. Values are determined by the National Land Cover Database (NLCD), to maintain consistency thought the Master Plan. Below Table 6.2.2 contains the ground covers and associated CN used during the analysis.

TABLE 6.2.2
TYPICAL SCS CN VALUES

GROUND COVER CHARACTERISTICS	CURVE NUMBER FOR SOIL GROUP			
Ground Cover Type and Condition	**A Well-drained**	**B Moderate**	**C Poor**	**D Very poor**
Barren	70	81	88	92
Cultivated Crops	62	74	82	86
Developed, High Intensity	88	92	93	94
Developed, Low Intensity	81	88	90	93
Developed, Medium Intensity	84	89	93	94
Developed, Open Area	52	68	78	84
Forrest and Shrub Land	42	42	50	58
Herbaceous	63	63	75	85
Impervious Area	98	98	98	98
Open Water	100	100	100	100
Wetlands	86	86	86	86

Rainfall

Storm rainfall is determined from the design frequency or design storm as previously mentioned. Total rainfall for the design storm used in Curry County is based on the National Oceanic and Atmospheric Administration (NOAA) Precipitation Maps for the western United States.

Time of Concentration

As in the Rational Method, the time of concentration is an important parameter in the SCS Method. Unlike the Rational Method, the SCS utilizes T_c to determine the time to peak discharge rather than the time of peak rainfall. Time of concentration used in the SCS Method is expressed as:

$$T_c = L^{0.8}\left(\frac{\left(\frac{1{,}000}{CN} - 9\right)^{0.7}}{4{,}407(S_g)^{0.5}}\right)$$

T_c = Time of Concentration
L = Longest Flow length
CN = Curve Number
S_g = Average slope

Time to Peak

The Time to Peak, T_p, is the amount of time to the peak discharge. The time to peak is calculated with the unit hydrograph and time of concentration. The time to peak is not equal to the time of concentration.

Peak Runoff

The peak runoff is the peak amount of runoff discharged during a rainfall event. The peak runoff is calculated with the SCS Method, and varies greatly with the slope and land use of the area in the drainage area. The peak flow is usually in cubic feet per second (cfs), and is used to size structures associated with the storm drain system.

Unit Hydrograph

Runoff generated from a storm is described by a hydrograph. A hydrograph is a predicted discharge wave that, similar to a bell curve, starts slowly then increases with time to a peak before decreasing to its pre-storm levels.

A unit hydrograph is a dimensionless hydrograph, hypothetically generated by one inch of excess precipitation resulting from a uniformly distributed storm of uniform duration over a uniform area. The peak discharge (the y axis) and the time of peak discharge (the x axis) for the unit hydrograph are plotted as fractions of the peak and time to peak runoff, respectively. This standardized hydrograph is used to generate site specific hydrographs by combining rainfall and time to the unit values. The calculation, called runoff generation, is performed as described hereafter.

Runoff Generation

In order to dimension the unit hydrograph and generate runoff according to TR-20 predictions, rainfall is assumed to fall on an area in a burst. The burst of rain is assumed to flow downstream where it is collected and discharged from the area over an extended time interval.

The duration of the discharge is extended because not all of the rainfall reaches the discharge at the same time. Some of the flow is retained because of soil characteristics; some is delayed because of distance and velocity of travel.

At the same time the water from the farthest point of the basin reaches the discharge point, the lower areas of drainage are also contributing to the flow. The sum creates the peak discharge, which is shown on the y axis of the hydrograph. The time of the peak is similarly based on the time of travel and plotted as the x axis. Both the discharge and time of travel are utilized to dimension the unit hydrograph.

Once dimensioned, the unit hydrograph provides the runoff from one interval of the storm's duration. To predict the impact from an entire storm, it is necessary to generate and sum hydrographs for each storm interval. Each new hydrograph generated is based on the mass of rainfall occurring at that particular time, as predicted by the SCS synthetic rainfall distribution curve. As each burst of rainfall generates a new runoff hydrograph, it is added to the preceding hydrograph with its axis displaced by the time between bursts. Once the entire storm is summed, a single hydrograph result. This hydrograph depicts the runoff prediction for that subbasin.

Hydrograph Routing

Within complex basins, there are often several subbasins, each generating a runoff hydrograph. Basins with subbasins usually present themselves in developed areas where there is storm infrastructure or other man-made drainage rerouting. In order to observe the effects of a storm on an entire basin, it is necessary to route each subbasin hydrograph throughout the system. Since each hydrograph is based on the time of concentration, it is possible to add each subbasin hydrograph at its discharge point. The process is repeated until all of the hydrographs have been routed through the entire basin and summed at the point of discharge. This process is called hydrograph routing.

StreamStats

StreamStats is a map-based website from USGS that incorporates data from a multitude of government data sets and programs that are useful for water-resources planning and management, engineering and design purposes. StreamStats delineates the drainage basins and runoff for user-selected sites on streams. StreamStats determines runoff at different storm intervals and provides information on drainage-basin boundary, ground coverage, slope and length. StreamStats can only be used on defined streams and is not available for small tributaries or sheet flows. The program is best suited for areas where there is little to no man-made disturbances to the flow of stormwater. In areas that are developed the StreamStats application is only to be used as an initial assessment because it does not use information about local storm infrastructure to define the basins.

6.3 Infrastructure Analysis

Channelization

As stormwater flows downstream, it travels in some type of channel, for example, a ditch, culvert, natural creek, or pipes. A common semi-empirical formula used to characterize the hydraulic behavior of these conduits is Manning's Equation:

$$Q = \left(\frac{1.49}{n}\right) * A * R^{2/3} * S^{1/2}$$

Q = Channel Flow (cfs)
A = Cross-Sectional Area (sf)
R = Hydraulic Radius=A/P (ft)
P = Wetted Perimeter (ft)
S = Channel Slope (ft/ft)
n = Manning's Roughness Coefficient

Channels vary widely in their hydraulic performance. The roughness coefficient "n" is used to describe the texture of the channel in terms of the material of construction. Materials differ in surface friction. If a channel is made up of a rough surface, there is more friction as the water flows through the channel, and more energy is used to overcome that friction, this correlated to a high Manning's "n" value. The result is lower water velocities and therefore lower flows. Table 6.3.1 lists some commonly used Manning's "n" values for different pipe and channel surfaces.

TABLE 6.3.1
TYPICAL MANNING'S ROUGHNESS COEFFICIENTS

Surface or Material	Manning's "n"
Pipe Material	
Aluminized Steel (AS)	0.025 (New 0.015)
Corrugated Aluminum (CA)	0.025
Corrugated Steel (CS)	0.025
Polyethylene (PE)	0.015
Poured Concrete (PC)	0.015 (New 0.015)
Open Channel	
Bare Earth	0.022
Rubble	0.032
Earth, Stone and Weeds	0.035

6.4 System Modeling and Capacity Evaluation

The storm modeling and capacity evaluation was completed using HydroCad™ packaged computer applications which uses the SCS Method to compute both storm drain capacities and drainage basin runoff. The results from HydroCad™ helps to determine if the storm drain needs to be upsized based on the calculated capacities and runoff values.

Factors used to evaluate the basin and storm drains includes, but is not limited to: land use, soil type, basin size, infrastructure slopes. The information for the inputs comes from a collection of aerial mapping, previous studies, field investigations, and information from County Staff. Tables that summarize and compute the inputs for each basin and associated storm drainage are located in Appendix XX. For basins that were defined using the StreamStats application the runoffs were verified using the HydroCad™ model to keep consistent with those that did not have their basin defined with StreamStats. Report sheets showing the outputs of the runoff and capacities calculated in the HydroCad™ model are included in Appendix XX.

SECTION 7:

STORM DRAIN MODEL

SECTION 7: STORM DRAIN MODEL

7.1 Identified Modeling Criteria

The existing culverts and basins within the study area have been identified and modeled to determine the capacity of various system components. Factors affecting the modeling were land use, soil type, surface conditions, and vegetation in both undeveloped and developed areas. Each basin identified in this section has been modeled based on the estimated drainage area as determined from topographic mapping, ground surface slopes, and StreamStats. The presence of drainage facilities is based on the County's Geographic Information System (GIS) mapping, previous studies, field investigations, and information from County Staff.

The County's culvert inventory includes 3,524 culverts within basins located throughout the entire County. Time and budget constraints did not allow for modeling of all the culverts and basins. In order to narrow down the scope of the study, modeling was limited to the following criteria:

- Cross culverts 18 inches or larger.
- County rated culverts in poor (1) or fair (2) condition. The rating description is in Section 3.
- Projects identified by the County as having insufficient capacity.
- Projects identified and requested by the County as problem areas.
- Projects identified by the public as problem areas.
- Basins identified as populated areas for quick reference.

The SCS (TR-20) Method, as described in Section 6, was used to calculate stormwater discharge volumes for each basin and selected subbasins. The SCS Method utilizes curve numbers to rate the runoff potential of an area based on land use, cover condition and soil type. Basin runoff and culvert capacity are a result of HydroCad™ modeling. Results for individual culvert calculations are in Appendix XX.

7.2 Culvert Model Results

Culvert modeling results and recommendations are provided for each region in this section. Recalculation and/or redesign will be required to ensure that adequate drainage and capacity is obtained where estimations were made for basins and culverts. In some instances, the natural grade and condition of the basins will differ from the grades used in the Master Plan. Recalculation and/or redesign will be required to ensure that adequate drainage is obtained. Adjustments will be completed with final design for improvements or developments. Permitting and consultation with affected agencies may impact proposed improvements that could increase the size and requirements of the project. Model results and recommendations were based on the existing basin conditions. Buildout conditions were not identified or modeled because no development was identified by the County within their jurisdiction.

A summary of information utilized in Tables 7.2.1 to Table 7.2.2 for culvert identification, existing culvert data, modeling, recommendations, and cost is provided hereafter.

Road Number and Name

The roads are categorized into three separate sections. The roads in Northern Curry County are numbered from 106 to 280, Central Curry County range from 375 to 695, and Southern Curry County include 703 to 897.

Milepost

Mileposts (MP) provided the location of the segment of roadways where the culvert is located.

Storm Frequency for Modeling

Storm infrastructure modeling for the study area utilize the following storm frequency scenarios:

- A 25-year, 24-hour storm frequency was selected as appropriate for most County roads and conveyance systems draining less than 640 acres.
- A 50-year, 24-hour storm frequency was selected for major river roads per County request and conveyance systems draining more than 640 acres per County Ordinance 3.433 (4). The major river roads include Floras Lake, Sixes River, Elk River, Rogue River, Pistol River, Chetco River, and Winchuck River.

Section 6 provides detailed information on depth and storm frequencies used for this study.

Existing Culvert Size, Type, and Length

Culverts were modeled using their listed material, size, and length from the Curry County Road Department inventory.

Existing Polyethylene (PE) and Precast Concrete (PC) culverts were modeled using a Manning's friction factor of 0.015. See Section 6 for information regarding Manning's friction factor.

Existing corrugated Aluminized Steel (AS), Corrugated Steel (CS), and unknown culverts were modeled using a Manning's friction factor of 0.025.

Depth of Existing Culvert

The County does not keep records on depth of the culverts. The Dyer Partnership performed field investigations on some culverts to determine average depth. The average depth of the culvert is measured to the top of the pipe and determined to be 5-10 feet.

Existing Culvert Capacity

Existing modeled culvert capacity is divided by modeled basin runoff to obtain existing culvert capacity as a percentage. Where existing culvert basin runoff is greater than eighty percent of the culvert capacity, the culvert was deemed undersized.

Recommended Culvert Size and Type

Undersized culverts were provided with a recommended culvert size and type of material as follows:

- All recommended culverts 48-inches or smaller are smooth wall HDPE culverts, with an exception for County maintained roads that are located on federal grounds where helical AS was recommended in the event of wildfires.
- All culverts larger than 48-inches were recommended to be helical AS.
- All proposed culverts were modeled with a conservative Manning friction factor of 0.015, which corresponds to the design roughness coefficient of smooth wall HDPE and helical AS.

For culverts where the basin runoff is only a small portion of the culvert capacity there is no recommendation to downsize the culvert; in the event the culvert had been sized for fish usage, the basin data was incorrect, or other special requirements were needed.

All culverts are expected to maintain existing orientation and alignment if replaced and would not require additional length than the length identified by the County's inventory.

Slope

The estimated slope of four percent (½ inch per foot) was selected for culverts that were not identified during The Dyer Partnership field investigations. A four percent slope provides a minimum velocity of over 2.0 feet per second for each size of culvert. The slope was identified by the County as the average slope used most frequently within the system for installing culverts. A clinometer was used in field investigations to measure the slope of the culverts.

Structure

Existing culverts with headwalls, standpipes or other structures were assumed to be replaced with the same structures or special implement.

TABLE 7.2.1
STRUCTURE ABBREVIATIONS

Structure	Abbreviations
Catch Basin	CB
Manhole	MH
Standpipe	SP
Beveled Inlet	BI
Beveled Outlet	BO
Headwall	HW
Wingwall	WW

Capital Improvement Plan Projects

The Capital Improvement Plan (CIP) projects identified in this Master Plan have special requirements, require special permitting, are located in an identified fish stream, require technical engineering design, have specific installation methods, or are a larger dimension than the County's Crew has equipment to install or repair. The County's limitations on culvert replacement are culverts that are larger than 48-inch

or deeper than ten feet. The County does not have shoring equipment to safely replace these culverts. A description of each CIP project is located in Section 8.

Cost

The cost of culverts that are not identified as CIP projects are based on a unit price per lineal foot for recommended size, depth and type of material. A lump sum price was added for trench patch paving that was dependent of culvert size for width of path, this price assumed a 30-foot-wide roadway. Culverts that have an associated structure are provided with a cost per each and added to the estimate. The combined cost of the pipe, trench patch and any associated structures was multiplied by a construction factor which accounts for construction facilities, temporary controls, demolition, site prep, direction of traffic and environmental controls. It is expected culverts constructed by the Curry County Road Department will provide greater cost savings compared to the costs listed in this Master Plan. Permitting requirements and depth of these culvert is unknown and will need to be evaluated on a case-by-case basis. A breakdown of the unit prices is in Appendix XX.

Tables 7.2.1 through 7.2.3 provide modeling results and recommendations for each region. Figures 7.2.1 through 7.2.3 provide a map of basins for each of the existing culverts modeled, provide a scaled version of the basin size, and the culvert rating. Ratings include the following conditions: fair, fair or poor, poor, and under capacity

TABLE 7.2.2
NORTHERN REGION MODELING RESULTS

Road Name	Mile Point	Year Storm Model	Existing Culvert Size (in)	Existing Culvert Capacity	New Culvert Size	Slope	Structure	Cost $
Hazel St.	0.004	25-YR	18	135%	18	2%		$19,598
Langlois Mtn Rd.	5.694	25-YR	18	25%	18	4%*		$15,860
Langlois Mtn Rd.	6.319	25-YR	18	29%	18	4%*		$19,110
Langlois Mtn Rd.	6.688	25-YR	18	48%	18	4%*		$21,060
Langlois Mtn Rd.	7.316	25-YR	36	55%	-	4%		CIP
Langlois Mtn Rd.	7.669	25-YR	18	77%	18	4%*		$20,329
Floras Creek Rd.	0.463	50-YR	18	55%	18	4%*		$45,760
Floras Creek Rd.	1.811	50-YR	18	107%	18	4%*		$36,010
Floras Creek Rd.	2.069	50-YR	72	7%	-	3%		CIP
Floras Creek Rd.	2.107	50-YR	60	39%	-	12%		CIP
Floras Creek Rd.	2.164	50-YR	60	36%	-	11%		CIP
Floras Creek Rd.	2.697	50-YR	18	95%	24	4%*		$24,570
Floras Creek Rd.	2.752	50-YR	24	60%	24	4%*		$22,133
Floras Creek Rd.	2.926	50-YR	72	28%	-	18%		CIP
Floras Creek Rd.	3.970	50-YR	48	133%	-	10%		CIP
Floras Creek Rd.	4.298	50-YR	24	148%	30	4%*		$21,840
Floras Creek Rd.	5.009	50-YR	18	29%	18	4%*		$16,445
Floras Creek Rd.	5.165	50-YR	48	25%	-	11%		CIP
Floras Creek Rd.	5.374	50-YR	18	34%	18	4%*		$19,695
Floras Creek Rd.	5.725	50-YR	36	49%	-	8%		CIP
Floras Creek Rd.	6.206	50-YR	18	22%	18	4%*		$19,800
Floras Creek Rd.	6.882	50-YR	18	36%	18	4%*		$19,300
Floras Lake Lp.	0.513	25-YR	18	240%	-	5%		CIP
Floras Lake Lp.	0.851	25-YR	24	77%	24	3%		$23,985
Floras Lake Lp.	1.753	25-YR	36	236%	24	FLAT		$21,548
Lakeshore Dr.	0.088	25-YR	48	67%	48	2%		$32,695
Floras Lake Rd.	0.363	25-YR	18	75%	18	2%		$15,860
Floras Lake Rd.	0.793	25-YR	36	59%	36	3%		$22,750
Floras Lake Rd.	1.050	25-YR	24	168%	24	4%*		$19,110
Lakes End Drive.	0.047	25-YR	18	19%	18	4%*		$17,485
Lakes End Drive.	0.308	25-YR	18	53%	18	4%*		$15,860
Boice Cope Rd.	0.080	25-YR	36	99%	36	3%		$35,750
County Shop Rd.	0.004	25-YR	24	45%	24	2%		$23,985
County Shop Rd.	0.171	25-YR	36	62%	-	4%*		CIP
Childers Rd.	0.129	50-YR	72	186%	-	3%		CIP

Road Name	Mile Point	Year Storm Model	Existing Culvert Size (in)	Existing Culvert Capacity	New Culvert Size	Slope	Structure	Cost $
Sixes River Rd.	0.010	50-YR	18	33%	18	4%*		$19,110
Sixes River Rd.	0.173	50-YR	72	30%	-	4%*		CIP
Sixes River Rd.	2.733	50-YR	60	24%	-	5%		CIP
Sixes River Rd.	7.279	50-YR	36	46%	-	4%*		CIP
Sixes River Rd.	7.376	50-YR	36	27%	-	4%*		CIP
Sixes River Rd.	7.853	50-YR	18	35%	18	4%*	SP	$21,645
Sixes River Rd.	7.988	50-YR	24	125%	24	4%*		$32,614
Sixes River Rd.	8.477	50-YR	18	17%	18	4%*		$16,120
Sixes River Rd.	8.666	50-YR	18	12%	18	4%*		$16,445
Sixes River Rd.	8.738	50-YR	48	55%	-	4%*		CIP
Sixes River Rd.	8.961	50-YR	18	81%	18	4%*		$18,070
Sixes River Rd.	10.217	50-YR	18	30%	18	4%*		$16,445
Sixes River Rd.	10.238	50-YR	18	41%	18	4%*		$18,558
Grassy Knob Rd.	0.127	25-YR	18	58%	18	4%*		$15,860
Grassy Knob Rd.	0.290	25-YR	18	12%	18	4%*		$28,860
Grassy Knob Rd.	0.501	25-YR	18	16%	18	4%*		$28,860
Grassy Knob Rd.	0.591	25-YR	36	4%	-	14%		CIP
Grassy Knob Rd.	0.693	25-YR	18	9%	18	4%*		$15,860
Grassy Knob Rd.	0.771	25-YR	24	15%	24	4%*		$53,235
Grassy Knob Rd.	0.996	25-YR	18	58%	18	4%*		$16,510
Grassy Knob Rd.	1.094	25-YR	18	140%	24	4%*		$23,985
Grassy Knob Rd.	1.614	25-YR	18	119%	18	4%*		$17,485
Grassy Knob Rd.	1.790	25-YR	18	106%	18	4%*		$19,110
Grassy Knob Rd.	1.976	25-YR	24	13%	24	4%*		$28,860
Grassy Knob Rd.	2.102	25-YR	24	3%	24	4%*		$33,930
Grassy Knob Rd.	2.129	25-YR	24	12%	24	4%*		$34,125
Grassy Knob Rd.	2.212	25-YR	24	8%	24	4%*		$34,125
Grassy Knob Rd.	2.283	25-YR	18	33%	18	4%*		$25,610
Grassy Knob Rd.	2.296	25-YR	18	28%	18	4%*		$25,610
Grassy Knob Rd.	2.489	25-YR	18	9%	18	4%*		$15,860
Grassy Knob Rd.	3.140	25-YR	18	112%	18	4%*		$15,860
Grassy Knob Rd.	3.332	25-YR	18	32%	18	4%*		$17,485
Grassy Knob Rd.	3.591	25-YR	18	41%	18	4%*		$19,110
Grassy Knob Rd.	3.939	25-YR	18	33%	18	4%*		$20,735
Mckenzie Rd.	0.014	25-YR	18	43%	18	4%*		$16,835
Mckenzie Rd.	0.250	25-YR	18	119%	18	4%*	SP	$38,123
Elk River Rd.	0.327	50-YR	24	68%	24	4%*		$39,878

Road Name	Mile Point	Year Storm Model	Existing Culvert Size (in)	Existing Culvert Capacity	New Culvert Size	Slope	Structure	Cost $
Elk River Rd.	0.530	50-YR	18	43%	18	4%*		$17,258
Elk River Rd.	2.610	50-YR	18	108%	18	4%*		$18,883
Elk River Rd.	2.865	50-YR	18	55%	18	4%*		$16,445
Elk River Rd.	2.980	50-YR	24	16%	24	4%*		$22,133
Elk River Rd.	3.583	50-YR	36	17%	-	3%		CIP
Elk River Rd.	3.585	50-YR	72	17%	-	2%		CIP
Elk River Rd.	3.916	50-YR	18	119%	24	4%*		$19,695
Elk River Rd.	4.049	50-YR	48	18%	-	8%		CIP
Elk River Rd.	4.571	50-YR	18	91%	18	4%*		$18,070
Elk River Rd.	4.666	50-YR	18	55%	18	4%*		$19,695
Elk River Rd.	4.739	50-YR	36	5%	36	10%		$24,635
Elk River Rd.	4.755	50-YR	36	9%	36	8%		$25,285
Elk River Rd.	5.072	50-YR	36	31%	36	8%		$29,835
Elk River Rd.	5.190	50-YR	18	338%	18	4%*		$19,695
Elk River Rd.	5.350	50-YR	18	32%	18	4%*		$17,095
Elk River Rd.	5.407	50-YR	18	62%	18	4%*		$21,320
Elk River Rd.	6.021	50-YR	24	24%	24	4%*		$29,445
Elk River Rd.	6.070	50-YR	18	75%	18	4%*		$17,258
Elk River Rd.	6.222	50-YR	18	76%	18	4%*		$16,445
Elk River Rd.	6.370	50-YR	18	42%	18	4%*		$15,633
Elk River Rd.	6.436	50-YR	18	64%	18	4%*		$16,445
Elk River Rd.	6.562	50-YR	48	73%	-	2%		CIP
Elk River Rd.	6.692	50-YR	18	39%	18	4%*		$22,945
Elk River Rd.	7.134	50-YR	24	44%	-	4%*		$19,695
Elk River Rd.	7.230	50-YR	18	111%	24	4%*		$21,158
Elk River Rd.	7.396	50-YR	O	73%	-	4%*		CIP
Elk River Rd.	7.463	50-YR	24	47%	24	4%*		$24,570
Nicholson Dr.	0.029	25-YR	18	85%	18	4%*		$18,070
Knapp Rd.	0.087	25-YR	24	21%	24	4%*		$20,670
Knapp Rd.	0.274	25-YR	24	52%	24	4%*		$19,695
Silver Butte Rd.	0.417	25-YR	24	75%	24	4%*	SP	$26,520
Myrtle Ln.	0.004	25-YR	18	60%	18	4%*		$15,860
Myrtle Ln.	0.110	25-YR	18	30%	18	4%*		$15,860
Zumwalt Ln.	0.033	25-YR	18	20%	18	4%*		$17,485
Zumwalt Ln.	0.072	25-YR	18	26%	18	4%*		$16,673
Hensley Hill Rd.	0.769	25-YR	18	54%	18	FLAT		$16,023
Paradise Point Rd.	0.111	25-YR	18	102%	18	4%*		$20,735

Road Name	Mile Point	Year Storm Model	Existing Culvert Size (in)	Existing Culvert Capacity	New Culvert Size	Slope	Structure	Cost $
Paradise Point Rd.	0.584	25-YR	18	76%	18	4%		$16,835
Cemetery Loop Rd.	0.662	25-YR	18	112%	18	4%*		$19,110
Cemetery Loop Rd.	1.256	25-YR	48	18%	-	12%		CIP
China Mountain Rd.	2.137	25-YR	18	22%	18	4%*		$14,235
China Mountain Rd.	2.304	25-YR	18	28%	18	4%*		$14,235
China Mountain Rd.	5.611	25-YR	18	39%	18	4%*		$13,748
China Mountain Rd.	5.685	25-YR	18	44%	18	4%*		$12,610

*Assumed Slope

TABLE 7.2.3
CENTRAL REGION MODELING RESULTS

Road Name	Mile Point	Year Storm Model	Existing Culvert Size (in)	Existing Culvert Capacity	New Culvert Size	Slope	Structure	Cost $
Agness-Illahe Rd.	1.336	50-YR	36	11%	36	4%		$23,400
Agness-Illahe Rd.	1.338	50-YR	24	56%	24	4%*		$19,598
Agness-Illahe Rd.	1.841	50-YR	60	19%	-	6%		CIP
Oak Flat Rd.	0.006	50-YR	18	673%	36	4%*		$22,750
Oak Flat Rd.	1.697	50-YR	18	457%	30	4%*		$18,330
Oak Flat Rd.	2.047	50-YR	36	50%	-	6%		CIP
Oak Flat Rd.	2.410	50-YR	48	66%	-	4%		CIP
Oak Flat Rd.	2.616	50-YR	18	215%	24	4%*		$16,673
Arizona Ranch Rd.	0.753	25-YR	18	42%	18	4%*		$22,360
Euchre Creek Rd.	0.006	50-YR	18	107%	18	4%*		$15,860
Euchre Creek Rd.	0.203	50-YR	18	42%	18	4%*		$15,210
Euchre Creek Rd.	0.809	50-YR	24	26%	24	4%*		$20,573
Euchre Creek Rd.	0.882	50-YR	18	39%	18	4%*		$15,860
Euchre Creed Rd.	0.982	50-YR	18	13%	18	4%*		$15,860
Euchre Creek Rd.	1.081	50-YR	18	164%	24	4%*		$19,110
Coy Creek Rd.	0.034	25-YR	18	27%	18	4%*		$14,235
Ophir Rd.	0.957	25-YR	18	138%	24	4%*		$28,860
Ophir Rd.	1.177	25-YR	24	49%	24	4%*		CIP
Ophir Rd.	1.784	25-YR	18	73%	18	4%*		$41,860
Ophir Rd.	2.373	25-YR	18	48%	18	4%*		$21,060
Ophir Rd.	3.881	25-YR	36	23%	36	4%*		$52,000
Horizon Dr.	0.063	25-YR	18	60%	18	4%*		$15,860
Cedar Valley Rd.	4.014	25-YR	18	51%	18	4%*		$19,110

Road Name	Mile Point	Year Storm Model	Existing Culvert Size (in)	Existing Culvert Capacity	New Culvert Size	Slope	Structure	Cost $
Cedar Valley Rd.	5.234	25-YR	18	48%	18	4%*		$19,110
Cedar Valley Rd.	5.477	25-YR	18	54%	18	4%*	SP	$17,485
Ponderosa Rd.	0.016	25-YR	36x72	84%	-	1%		CIP
Ponderosa Rd.	0.178	25-YR	18	26%	18	4%*		$17,485
Ponderosa Rd.	0.200	25-YR	18	28%	18	4%*		$17,485
Ponderosa Rd.	0.273	25-YR	36	22%	36	3%		$29,250
Ponderosa Rd.	0.378	25-YR	36	52%	36	3%		$29,250
Nesika Rd.	0.071	25-YR	24	36%	24	4%*		$13,125
Nesika Rd.	0.073	25-YR	24	45%	24	4%*		$26,423
Nesika Rd.	0.239	25-YR	24	91%	24	4%*		$33,735
Hillside Acres Rd.	0.299	25-YR	36	16%	36	4%		$35,750
Hillside Acres Rd.	0.475	25-YR	18	80%	18	12%		$17,485
Hillside Acres Rd.	0.669	25-YR	18	130%	18	4%*		$27,235
N Bank Rogue River Rd.	1.582	50-YR	72	111%	-	FLAT		CIP
N Bank Rogue River Rd.	1.942	50-YR	18	18%	18	8%		$15,860
N Bank Rogue River Rd.	2.071	50-YR	18	37%	18	8%		$19,110
N Bank Rogue River Rd.	2.310	50-YR	24	9%	24	4%*		$33,735
N Bank Rogue River Rd.	2.351	50-YR	24	7%	24	4%*		$33,735
N Bank Rogue River Rd.	3.657	50-YR	18	136%	24	4%*		$19,110
N Bank Rogue River Rd.	4.043	50-YR	24	41%	24	4%*		$25,448
N Bank Rogue River Rd.	7.548	50-YR	O	31%	-	4%*		CIP
N Bank Rogue River Rd.	7.550	50-YR	O	31%	-	4%*	HW	CIP
Old Coast Rd.	0.596	25-YR	18	318%	30	4%*		$53,430
Old Coast Rd.	1.677	25-YR	24	96%	30	4%*		$22,718
Old Coast Rd.	1.701	25-YR	24	49%	24	4%*		$20,329
Old Coast Rd.	1.918	25-YR	18	39%	18	4%*		$15,210
Old Coast Rd.	2.207	25-YR	24	213%	-	4%*		CIP
Old Coast Rd.	2.210	25-YR	24	51%	-	4%*		CIP
Old Coast Rd.	2.212	25-YR	36	17%	-	8%		CIP
Old Coast Rd.	2.683	25-YR	24	18%	24	4%*		$14,235
Wedderburn Loop Rd.	0.070	25-YR	18	57%	18	4%*		$17,485
Wedderburn Loop Rd.	0.099	25-YR	18	74%	18	4%*		$20,735
Wedderburn Loop Rd.	0.148	25-YR	18	87%	18	4%*		$15,860
Wedderburn Loop Rd.	0.311	25-YR	24	37%	24	4%*		$26,423
Wedderburn Loop Rd.	0.433	25-YR	18	46%	18	4%*		$19,110
Wedderburn Loop Rd.	0.492	25-YR	18	46%	18	4%*		$19,923
Wedderburn Loop Rd.	0.554	25-YR	18	60%	18	4%*		$19,923

Road Name	Mile Point	Year Storm Model	Existing Culvert Size (in)	Existing Culvert Capacity	New Culvert Size	Slope	Structure	Cost $
Wedderburn Loop Rd.	0.985	25-YR	24	53%	24	4%*		$21,548
Wedderburn Loop Rd.	1.183	25-YR	18	196%	24	4%*		$23,985
Jerrys Flat Rd.	0.564	50-YR	18	71%	18	4%*		$23,985
Jerrys Flat Rd.	0.776	50-YR	18	22%	18	4%*		$30,485
Jerrys Flat Rd.	0.987	50-YR	24	9%	24	6%		CIP
Jerrys Flat Rd.	1.714	50-YR	18	66%	18	4%*		$18,070
Jerrys Flat Rd.	1.955	50-YR	36	69%	36	4%*		CIP
Jerrys Flat Rd.	2.048	50-YR	24	311%	36	4%*		$46,085
Jerrys Flat Rd.	2.587	50-YR	36	11%	36	4%*		$36,335
Jerrys Flat Rd.	3.034	50-YR	24	61%	24	4%*		$24,570
Jerrys Flat Rd.	4.298	50-YR	18	186%	24	4%*		CIP
Jerrys Flat Rd.	7.252	50-YR	24	10%	24	4%*		$24,570
Jerrys Flat Rd.	7.305	50-YR	18	5%	18	4%*		$18,070
Jerrys Flat Rd.	7.339	50-YR	18	19%	18	4%*		$18,070
Jerrys Flat Rd.	7.715	50-YR	18	614%	36	4%*		$29,835
Jerrys Flat Rd.	8.398	50-YR	24	102%	24	4%*		$34,320
Jerrys Flat Rd.	8.701	50-YR	48	48%	-	4%*		CIP
Jerrys Flat Rd.	8.905	50-YR	18	256%	24	4%*		$24,570
Jerrys Flat Rd.	9.460	50-YR	48	37%	-	4%*		CIP
Grizzly Mountain Rd.	0.763	25-YR	18	64%	18	4%*		$14,235
Grizzly Mountain Rd.	0.960	25-YR	36	52%	-	8%		CIP
Grizzly Mountain Rd.	1.055	25-YR	36	36%	36	8%		$22,750
Grizzly Mountain Rd.	1.088	25-YR	24	69%	24	4%*		$19,110
Grizzly Mountain Rd.	1.912	25-YR	18	132%	18	4%*		$20,735
Hunter Creek Complex Rd.	0.057	25-YR	18	70%	18	4%*		$15,210
Hunter Creek Complex Rd.	0.061	25-YR	18	70%	18	4%*		$15,210
Hunter Creek Rd.	0.081	50-YR	24	9%	24	4%*		$41,633
Hunter Creek Rd.	0.791	50-YR	36	18%	36	8%		$33,085
Hunter Creek Rd.	3.991	50-YR	24	15%	24	4%*		$26,195
Hunter Creek Rd.	4.030	50-YR	24	12%	24	4%*	BI, BO	$23,433
Hunter Creek Rd.	4.100	50-YR	24	50%	24	4%*	BI	$25,220
Hunter Creek Rd.	4.265	50-YR	24	8%	24	4%*	BI, BO	$23,433
Hunter Creek Rd.	4.316	50-YR	24	11%	24	4%*		$22,133
Hunter Creek Rd.	4.379	50-YR	24	49%	24	4%*		$22,133
Hunter Creek Rd.	4.409	50-YR	36	15%	36	8%		$33,085
Hunter Creek Rd.	4.490	50-YR	24	29%	24	4%*	BI	$22,783
Hunter Creek Rd.	4.549	50-YR	24	15%	24	4%*		$22,133

Road Name	Mile Point	Year Storm Model	Existing Culvert Size (in)	Existing Culvert Capacity	New Culvert Size	Slope	Structure	Cost $
Hunter Creek Rd.	4.692	50-YR	24	30%	24	4%*	BI	$20,345
Hunter Creek Rd.	4.731	50-YR	O	24%	30	6%	BI	$28,340
Hunter Creek Rd.	4.804	50-YR	24	28%	24	4%*	BI, BO	$23,433
Hunter Creek Rd.	4.823	50-YR	48	32%	-	6%	BI	CIP
Hunter Creek Lp.	0.255	25-YR	18	46%	18	4%*		$19,110
Hunter Creek Lp.	0.827	25-YR	18	139%	24	4%*		$20,573
Hunter Creek Lp.	1.101	25-YR	18	29%	-	4%*		CIP
Brooks Rd.	0.064	25-YR	24	123%	24	4%*	SP	$20,085
Brooks Rd.	0.213	25-YR	18	18%	24	4%*		$31,298
Brooks Rd.	0.335	25-YR	18	14%	18	4%*		$19,110
Brooks Rd.	0.341	25-YR	18	14%	18	4%*		$17,160
Brooks Rd.	0.406	25-YR	18	28%	18	4%*		$15,860
Mateer Rd.	0.015	25-YR	24	13%	18	4%*		$19,110
Mateer Rd.	0.603	25-YR	18	150%	24	4%*		$23,985
Mateer Rd.	0.700	25-YR	18	84%	18	4%*		$17,485
Mateer Rd.	0.903	25-YR	18	89%	18	4%*		$15,860
Hunter Creek Ht.	0.057	25-YR	18	46%	18	4%*		$17,485
Hunter Creek Ht.	0.138	25-YR	O	29%	18	12%		$16,673
Hunter Creek Ht.	0.301	25-YR	18	25%	18	4%*		$19,760

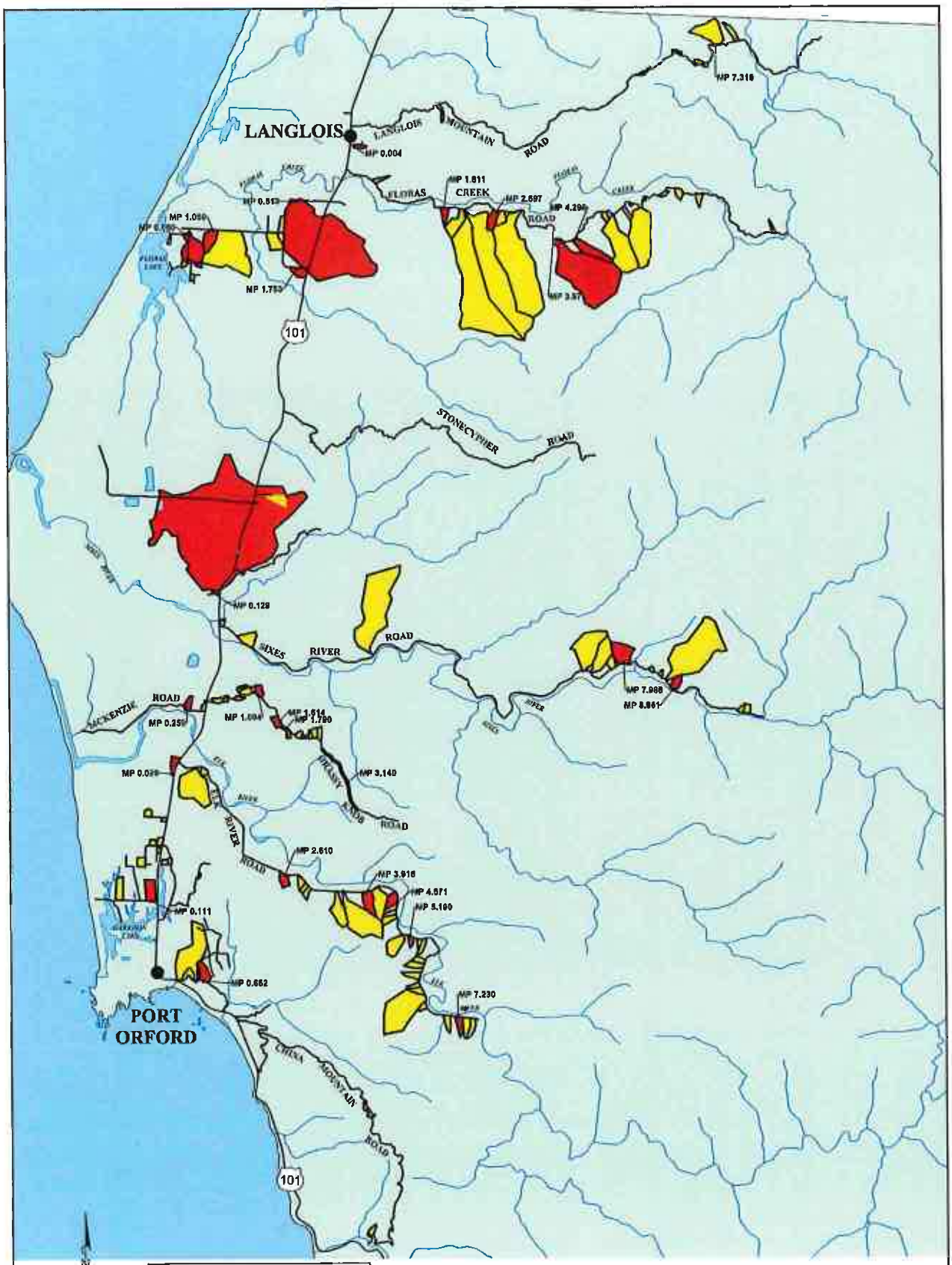
*Assumed Slope

TABLE 7.2.4
SOUTHERN REGION MODELING RESULTS

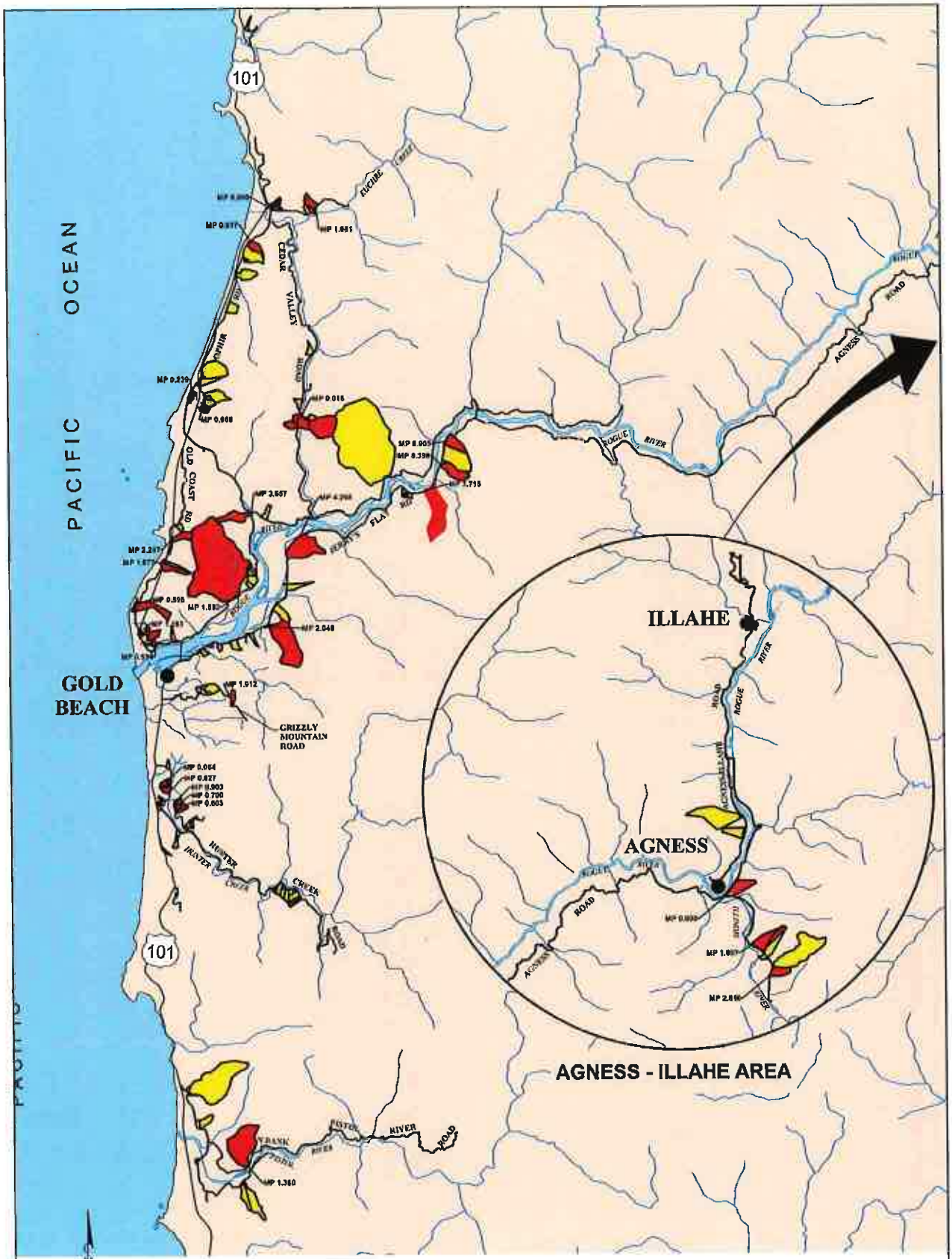
Road Name	Mile Point	Year Storm Model	Existing Culvert Size (in)	Existing Culvert Capacity	New Culvert Size	Slope	Structure	Cost $
Cape Ferrelo Rd.	1.264	25-YR	18	172%	24	4%		$23,985
Cape Ferrelo Rd.	1.580	25-YR	18	191%	24	4%*	CB	$27,235
Cape Ferrelo Rd.	1.771	25-YR	18	139%	24	4%*		$19,110
Pacific Crest Dr.	0.064	25-YR	18	176%	24	4%*		$23,985
Rainbow Rock Rd.	0.905	25-YR	18	45%	18	4%*		$15,860
Parkview Dr.	1.401	25-YR	18	278%	24	4%*	MH	$41,698
Dodge Ave.	0.390	25-YR	18	26%	18	4%*		$19,110
Old County Rd.	0.943	25-YR	18	126%	18	4%*		$15,860
N Bank Chetco River Rd.	0.902	50-YR	84	29%	-	4%		CIP
N Bank Chetco River Rd.	3.342	50-YR	48	56%	-	3%		CIP
N Bank Chetco River Rd.	5.116	50-YR	72	16%	-	1%		CIP
N Bank Chetco River Rd.	6.516	50-YR	66x48	30%	-	FLAT		CIP
N Bank Chetco River Rd.	6.744	50-YR	84	12%	-	6%		CIP
N Bank Chetco River Rd.	6.974	50-YR	72	15%	-	6%		CIP
Gardner Ridge Rd.	9.503	25-YR	18	53%	18	4%*		$15,860
Gardner Ridge Rd.	9.565	25-YR	24	28%	24	4%*		$16,673
Gardner Ridge Rd.	9.580	25-YR	18	27%	18	4%*		$16,673
Gardner Ridge Rd.	9.716	25-YR	18	82%	18	4%*		$15,860
Gardner Ridge Rd.	9.870	25-YR	18	94%	18	4%*		$14,235
Gardner Ridge Rd.	9.991	25-YR	18	76%	30	4%*		$18,330
Gardner Ridge Rd.	10.064	25-YR	18	25%	24	4%*		$15,210
Gardner Ridge Rd.	10.090	25-YR	18	6%	30	4%*		$18,330
Gardner Ridge Rd.	11.368	25-YR	18	28%	30	4%*		$18,330
S Bank Chetco River Rd.	1.872	50-YR	30	21%	-	4%		CIP
S Bank Chetco River Rd.	1.964	50-YR	30	5%	30	25%	SP	$24,668
S Bank Chetco River Rd.	3.850	50-YR	24	42%	120	10%		CIP
S Bank Chetco River Rd.	4.792	50-YR	18	92%	50	10%		CIP
S Bank Chetco River Rd.	4.812	50-YR	24	100%	24	3%		$19,110
Oceanview Dr.	0.217	25-YR	18	103%	24	FLAT		$19,110
Oceanview Dr.	1.369	25-YR	72	25%	-	8%		CIP
Oceanview Dr.	1.596	25-YR	24	43%	24	FLAT		$21,548
Oceanview Dr.	1.852	25-YR	72	11%	-	4%*		CIP
Oceanview Dr.	3.290	25-YR	36	76%	36	1%		$26,000
Museum Rd.	0.014	25-YR	18	53%	18	4%*	CB	$24,635
Museum Rd.	0.094	25-YR	36	68%	36	2%	SP	CIP

Road Name	Mile Point	Year Storm Model	Existing Culvert Size (in)	Existing Culvert Capacity	New Culvert Size	Slope	Structure	Cost $
Laurence Ln.	0.014	25-YR	36	231%	48	FLAT		$27,495
Jullia Way	0.013	25-YR	24	13%	24	4%*		$16,673
Winchuck River Rd.	0.321	50-YR	24	39%	24	17%		$23,351
Winchuck River Rd.	0.409	50-YR	18	64%	18	4%*		$18,233
Winchuck River Rd.	2.187	50-YR	18	48%	18	4%*	BI	$18,720
Winchuck River Rd.	2.721	50-YR	72 x 72	26%	-	1%	HW, WW	CIP
Winchuck River Rd.	4.287	50-YR	60	22%	-	5%		CIP
Winchuck River Rd.	5.193	50-YR	18	28%	18	4%*		$16,445
Winchuck River Rd.	2.187	50-YR	18	48%	18	4%*	BI	$18,720
Winchuck River Rd.	2.721	50-YR	72 x 72	26%	-	1%	HW, WW	CIP
Winchuck River Rd.	4.287	50-YR	60	22%	-	5%		CIP
Winchuck River Rd.	5.193	50-YR	18	28%	18	4%*		$16,445

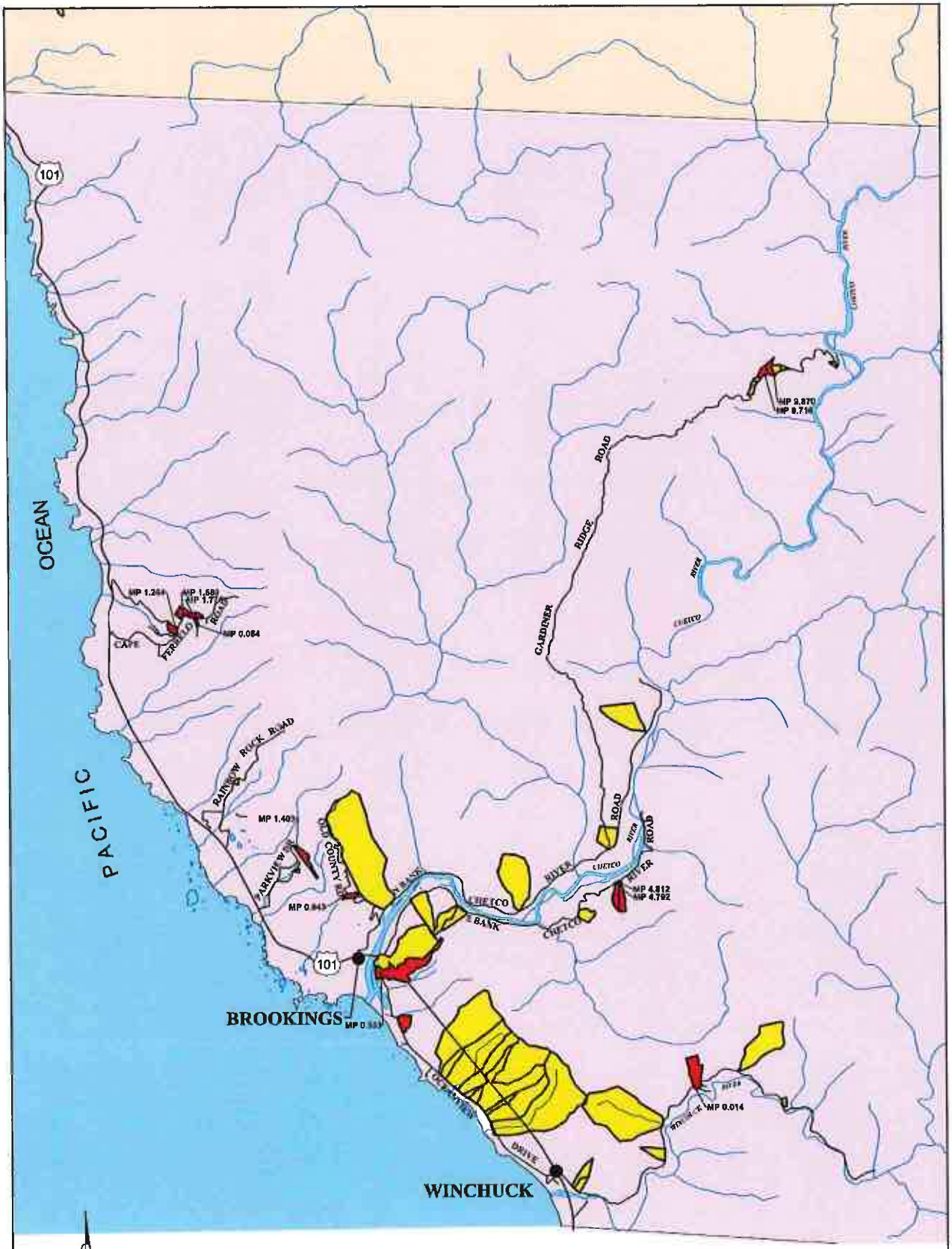
*Assumed Slope



THE DYER PARTNERSHIP ENGINEERS & PLANNERS	CURRY COUNTY STORM DRAIN MASTER PLAN	FIGURE NO.
DATE: APRIL 2022	NORTHERN CURRY COUNTY BASIN MAP	7.2.1
PROJECT NO.: 117.24		



THE DYER PARTNERSHIP ENGINEERS & PLANNERS	CURRY COUNTY STORM DRAIN MASTER PLAN	FIGURE NO.
DATE: APRIL 2022	CENTRAL CURRY COUNTY BASIN MAP	7.2.2
PROJECT NO.: 117.24		



THE DYER PARTNERSHIP ENGINEERS & PLANNERS DATE: APRIL 2022 PROJECT NO.: 117.24	CURRY COUNTY STORM DRAIN MASTER PLAN SOUTHERN CURRY COUNTY BASIN MAP	FIGURE NO. 7.2.3

7.3 Regional Basin Model Results

The most populated, unincorporated community in each region were modeled in this Master Plan. The unincorporated communities include Langlois for the Northern region, Wedderburn for the Central region, and Harbor for the Southern region. Each area is split into foundational basins and then into subbasins that connect culverts and other storm drain infrastructure. Regional basin model results are provided a quick reference for fundamental drainage requirements and used to check and model preliminary plans for future development.

Langlois Model Results

Langlois is divided into the two foundational basins of Langlois Bench and Langlois Hills. Each foundational basin is described hereafter.

Langlois Bench

The Langlois Bench is comprised of agricultural and low marshy areas with some residential areas located along Highway 101. This area is defined by Highway 101 to the east, Morton Creek to the north, and Floras Creek to the south. There are limited areas of the County maintained roadways to the west.

Subbasins within the Langlois Bench are 1.7, 2.3, and 3.3.

The Langlois Beach area does not contain any large drainage areas due to the low marshy ground that continues past the limits of the basin boundary until it discharges to the Pacific Ocean. The agricultural use of this land impacts how this area is drained. Cranberry bogs utilize the basin runoff in this area to flood bogs during harvest and then drain the bogs once harvest is completed.

Langlois Hills

Langlois Hills is the upland foundational basin of Langlois Bench and bordered by Highway 101 to the west, ridgeline to the east, Morton Creek to the north, and Floras Creek to the south. The majority of this area is comprised of steep wooded hillsides, with some residential areas, and low commercial development adjacent to Highway 101.

Subbasins within the Langlois Hills are 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 3.1, and 3.2.

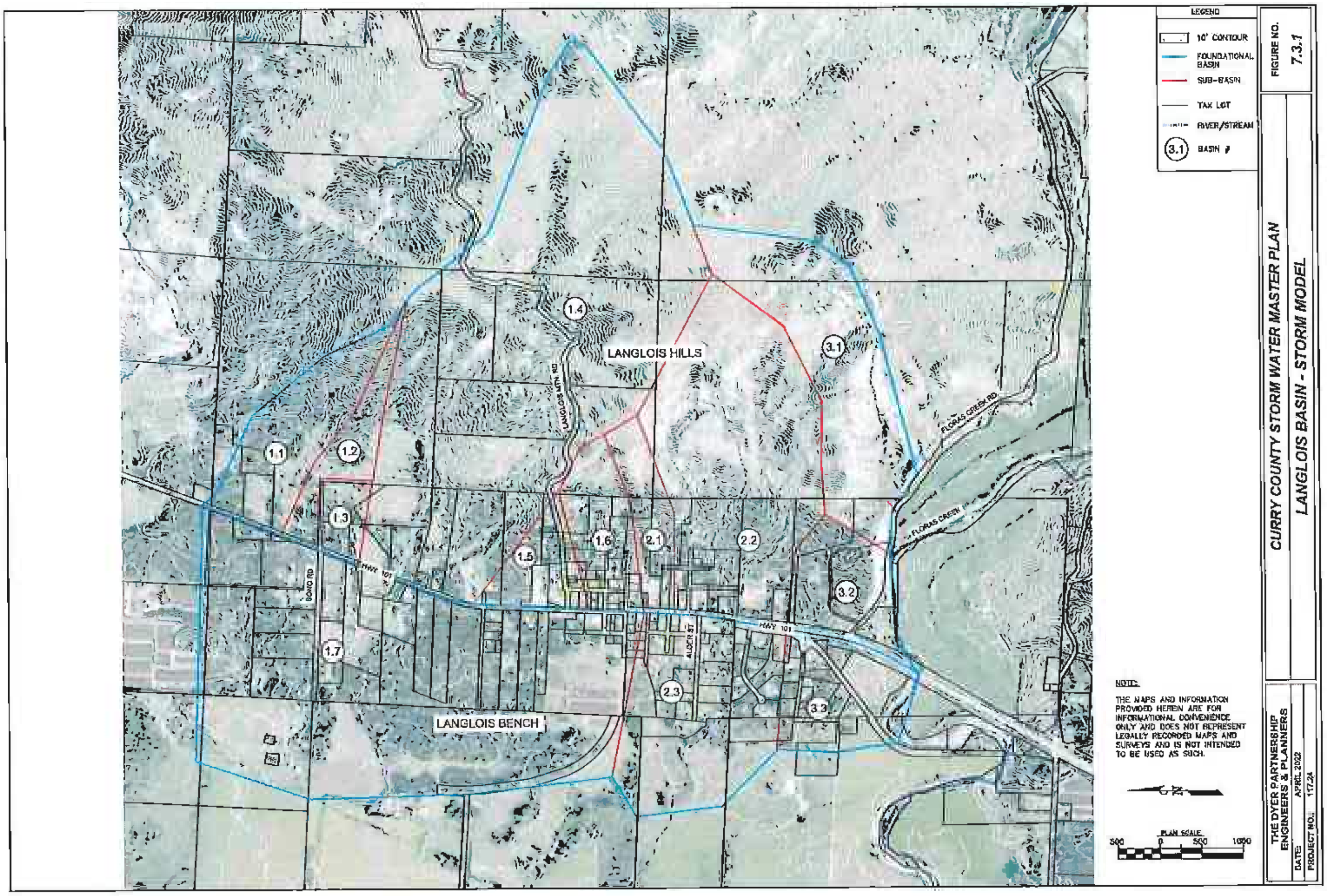
The runoff from the upper portion of these basins is drained under Highway 101 through a series of culverts owned and maintained by the Oregon Department of Transportation (ODOT). The culverts convey flows from Langlois Hill to the basins west into the Langlois Bench.

Modeling results from for each basin in the Langlois area are presented in Table 7.3.1.

TABLE 7.3.1
LANGLOIS MODELING RESULTS

Langlois				
Basin	**CN**	**Area**	**25-Year Runoff (cfs)**	**50-Yr Runoff (cfs)**
1.1	67	49.67	38	47
1.2	71	21.96	20	25
1.3	66	12.24	10	13
1.4	66	342.55	210	262
1.5	66	22.73	19	23
1.6	69	32.46	26	32
1.7	63	303.88	99	124
2.1	72	23.8	21	25
2.2	71	148.97	140	171
2.3	76	91.45	84	100
3.1	67	93.88	72	89
3.2	74	36.65	42	50
3.3	70	44.21	38	46

The modeling calculates rainfall runoff within each basin and does not include flows entering the basin from upstream. The total runoff for each basin consists of the sum of the runoff values. The total runoff from upstream or contributing basins account for infrastructure sizing and for use in the project recommendations.



LEGEND
10' CONTOUR
FOUNDATIONAL BASIN
SUB-BASIN
TAX LOT
RIVER/STREAM
3.1 BASIN #
LANGLOIS HILLS
LANGLOIS BENCH
LANGLOIS MTN RD
FLORAS CREEK RD
FLORAS CREEK
HWY 101
BOND RD
ALDER ST
1.1
1.2
1.3
1.4
1.5
1.6
1.7
2.1
2.2
2.3
3.1
3.2
3.3
NOTE:
THE MAPS AND INFORMATION PROVIDED HEREIN ARE FOR INFORMATIONAL CONVENIENCE ONLY AND DOES NOT REPRESENT LEGALLY RECORDED MAPS AND SURVEYS AND IS NOT INTENDED TO BE USED AS SUCH.
PLAN SCALE
500 0 500 1000
CURRY COUNTY STORM WATER MASTER PLAN
LANGLOIS BASIN - STORM MODEL
FIGURE NO.
7.3.1
THE DYER PARTNERSHIP
ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 117.24

Wedderburn Model Results

Wedderburn is divided into three foundational basins: Wedderburn Bench, Wedderburn Hills, and Rogue River northwest. Each area is described hereafter.

Wedderburn Bench

The Wedderburn Bench is comprised of an agricultural area that is located to the west of Highway 101. Residential areas sit to the far west, along the Pacific Ocean coast line and on the southern tip. The Wedderburn Bench basin area is bordered by Highway 101 to the east, Otter Point State Recreation Site to the north, Rogue River to the south, and the Pacific Ocean to the west.

Subbasins within the Wedderburn Bench are 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.4, 3.3, 3.4, and 4.4.

A few large drainage areas convey flows to a number of unnamed creeks that discharge to the Pacific Ocean. The residential areas convey flows through storm drainage infrastructure that includes catch basins, ditches, and culverts. There are many sewage lagoons located at the southern portion of this area owned and maintained by the Wedderburn Sanitary District.

Wedderburn Hills

Wedderburn Hills is the upland foundational basin of Wedderburn Bench and is bordered by Highway 101 to the west and south, and a ridgeline to the east. This area consists of wooded hillsides, with some residential and commercial development close to the bend in Highway 101.

Subbasins within Wedderburn Hills are 1.1, 1.2, 1.3, 1.4, 3.1, 3.2, 4.1, 4.2, and 4.3.

The runoff from this upper portion is drained under Highway 101 through a series of culverts owned and maintained by ODOT. The culverts convey flows from the Wedderburn Hill area to the basins located in the Wedderburn Bench area. The residential areas convey flows through a series of storm drainage infrastructure that includes manholes, catch basins, and storm drains. There are some private drainage systems located in developed areas in this basin.

Rogue River North

Rogue River North is the foundational basin that drains to the Rogue River and is defined by the ridge line at Hume Road to the east, Highway 101 to the north, the Rogue River to the south, and the Pacific Ocean to the west. The area north of Highway 101 is mostly wooded hillsides. There are residential areas and commercial development south of Highway 101, mainly along Wedderburn Loop.

Subbasins within Rogue River North are 5.1, 5.2, 6.1, 6.2, 7.1, and 7.2.

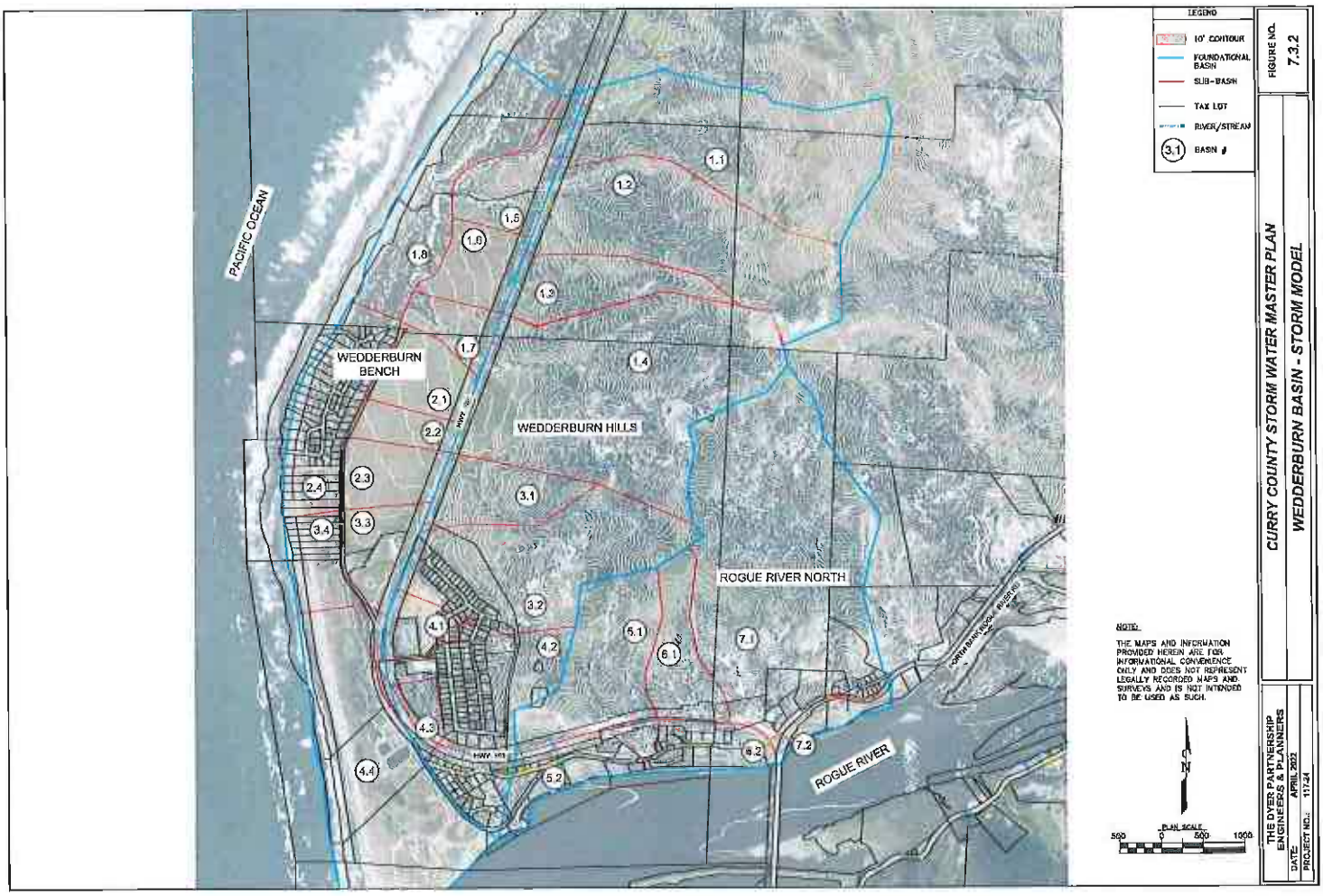
Basin flows north of Highway 101 are conveyed under the highway through a series of culverts owned and maintained by ODOT. The basin areas south of Highway 101 utilize a series of storm drain infrastructure to convey flows through residential and commercial areas that discharge into the Rogue River.

Modeling results for each basin and subbasin within Wedderburn areas are presented in Table 7.3.2.

TABLE 7.3.2
WEDDERBURN MODELING RESULTS

Wedderburn				
Basin	**CN**	**Area**	**25-Year Runoff (cfs)**	**50-Yr Runoff (cfs)**
1.1	66	105.55	100	124
1.2	66	96.39	66	82
1.3	66	31.94	24	30
1.4	60	153.92	75	96
1.5	81	227.1	38	44
1.6	79	20.98	29	34
1.7	81	14.11	20	24
2.1	80	21.74	30	36
2.2	80	12.09	17	20
2.3	80	20.34	28	33
2.4	85	43.2	67	77
3.1	65	27.54	22	27
3.2	63	81.38	53	67
3.3	76	21.53	27	33
3.4	72	18.15	21	25
4.1	62	14.43	10	13
4.2	59	46.1	25	32
4.3	62	6.48	5	6
4.4	70	130.14	123	154
5.1	69	53	54	66
5.2	91	25.75	47	54
6.1	68	26.1	25	31
6.2	78	18.24	25	30
7.1	68	171.95	143	176
7.2	77	9.58	13	15

The modeling calculates rainfall runoff within each basin and does not include flows entering the basin from upstream. The total runoff for each basin consists of the sum of the runoff values. The total runoff from upstream or contributing basins account for infrastructure sizing and for use in the project recommendations.


PACIFIC OCEAN
WEDDERBURN BENCH
WEDDERBURN HILLS
ROGUE RIVER NORTH
ROGUE RIVER
HWY 101
LEGEND
10' CONTOUR
FOUNDATIONAL BASIN
SUB-BASIN
TAX LOT
RIVER/STREAM
BASIN #
NOTE:
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PLAN SCALE
500 0 500 1000
FIGURE NO. 7.3.2
CURRY COUNTY STORM WATER MASTER PLAN
WEDDERBURN BASIN - STORM MODEL
THE DYER PARTNERSHIP ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 1117-24

Harbor Model Results

Harbor is split into four major areas: Boat Basin, Developed Hills, Harbor Bench, and Harbor Hills. Each area is described hereafter:

Boat Basin

The Boat Basin foundational basin is characterized by pavement, commercial development, and lack of vegetation. The Boat Basin area lies west of Highway 101 and south of the Chetco River. The west boundary of this basin is the Pacific Ocean and the south boundary is near Olsen Lane.

The basins and subbasins within Boat Basin are 1.2, 2.2, 3, 4.2, 5.2, 6.2, and 7.

Most subbasins discharge into the Pacific Ocean or the Port of Harbor except for Basin 1.2, which discharges directly into the Chetco River. Boat Basin has two major drainage features which are Fish House Creek and Tuttle Creek. There is a high volume of aging storm drainage infrastructure in this basin from development including catch basins, manholes, sediment basins and storm drain lines. The Boat Basin's outdated infrastructure is not built to current codes or sizing.

Developed Hills

The Developed Hills foundational basin of Harbor area has several residential developments, a few commercial lots, and some wooded hillsides. This area is located at the base of the hills, just east of Highway 101. The northern boundary is the Chetco River, the eastern boundary is the ridge line, and the southern boundary is the southern ridge line of Tuttle Creek.

The subbasins within the Developed Hills are 1.1, 2.1, 4.1, 5.1, and 6.1

The Developed Hills area originates with Fish House Creek and Tuttle Creek. A large portion of the runoff is collected into both County and privately maintained storm drainage systems with infrastructure including catch basins, manholes and storm drains. The runoff from this upper portion is drained under Highway 101 through a series of culverts installed and maintained by ODOT to the basins west of Highway 101 then draining into the Boat Basin area.

Harbor Bench

The Harbor Bench is comprised of mostly agricultural land with some residential areas along Oceanview Drive and Highway 101. This area is defined by Highway 101 to the west, Olsen Lane to the north, the Pacific Ocean to the east, and McVay Creek to the south.

The basins and subbasins within the Harbor Bench are 8.2, 9, 10, 11, 12.2, 13, 14, 15, 16, 17.2, 18, 19, 20.2, 21, 22, 23, 24, 25, 26.2, 27, 28.2, 29, and 30.2.

The Harbor Bench area is expected to have further development, but there are no current plans for development. There are some storm drainage systems within this area, but most of the basin runoff sheet flows into McVay Creek, Johnson Creek, or smaller unnamed creeks in the area. These creeks are conveyed under Oceanview Drive through culverts. Most of the other basins in the Harbor Bench area that do not cross major roads sheet flow directly to the Pacific Ocean.

Harbor Hills

Harbor Hills is the upland area of Harbor Bench and is bordered by Highway 101 to the west, the ridgeline to the east, McVay Creek to the south and the Tuttle Creek ridge to the north. The Harbor Hills area is mostly steep wooded hillsides; with some residential and commercial development close to Highway 101. The steep hillsides have large drainages including Johnson Creek or McVay Creek.

The subbasins within Harbor Hills are 8.1, 12.1, 17.1, 20.1, 26.1, 28.1, and 30.1.

The basin runoff in Harbor Hills is drained to the Harbor Bench area under Highway 101 through multiple culverts owned and maintained by ODOT.

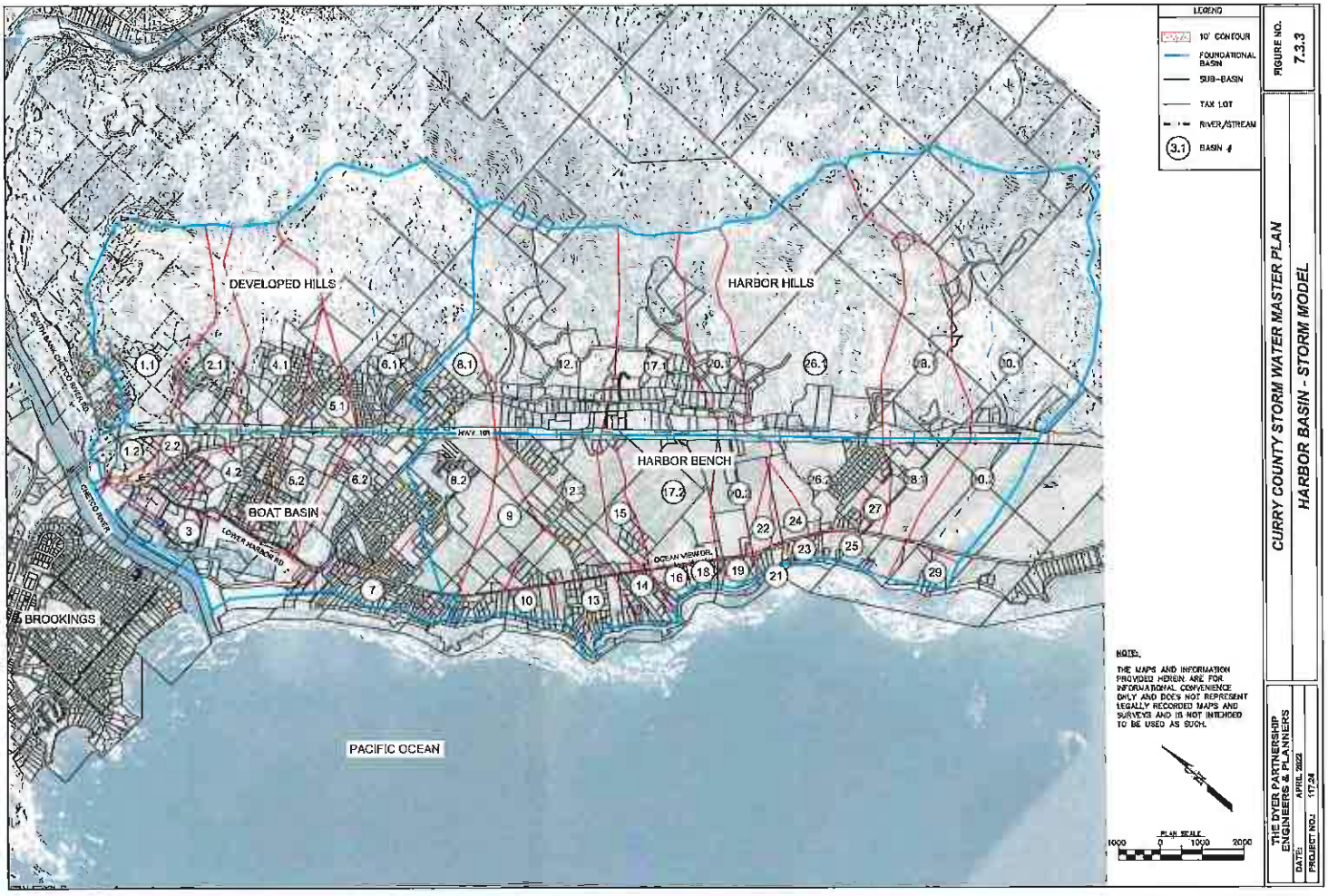
Modeling results for each basin within the Harbor Hills area are presented in Table 7.3.3.

TABLE 7.3.3
HARBOR MODELING RESULTS

Harbor				
Basin	**CN**	**Area**	**25-Year Runoff (cfs)**	**50-Yr Runoff (cfs)**
1.1	77	164	204	242
1.2	77	20.51	27	32
2.1	81	66.99	95	111
2.2	81	38.18	52	61
3	95	99.74	186	210
4.1	76	120.91	145	172
4.2	76	49.55	60	71
5.1	89	34.8	61	69
5.2	89	53.91	89	102
6.1	60	297.97	163	210
6.2	60	110.47	58	75
7	91	49.75	83	95
8.1	80	44.75	60	70
8.2	83	80.63	106	123
9	83	46.23	59	69
10	89	22.27	39	44
11	90	30.09	52	60
12.1	65	243.95	193	241
12.2	63	82.73	42	54
13	90	33.1	58	66
14	91	16.84	30	34
15	88	27.1	40	55
16	91	8.48	15	17
17.1	61	130.47	81	104
17.2	71	90.97	78	95

Harbor				
Basin	**CN**	**Area**	**25-Year Runoff (cfs)**	**50-Yr Runoff (cfs)**
18	91	5.89	11	12
19	91	9.24	17	19
20.1	70	69.85	68	82
20.2	70	47.15	39	48
21	84	5.44	9	10
22	90	6.35	11	12
23	90	6.35	11	13
24	84	15.33	22	26
25	84	22.99	37	43
26.1	57	318.41	150	198
26.2	65	71.24	56	70
27	65	9.8	7	9
28.1	55	101.22	44	60
28.2	65	43.05	29	37
29	65	17.59	15	18
30.1	55	365.3	117	158
30.2	65	70.16	42	53

The modeling calculates rainfall runoff within each basin and does not include flows entering the basin from upstream. The total runoff for each basin consists of the sum of the runoff values. The total runoff from upstream or contributing basins account for infrastructure sizing and for use in the project recommendations.


LEGEND
10' CONTOUR
FOUNDATIONAL BASIN
SUB-BASIN
TAX LOT
RIVER/STREAM
3.1 BASIN #
DEVELOPED HILLS
HARBOR HILLS
HARBOR BENCH
BOAT BASIN
BROOKINGS
PACIFIC OCEAN
HWY. 101
CHETCO RIVER
LOWER HARBOR RD
OCEAN VIEW DR.
NOTES:
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PLAN SCALE
1000 0 1000 2000
FIGURE NO. 7.3.3
CURRY COUNTY STORM WATER MASTER PLAN
HARBOR BASIN - STORM MODEL
THE DYER PARTNERSHIP ENGINEERS & PLANNERS
DATE: APRIL 2022
PROJECT NO.: 117.24

SECTION 8:

RECOMMENDED PLAN

SECTION 8: RECOMMENDED PLAN

8.1 Proposed Storm Drain Improvement Projects

A recommended Capital Improvement Plan (CIP) has been established for the Curry County Road Department with the use of the hydraulic storm model, consideration of the existing system, field investigations, County culvert ratings and County Staff input. This section contains the priority of projects and estimated costs for improvements. The same estimations outlined in Section 7.2 were used during the modeling and analysis of the capital improvement projects. Recommendations for CIP projects were determined based on the results of modeling and information provided by the County.

Capital improvement projects were created using the criteria below in conjunction with projects identified in Section 7.

- Cross culverts 48-inches or larger.
- Cross culverts identified as deeper than ten feet.
- Oregon Department of Fish and Wildlife (ODFW) mapped fish stream.
- Require contracted services outside of Curry County Staff.

The County does not have the equipment capable of safely installing culverts larger than 48-inches or deeper than ten feet which require specialty shoring. Specialty repairs for culverts that are not identified as fish streams include slip ling culverts less than 48-inches in diameter. If the culvert was 48-inches or larger the Master Plan recommended lining the invert with concrete. These repairs were only recommended where no major structural defects or alignment issues were noted in County inspection reports. If the culvert had structural damage, is undersized, or has alignment issues the recommendation will be for replacement. Although streams were not identified as a fish streams on the ODFW designated map, consultation is recommended for all perennial streams to confirm there are no fish passage requirements.

Culverts identified as mapped fish streams are recommended to be removed and replaced. The United States Army Corp of Engineers (USACE) recommend the culverts requiring fish passage should not be repaired using slip ling or concrete invert repair methods. All fish passage culverts that do not meet fish passage requirements are recommended to be removed and replaced. Streams identified with trout, steelhead, and Chinook salmon recommend sizing of culverts to match the existing channel width of the stream. These channel widths were assumed and further consultation with ODFW is required to determine actual fish passage requirements. For planning purposes, the recommendations use the next larger size culvert than the existing culvert for planning purposes only.

Fish streams identified with coho salmon are recommended to be replaced with a culvert size of 1.5 times larger than the existing channel width. For planning purposes, the recommended culvert size was 1.5 times the existing culvert size. The recommended culvert size is utilized for this Master Plan. Culvert size and fish passage requirements need to be verified during consultation with NMFS in coho salmon streams. Section 4 of this Master Plan identifies permitting requirements. Large culverts that required fish passage are recommended to be replaced with precast concrete bridges to allow for a more natural fish passage.

Other CIP recommendations include new construction, reroutes, or adding infrastructure to allow for easier maintenance or alleviate capacity related issues.

The County and The Dyer Partnership identified a total of 67 proposed CIP projects. Detailed descriptions for each project and their recommendations are located in Section 8.3.
Each CIP project was placed in a construction category. Shown in Table 8.1.1.

TABLE 8.1.1
CIP PROJECTS BY CONSTRUCTION CATEGORY

Project Category	Number of CIP Projects
Precast Bridge	3
Concrete Invert Liner	9
New Infrastructure	17
New Construction	2
Remove and Replace	28
Slip Line	6
Reroute	2
Total CIP Projects	**67**

8.2 Capital Improvement Plan Project Priority

Capital Improvement Plan projects were ranked and prioritized by the Curry County Road Department Staff with assistance from The Dyer Partnership based on the following project criteria:

- Repair poor condition or undersized infrastructure.
- Beneficial to the greatest number of stakeholders.
- Alleviates County and public problem areas.
- Addresses erosion and sedimentation concerns.
- Meets fish passage requirements.
- Storm drainage projects in roads that require repaving.
- High probability of being funded by outside sources.
- Low permit complexity.

Projects with multiple items in the above criteria are ranked as higher priority improvements. An example of a high priority project would be a small project in scope or cost that reduces maintenance issues and is beneficial to a number of stakeholders with no permitting. Projects that have a high probability of procuring outside funding will also be given a high rank. An example of a low priority improvement projects would be a large project in scope or cost that is located on a roadway with very low traffic and complex permitting requirements.

The high priority rating indicates a problem already exists and should be addressed as soon as funding is available. Medium and low priority ratings signify a problem is not immediate but is likely to require attention in the future. Medium ratings are for projects that address a more significant future problem than low priority projects. As projects are completed, medium priority rated projects and low priority rated projects will be reprioritized.

The project priorities are ranked from Priority 1 through Priority 3, with Priority 1 being the highest priority projects. The numbering sequence in each classification group dictates the priority order of the project. Based on these considerations, each classification group is summarized hereafter.

- Priority 1 projects should be implemented within five years.
- Priority 2 projects should be implemented between five and ten years.
- Priority 3 projects should be implemented between ten and twenty years.

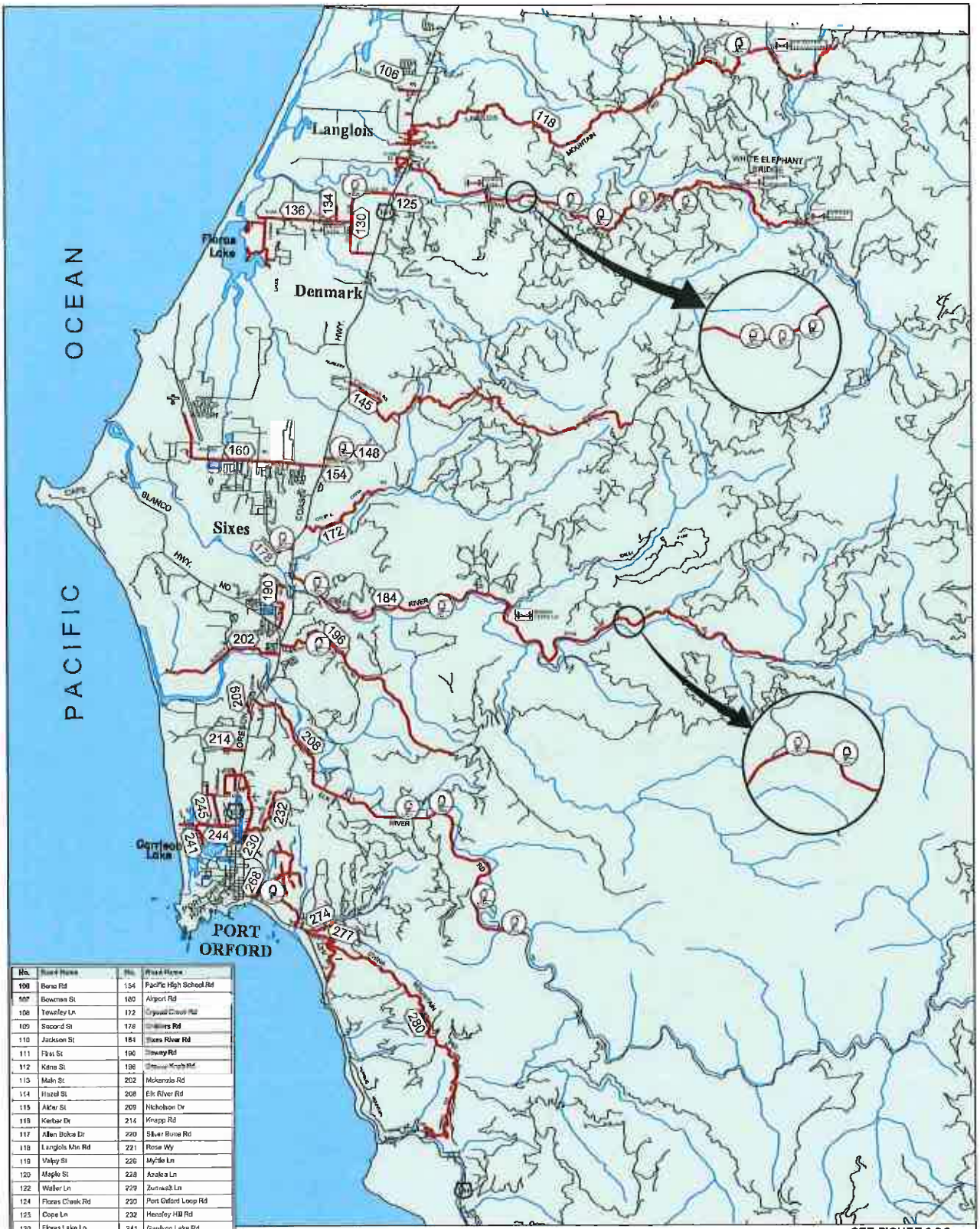
Maps showing the location of proposed improvements projects are included in Figures 8.2.1 through 8.2.3. Table 8.2.1 lists the project priority, project category and estimated costs. Detailed cost estimates for each project are located in Appendix XX.

TABLE 8.2.1
CAPITAL IMPROVEMENT PLAN PROJECTS

Priority	Road Name	Mile Point	Project Category	Project Cost
	Langlois Mtn Rd.	7.316	Remove and Replace	$124,920
	Cemetery Loop Rd.	1.256	Remove and Replace	$227,948
	Childers Rd.	0.129	Remove and Replace	$377,915
	Elk River Rd.	3.583 and 3.585	Remove and Replace	$303,060
	Elk River Rd.	4.049	Concrete Invert Liner	$56,400
	Elk River Rd.	6.562	Remove and Replace	$412,848
	Elk River Rd.	7.396	Remove and Replace	$81,975
	Floras Creek Rd.	2.069	Remove and Replace	$418,125
	Floras Creek Rd.	2.107	Remove and Replace	$227,925
	Floras Creek Rd.	2.164	Concrete Invert Liner	$77,250
	Floras Creek Rd.	2.926	New Infrastructure	$505,130
	Floras Creek Rd.	3.97	Remove and Replace	$259,483
	Floras Creek Rd.	5.165	Remove and Replace	$132,585
	Floras Creek Rd.	5.725	Slip Line	$57,600
	Floras Lake Lp.	0.513	Remove and Replace	$208,665
	County Shop Rd.	0.171	Remove and Replace	$152,745
	Sixes River Rd.	0.173	Remove and Replace	$225,820
	Sixes River Rd.	2.733	Concrete Invert Liner	$75,000
	Sixes River Rd.	7.279	Slip Line	$119,500
	Sixes River Rd.	7.376	Remove and Replace	$245,539

Priority	Road Name	Mile Point	Project Category	Project Cost
	Sixes River Rd.	8.738	Remove and Replace	$209,915
	Grassy Knob Rd.	0.591	Slip Line	$112,800
	Agness-Illahe Rd.	1.841	Remove and Replace	$396,778
	Oak Flat Rd.	2.047	Slip Line	$41,100
	Oak Flat Rd.	2.41	Remove and Replace	$175,175
	Ponderosa Rd.	0.016	Remove and Replace	$221,970
	Nesika Rd.	0.071	New Infrastructure	$82,900
	Nesika Rd.	0.239	New Infrastructure	$158,470
	A Street	0.12	New Construction	$80,313
	N Bank Rogue River Rd.	1.582	Precast Bridge	$860,000
	N Bank Rogue River Rd.	7.548 and 7.550	Precast Bridge	$840,000
	Old Coast Rd.	0.569 to 0.784	Reroute	$521,600
	Old Coast Rd.	2.207/2.210/2.212	Remove and Replace	$58,574
	Jerry's Flat Rd.	0.987	Remove and Replace	$79,267
	Jerry's Flat Rd.	1.285	New Infrastructure	$92,635
	Jerry's Flat Rd.	1.955	Remove and Replace	$169,040
	Jerry's Flat Rd.	3.717 to 4.472	New Infrastructure	$191,675
	Jerry's Flat Rd.	8.701	Remove and Replace	$190,075
	Jerry's Flat Rd.	9.46	Concrete Invert Liner	$60,100
	Hunter Creek Lp.	1.101	New Construction	$162,305
	Grizzly Mountain Rd.	0.96	Remove and Replace	$48,425
	N Bank Pistol River Rd.	4.824	Concrete Invert Liner	$82,100
	Pistol River Lp.	0.226	New Infrastructure	$103,300
	S Bank Pistol River Rd.	1.005	Concrete Invert Liner	$70,500
	N Bank Chetco River Rd.	0.902	Precast Bridge	$1,057,400
	N Bank Chetco River Rd.	3.342	New Infrastructure	$363,295
	N Bank Chetco River Rd.	5.116	Concrete Invert Liner	$242,265
	N Bank Chetco River Rd.	6.516	New Infrastructure	$192,700
	N Bank Chetco River Rd.	6.744	Remove and Replace	$354,220
	N Bank Chetco River Rd.	6.974	New Infrastructure	$296,590
	S Bank Chetco River Rd.	0.99 to 1.16	Reroute	$306,700
	S Bank Chetco River Rd.	1.872	Slip Line	$94,700
	S Bank Chetco River Rd.	3.85	Slip Line	$76,500
	S Bank Chetco River Rd.	4.792	Remove and Replace	$43,690
	Lower Harbor Rd.	0.142	New Infrastructure	$396,350
	Lower Harbor Rd.	0.332	New Infrastructure	$392,250
	Lower Harbor Rd.	0.551	New Infrastructure	$215,640
	Lower Harbor Rd.	0.853	New Infrastructure	$775,750
	Lower Harbor Rd.	0.900	New Infrastructure	$1,237,247
	Oceanview Dr.	1.369	Concrete Invert Liner	$82,100

Priority	Road Name	Mile Point	Project Category	Project Cost
	Oceanview Dr.	1.852	Concrete Invert Liner	$134,100
	Museum Rd.	0.094	Remove and Replace	$279,283
	Winchuck River Rd.	2.721	New Infrastructure	$121,600
	Winchuck River Rd.	4.287	Remove and Replace	$222,700
	Azalea Ln. and Iris St.	-	New Infrastructure	$661,875
	Bayview Dr. and Driftwood Dr.	-	New Infrastructure	$457,325
	Hillside Terrace	-	New Infrastructure	$326,525
			Total Project Cost	**$17,630,253**



No.	Road Name	No.	Road Name
106	Bena Rd	154	Pacific High School Rd
107	Bowman St	160	Airport Rd
108	Townley Ln	172	Crystal Creek Rd
109	Second St	178	[illegible]es Rd
110	Jackson St	184	Sixes River Rd
111	First St	190	[illegible]away Rd
112	Kime St	196	[illegible] Knob Rd
113	Main St	202	Mckenzie Rd
114	Hazel St	208	Elk River Rd
115	Alder St	209	Nicholson Dr
116	Kerbar Dr	214	Knapp Rd
117	Allen Bolce Dr	230	Silver Bunes Rd
118	Langlois Mtn Rd	221	Rose Wy
119	Valley St	226	Myrtle Ln
120	Maple St	228	Azalea Ln
122	Waller Ln	229	Zumwalt Ln
124	Floras Creek Rd	230	Port Orford Loop Rd
125	Cape Ln	232	Hensley Hill Rd
130	Floras Lake Lp	241	Garrison Lake Rd
134	Lakeshore Dr	244	Paradise Point Rd
136	Oceanview Ln	245	Arizona St
134	Hoga Rd	268	Cemetery Loop Rd
136	Floras Lake Rd	269.1	Old Mill Rd
140	Lakes End Dr	269.2	Vista Dr
141	I St	269.3	Cedar Hollow Rd
142	Bolce Cope Rd	269.4	Humbug Wy
142.1	Bolce Cope Park Rd	269.5	Blanchard Dr
142.2	Leeward Street	269.6	Park Rd
143	Woodruff Ln	274	Hubbard Creek Rd
145	Stonecypher Rd	277	Noble Dr
148	County Shop Rd	280	[illegible] Mountain Rd

LEGEND

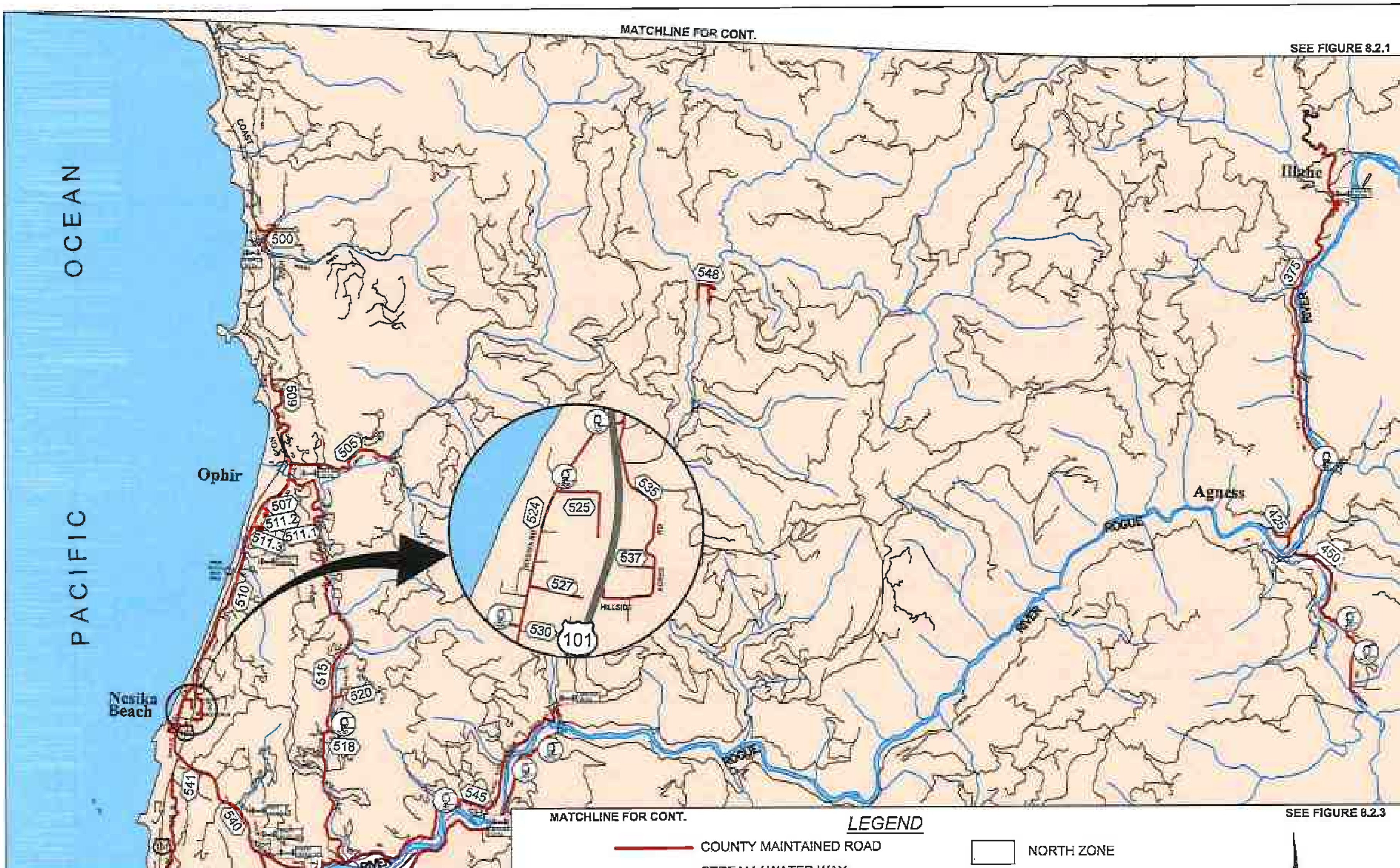
- COUNTY MAINTAINED ROAD
- STREAM / WATER WAY
- COUNTY BRIDGE
- ### ROAD NUMBER
- CIP PROJECT LOCATION
- NORTH ZONE
- CENTRAL ZONE
- SOUTH ZONE

N

NOT TO SCALE

THE DYER PARTNERSHIP ENGINEERS & PLANNERS DATE: APRIL 2022 PROJECT NO.: 117.24	CURRY COUNTY STORM DRAIN MASTER PLAN NORTHERN CURRY COUNTY - CIP LOCATION MAP	FIGURE NO. 8.2.1

200



No.	Road Name	No.	Road Name	No.	Road Name	No.	Road Name
375	Agness-Illahe Rd	510	Ophir Rd	524	Nesika Rd	535	Hillside Acres Rd
425	Cougar Ln	511.1	Rodran Dr	525	Orange Rd	537	Raccoon Ln
450	Oak Flat Rd	511.2	Humbug Ln	527	Chandler Rd	540	Edson Creek Rd
500	Arizona Ranch Rd	511.3	Moss Wy	530	A St	541	Nesika Beach Dump
505	Euchre Creek Rd	515	Cedar Valley Rd	531	B St	545	N Bank Rogue River
507	Starkweather Rd	518	Ponderosa Rd	532	Kilgore Rd	546	Lobster Crk Youth Camp Rd
509	Cloy Creek Rd	520	Mckinnon Dr	534	Gun Club Rd		

MATCHLINE FOR CONT.

SEE FIGURE 8.2.3

LEGEND

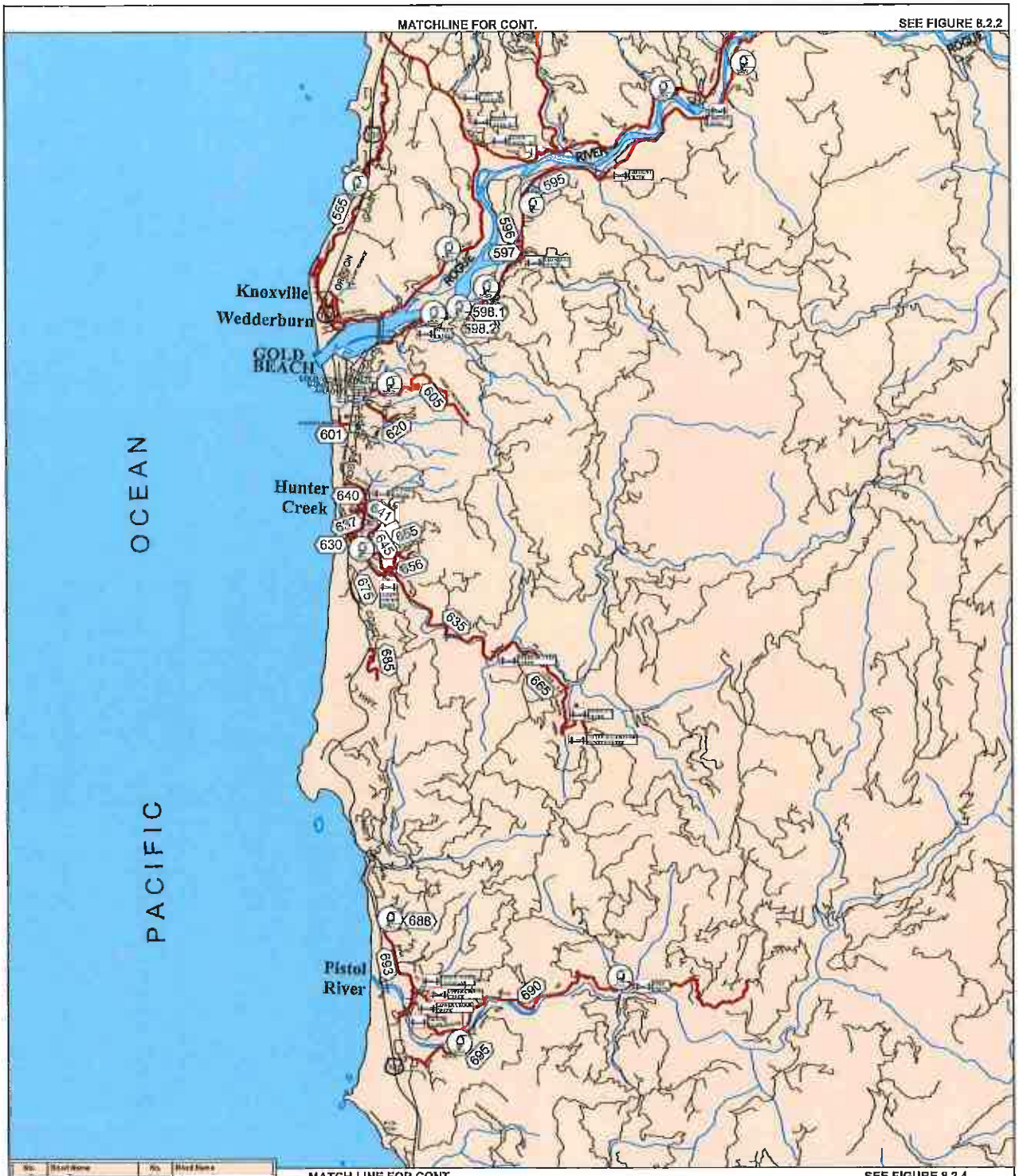
- COUNTY MAINTAINED ROAD
- STREAM / WATER WAY
- COUNTY BRIDGE
- ROAD NUMBER
- CIP PROJECT LOCATION
- NORTH ZONE
- CENTRAL ZONE
- SOUTH ZONE

N

NOT TO SCALE

THE DYER PARTNERSHIP ENGINEERS & PLANNERS	CURRY COUNTY STORM DRAIN MASTER PLAN	FIGURE NO.
DATE: APRIL 2022	CENTRAL CURRY COUNTY - PART 1 - CIP LOCATION MAP	8.2.2
PROJECT NO.: 117.24		

201



No.	Road Name	No.	Road Name
555	Old Coast Rd	601	Fairgrounds Rd
555.1	Ocean Wy	605	Grizzly Mountain Rd
555.2	Driftwood Dr	620	Quarry Rd
555.4	Ifis St	630	Hunter Crk Complex
555.5	Bayview Dr	635	Hunter Creek Rd
555.6	Hillside Tr	637	Hunter Creek Lp
555.7	Azalea Ln	640	Brooks Rd
570.1	Miner Dr	641	Water Tank
570.2	Sandy Dr	645	Mateer Rd
570.3	Cobblestone Ct	655	Hunter Creek Hl
570.4	Pebble Pl	656	Emerald Dr
570.5	Boulder Pl	665	Little South Fork Rd
570.6	Agate Pl	675	Thimbleberry Rd
575	Wedderburn Loop Rd	685	Eighty Acre Rd
585	Doyle Point Rd	688	Pistol River Cemetery Rd
593	Jerry's Flat Rd	690	N Bank Pistol River Rd
595	Curry St	691	Pistol River School Rd
597	Riverway Dr	693	Pistol River Lp
598.1	Vista Lp	695	S Bank Pistol River Rd
598.2	Hummingbird Hill Rd		

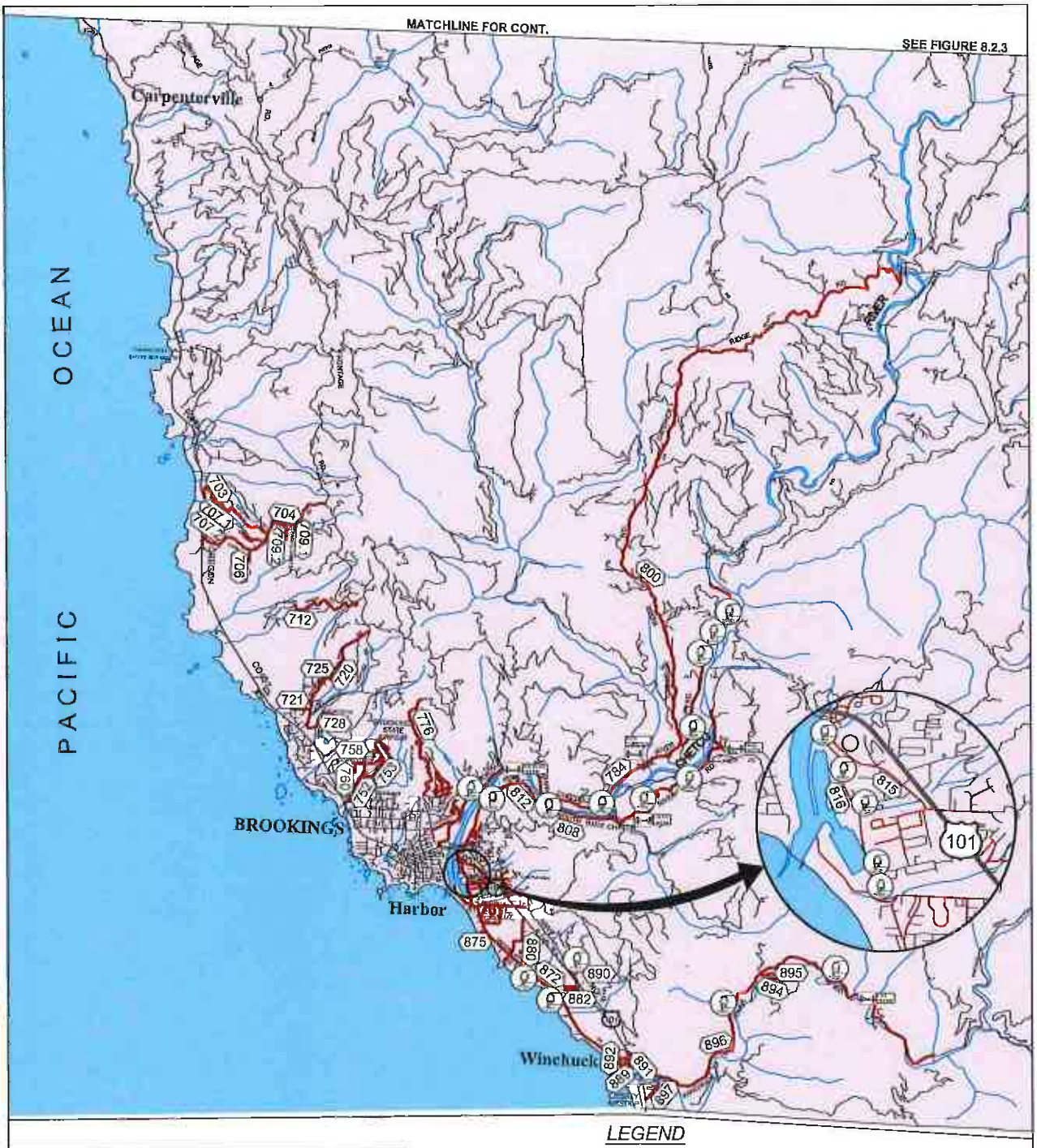
LEGEND

- COUNTY MAINTAINED ROAD
- STREAM / WATER WAY
- COUNTY BRIDGE
- ### ROAD NUMBER
- CIP PROJECT LOCATION
- NORTH ZONE
- CENTRAL ZONE
- SOUTH ZONE

N

NOT TO SCALE

THE DYER PARTNERSHIP ENGINEERS & PLANNERS DATE: APRIL 2022 PROJECT NO.: 117.24	CURRY COUNTY STORM DRAIN MASTER PLAN CENTRAL CURRY COUNTY - PART 2 - CIP LOCATION MAP	FIGURE NO. 8.2.3



No.	Road Name	No.	Road Name	No.	Road Name
703	Eggers Rd	784	N Bank Chetco River Rd	856	Crestline Lp
704	Cape Ferrelo Rd	792	Thompson Rd	857	Lively Ln
706	Comatt Rd	800	Gardner Ridge Rd	860.1	Floral Hill Dr
707.1	Brookside Dr	808	S Bank Chetco River Rd	860.2	Wedgewood Ln
707.2	N Brookside Dr	808.1	S Bnk Chetco Upas	860.3	Kings Wy
709.1	Pacific Crest Dr	810	Payne Rd	861	Turids Ln
709.2	Woodson Ln	811	Chilcote Ln	862	Gavin Ln
712	Dulley Creek Rd	812	Salmonberry Rd	864	Thors Ln
720	Rainbow Rock Rd	813	Foster Rd	870	Olsen Ln
721	Coverdell Rd	814	Harbor View Dr	872	Oceanview Dr
725	Aqua Vista Ln	815	Shopping Center Ave	875	Holly Ln
726	Damosa Rd	815.1	Zimmerman Ln	880	Paddell Dr
752	Parkview Dr	816	Lower Harbor Rd	882	Camellia Dr
753	Dodge Av	817	W Benham Ln	889	Kemlin Pl
758	Bowman Ln	818	E Benham Ln	890	Museum Rd
760	Stafford Rd	819	Bayview Dr	891	Ilwen Dr
770	Old County Rd	821	Weinborne Ln	892	Wallam Rd
771	Lundeen Rd	824	Boat Basin Rd	894	Laurence Ln
778.1	Marina Heights Lp	840	E Hoffakt Ln	895	Julia Wy
778.2	Pacific View Dr	841	Chapman Ln	896	Winchuck River Rd
778.3	Eastwood Ln	848	W Hoffakt Ln	897	State Line Rd
778.4	Westwood Ln	855	Crestline Lp		

LEGEND

- COUNTY MAINTAINED ROAD
- STREAM / WATER WAY
- COUNTY BRIDGE
- ROAD NUMBER
- CIP PROJECT LOCATION
- NORTH ZONE
- CENTRAL ZONE
- SOUTH ZONE

N

NOT TO SCALE

THE DYER PARTNERSHIP ENGINEERS & PLANNERS	CURRY COUNTY STORM DRAIN MASTER PLAN	FIGURE NO.
DATE: APRIL 2022	SOUTHERN CURRY COUNTY - CIP LOCATION MAP	8.2.4
PROJECT NO.: 117.24		

8.3 Capital Improvement Plan Project Description

Figures 8.3.1 through 8.3.67 provide a description of each Capital Improvement Plan (CIP) project for Curry County.

FIGURE 8.3.1
LANGLOIS MOUNTAIN ROAD AT MP 7.316

PROJECT NO. XX			
Road Name:	Langlois Mountain Road	**Project Limit (MP):**	7.316
Region-Road No.:	North-118	**Average Depth:**	3.5'
County Rating:	1	**25 YR - 24 HR Basin Runoff:**	38 cfs
Culvert Diameter:	36"	**Existing Culvert Capacity:**	69 cfs
Culvert Type:	CS	**Fish Stream:**	Trout
Length / Slope:	40' / 4%	**Project Cost:**	TBD

EXISTING CONDITIONS:

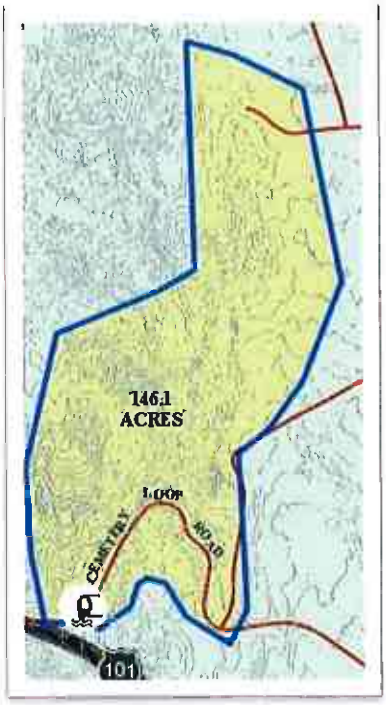
An existing 36-inch corrugated steel cross culvert that conveys flows under Langlois Mountain Road. The culvert is a designated trout stream by ODFW. The existing capacity is adequate based on a 25-year, 24-hour peak flow event. County inspection records note that the existing culvert has perforations and is in poor condition.

PROPOSED IMPROVEMENT PROJECT:

The proposed plan is to remove and replace the existing culvert with a new 48-inch aluminized steel culvert to meet fish passage requirements. The County will be required to obtain a permit under Section 404 of the Clean Water Act in order to replace the culvert. The proposed culvert is expected to be sized adequately for fish passage requirements, but consultation with ODFW will be required for verification. Additional costs may be required if permitting results in consultation with NMFS.

FIGURE 8.3.2
CEMETERY LOOP ROAD AT MP 1.256

PROJECT NO. XX			
Road Name:	Cemetery Loop Rd.	**Project Limit (MP):**	1.256
Region-Road No.:	Northern-268	**Average Depth:**	12'
County Rating:	2	**25 YR - 24 HR Basin Runoff:**	54 cfs
Culvert Diameter:	48"	**Existing Culvert Capacity:**	291 cfs
Culvert Type:	PC	**Fish Stream:**	Trout
Length / Slope:	70' / 5.5%	**Project Cost:**	TBD



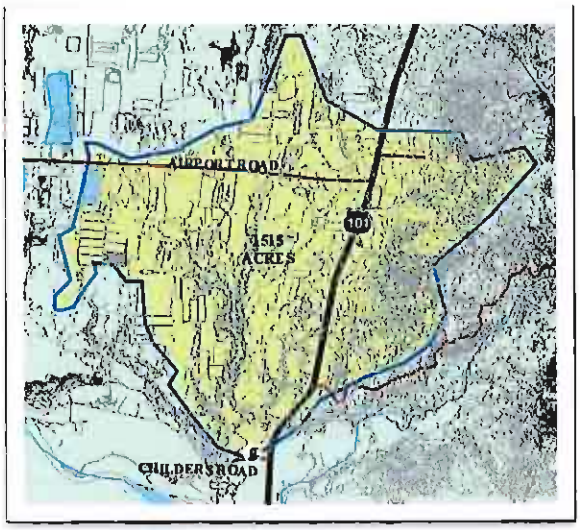
EXISTING CONDITIONS:
An existing 48-inch concrete cross culvert that conveys flows under Cemetery Loop Road and is on an ODFW mapped trout stream. The existing capacity is adequate based on modeling for a 25-year, 24-hour peak flow event. County inspection indicated that the first 6-foot section of pipe is concrete and disjointed. The County noted that the outlet of the culvert appears to be located on the west side of Highway 101 and the length is unknown. The ODOT TransGIS indicates a 42-inch concrete culvert that is 325 lineal feet in length shown in the same location. It is assumed that the culvert is shared with ODOT based on this information. The portion that the County is responsible for is across Cemetery Loop in the right-of-way with an approximate length of seventy lineal feet.

PROPOSED IMPROVEMENT PROJECT:
While the capacity of the culvert is adequate, the proposed plan is to remove and replace the existing culvert with a new 60-inch corrugated aluminized steel culvert to meet fish passage requirements. This project is limited to the culvert located within the County right-of-way and maintained by the County. Coordination with ODOT is essential for determining replacement of this culvert. The County will need to obtain a permit under Section 404 of the Clean Water Act from USACE and consultation with ODFW, because work will be performed under the ordinary high-water mark and it is a mapped trout stream. Additional costs may be required if permitting results in consultation with NMFS.

FIGURE 8.3.3
CHILDERS ROAD AT MP 0.128

PROJECT NO. XX			
Road Name:	Childers Rd.	**Project Limit (MP):**	0.128
Region-Road No.:	Central-178	**Average Depth:**	4.5'
County Rating:	1	**50 YR - 24 HR Basin Runoff:**	882 cfs
Culvert Diameter:	72	**Existing Culvert Capacity:**	381 cfs
Culvert Type:	CS	**Fish Stream:**	Steelhead, Trout
Length / Slope:	30' / 3%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 72-inch corrugated steel cross culvert that conveys flows under Childers Road and is a tributary to the Sixes River. The tributary is mapped by ODFW as a designated trout and steelhead stream. The existing capacity is modeled as inadequate based on a 50-year, 24-hour peak flow event. The basin is greater than 640 acres, which requires a 50-year storm per Curry County ordinance 3.433 (4). The existing culvert sits in a low marshy area and is beveled at both ends with heavy rust throughout the entire culvert per County inspection records.



PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 137-inch by 87-inch arched aluminized steel culvert. New concrete headwall and endwall will be installed to the culvert. The County will need to obtain a permit under Section 404 of the Clean Water Act and consult with ODFW to ensure the design meets fish passage criteria. The selected culvert is expected to meet the required fish passage criteria, but further consultation is recommended to verify the design. Additional costs may be required if permitting results in consultation with NMFS.

FIGURE 8.3.4
ELK RIVER ROAD AT MP 3.583 and 3.585

PROJECT NO. XX			
Road Name:	Elk River Rd.	**Project Limit (MP):**	**3.583 and 3.585**
Region-Road No.:	Northern-208	**Average Depth:**	2.51
County Rating:	1, 2	**50 YR - 24 HR Basin Runoff:**	65 cfs
Culvert Diameter:	36", 72"	**Existing Culvert Capacity:**	139 cfs
Culvert Type:	CS	**Fish Stream:**	Trout
Length / Slope:	60' / 2.5% (36"), 1.73% (72")	**Project Cost:**	TBD

EXISTING CONDITIONS:
The existing 36-inch and 72-inch parallel corrugated steel culverts drain the same tributary to the Elk River under Elk River Road. The tributary is mapped as an ODFW designated trout stream. The combined capacities of the parallel culverts were modeled with a 50-year, 24-hour peak flow event and are adequate. County inspection records indicate that the parallel culverts drain the same drainage area.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culverts with a single 95-inch by 67-inch aluminized steel arch culvert. The County will need to obtain a permit under Section 404 of the Clean Water Act. Consultation with ODFW will be required to verify culvert sizing and determine fish passage requirements. Additional costs may be required if permitting results in consultation with NMFS.

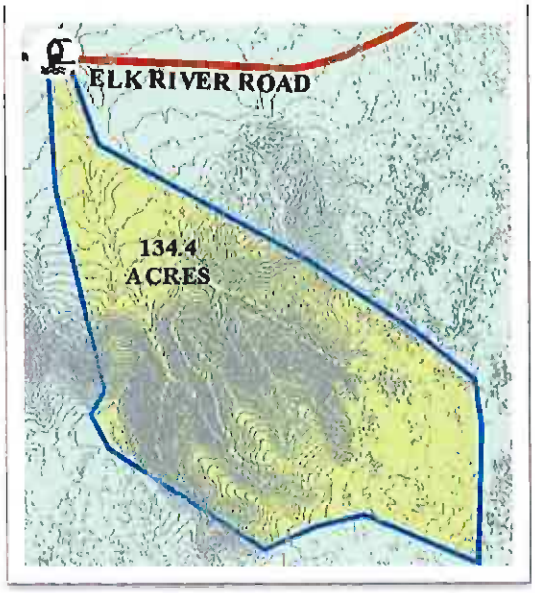
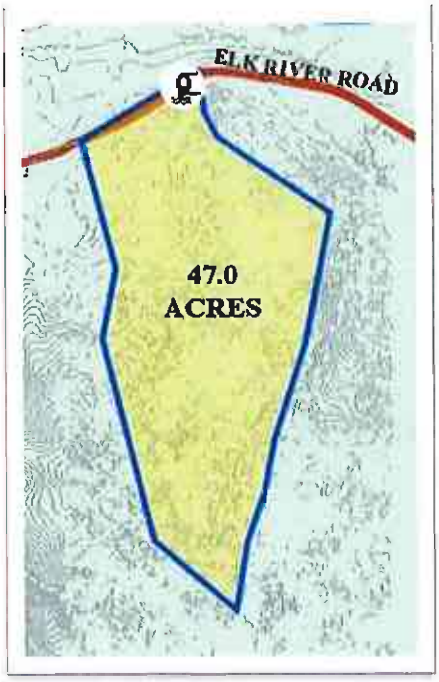


FIGURE 8.3.5
ELK RIVER ROAD AT MP 4.049

PROJECT NO. XX			
Road Name:	Elk River Rd.	**Project Limit (MP):**	4.049
Region-Road No.:	Northern-208	**Average Depth:**	5.5'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	38 cfs
Culvert Diameter:	48"	**Existing Culvert Capacity:**	211 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	50' / 8%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 48-inch corrugated steel cross culvert conveys flows under Elk River Road. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection reports note that the existing culvert has heavy rust on both ends. Dyer field notes confirm rust and the culvert has some debris.

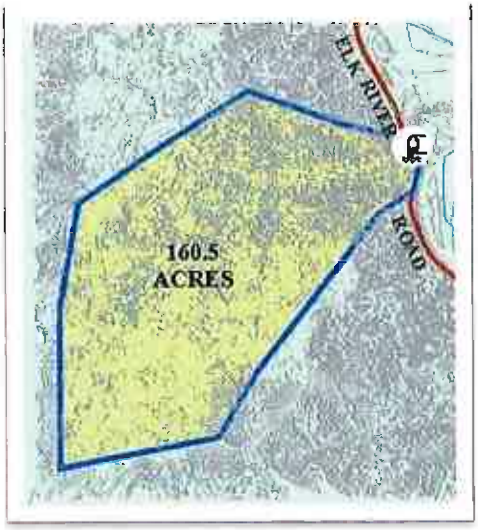


PROPOSED IMPROVEMENT PROJECT:
The proposed plan is for the County to clean the existing 48-inch corrugated steel culvert. The culvert should be reinspected and evaluated by the County for any structural defects. If minimal defects are present a concrete invert is recommended to be installed, to create an improved flow line and extend the life of the culvert. Although the culvert drains upland flows and is not mapped as a designated fish stream, a consultation with USACE and ODFW is recommended to ensure no permits are required due to the downstream location of the Elk River.

FIGURE 8.3.6
ELK RIVER ROAD AT MP 6.562

PROJECT NO. XX			
Road Name:	Elk River Rd.	**Project Limit (MP):**	6.562
Region-Road No.:	Northern-208	**Average Depth:**	20.0'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	77 cfs
Culvert Diameter:	48"	**Existing Culvert Capacity:**	106 cfs
Culvert Type:	CS	**Fish Stream:**	Trout
Length / Slope:	120' / 2%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 48-inch corrugated steel cross culvert is located on a tributary to the Elk River, which is a mapped ODFW designated trout stream. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. The existing culvert has a section of concrete culvert that is connected to the corrugated steel culvert with tar lining per County inspection records.

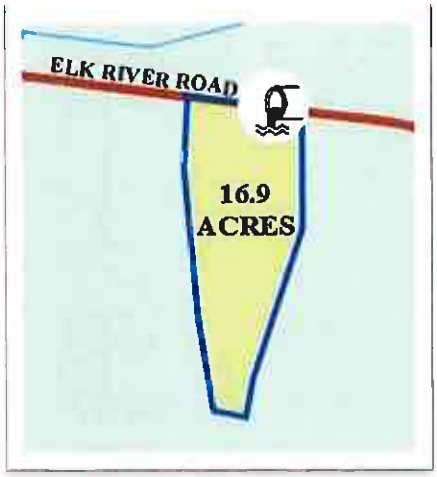


PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 60-inch aluminized steel culvert to meet fish passage requirements. A temporary access road will need to be constructed in order to install the new culvert. The County will need to obtain a permit under Section 404 of the Clean Water Act and consult with ODFW for sizing or additional fish passage requirements. The 60-inch culvert recommendation is based on an estimated channel width and will need to be verified during consultation with ODFW. Additional costs may be required if permitting results in consultation with NMFS.

FIGURE 8.3.7
ELK RIVER ROAD AT MP 7.396

PROJECT NO. XX			
Road Name:	Elk River Road	**Project Limit (MP):**	7.396
Region-Road No.:	Northern-208	**Average Depth:**	20'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	15 cfs
Culvert Diameter:	42"x30" Inlet, 24"	**Existing Culvert Capacity:**	24 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	70' / 4%*	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 24-inch corrugated steel cross culvert with a 42-inch by 30-inch culvert inlet transitions at approximately eight lineal feet. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event.

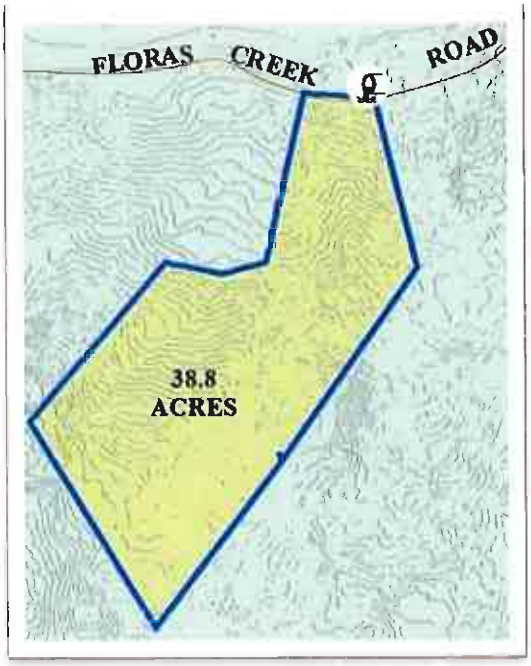


PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the culvert with a new 24-inch HDPE smooth wall culvert. The project will require significant shoring to be completed because of the deep depth. Since the culvert drains upland flows and is not located in a mapped fish stream. The County should consult with USACE and ODFW for verification that no permit is required due to the proximity of the culvert with the Elk River.

FIGURE 8.3.8
FLORAS CREEK ROAD AT MP 2.069

PROJECT NO. XX			
Road Name:	Floras Creek Road	**Project Limit (MP):**	2.069
Region-Road No.:	Northern-124	**Average Depth:**	5'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	27 cfs
Culvert Diameter:	72"	**Existing Culvert Capacity:**	381 cfs
Culvert Type:	CS	**Fish Stream:**	Trout
Length / Slope:	60' / 3%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 72-inch corrugated steel cross culvert is on a mapped ODFW designated fish stream and tributary to Floras Creek. The existing culvert capacity is adequate based on modeling for a 50-Year, 24-Hour flow event. County inspection records indicate heavy pack rust at the outlet of the culvert. Wood stringers are attached to each side of the pipe with a wood platform located one third up the length of the culvert from the invert.



PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 72-inch aluminized steel culvert and concrete structure to maintain fish passage requirements. A concrete outfall structure will be installed in place of the wood platform and stringers. The County will be required to obtain a permit under Section 404 of the Clean Water Act in order to replace the culvert. It is estimated the culvert is sized adequately for fish passage requirements, but consultation with ODFW will be required for verification. Additional costs may be required if permitting results in consultation with NMFS.

FIGURE 8.3.9
FLORAS CREEK ROAD AT MP 2.107

PROJECT NO. XX			
Road Name:	Floras Creek Road	**Project Limit (MP):**	2.107
Region-Road No.:	Northern-124	**Average Depth:**	5.3'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	183 cfs
Culvert Diameter:	60"	**Existing Culvert Capacity:**	469 cfs
Culvert Type:	CS	**Fish Stream:**	Trout
Length / Slope:	60' / 12%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 60-inch corrugated metal cross culvert is on a mapped ODFW designated trout stream and tributary to Floras Creek. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate heavy rust at the inlet and outlets. The outlet has an approximate 10-foot drop.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 72-inch aluminized steel culvert to meet fish passage requirements. The County will need to obtain a permit under Section 404 of the Clean Water Act. Since the culvert conveys flows from a designated fish stream consultation with ODFW will be required to confirm sizing of the culvert and fish passage requirements. Additional costs may be required if permitting results in consultation with NMFS.

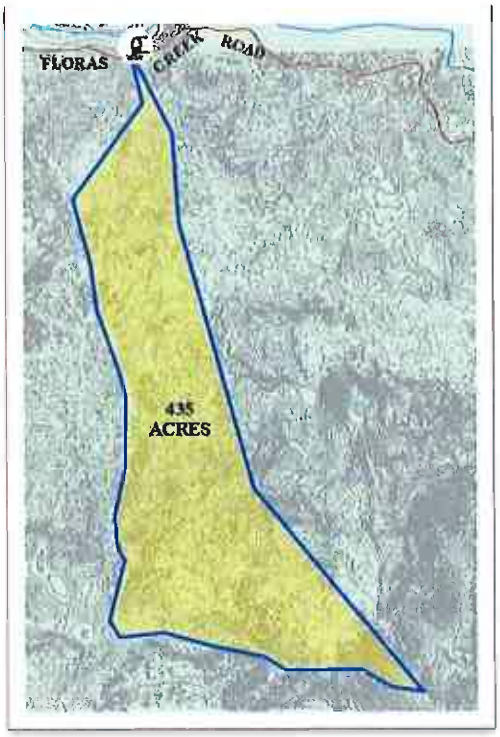


FIGURE 8.3.10
FLORAS CREEK ROAD AT MP 2.164

PROJECT NO. XX			
Road Name:	Floras Creek Road	**Project Limit (MP):**	2.164
Region-Road No.:	Northern-124	**Average Depth:**	10'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	162 cfs
Culvert Diameter:	60"	**Existing Culvert Capacity:**	449 cfs
Culvert Type:	CS	**Fist Stream:**	No
Length / Slope:	55' / 11%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 60-inch corrugated steel cross culvert that conveys flows to Floras Creek with an approximate 6-foot drop at the outlet. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records state that the existing culvert invert is rusted.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to clean the existing culvert and install a concrete invert to extend the service life and prevent further rusting. Further inspection and evaluation will be need by the County to determine if the existing culvert is in adequate structural condition for this repair. Although the culvert drains upland flows and is not mapped as a designated fish stream, a consultation with USACE and ODFW is recommended to ensure no permits are required. Further evaluation will be needed if it is determined that concrete invert repair is not accepted by consultation with USACE and ODFW.

FIGURE 8.3.11
FLORAS CREEK ROAD AT MP 2.926

PROJECT NO. XX			
Road Name:	Floras Creek Rd.	**Project Limit (MP):**	2.926
Region-Road No.:	Northern-124	**Average Depth:**	10'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	258 cfs
Culvert Diameter:	72"	**Existing Culvert Capacity:**	934 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	60' / 1.8%	**Project Cost:**	TBD

EXISTING CONDITIONS:

At Milepost 2.926, the road narrows to 13 feet due to the repair of an existing slide area. An existing 72-inch corrugated steel cross culvert that conveys flows to Floras Creek is in fair condition. The bottom of the culvert shows evidence of concrete abrasion. A wooden platform with cable tieback was built at the outfall to direct flows down a steep embankment and it is in poor condition. The existing culvert capacity is adequate based on the 50-year, 24-hour peak flow event.

PROPOSED IMPROVEMENT PROJECT:

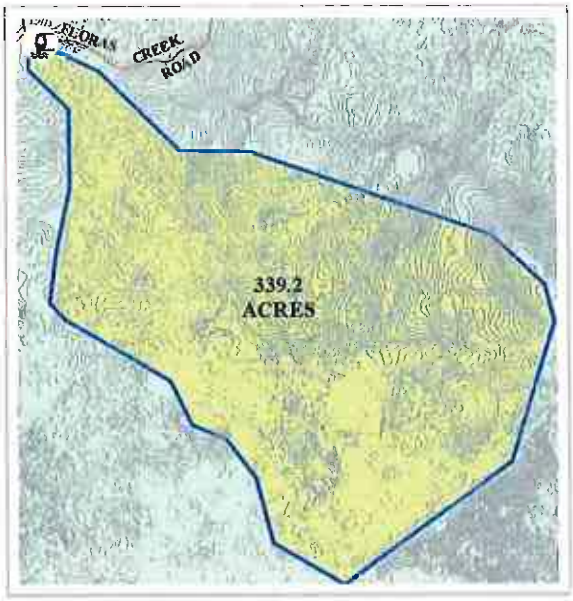
This project coincides with *Six Year Road Capital Improvement Plan* Project No. 20 and should be completed in conjunction with the road widening project. Drainage improvements include the existing ditch filled on the north side and replaced with new 12-inch culverts conveying flows parallel to the road and discharging to a new 72-inch aluminized steel culvert that conveys flows under Floras Creek Road. A culvert outlet structure will be installed to replace the existing wooden structural platform with cable tieback. A geotechnical investigation will be required because the area is subject to slides. Although the culvert drains upland flows and is not mapped as a designated fish stream, a consultation with USACE and ODFW is recommended to ensure no permits are required due to the downstream location of Floras Creek.

FIGURE 8.3.12
FLORAS CREEK ROAD AT MP 3.970

PROJECT NO. XX			
Road Name:	Floras Creek Road	**Project Limit (MP):**	3.970
Region-Road No.:	Northern-124	**Average Depth:**	12'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	314 cfs
Culvert Diameter:	48"	**Existing Culvert Capacity:**	236 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	50' / 10%	**Project Cost:**	TBD

EXISTING CONDITIONS:

An existing 48-inch corrugated steel cross culvert is on a tributary of Floras Creek. The existing capacity is inadequate based on a 50-year, 24-hour peak flow event. County inspection records state that the culvert invert is polished and the full circumference of the culvert interior and exterior is rusted. There is a dip in the middle of the culvert, which could be a sign of settling or poor installation methods.



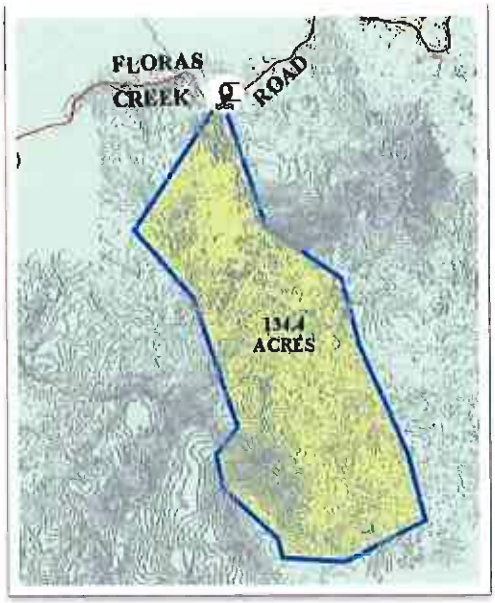
PROPOSED IMPROVEMENT PROJECT:

This project coincides with *Six Year Road Capital Improvement Plan* Project No. 22 and should be completed in conjunction with the road widening project. The proposed plan is to remove and replace the existing culvert with a new 60-inch aluminized steel culvert with new concrete headwall to meet capacity requirements. The County will need to obtain a permit under Section 404 of the Clean Water Act to upsize the culvert. Although the stream is not identified as a fish stream on the ODFW designated map, consultation is recommended to confirm there are no fish passage requirements. Additional costs may be associated with the project if ODFW consultation results in fish passage requirements.

FIGURE 8.3.13
FLORAS CREEK ROAD AT MP 5.165

PROJECT NO. XX			
Road Name:	Floras Creek Road	**Project Limit (MP):**	5.165
Region-Road No.:	Northern-124	**Average Depth:**	6.5'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	62 cfs
Culvert Diameter:	48"	**Existing Culvert Capacity:**	247 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	50' / 11%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 48-inch corrugated steel cross culvert conveys flows under Floras Creek Road. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. The culvert invert is rusty and may have a joint separation twenty feet upstream from the outlet per County inspection records.



PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 48-inch aluminized steel culvert. The County will potentially need to obtain a permit under Section 404 of the Clean Water Act to replace the culvert. Although the stream is not identified as a fish stream on the ODFW designated map, consultation is recommended to confirm there are no fish passage requirements based on the culvert's close vicinity to Floras Creek. Additional costs may be associated with the project if ODFW consultation results in fish passage requirements.

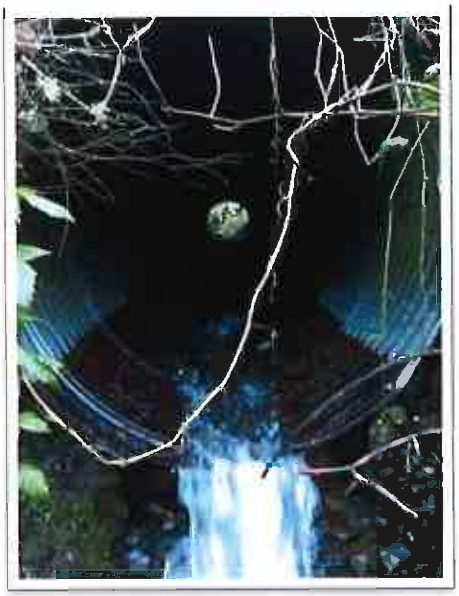


FIGURE 8.3.14
FLORAS CREEK ROAD AT MP 5.725

PROJECT NO. XX			
Road Name:	Floras Creek Road	**Project Limit (MP):**	5.725
Region-Road No.:	Northern-124	**Average Depth:**	14'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	48 cfs
Culvert Diameter:	36"	**Existing Culvert Capacity:**	98 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	70' / 8%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 36-inch corrugated steel cross culvert conveys flows under Floras Creek Road. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate the existing culvert has moderate rusting and no perforations.

PROPOSED IMPROVEMENT PROJECT:
It is recommended that the culvert is slip lined using a PVC liner pipe due to the depth of bury. Sliplining will prevent further degradation of the culvert. Although this culvert drains upland flows and is not mapped as a designated fish stream, consultation with USACE and ODFW is recommended to ensure no permits are required due to the proximity to Floras Creek.

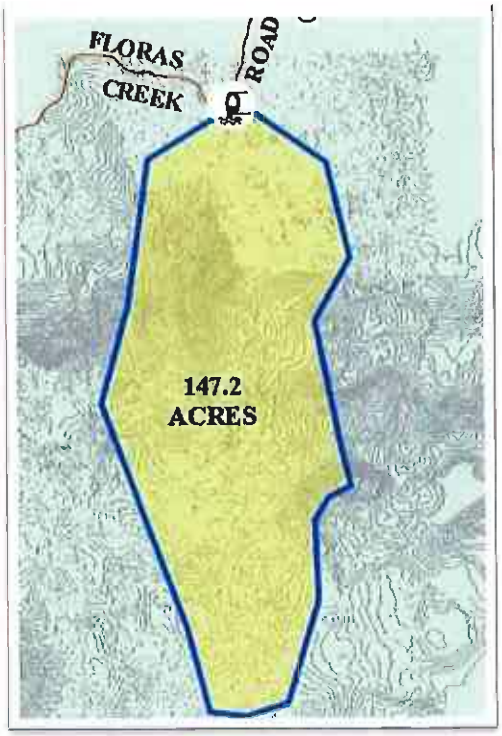
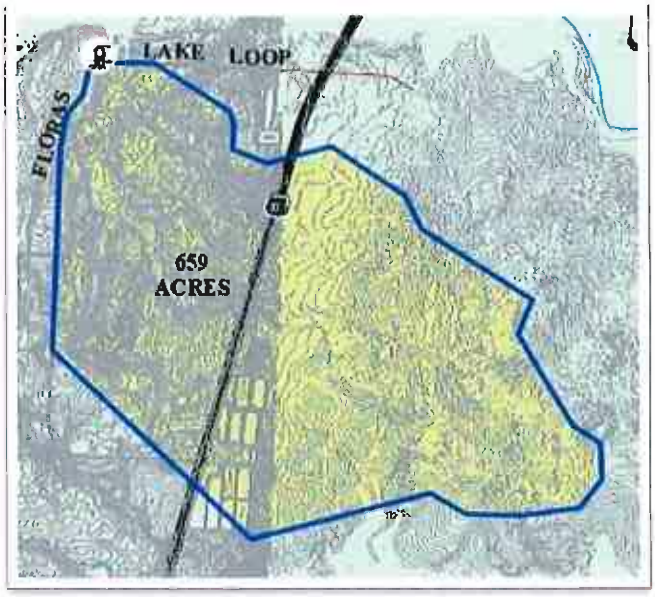


FIGURE 8.3.15
FLORAS LAKE LOOP AT MP 0.513

PROJECT NO. XX			
Road Name:	Floras Lake Lp.	**Project Limit (MP):**	0.513
Region-Road No.:	Northern-130	**Average Depth:**	4'
County Rating:	1	**50 YR - 24 HR Basin Runoff:**	401 cfs
Culvert Diameter:	48"	**Existing Culvert Capacity:**	167 cfs
Culvert Type:	CS	**Fish Stream:**	Steelhead, Coho & Chinook Salmon, and Trout
Length / Slope:	50' / 5%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 48-inch corrugated steel cross culvert is on a ODFW designated fish stream with coho & Chinook salmon, steelhead and trout as the listed fish species. The existing capacity is inadequate based on modeling for a 50-year, 24-hour peak flow event. Per County ordinance a 50-year storm is required when the basin is greater than 640 acres. The existing culvert sits in a low marshy area that typically floods in the winter.



PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 72-inch aluminized steel culvert to satisfy capacity and fish stream requirements. The County will need to obtain a permit under Section 404 of the Clean Water Act. A Section 404 permit with coho as a listed species typically results in consultation with NMFS. The recommended culvert size and fish passage requirements should be verified during consultation with each regulatory agency.

FIGURE 8.3.16
COUNTY SHOP ROAD AT MP 0.171

PROJECT NO. XX			
Road Name:	County Shop Road	**Project Limit (MP):**	0.171
Region-Road No.:	Northern-148	**Average Depth:**	7.2'
County Rating:	1	**25 YR - 24 HR Basin Runoff:**	34 cfs
Culvert Diameter:	36"	**Existing Culvert Capacity:**	60 cfs
Culvert Type:	CS	**Fish Stream:**	Trout
Length / Slope:	70' / 3%	**Project Cost:**	TBD

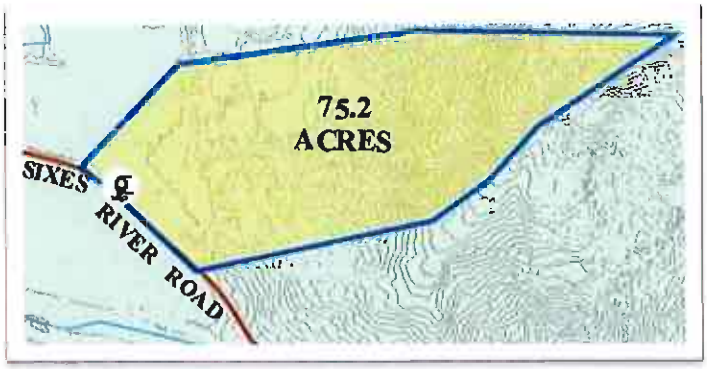
EXISTING CONDITIONS:
An existing 36-inch corrugated steel cross culvert is located on a mapped ODFW designated trout stream. The existing capacity is adequate based on the model for a 25-year, 24-hour peak flow event. The County inspection records noted that the sides of the existing culvert are rusted at the inlet. The inlet appears to be misshapen and the bottom of the existing culvert is rusted.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 48-inch aluminized steel culvert to meet fish passage requirements. Replacing the culvert will require the County to obtain a permit under Section 404 of the Clean Water Act and consultation with ODFW. The recommended culvert size is expected to meet fish passage requirements, but will need to be verified by ODFW during consultation. Additional costs may be required if permitting results in consultation with NFMS.

FIGURE 8.3.17
SIXES RIVER ROAD AT MP 0.173

PROJECT NO. XX			
Road Name:	Sixes River Rd.	**Project Limit (MP):**	0.173
Region-Road No.:	North-184	**Average Depth:**	3.5'
County Rating:	1	**50 YR - 24 HR Basin Runoff:**	67 cfs
Culvert Diameter:	72"	**Existing Culvert Capacity:**	440 cfs
Culvert Type:	CS	**Fish Stream:**	Trout
Length / Slope:	40' / 4%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 72-inch corrugated steel cross culvert conveys flows on a tributary to the Sixes River. The tributary is a mapped ODFW designated trout stream. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate the existing culvert is typically submerged and is full of sediment.



PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culverts with an 84-inch aluminized steel culvert to meet fish passage requirements. The County will need to obtain a permit under Section 404 of the Clean Water Act. Consultation with ODFW will be required to verify culvert sizing and determine fish passage requirements. Additional costs may be required if permitting results in consultation with NMFS.

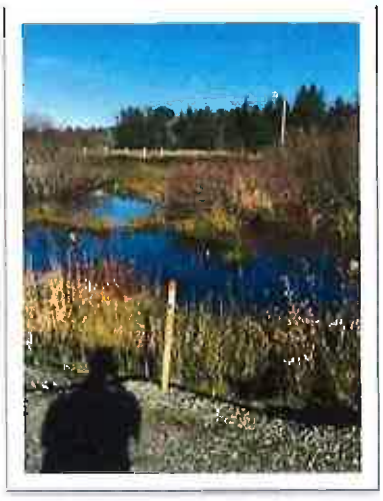


FIGURE 8.3.18
SIXES RIVER ROAD AT MP 2.733

PROJECT NO. XX			
Road Name:	Sixes River Road	**Project Limit (MP):**	2.733
Region-Road No.:	Northern-184	**Average Depth:**	3.5'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	73 cfs
Culvert Diameter:	60"	**Existing Culvert Capacity:**	303 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	70' / 5%	**Project Cost:**	TBD

EXISTING CONDITIONS:

An existing 60-inch corrugated steel cross culvert conveys flows under Sixes River Road. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate the existing culvert is rusted and full of debris. There is evidence of a previous tar coating that has degraded, and is present in the corrugations of the culvert. No perforations were noted in the inspection records.

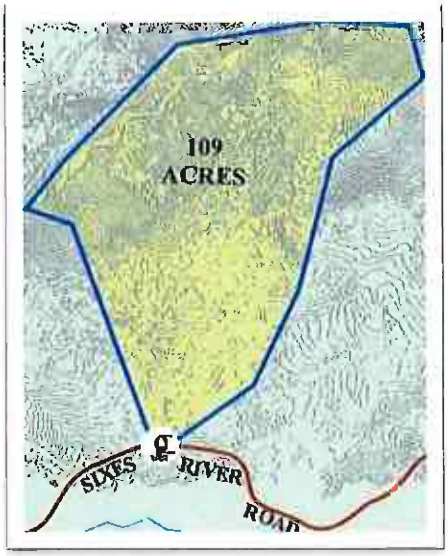
PROPOSED IMPROVEMENT PROJECT:

The proposed plan will install a concrete invert liner to extend the design life of the existing culvert. The culvert should be cleaned and investigated further for any structural damages prior to installing the concrete invert liner. The culvert system appears to drain upland flows and is not located in a mapped fish stream. It is recommended the County consult with USACE and ODFW prior to the work due to the proximity of the culvert with Sixes River.

FIGURE 8.3.19
SIXES RIVER ROAD AT MP 7.279

PROJECT NO. XX			
Road Name:	Sixes River Rd.	**Project Limit (MP):**	7.279
Region-Road No.:	North-184	**Average Depth:**	35.6'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	42 cfs
Culvert Diameter:	36"	**Existing Culvert Capacity:**	92 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	165' / 7%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 36-inch corrugated steel cross culvert conveys flows under Sixes River Road. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate the culvert is rusted to the spring line and the outlet has a 7-foot drop onto large boulders. The culvert serves two creeks and one of them is perennial.



PROPOSED IMPROVEMENT PROJECT:
Due to the deep depth of the existing culvert the recommended plan is to slipline using a PVC liner. It is recommended the County clean and televise the culvert prior to the repair to check the condition and alignment for feasibility of sliplining. Additional slope stabilization should be installed at the outfall to stabilize the existing bank and prevent scouring and erosion. The culvert system drains upland flows and is not located in a mapped fish stream. It is recommended that the County consult with USACE and ODFW prior to the work due to the proximity of the culvert with the Chetco River.

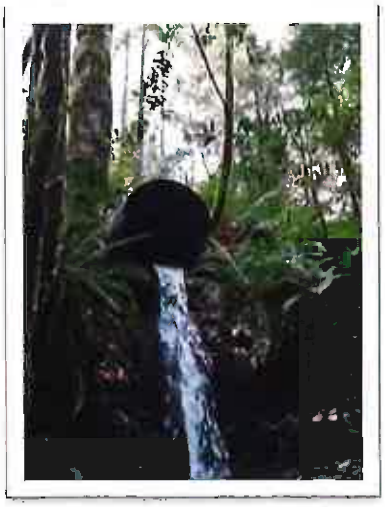
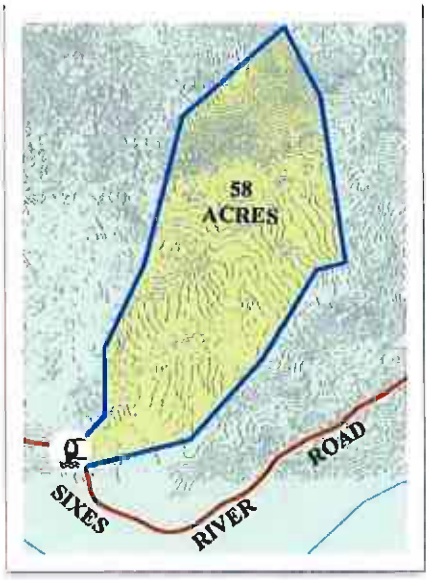


FIGURE 8.3.20
SIXES RIVER ROAD AT MP 7.376

PROJECT NO. XX			
Road Name:	Sixes River Rd.	**Project Limit (MP):**	7.376
Region-Road No.:	North-184	**Average Depth:**	25.7'
County Rating:	1	**50 YR - 24 HR Basin Runoff:**	28 cfs
Culvert Diameter:	36"	**Existing Culvert Capacity:**	104 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	112' / 9%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 36-inch corrugated steel cross culvert that conveys flows under Sixes River Road. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate the inlet is rotted approximately three feet in, has visible perforations to ten feet, and rusted sidewalls. The outlet steps down to rocks at approximately four feet. The Dyer Partnership survey field notes indicate the culvert has a belly.

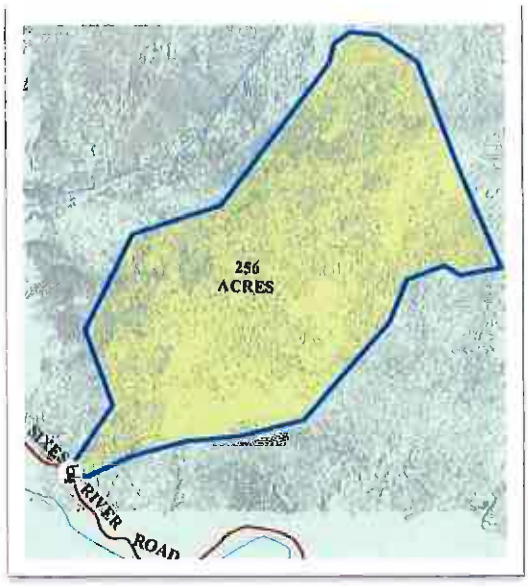


PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 36-inch smooth wall HDPE culvert. Slope protection at the outlet is recommended to prevent erosion. Although the culvert drains upland flows and is not mapped as a designated fish stream, a consultation with USACE and ODFW is recommended to ensure no permits are required prior to performing any work due to the proximity of the Sixes River.

FIGURE 8.3.21
SIXES RIVER ROAD AT MP 8.738

PROJECT NO. XX			
Road Name:	Sixes River Rd.	**Project Limit (MP):**	8.738
Region-Road No.:	North-184	**Average Depth:**	16.2
County Rating:	1	**50 YR - 24 HR Basin Runoff:**	100 cfs
Culvert Diameter:	48"	**Existing Culvert Capacity:**	183 cfs
Culvert Type:	CS	**Fish Stream:**	Trout
Length / Slope:	60' / 6%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 48-inch corrugated steel cross culvert that conveys flows under Sixes River Road. The stream is a tributary to the Sixes River and is an ODFW designated trout stream. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. The factory tar coating appears to be degrading, exposing the pipe to environmental conditions.

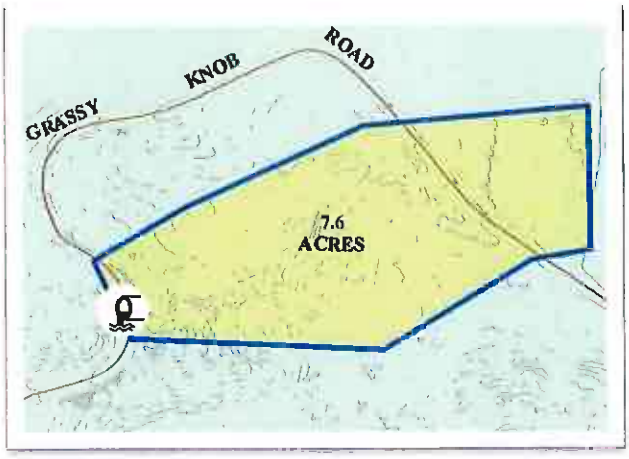


PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 60-inch aluminized steel culvert. The County will need to obtain a permit under Section 404 of the Clean Water Act. Consultation with ODFW will be required to verify culvert sizing and determine fish passage requirements. Additional costs may be required if permitting results in consultation with NMFS.

FIGURE 8.3.22
GRASSY KNOB ROAD AT MP 0.591

PROJECT NO. XX			
Road Name:	Grassy Knob Rd.	**Project Limit (MP):**	0.591
Region-Road No.:	Northern-196	**Average Depth:**	20'
County Rating:	1	**25 YR - 24 HR Basin Runoff:**	5 cfs
Culvert Diameter:	36"	**Existing Culvert Capacity:**	130 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	140' / 14%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 36-inch corrugated steel cross culvert conveys flows under Grassy Knob Road. The existing capacity appears to be more than adequate based on modeling for a 25-year, 24-hour peak flow event. The existing culvert has heavy rust on the invert and some perforations per County inspection records. The outlet is located on a steep bank.

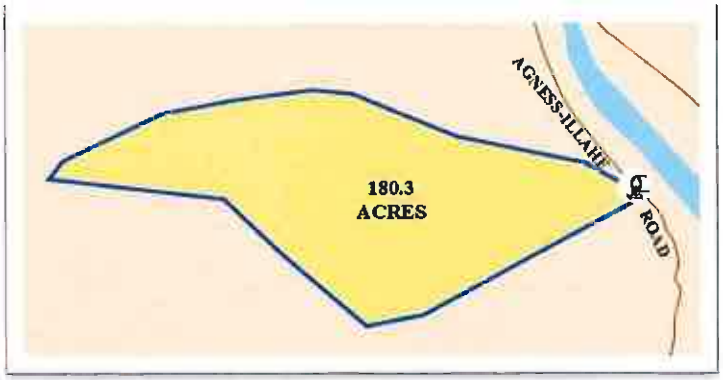


PROPOSED IMPROVEMENT PROJECT:
It is recommended that the existing culvert is sliplined using a PVC liner pipe. The liner will extend the life of the existing culvert and will not require the deep excavation needed to replace the culvert. The flows conveyed by this culvert appear to be upland flows. Although the culvert appears to drain upland flows and is not mapped as a designated fish stream, a consultation with USACE and ODFW is recommended to ensure no permits are required.

FIGURE 8.3.23
AGNESS-ILLAHE ROAD AT MP 1.841

PROJECT NO. XX			
Road Name:	Agness-Illahe Rd.	**Project Limit (MP):**	1.841
Region-Road No.:	Central-375	**Average Depth:**	30'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	61 cfs
Culvert Diameter:	60"	**Existing Culvert Capacity:**	332 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	140' / 6%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 60-inch corrugated steel cross culvert that conveys flows under Agness-Illahe Road. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate that the existing culvert alignment is not straight and the tar coated invert has degraded. The culvert is rusted.



PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 60-inch corrugated aluminized steel culvert to correct the alignment. No permit is expected to be required since the culvert is located above the ordinary high-water mark. The culvert dries out between rain storms, conveys upland flows, and is not located in a mapped fish stream. It is recommended the County consult with USACE and ODFW prior to the work due to the proximity of the culvert with the Rogue River.

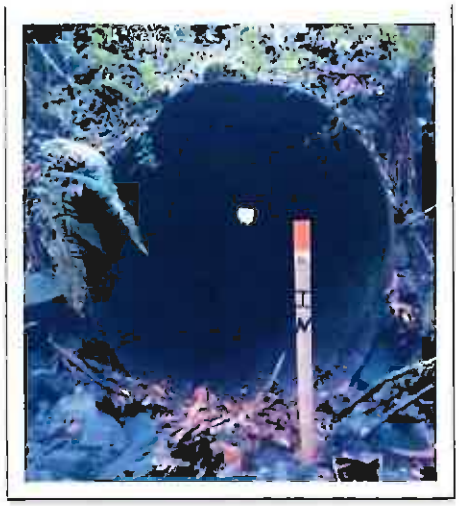


FIGURE 8.3.24
OAK FLAT ROAD AT MP 2.047

PROJECT NO. XX			
Road Name:	Oak Flat Rd.	**Project Limit (MP):**	2.047
Region-Road No.:	Central-450	**Average Depth:**	12'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	43 cfs
Culvert Diameter:	36"	**Existing Culvert Capacity:**	85 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	60'/ 6%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 36-inch corrugated steel cross culvert that conveys flows under Oak Flat Road. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate the culvert is heavily rusted but has no perforations.

PROPOSED IMPROVEMENT PROJECT:
It is recommended that the culvert is cleaned and sliplined with a PVC liner pipe during summer conditions when the culvert is dry. Slope protection is recommended around the inlet of the culvert. Although the culvert drains upland flows and is not mapped as a designated fish stream, a consultation with USACE and ODFW is recommended to ensure no permits are required prior to performing any work.

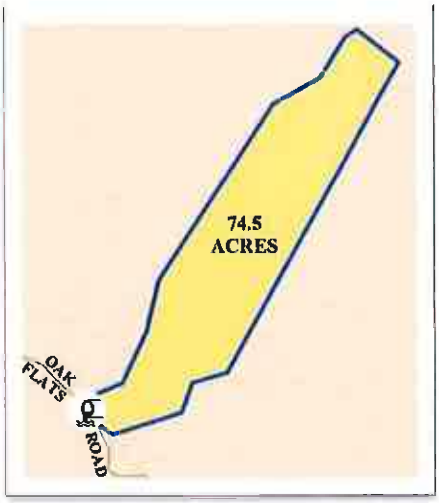
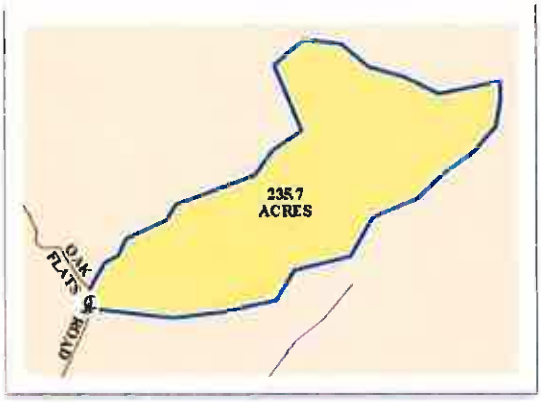


FIGURE 8.3.25
OAK FLAT ROAD AT MP 2.410

PROJECT NO. XX			
Road Name:	Oak Flat Rd.	**Project Limit (MP):**	2.410
Region-Road No.:	Central-450	**Average Depth:**	3'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	121 cfs
Culvert Diameter:	48"	**Existing Culvert Capacity:**	183 cfs
Culvert Type:	CS	**Fish Stream:**	Trout
Length / Slope:	30'/ 4%	**Project Cost:**	TBD

EXISTING CONDITIONS:

An existing 48-inch corrugated steel cross culvert conveys flows under Oak Flat Road and is an ODFW mapped coastal cutthroat trout stream. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records state that the invert of the culvert is perforated at the outlet. The culvert bedding is washing out and undermines both the inlet and outlet.



PROPOSED IMPROVEMENT PROJECT:

The proposed plan is to remove and replace the existing culvert with a new 71-inch by 47-inch arch culvert for fish passage. Slope protection will be added at the inlet and outlet of the culvert. The County will be required to obtain a permit under Section 404 of the Clean Water Act in order to replace the culvert. Consultation with ODFW will be required to verify sizing and fish passage requirements. Additional costs may be required if permitting results in consultation with NMFS.

FIGURE 8.3.26
PONDEROSA ROAD AT MP 0.016

PROJECT NO. XX			
Road Name:	Ponderosa Rd.	**Project Limit (MP):**	.016
Region-Road No.:	Central-518	**Average Depth:**	5'
County Rating:	2	**25 YR - 24 HR Basin Runoff:**	211 cfs
Culvert Diameter:	3' x 6' (in), 5' x 6' (out)	**Existing Culvert Capacity:**	151 cfs
Culvert Type:	PC	**Fish Stream:**	Steelhead, Trout
Length / Slope:	30' / 1%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing poured in place box culvert begins as 3-feet by 6-feet at the inlet and transitions to 5-feet by 6-feet at the outlet on Cedar Creek is an ODFW designated steelhead and trout stream. The existing capacity is inadequate based on modeling for a 50-year, 24-hour peak flow. County inspection records indicate there is broken concrete at the inlet and water flows through a hole under the concrete.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing box culvert with a new 95-inch by 67-inch arch culvert to meet fish passage and capacity requirements. The County will be required to obtain a permit under Section 404 of the Clean Water Act in order to replace the culvert. It is expected the proposed culvert is sized adequately for fish passage requirements, but consultation with ODFW will be required for verification. Additional costs may be required if permitting results in consultation with NMFS.

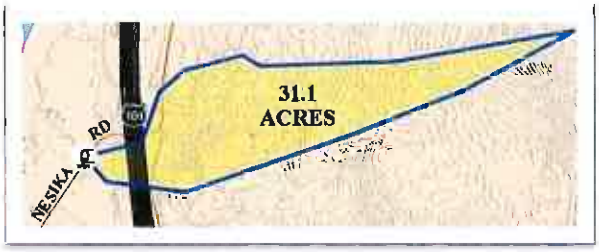
FIGURE 8.3.27
NESIKA ROAD AT MP 0.071

PROJECT NO. XX			
Road Name:	Nesika Road	**Project Limit (MP):**	0.071
Region-Road No.:	Central-524	**Average Depth:**	4'
County Rating:	2	**25 YR - 24 HR Basin Runoff:**	28 cfs
Culvert Diameter:	36"	**Existing Culvert Capacity:**	116 cfs
Culvert Type:	PE	**Fish Stream:**	No
Length / Slope:	70' / 4%*	**Project Cost:**	TBD

*Estimated slope

EXISTING CONDITIONS:

An existing 36-inch HDPE cross culvert conveys flows under Nesika Beach Road. The existing culvert is adequate based on modeling for a 25-year, 24-hour peak flow event. Existing dual culverts have been replaced with HDPE since the last inspection report by the County dated April 7, 2009. The culvert appears to be in good condition, but the inlet is located on private property and is difficult to maintain.



PROPOSED IMPROVEMENT PROJECT:

The proposed plan is to install an inlet structure with a debris rack to prevent erosion and the culvert from filling with larger debris. It is recommended that the County obtain an easement for installation and maintenance of the culvert. Although the culvert appears to drain upland flows and is not mapped as a designated fish stream, a consultation with USACE and ODFW is recommended to ensure no permits are required prior to performing any work. The County is expected to need to obtain a permit under Section 404 of the Clean Water Act to replace install the inlet structure.

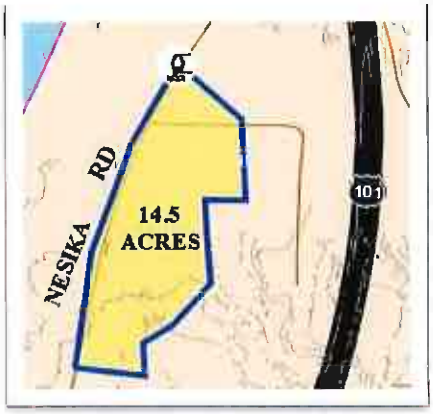
FIGURE 8.3.28
NESIKA ROAD AT MP 0.24

PROJECT NO. XX			
Road Name:	Nesika Road	**Project Limit (MP):**	0.24
Region-Road No.:	Central-524	**Average Depth:**	4'
County Rating:	2	**25 YR - 24 HR Basin Runoff:**	36 cfs
Culvert Diameter:	24"	**Existing Culvert Capacity:**	24 cfs
Culvert Type:	PC	**Fish Stream:**	No
Length / Slope:	100' / 4%*	**Project Cost:**	TBD

*Assumed slope

EXISTING CONDITIONS:

An existing 24-inch concrete cross culvert conveys flows under Nesika Beach Road. The existing culvert capacity is inadequate based on a 25-year, 24-hour peak flow event. County inspection reports state that the existing culvert inlet and outlet are typically submerged and difficult to locate. The culvert inlet and outlet are located on private property and is difficult for the County to maintain.



PROPOSED IMPROVEMENT PROJECT:

The proposed plan is to remove the existing culvert and install a new 30-inch smooth wall HDPE culvert and new concrete inlet structure with a debris rack to prevent erosion. If the culverts are typically submerged it is recommended to raise the elevation of the new culvert if feasible. This will require channel reconstruction. It is recommended that the County obtain an easement for installation and maintenance of the culvert inlet and outlet. Although the culvert drains upland flows and is not mapped as a designated fish stream, a consultation with USACE and ODFW is recommended to ensure no permits are required prior to performing any work. The County will need to obtain a permit under Section 404 of the Clean Water Act to replace the culvert.

FIGURE 8.3.29
A STREET AT MP 0.12

PROJECT NO. XX			
Road Name:	A Street	**Project Limit (MP):**	0.12
Region-Road No.:	Central-530	**Depth:**	N/A
County Rating:	N/A	**25 YR - 24 HR Basin Runoff:**	11 cfs
Culvert Diameter:	None	**Existing Culvert Capacity:**	N/A
Culvert Type:	N/A	**Fish Creek:**	No
Length / Slope:	N/A	**Project Cost:**	TBD

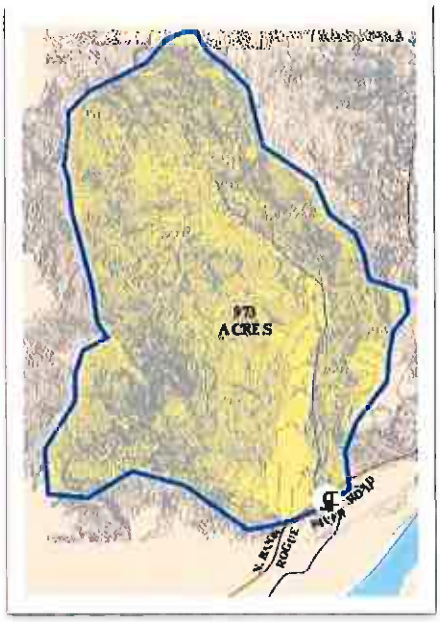
EXISTING CONDITIONS:
Existing ditching on each side of the roadway currently conveys flows to the west along A Street. At the end of A Street the ditching ends abruptly and water overflows out of the ditch, where it sheet flows down the street to a vegetated cliffside. The cliffside is slowly eroding due to concentrated sheet flows from this drainage.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to install ditch inlets at the end of A Street in the north and south ditches. Each ditch inlet will convey flows through new 12-inch smooth wall HDPE storm drain lines to a new manhole installed in the center of A Street. From the new manhole an 18-inch smooth wall HDPE outfall will convey flows to the west and discharge to the cliffside. The outfall will be installed five to ten feet deep, but well above the ordinary high-water mark. Rock slope protection will be installed at the outfall and native vegetation will be restored along the cliffside to prevent further erosion of the bank.

FIGURE 8.3.30
NORTH BANK ROGUE RIVER ROAD AT MP 1.582

PROJECT NO. XX			
Road Name:	N Bank Rogue River Rd.	**Project Limit (MP):**	1.582
Region-Road No.:	Central-545	**Average Depth:**	3'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	550 cfs
Culvert Diameter:	2 - 72"	**Existing Culvert Capacity:**	494 cfs
Culvert Type:	CS, Concrete Invert	**Fish Stream:**	Trout, Steelhead, Coho & Chinook Salmon
Length / Slope:	60'/ 1%	**Project Cost:**	TBD

EXISTING CONDITIONS:
Dual existing 72-inch corrugated steel cross culverts share a headwall and drain an ODFW designated fish stream on a tributary to the Rogue River. The combined capacities are not adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records note that the existing culverts are tar coated with concrete lined inverts and regularly fill with debris.



PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing dual culverts with a new 20-foot precast bridge in order to meet fish passage and capacity requirements. The County will need to obtain a permit under Section 404 of the Clean Water Act. A Section 404 permit with coho as a listed species typically results in consultation with NMFS. Fish passage requirements should be verified during consultation with each regulatory agency. An easement may be required during installation of the precast bridge. A geotechnical study is recommended to investigate the feasibility of the bridge at this location.

FIGURE 8.3.31
NORTH BANK ROGUE RIVER ROAD AT MP 7.548 AND 7.550

PROJECT NO. XX			
Road Name:	North Bank Rogue River Rd.	**Project Limit (MP):**	7.548 and 7.550
Region-Road No.:	Central-545	**Average Depth:**	8'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	340 cfs
Culvert Diameter:	2 - 48" x 72"	**Existing Culvert Capacity:**	706 cfs
Culvert Type:	CS	**Fish Stream:**	Trout
Length / Slope:	60' / 8%	**Project Cost:**	TBD

EXISTING CONDITIONS:
Dual existing 48-inch by 72-inch corrugated steel cross culverts share a concrete headwall and wing walls which convey flows from a tributary to the Rogue River; known as Libby Creek under the North Bank Rogue River Road. The combined capacities are not adequate for a 50-year, 24-hour peak flow event. County inspection records indicated both culverts are heavily rusted.

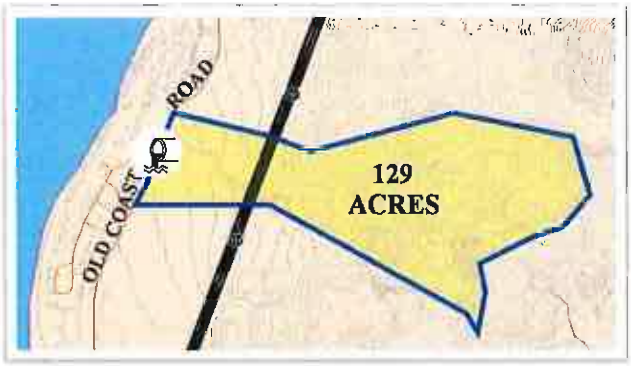
PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the dual existing culverts with a new 20-foot precast bridge to meet capacity and fish passage requirements. The County will need to obtain a permit under Section 404 of the Clean Water Act. Fish passage requirements should be verified during consultation with each regulatory agency. An easement may be required during installation of the precast bridge. A geotechnical study is recommended to investigate the feasibility of the bridge for this location.

FIGURE 8.3.32
OLD COAST ROAD AT MP 0.596 TO 0.784

PROJECT NO. XX			
Road Name:	Old Coast Road	**Project Limit (MP):**	0.596 to 0.784
Region-Road No.:	Central-555	**Average Depth:**	Varies
County Rating:	2, 3	**50 YR - 24 HR Basin Runoff:**	Varies
Culvert Diameter:	18", 36"	**Existing Culvert Capacity:**	Varies
Culvert Type:	CS, CA	**Fish Stream:**	No
Length / Slope:	150', 60' / 4%*	**Project Cost:**	TBD

*Assumed slope

EXISTING CONDITIONS:



Two existing culverts located at Milepost 0.596 (18-inch corrugated steel) and 0.784 (36-inch corrugated steel). A portion of the drainage runoff from the large field area on the east side of the Old Coast Road at Milepost 0.596 is routed under the road and directed downhill along Miner Drive to an existing drainage. This drainage backups and causes localized flooding during the winter time along Sandy Drive as well as residences along this road. The culvert at Milepost 0.784 receives flows from a creek located to the east, and conveys flows under Old County Road. The County indicated this culvert is known for having beaver issues; causing the plug up of the inlet.

PROPOSED IMPROVEMENT PROJECT:

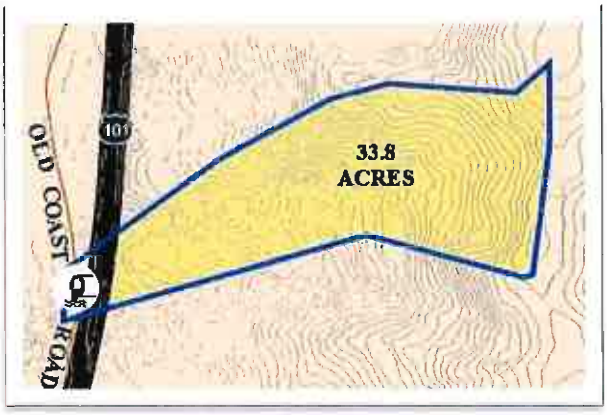
To help alleviate localized flooding, the County requested to reroute storm runoff from the large field away from Miner Drive. The existing culvert at Milepost 0.596 would be capped and abandoned in place. A new ditch inlet will be installed near the existing 18-inch culvert inlet and piped to the north with 1,000 lineal feet of new 18-inch smooth wall HDPE storm pipe with four additional manholes. The grates will convey flows towards the 36-inch corrugated aluminized outfall. Existing ditching will be filled in and shallow ditching will be installed to direct surface water to the new ditch inlets along the east side of the Old Coast Road. A new 36-inch smooth wall HDPE culvert with new inlet structure with a debris rack. The County has had a difficult time maintaining the existing outfall because of beavers. A new inlet structure will make the inlet easier to maintain. The culvert system drains upland flows and is not located in a mapped fish stream. It is recommended the County consult with USACE and ODFW prior to the work due to the proximity of the culvert to the Pacific Ocean.

FIGURE 8.3.33
OLD COAST ROAD AT MP 2.207, 2.210 AND 2.212

PROJECT NO. XX			
Road Name:	Old Coast Road	**Project Limit (MP):**	2.207, 2.210 and 2.212
Region-Road No.:	Central-555	**Average Depth:**	12'
County Rating:	2	**25 YR - 24 HR Basin Runoff:**	23 cfs
Culvert Diameter:	36", 24", 36"	**Existing Culvert Capacity:**	33 cfs
Culvert Type:	CS, PC, CS	**Fish Stream:**	No
Length / Slope:	65' / 8%	**Project Cost:**	TBD

EXISTING CONDITIONS:

The inlet of the culvert is composed of 15 lineal feet of 36-inch corrugated steel culvert. The middle section is 24-inch concrete and the outlet is approximately twenty lineal feet of 24-inch corrugated steel culvert. The existing capacity is adequate based on a 50-year, 24-hour peak flow event. The existing corrugated steel culvert sections are beveled at both ends, heavily rusted, and the inverts are rusted out per County inspection records.



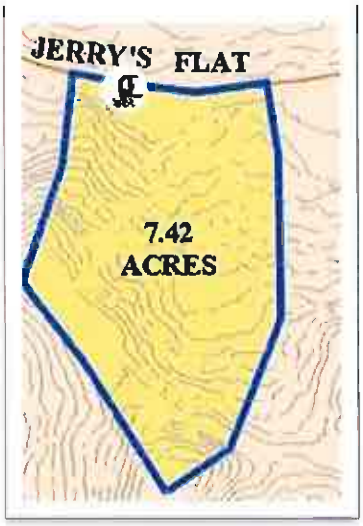
PROPOSED IMPROVEMENT PROJECT:

The proposed plan is to remove and replace the existing culvert with a new 24-inch smooth wall HDPE culvert. The depth of the culvert will require a deep shoring system. Although the culvert drains upland flows and is not mapped as a designated fish stream, a consultation with USACE and ODFW is recommended to ensure no permits are required.

FIGURE 8.3.34
JERRY'S FLAT ROAD AT MP 0.987

PROJECT NO. XX			
Road Name:	Jerry's Flat Road	**Project Limit (MP):**	0.987
Region-Road No.:	Central-595	**Average Depth:**	25'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	5 cfs
Culvert Diameter:	24"	**Existing Culvert Capacity:**	24 cfs
Culvert Type:	AS	**Fish Stream:**	No
Length / Slope:	90' / 4%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 24-inch aluminized steel cross culvert conveys flows under Jerry's Flat Road. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records state that the existing culvert is plugged and is located in a slide movement area. It appears the culvert drains upland flows and is typically dry outside of rain events.



PROPOSED IMPROVEMENT PROJECT:
A geotechnical investigation is recommended to determine if the flows in this area need to be routed away from the slide area. The proposed plan is to remove and replace the culvert with a new 24-inch HDPE smooth wall culvert. The project will require significant shoring to be completed because of the deep depth. It is expected the culvert drains upland flows and is not located in a mapped fish stream. The County should consult with USACE and ODFW for verification that no permit is required due to the proximity of the culvert with the Rogue River.

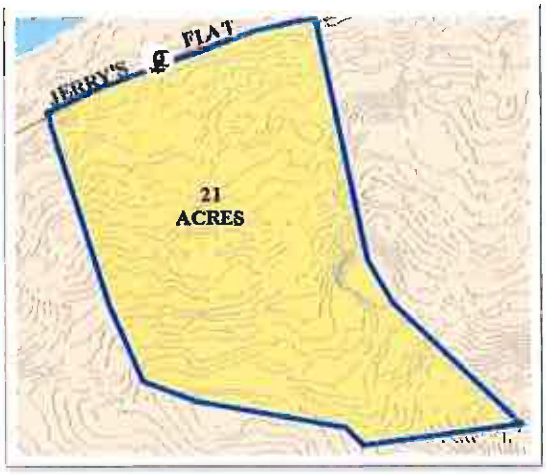
FIGURE 8.3.35
JERRY'S FLAT ROAD AT MP 1.285

PROJECT NO. XX			
Road Name:	Jerry's Flat Road	**Project Limit (MP):**	1.285
Region-Road No.:	Central-595	**Average Depth:**	4'
County Rating:	3	**50 YR - 24 HR Basin Runoff:**	41 cfs
Culvert Diameter:	2-18"	**Existing Culvert Capacity:**	42 cfs
Culvert Type:	PE	**Fish Stream:**	No
Length / Slope:	66' / 4%*	**Project Cost:**	TBD

*Assumed slope

EXISTING CONDITIONS:

Dual existing 18-inch HDPE outfall culverts that originate from a poured in place grated structure that lies at the intersection of Jerry's Flat Road and Eagleview Drive with a short storm drain inlet from the ditch. The existing capacity of the dual culverts is inadequate based on modeling for a 50-year, 24-hour peak flow event. Upland flows are expected to drain into the system; therefore, the area is typically dry outside of rain events.



PROPOSED IMPROVEMENT PROJECT:

The proposed plan is to remove the poured in place grated structure with existing dual culvert outlets. Replace the structure with a new grated manhole and a new single 30-inch smooth wall HDPE culvert outfall. The project would be limited to the drainage system located within the right-of-way and maintained by the County. The project is within a slide zone. The County applied for a FLAP Grant in 2021 to financially assist with fixing the slide and to address this culvert issue.

FIGURE 8.3.36
JERRY'S FLAT ROAD AT MP 1.955

PROJECT NO. XX			
Road Name:	Jerry's Flat Road	**Project Limit (MP):**	1.955
Region-Road No.:	Central-595	**Average Depth:**	X
County Rating:	1	**50 YR - 24 HR Basin Runoff:**	60 cfs
Culvert Diameter:	36"	**Existing Culvert Capacity:**	87 cfs
Culvert Type:	CS	**Fish Stream:**	Trout
Length / Slope:	80'/ 6%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 36-inch corrugated steel cross culvert conveys flows from a trout stream mapped by ODFW and is a tributary to the Rogue River. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. The existing culvert has sections that are rusted and/or perforated per Dyer survey field notes. An existing water service line is installed through the culvert.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 48-inch aluminized steel culvert to meet fish passage requirements. The County will be required to obtain a permit under Section 404 of the Clean Water Act in order to replace the culvert. The proposed culvert is expected to be sized adequately for fish passage requirements, but consultation with ODFW will be required for verification. Additional costs may be required if permitting results in consultation with NMFS.

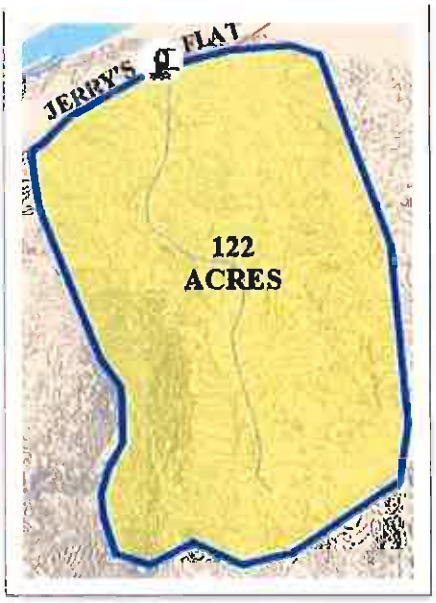
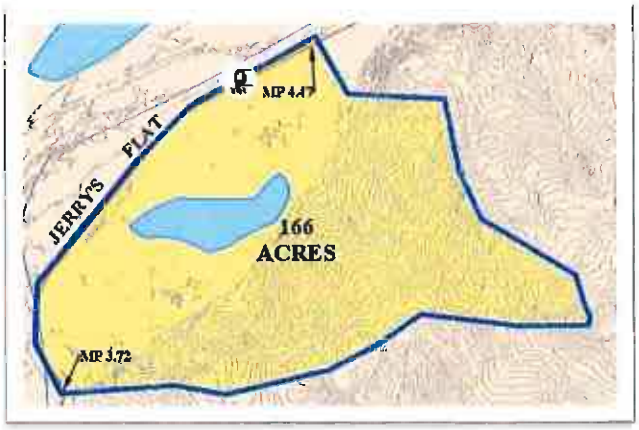


FIGURE 8.3.37
JERRY'S FLAT ROAD AT MP 3.717 TO 4.472

PROJECT NO. XX			
Road Name:	Jerry's Flat Road	**Project Limit (MP):**	3.717 to 4.472
Region-Road No.:	Central-595	**Average Depth:**	Varies
County Rating:	Varies	**50 YR - 24 HR Basin Runoff:**	107 cfs (Full site)
Culvert Diameter:	12", 18"	**Existing Culvert Capacity:**	Varies
Culvert Type:	Varies	**Fish Culvert:**	No
Length / Slope:	Varies	**Project Cost:**	TBD

EXISTING CONDITIONS:
East of Jerry's Flat Road is the location of an old mill site. The land is currently vacant, partially paved, and graveled. The storm water on site is currently is conveyed across Jerry's Flat Road by individual culverts and stormwater infrastructure. The County indicated the shoulder of the road is narrow and is not wide enough to accommodate pedestrians access or cyclists.



PROPOSED IMPROVEMENT PROJECT:
The proposed project relocates the ditch to the southeast side and widens the road for a pedestrian access from MP 3.717 to 4.472. The cost for road widening is not included in this Master Plan. The following improvements are recommended for drainage only:

MP 3.9: A new inlet structure that connects to a new 30-inch smooth wall HDPE outfall culvert that conveys flows from the far west portion of the site under Jerry's Flat Road.

MP 4.182: A new inlet structure will connect into a new 12-inch HDPE smooth wall culvert that conveys flows parallel to the east side of Jerry's Flat Road under a driveway. The inlet structure will connect to an existing 24-inch HDPE smooth wall culvert that conveys flows under Jerry's Flat Road to the west and discharges across private property. A new manhole will be placed in the right-of-way of Jerry's Flat Road on the west side of the road for culvert maintenance. The outfall is located on private property.

MP 4.298: The existing 18-inch HDPE culvert is to be extended thirty lineal feet on the east side of the road to allow for road widening. A headwall is recommended on the east side of the road and a new manhole is recommended in the right-of-way on the west side of Jerry's Flat Road for maintenance. The outfall is located on private property.

MP 4.424: A new grated manhole will be installed and connected into the existing 18-inch culvert. A new manhole should be installed in the right-of-way. The outfall will need to be extended on to private property.

MP 4.472: A new manhole will be installed on the existing 18-inch culvert in the right-of-way and the outfall will be extended on private property.

FIGURE 8.3.38
JERRY'S FLAT ROAD AT MP 8.701

PROJECT NO. XX			
Road Name:	Jerry's Flat Road	**Project Limit (MP):**	8.701
Region-Road No.:	Central-595	**Average Depth:**	4'
County Rating:	1	**50 YR - 24 HR Basin Runoff:**	62 cfs
Culvert Diameter:	48"	**Existing Culvert Capacity:**	129 cfs
Culvert Type:	CS	**Fish Stream:**	Trout
Length / Slope:	60' / 3%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 48-inch corrugated steel cross culvert conveys flows under Jerry's Flat Road from an ODFW mapped trout stream and tributary to the Rogue River. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection reports indicate the existing culvert is rusted and has perforations.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to upsize the existing culvert with a new 60-inch aluminized steel culvert for fish passage requirements. The County will be required to obtain a permit under Section 404 of the Clean Water Act in order to replace the culvert. The proposed culvert is expected to be sized adequately for fish passage requirements, but consultation with ODFW will be required for verification. Additional costs may be required if permitting results in consultation with NMFS.

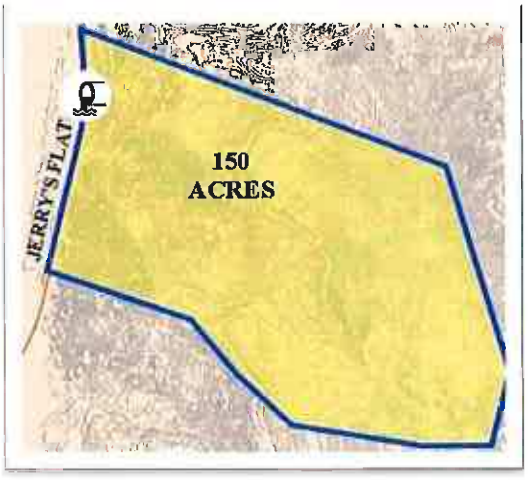


FIGURE 8.3.39
JERRY'S FLAT ROAD AT MP 9.460

PROJECT NO. XX			
Road Name:	Jerry's Flat Road	**Project Limit (MP):**	9.460
Region-Road No.:	Central-595	**Average Depth:**	15'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	65 cfs
Culvert Diameter:	48"	**Existing Culvert Capacity:**	176 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	70' / 5.6%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 48-inch corrugated steel cross culvert on a tributary to the Rogue River. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow storm event. The invert of the existing culvert is lined with half inch of concrete impregnated fabric per County inspection records.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove the existing fabric invert and replace with a concrete invert to extend the service life of the culvert. The culvert drains upland flows and is not located in a mapped fish stream. It is recommended that the County consult with USACE and ODFW prior to the work due to the proximity of the culvert to the Rogue River.

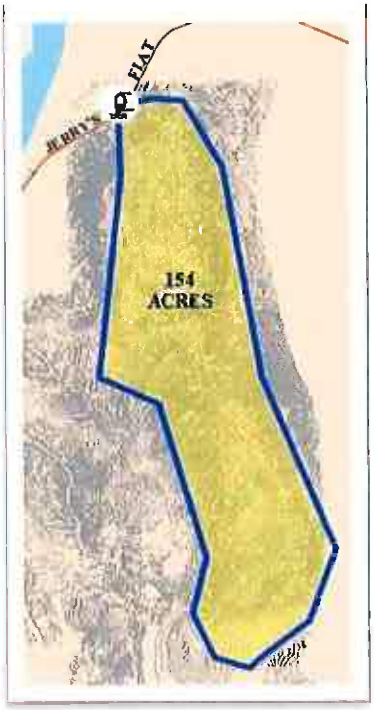


FIGURE 8.3.40
HUNTER CREEK LOOP AT MP 1.092 AND 1.101

PROJECT NO. XX			
Road Name:	Hunter Creek Loop	**Project Limit (MP):**	1.092, 1.101
Region-Road No.:	Central-637	**Average Depth:**	N/A
County Rating:	3 (MP 1.092), 2 (MP 1.101)	**25 YR - 24 HR Basin Runoff:**	24.63 cfs
Culvert Diameter:	2-18"	**Existing Culvert Capacity:**	21.84 cfs
Culvert Type:	PC	**Fish Stream:**	No
Length / Slope:	150' / 4%*	**Project Cost:**	TBD

*Assumed slope

EXISTING CONDITIONS:
Parallel existing 18-inch culverts convey flows under Hunter Creek Complex Road and Hunter Creek Loop. The existing culverts discharge at the existing bench, north of the Curry County Road Department. The combined existing capacity is inadequate based on modeling for a 25-year, 24-hour peak flow event.

PROPOSED IMPROVEMENT PROJECT:
The County is planning on utilizing the existing bench south of Hunter Creek Complex Road as a stockpile and staging area. The proposed plan is to upsize the existing culvert at Milepost 1.101 with new 24-inch smooth wall HDPE culvert and protect the culvert at Milepost 1.092 in place. The existing culverts discharge at an elevation higher than the proposed stockpile area and currently have a large drop. Slope protection will be installed below the culverts and a new ditch with a ditch inlet will be installed below the culverts. The new ditch inlet will convey flows to the southeast through 200 lineal feet of new 24-inch smooth wall HDPE culvert that will discharge into an existing ditch north of the Curry County Road Department buildings. Although this culvert drains upland flows, consultation with USACE and ODFW is recommended to determine if a permit is necessary for the work since existing ditching may contain wetland vegetation.

FIGURE 8.3.41
GRIZZLY MOUNTAIN ROAD AT MP 0.960

PROJECT NO. XX			
Road Name:	Grizzly Mountain Road	**Project Limit (MP):**	0.960
Region-Road No.:	Central-605	**Average Depth:**	10'
County Rating:	1	**25 YR - 24 HR Basin Runoff:**	51 cfs
Culvert Diameter:	36"	**Existing Culvert Capacity:**	98 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	50' / 8%	**Project Cost:**	TBD

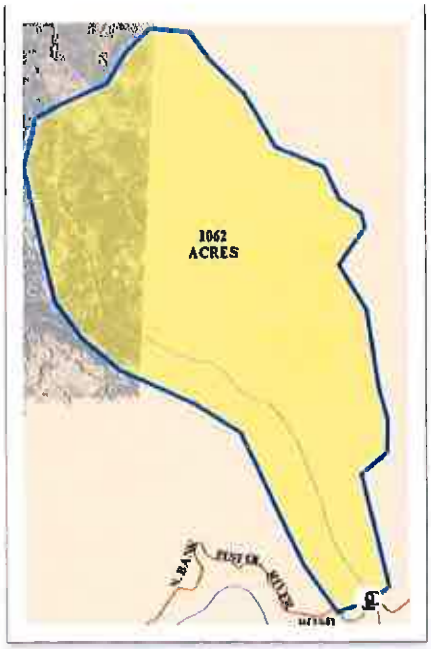
EXISTING CONDITIONS:
An existing 36-inch corrugated steel cross culvert that conveys flows under Grizzly Mountain Road from a ditch. The existing capacity is adequate based on modeling for a 25-year, 24-hour peak flow event. County inspection records indicate the inlet is perforated 7-inches to 10-inches. The culvert from 30-feet to 50-feet is perforated and in poor condition. The culvert appears to be located in an upland site and is typically dry between rain storms.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 36-inch smooth wall HDPE culvert. Slope protection at the outlet is recommended to prevent any further erosion. Although the culvert drains upland flows and is not mapped as a designated fish stream, a consultation with USACE and ODFW is recommended to ensure no permits are required prior to performing any work.

FIGURE 8.3.42
N BANK PISTOL RIVER ROAD AT MP 4.824

PROJECT NO. XX			
Road Name:	N Bank Pistol River Rd.	**Project Limit (MP):**	4.824
Region-Road No.:	Central-690	**Average Depth:**	12'
County Rating:	3	**50 YR - 24 HR Basin Runoff:**	335 cfs
Culvert Diameter:	2-96"	**Existing Culvert Capacity:**	1,120 cfs
Culvert Type:	CS	**Fish Stream:**	Steelhead
Length / Slope:	102' / 8%	**Project Cost:**	TBD

EXISTING CONDITIONS:
Dual existing 96-inch corrugated steel cross culverts convey flows from Glade Creek, which is a designated steelhead stream and a tributary to the Pistol River. The existing culvert inverts are lined on the bottom. The eastern culvert had a concrete invert liner installed in the summer of 2021. The other culvert is currently lined with half inch of cement impregnated fabric. The combined capacities are more than adequate for modeling a 50-year, 24-hour peak flow event.

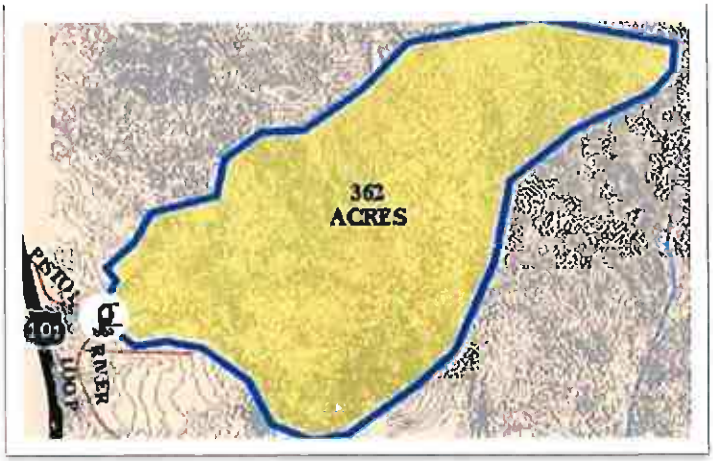


PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to provide a concrete invert liner in replacement of the existing fabric lined west culvert. The channel will need to be temporarily routed to the east culvert that is already lined with concrete. The County may need to obtain a maintenance permit under Section 404 from USACE. A consultation with ODFW is recommended to ensure all fish requirements are met when dewatering the culvert.

FIGURE 8.3.43
PISTOL RIVER LOOP AT MP 0.226

PROJECT NO. XX			
Road Name:	Pistol River Loop	**Project Limit (MP):**	0.226
Region-Road No.:	Central-693	**Average Depth:**	50'
County Rating:	2	**25 YR - 24 HR Basin Runoff:**	104 cfs
Culvert Diameter:	60" Box Culvert	**Existing Culvert Capacity:**	244 cfs
Culvert Type:	PC	**Fish Stream:**	No
Length / Slope:	159' / 2%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 60-inch square box culvert with concrete wingwall on the outlet under Pistol River Loop Road drains to the McKinley Creek. The existing capacity is adequate based on modeling for a 25-year, 24-hour peak flow event. County inspection records noted that the inlet has scouring and exposed rebar. The inlet is blocked by a large maple tree.

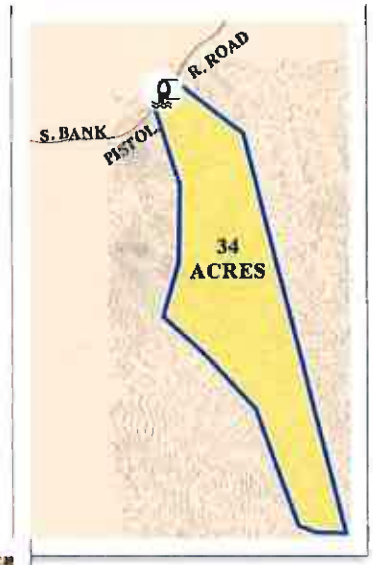


PROPOSED IMPROVEMENT PROJECT:
Rehabilitation of the existing concrete box culvert is recommended based on the deep depth. Rehabilitation includes dewatering the culvert and filling all cracks, holes, and exposed rebar with grout. The large maple tree will need to be removed at the inlet. While the box culvert is dewatered the County should evaluate any structural damage. Structural damage will potentially need to be reinforced if feasible. Structural repairs are not provided as County inspections did not indicate any structural issues. Although the culvert drains upland flows and is not mapped as a designated fish stream, a consultation with USACE and ODFW is recommended to ensure no permits are required prior to performing any work due to the downstream location of the Pistol River.

FIGURE 8.3.44
SOUTH BANK PISTOL RIVER ROAD AT MP 1.005

PROJECT NO. XX			
Road Name:	S Bank Pistol River Rd.	**Project Limit (MP):**	1.005
Region-Road No.:	Central-695	**Average Depth:**	5'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	25 cfs
Culvert Diameter:	60"	**Existing Culvert Capacity:**	507 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	60' / 14%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 60-inch corrugated steel cross culvert conveys flow under the South Bank of the Pistol River Road. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate the invert of the existing culvert is heavily rusted but has no perforations.



PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to install a concrete invert liner to extend the life of the culvert. The culvert should be cleaned and investigated further for structural damage prior to installing the concrete invert liner. The culvert system drains upland flows and is not located in a mapped fish stream. It is recommended that the County consult with USACE and ODFW prior to the work due to the proximity of the culvert with the Pistol River.

FIGURE 8.3.45
N BANK CHETCO RIVER ROAD AT MP 0.902

PROJECT NO. XX			
Road Name:	N Bank Chetco River Rd.	**Project Limit (MP):**	0.902
Region-Road No.:	South-784	**Average Depth:**	3.4'
County Rating:	1	**50 YR - 24 HR Basin Runoff:**	193 cfs
Culvert Diameter:	84"	**Existing Culvert Capacity:**	664 cfs
Culvert Type:	CS	**Fish Stream:**	Trout
Length / Slope:	50'/ 4%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 84-inch corrugated steel cross culvert on Ferry Creek conveys flows under the North Bank of the Chetco River Road. Ferry Creek is a mapped ODFW designated fish stream and tributary to Chetco River. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. The existing culvert is heavily rusted and is full of debris per County inspection records.

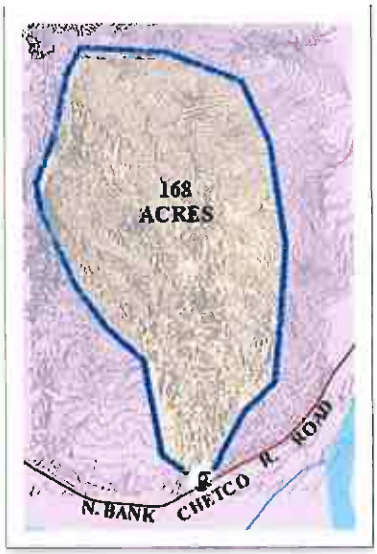
PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 20-foot precast bridge to meet fish passage requirements. The replacement will be easier for the County to maintain. The portion of the culvert is located on private property will need to be removed through a construction easement. Coordination with the private property owner will be essential for this project. The County will need to obtain a permit under Section 404 of the Clean Water Act. Consultation with ODFW will be required to determine fish passage requirements. Additional costs may be required if permitting results in consultation with NMFS. Coordination with the City of Brookings will be required because it will impact their water transmission lines.

FIGURE 8.3.46
NORTH BANK CHETCO RIVER ROAD AT MP 3.342

PROJECT NO. XX			
Road Name:	N Bank Chetco River	**Project Limit (MP):**	3.342
Region-Road No.:	South-784	**Average Depth:**	13.1'
County Rating:	3	**50 YR - 24 HR Basin Runoff:**	73 cfs
Culvert Diameter:	48"	**Existing Culvert Capacity:**	140 cfs
Culvert Type:	CA	**Fish Stream:**	Trout
Length / Slope:	80' / 3.5%	**Project Cost:**	TBD

EXISTING CONDITIONS:

An existing 48-inch corrugated aluminized cross culvert is located on Market Creek, which is a tributary to the Chetco River and designated trout stream by ODFW. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate that the culvert inlet has been damaged by rock placement.



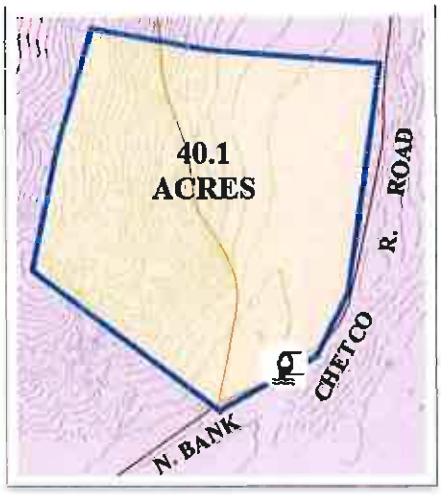
PROPOSED IMPROVEMENT PROJECT:

A Technical Memorandum was written by Northern Hydrology and Engineering in 2018, which provided recommendations to replace the existing culvert. The proposed plan recommended installation of a new 96-inch aluminized steel culvert at a no-slope grade with three grade control rock berms (two upstream and one downstream) to allow for the no-slope through the culvert for fish passage. The County will need to obtain a permit under Section 404 of the Clean Water Act and consult with ODFW to ensure the design meets fish passage criteria. The Master Plan anticipates the selected culvert meets the required fish passage criteria, but further consultation is recommended to verify the design. Additional costs may be required if permitting results in consultation with NMFS.

FIGURE 8.3.47
N BANK CHETCO RIVER ROAD AT MP 5.116

PROJECT NO. XX			
Road Name:	N Bank Chetco River Rd.	**Project Limit (MP):**	5.116
Region-Road No.:	South-784	**Average Depth:**	9.5'
County Rating:	1	**50 YR - 24 HR Basin Runoff:**	36 cfs
Culvert Diameter:	72"	**Existing Culvert Capacity:**	220 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	50' / 1%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 72-inch corrugated steel cross culvert conveys flows under the North Bank Chetco River Road. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate the full circumference of the culvert is rusted and the invert is perforated.

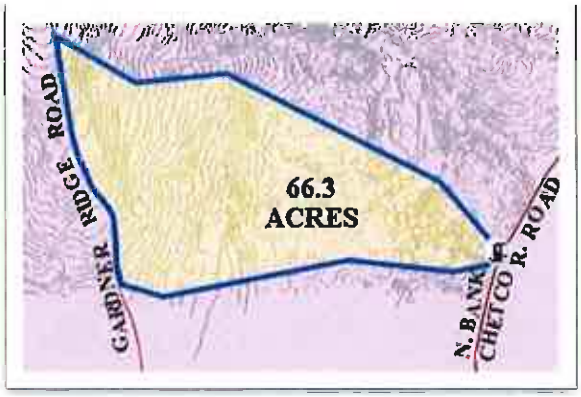


PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 72-inch aluminized steel culvert. Although the culvert drains upland flows and is not mapped as a designated fish stream, a consultation with USACE and ODFW is recommended to ensure no permits are required prior to performing any work; based on the proximity of the culvert to the Chetco River.

FIGURE 8.3.48
NORTH BANK CHETCO RIVER ROAD AT MP 6.516

PROJECT NO. XX			
Road Name:	N Bank Chetco River Rd.	**Project Limit (MP):**	6.516
Region-Road No.:	South-784	**Average Depth:**	2'
County Rating:	3	**50 YR - 24 HR Basin Runoff:**	43 cfs
Culvert Diameter:	66" x 48"	**Existing Culvert Capacity:**	144 cfs
Culvert Type:	AS	**Fish Stream:**	No
Length / Slope:	45' / 1%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 66-inch by 48-inch aluminum arch culvert that conveys flow to the Chetco River. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate the culvert fills with rock and debris.



PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove all rock and sediment buildup from the culvert and install a headwall structure to prevent future rock buildup. The inlet structure may be located on private property and the County will need an easement for installation and maintenance. The County will be required to obtain a permit under Section 404 of the Clean Water Act for this work. It is expected there are no fish present; however, consultation with ODFW will be required for verification.

FIGURE 8.3.49
NORTH BANK CHETCO RIVER ROAD AT MP 6.744

PROJECT NO. XX			
Road Name:	N Bank Chetco River Rd.	**Project Limit (MP):**	6.744
Region-Road No.:	South-784	**Average Depth:**	2.5'
County Rating:	3	**50 YR - 24 HR Basin Runoff:**	96 cfs
Culvert Diameter:	84"	**Existing Culvert Capacity:**	814 cfs
Culvert Type:	CS	**Fish Stream:**	Steelhead & Trout
Length / Slope:	60' / 6%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 84-inch corrugated steel cross culvert is located on Willow Creek, which is a tributary to Chetco River and a mapped trout and steelhead stream by ODFW. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate the existing culvert is embedded with sediment and the outfall fills with rock on private property.

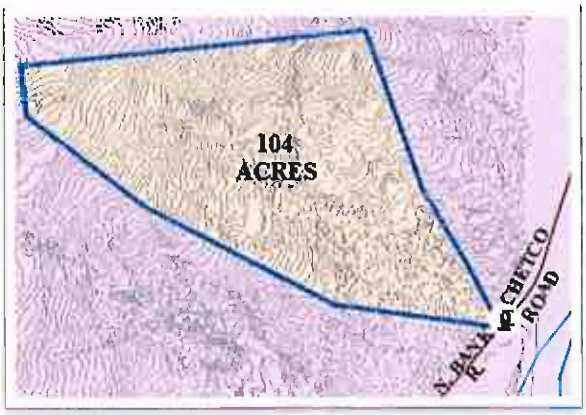
PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a new 95-inch by 67-inch arched aluminum culvert to meet fish passage requirements. The County will need to obtain a permit under Section 404 of the Clean Water Act. Consultation with ODFW will be required to verify culvert sizing and determine fish passage requirements. Additional costs may be required if permitting results in consultation with NMFS.

FIGURE 8.3.50
NORTH BANK CHETCO RIVER ROAD AT MP 6.974

PROJECT NO. XX			
Road Name:	N Bank Chetco River Rd.	**Project Limit (MP):**	6.974
Region-Road No.:	South-784	**Average Depth:**	4.25'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	83 cfs
Culvert Diameter:	72"	**Existing Culvert Capacity:**	540 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	40' / 6%	**Project Cost:**	TBD

EXISTING CONDITIONS:

An existing 72-inch corrugated steel cross culvert conveys flows under the North Bank of the Chetco River Road. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate the invert at the inlet is perforated and the outlet has heavy rust.



PROPOSED IMPROVEMENT PROJECT:

The proposed plan is to remove and replace the culvert with a new 72-inch aluminized steel culvert and a new headwall structure for maintenance. The County will be required to obtain a permit under Section 404 of the Clean Water Act for this work. It is expected there are no fish present; however, consultation with ODFW will be required for verification because of the downstream location of the Chetco River.

FIGURE 8.3.51
SOUTH BANK CHETCO RIVER ROAD AT MP 0.99 TO 1.16

PROJECT NO. XX			
Road Name:	S Bank Chetco River Rd.	**Project Limit (MP):**	0.99 to 1.16
Region-Road No.:	South-808	**Average Depth:**	4' - 10'
County Rating:	3	**50 YR - 24 HR Basin Runoff:**	6 cfs , 26 cfs
Culvert Diameter:	18", 24"	**Existing Culvert Capacity:**	21 cfs (18"), 45 cfs (24")
Culvert Type:	PE	**Fish Stream:**	No
Length / Slope:	50', 75' / 4%*	**Project Cost:**	TBD

*Assumed slope

EXISTING CONDITIONS:
Two existing culverts located at Milepost 0.99 (18-inch HDPE) and Milepost 1.16 (24-inch HDPE) convey flows from ditching on the southeast side of the South Bank Chetco River Road. The existing capacity is adequate based on a 50-year, 24-hour peak flow event. The existing culvert at Milepost 0.99 is located within a slide area. The County indicated culvert flows are escalating the conditions within the slide area. County inspection records note that both culverts have beveled inlets.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to reroute the drainage away from the existing slide area. The existing culvert at Milepost 0.99 would be abandoned in place. A new ditch inlet will be installed near the existing 18-inch culvert inlet and hard piped to the northeast with 900 lineal feet of new 18-inch smooth wall HDPE culvert that conveys flow to the existing 24-inch HDPE culvert. A new ditch inlet will be installed in the existing ditch line at the midpoint point of the new piping. Shallow ditching will be installed to direct surface water to the new ditch inlets. The culvert system drains upland flows and is not located in a mapped fish stream. It is recommended the County consult with USACE and ODFW prior to the work due to the close proximity of the culvert with the Chetco River. Further geotechnical investigation is needed for professional recommendations to repair the slide area. A cost to repair the slide area is not provided in this Master Plan.

FIGURE 8.3.52
S BANK CHETCO RIVER ROAD AT MP 1.872

PROJECT NO. XX			
Road Name:	S Bank Chetco River Rd.	**Project Limit (MP):**	1.872
Region-Road No.:	South-808	**Average Depth:**	15.4'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	15 cfs
Culvert Diameter:	30"	**Existing Culvert Capacity:**	43 cfs
Culvert Type:	PC	**Fish Stream:**	No
Length / Slope:	70' / 4%	**Project Cost:**	TBD

EXISTING CONDITIONS:

An existing 30-inch concrete culvert conveys flows under the South Bank of the Chetco River. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records note that the existing culvert joins into a standpipe at the inlet and there are some separations that were grouted in the past. The concrete culvert has degraded since its original placement and is near the end of its useful design life.

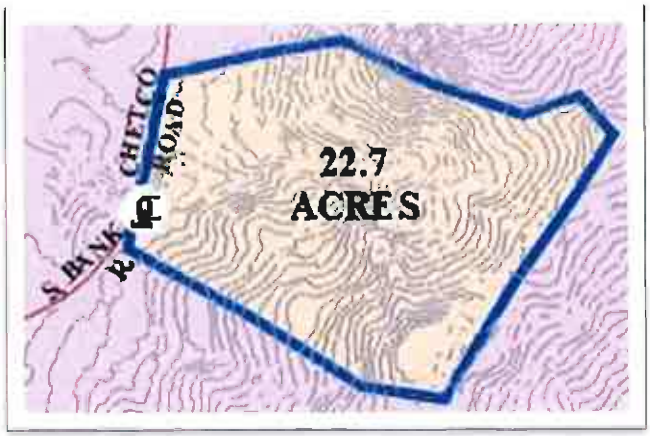
PROPOSED IMPROVEMENT PROJECT:

The proposed plan is to slipline the existing culvert with a PVC liner. It is recommended that the standpipe be replaced with a new manhole at the inlet and slope protection is added to the outlet. The County may need to obtain a temporary construction easement for this work because a private system drains into the standpipe. The culvert system drains upland flows and is not located in a mapped fish stream. It is recommended the County consult with USACE and ODFW prior to the work due to the proximity of the culvert with the Chetco River.

FIGURE 8.3.53
SOUTH BANK CHETCO RIVER ROAD AT MP 3.850

PROJECT NO. XX			
Road Name:	S Bank Chetco River Rd.	**Project Limit (MP):**	3.850
Region-Road No.:	South-808	**Average Depth:**	32.1'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	16 cfs
Culvert Diameter:	24"	**Existing Culvert Capacity:**	37 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	120' / 10%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 24-inch corrugated steel cross culvert conveys flows under the South Bank Chetco River Road. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. The Dyer Partnership field survey noted that the culvert is heavily rusted and the large drop at the outlet appears to be eroding the bank.



PROPOSED IMPROVEMENT PROJECT:
Due to the depth of the existing culvert the proposed plan is to slipline the existing culvert with a PVC liner. It is recommended the County clean and televise the culvert prior to sliplining to check the condition and alignment for feasibility of sliplining. Slope protection should be added to the outlet of the culvert to prevent erosion. The culvert system drains upland flows and is not located in a mapped fish stream. It is recommended the County consult with USACE and ODFW prior to the work due to the proximity of the culvert with the Chetco River.

FIGURE 8.3.54
SOUTH BANK CHETCO RIVER ROAD AT MP 4.792

PROJECT NO. XX			
Road Name:	S Bank Chetco River Rd.	**Project Limit (MP):**	4.792
Region-Road No.:	South-808	**Average Depth:**	12.5'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	16 cfs
Culvert Diameter:	18"	**Existing Culvert Capacity:**	17 cfs
Culvert Type:	AS	**Fish Stream:**	No
Length / Slope:	50' / 10%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 18-inch aluminized steel culvert conveys flows under the South Bank of the Chetco River Road. The existing capacity is inadequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate the cross culvert needs to be raised and potentially upgraded to 24-inches. There is a 200-foot down spout on the outlet of the culvert.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove the existing culvert and install a new 18-inch smooth wall HDPE culvert that is raised up above the invert of the existing culvert. Raising grades of the culvert will require channel improvements on both the inlet and outlet to match new elevations. The culvert system drains upland flows and is not located in a mapped fish stream. It is recommended the County consult with USACE and ODFW prior to the work due to the proximity of the culvert with the Chetco River.

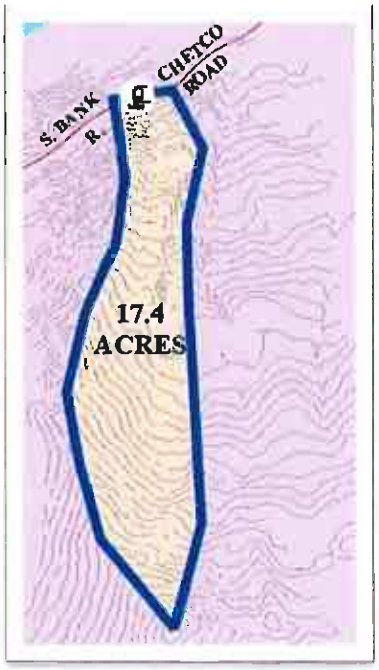


FIGURE 8.3.55
LOWER HARBOR ROAD AT MP 0.142

PROJECT NO. XX			
Road Name:	Lower Harbor Rd.	**Project Limit (MP):**	0.142
Region-Road No.:	South-816	**Average Depth:**	Varies
County Rating:	N/A	**50 YR - 24 HR Basin Runoff:**	241 cfs
Culvert Diameter:	36" Box / 42"	**Existing Culvert Capacity:**	100.7 cfs
Culvert Type:	Concrete Box / CS	**Fish Stream:**	Trout
Length / Slope:	80' / 70' / Slope Varies	**Project Cost:**	TBD

EXISTING CONDITIONS:

An existing 36-inch concrete box culvert and 42-inch corrugated steel culvert drains Fish House Creek under the Lower Harbor Road and private infrastructure. Fish House Creek is a tributary to the Chetco River and a designated ODFW coastal cutthroat trout stream. The 36-inch corrugated steel culvert conveys flows under the Lower Harbor Road and drains Harbor Basin No. 2. The existing culvert capacities are inadequate based on modeling for a 50-year, 24-hour peak flow event.

PROPOSED IMPROVEMENT PROJECT:

The proposed plan is to remove and replace the existing storm drains with new 36-inch PVC storm drain lines and 42-inch PVC storm drain lines as part of the original fill design to meet capacity requirements in the right-of-way. Storm drain manholes will be installed in County right-of-way for maintenance purposes. The County will be required to obtain a permit under Section 404 of the Clean Water Act in order to replace the culvert. This is a sensitive area for archeological sites. No recommendations or costs are provided in this Master Plan for work on private property.

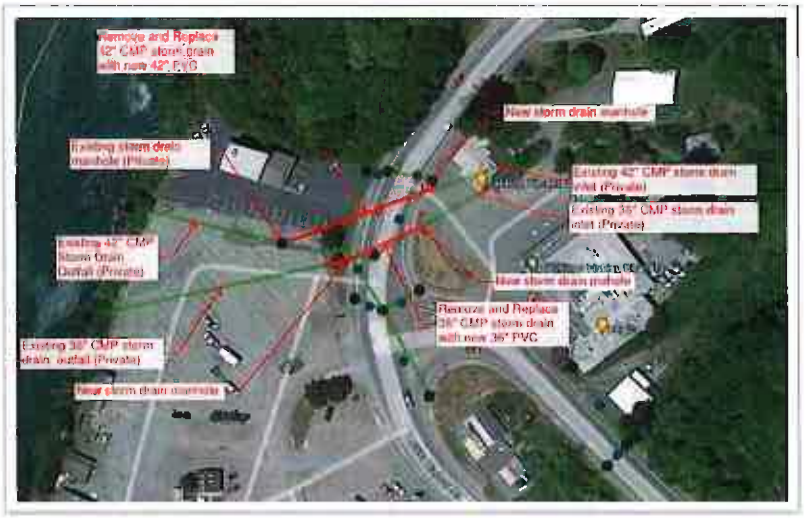
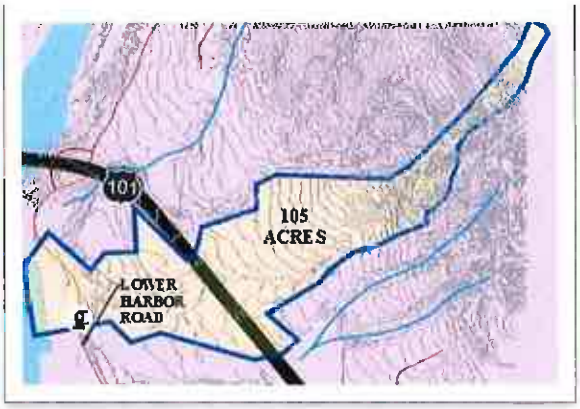


FIGURE 8.3.56
LOWER HARBOR ROAD AT MP 0.332

PROJECT NO. XX			
Road Name:	Lower Harbor Rd.	**Project Limit (MP):**	0.332
Region-Road No.:	South-816	**Average Depth:**	3'
County Rating:	2	**25 YR - 24 HR Basin Runoff:**	-- cfs
Culvert Diameter:	36"	**Existing Culvert Capacity:**	37 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	70' / 1%	**Project Cost:**	TBD

EXISTING CONDITIONS:

An existing 36-inch corrugated steel culvert conveys flows under Lower Harbor Road and drains Harbor Basin No. 2. The existing culvert capacity is inadequate based on modeling for a 25-year, 24-hour peak flow event. The County has difficulty maintaining the culvert because of issues with access due to private property. As a result of the access difficulties the culvert regularly builds up with sediment.



PROPOSED IMPROVEMENT PROJECT:

It is recommended to install a new inlet structure with a debris rack to prevent any large debris from entering the system. A 16-foot by 8-foot sediment basin with a four-foot sump will be installed approximately 100 lineal feet downstream of the inlet to collect sediment and for the County to maintain the system. The sediment basin will be installed in the parking lot adjacent to the Port of Harbor office building. The County will be required to obtain a permit under Section 404 of the Clean Water Act in order to replace the culvert. This is a sensitive area for archeological sites.

FIGURE 8.3.57
LOWER HARBOR ROAD AT MP 0.551

PROJECT NO. XX			
Road Name:	Lower Harbor Rd.	**Project Limit (MP):**	0.551
Region-Road No.:	South-816	**Average Depth:**	Unknown
County Rating:	3	**25 YR - 24 HR Basin Runoff:**	204 cfs
Culvert Diameter:	48"	**Existing Culvert Capacity:**	150 cfs
Culvert Type:	CA	**Fish Stream:**	No
Length / Slope:	150' / 4%*	**Project Cost:**	TBD

*Assumed slope

EXISTING CONDITIONS:
An existing 48-inch corrugated aluminum storm drain line conveys flows under Lower Harbor Road and drains Harbor Basin No. 4. The existing capacity is inadequate based on storm modeling for a 25-year, 24-hour peak flow event. The existing storm drain line collects flows from a catch basin on the north side of the entrance into the Portside RV Park and then conveys flows to the west into a catch basin located in a hotel parking lot. From the hotel parking lot, flows are conveyed to the west across a private property to an outfall that discharges into the harbor. The existing culvert has sediment buildup issues and is difficult for the County to maintain.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to install a new catch basin in the County right-of-way with a deep sump that will act as a sedimentation basin. The County will be able to vac out the sump regularly to control the sediment issues. A new 48-inch smooth wall HDPE storm drain line will be installed in the same alignment as the existing drain line. The downstream piping is located on private property, but will be upsized. It is recommended the private downstream outfall is rerouted away from the hotel building structure and replaced prior to this project. The cost for upgrading the outfall on private property is not included in this Master Plan. The County may be required to obtain a permit under Section 404 of the Clean Water Act in order to replace the culvert. Temporary easements will be required for construction. This is a sensitive area for archeological sites.

FIGURE 8.3.58
LOWER HARBOR ROAD AT MP 0.853

PROJECT NO. XX			
Road Name:	Lower Harbor Rd.	**Project Limit (MP):**	0.853
Region-Road No.:	South-816	**Average Depth:**	Varies
County Rating:	N/A	**25 YR - 24 HR Basin Runoff:**	150 cfs
Culvert Diameter:	36" / 48"	**Existing Culvert Capacity:**	150 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	Varies / 4%*	**Project Cost:**	TBD

*Assumed slope

EXISTING CONDITIONS:
An existing 48-inch corrugated steel culvert conveys flows under Lower Harbor Road and drains Harbor Basin No. 5. The existing capacity is inadequate based on modeling for a 25-year, 24-hour peak flow event. The existing 48-inch corrugated steel culvert collects the drainage from the creek just south of Smith Lane and conveys flows to the west into a wooden structure with a grated top. The inlet storm drain line is located lower than the 36-inch HDPE outlet storm drain line, which creates a bottle neck at this location. From the wooden structure the existing 36-inch storm drain line outfall conveys flows to the northwest along private property and discharges into the harbor. The County noted that sediment build up and maintenance is an issue in the storm drain system.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing storm drainage system with a new 48-inch smooth wall HDPE storm drain line, which will satisfy capacity issues. An inlet structure with a debris rack will be installed at the head of the open channel stream. A new grated manhole will replace the existing wood structure. Prior to the discharge point at the harbor an 18-foot by 6-foot sedimentation basin will be installed in the parking lot of the shipyard for maintenance. The County will need to acquire an easement for the purposes of installation and maintenance of the new sediment basin. The County will be required to obtain a permit under Section 404 of the Clean Water Act in order to replace the culvert. This is a sensitive area for archeological sites.

FIGURE 8.3.59
LOWER HARBOR ROAD AT MP 0.900

PROJECT NO. XX			
Road Name:	Lower Harbor Rd.	**Project Limit (MP):**	0.900
Region-Road No.:	South-816	**Average Depth:**	Varies
County Rating:	N/A	**25 YR - 24 HR Basin Runoff:**	220 cfs
Culvert Diameter:	84"	**Existing Culvert Capacity:**	332 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	N/A	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 84-inch corrugated aluminized steel storm drain line extends from an existing sedimentation basin located on Tuttle Creek. The existing sedimentation basin is located west of Lower Harbor Road. Harbor Basin No. 6 is the drainage basin for the Tuttle Creek drainage. The existing storm drain capacity was modeled as adequate based on a 25-year, 24-hour peak flow event. The outfall builds up with sediment in the harbor and is difficult to maintain.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to install a second 65-foot by 15-foot sedimentation basin closer to the harbor for the County to maintain the storm system without entering the harbor. The sedimentation basin will be installed just upstream of the existing 84-inch outfall in a private shipyard. The County will need to acquire an easement for the purposes of access, installation, and maintenance. The County will be required to obtain a permit under Section 404 of the Clean Water Act in order install the sedimentation. This is a sensitive area for archeological sites.

FIGURE 8.3.60
OCEANVIEW DRIVE AT MP 1.369

PROJECT NO. XX			
Road Name:	Oceanview Dr.	**Project Limit (MP):**	1.369
Region-Road No.:	South-872	**Average Depth:**	6'
County Rating:	2	**25 YR - 24 HR Basin Runoff:**	159 cfs
Culvert Diameter:	72"	**Existing Culvert Capacity:**	311 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	55' / 8%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 72-inch corrugated steel cross culvert conveys flows under Oceanview Drive and drains Harbor Basin No. 17. The existing capacity is adequate based on a 25-year, 24-hour peak flow event. The existing culvert has vegetation at the inlet and outlet per County inspection records.

PROPOSED IMPROVEMENT PROJECT:
It is recommended that the culvert is cleared of vegetation, cleaned, and investigated for any structural damage prior to installing a new concrete invert liner. Although the culvert drains upland flows and is not mapped as a designated fish stream, a consultation with USACE and ODFW is recommended to ensure no permits are required and to verify that a concrete culvert liner is an appropriate repair method.

FIGURE 8.3.61
OCEANVIEW DRIVE AT MP 1.852

PROJECT NO. XX			
Road Name:	Oceanview Dr.	**Project Limit (MP):**	1.852
Region-Road No.:	South-872	**Average Depth:**	Varies
County Rating:	2	**25 YR - 24 HR Basin Runoff:**	206 cfs
Culvert Diameter:	72"	**Existing Culvert Capacity:**	311 cfs
Culvert Type:	CS	**Fish Stream:**	No
Length / Slope:	125' / 2%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 72-inch corrugated steel cross culvert conveys flows under Oceanview Drive and drains Johnson Creek located in Harbor Basin No. 26. The existing capacity is adequate based on modeling for a 25-year, 24-hour peak flow event. County inspection records note that the existing culvert has two water service lines located inside of the culvert and the invert is in poor condition.

PROPOSED IMPROVEMENT PROJECT:
It is recommended that the culvert is cleared of vegetation, cleaned, and investigated for structural damage prior to installing a new concrete invert liner. Although the culvert drains upland flows and is not mapped as a designated fish stream, consultation with USACE and ODFW is recommended to ensure no permits are required prior to performing any work. An easement may be required for access to the culvert.

FIGURE 8.3.62
MUSEUM ROAD AT MP 0.094

PROJECT NO. XX			
Road Name:	Museum Rd.	**Project Limit (MP):**	0.094
Region-Road No.:	South-890	**Average Depth:**	15.5'
County Rating:	2	**25 YR - 24 HR Basin Runoff:**	56 cfs
Culvert Diameter:	36"	**Existing Culvert Capacity:**	49 cfs
Culvert Type:	PC	**Fish Stream:**	No
Length / Slope:	140' / 2%	**Project Cost:**	TBD

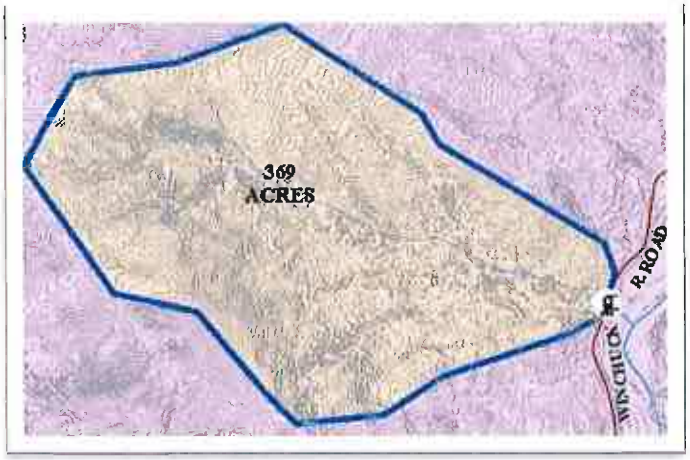
EXISTING CONDITIONS:
An existing 36-inch HDPE cross culvert located on Johnson Creek conveys flows under Museum Drive. The existing capacity is inadequate based modeling for a 25-year, 24-hour peak flow event. The culvert discharges to a standpipe and then west across Highway 101 to an ODOT maintained culvert. County inspection records indicate that the culvert was full of debris and needs to be flushed.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the existing culvert with a 48-inch smooth wall HDPE culvert. Upsizing the culvert will create a bottle neck downstream at the connection to the ODOT culvert. A manhole with a grated inlet is recommended to replace the standpipe within the County right-of-way. The existing ODOT maintained culvert will need to be upsized prior to the County upsizing their culvert. Coordination with ODOT is essential for potential cost sharing. The County will potentially need to obtain a permit under Section 404 of the Clean Water Act to replace the culvert. Although the stream is not identified as a fish stream on the ODFW designated map, consultation is recommended to confirm there are no fish passage requirements.

FIGURE 8.3.63
WINCHUCK RIVER ROAD AT MP 2.721

PROJECT NO. XX			
Road Name:	Winchuck River Rd.	**Project Limit (MP):**	2.721
Region-Road No.:	South-896	**Average Depth:**	10'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	119 cfs
Culvert Diameter:	72" x 72"	**Existing Culvert Capacity:**	280 cfs
Culvert Type:	PC	**Fish Stream:**	Trout
Length / Slope:	60' / 1%	**Project Cost:**	TBD

EXISTING CONDITIONS:
An existing 72-inch square concrete box culvert is located on a tributary to the Winchuck River and designated by ODFW as a coastal cutthroat trout stream. The existing capacity is adequate based on modeling for a 50-year, 24-hour peak flow event. County inspection records indicate the existing culvert has a concrete headwall and wingwalls at the inlet and outlet. The bottom of the box culvert is scoured out approximately 1-inch, exposing lengths of rebar.



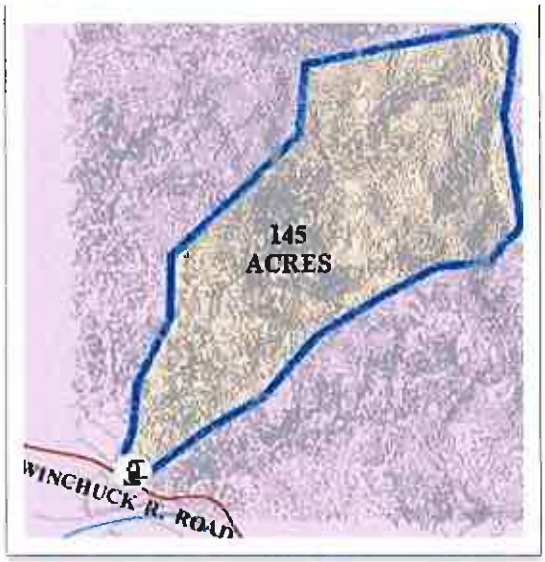
PROPOSED IMPROVEMENT PROJECT:
Rehabilitation of the existing concrete box culvert is recommended. Rehabilitation includes dewatering and cleaning the culvert as well as repairing all cracks, holes, and exposed rebar with grout. While the box culvert is dewatered the County should evaluate any structural damage. Any structural damage will potentially need to be reinforced if feasible, but structural repairs are not provided as County inspections did not indicate any structural issues. The County will need to obtain a maintenance permit under Section 404 of the Clean Water Act. Consultation with ODFW will be required for dewatering the culvert in a fish stream.

FIGURE 8.3.64
WINCHUCK RIVER ROAD AT MP 4.287

PROJECT NO. XX			
Road Name:	Winchuck River Rd.	**Project Limit (MP):**	4.287
Region-Road No.:	South-896	**Average Depth:**	11.3'
County Rating:	2	**50 YR - 24 HR Basin Runoff:**	67 cfs
Culvert Diameter:	60"	**Existing Culvert Capacity:**	303 cfs
Culvert Type:	CS	**Fish Stream:**	Steelhead, Trout
Length / Slope:	50' / 5%	**Project Cost:**	TBD

EXISTING CONDITIONS:

An existing 60-inch corrugated steel cross conveys flows under Winchuck River Road. The culvert is located on a tributary to the Winchuck River and is a mapped ODFW designated winter steelhead and coastal cutthroat trout stream. The existing capacity is adequate based on modeling for a 25-year, 24-hour peak flow event. County inspection records indicate the culvert invert is lined with concrete and has cut off walls. The culvert has debris build up at the inlet. There is an exposed phone and/or cable in the ditch line.



PROPOSED IMPROVEMENT PROJECT:

The proposed plan is to remove and replace the existing culvert with a 72-inch aluminized steel culvert to satisfy fish passage requirements. The County will need to obtain a permit under Section 404 of the Clean Water Act. Consultation with ODFW will be required to verify culvert sizing and determine fish passage requirements. Additional costs may be required if permitting results in consultation with NMFS.

FIGURE 8.3.65
AZALEA LANE AND IRIS STREET AT ROGUE HILLS SUBDIVISION

PROJECT NO. XX			
Road Name:	Azalea Ln. & Iris St.	**Project Limit (MP):**	0 - 0.13 (Azalea Ln.), 0 - 0.08 (Iris St.)
Region-Road No.:	Central-565.7 and 565.4	**Average Depth:**	Varies
County Rating:	2	**25 YR - 24 HR Basin Runoff:**	19 cfs
Culvert Diameter:	Varies	**Existing Culvert Capacity:**	Varies
Culvert Type:	Varies	**Fish Culvert:**	No
Length / Slope:	Varies	**Project Cost:**	TBD

EXISTING CONDITIONS:
The storm drainage from Iris Street and Hilltop Drive, flows to the west into a series of storm drain lines, catch basins, and area drains located on the south side of the roadway. The existing storm drainage infrastructure discharges into a creek located behind a residential area; west of the intersection of Azaela Lane and Drifwood Drive. The west end of the existing storm drainage system is partially located on private property and cannot be maintained by the County. Storm drainage along Azalea Lane is collected by storm drainage system that discharges into the creek at the west end of Azalea Lane. The existing curb and gutters and most of the storm drain infrastructure does not meet Curry County Standards.

PROPOSED IMPROVEMENT PROJECT:
The street portion of this project is Project No. 36 in the *Six Year Road Capital Improvement Plan*. The storm drainage plan is to install a new catch basin at 94084 Hilltop Drive to collect sheet flows from above Hilltop Drive. Catch basin flows will be conveyed through an 18-inch smooth wall HDPE storm drain down Iris Street to the intersection of Iris Street and Driftwood Drive, where a new manhole will be installed. From the new manhole a 24-inch smooth wall HDPE storm drain will convey flows along Azalea Lane to a new manhole at the end of Azalea Lane. From the new manhole a 24-inch smooth wall HDPE outfall will be installed that will discharge into the existing ditch. Multiple new catch basins will replace existing catch basins along the route and connect into the new storm drain line. The new outfall will require an easement for County maintenance and construction.

FIGURE 8.3.66
BAYVIEW DRIVE AND DRIFTWOOD DRIVE AT ROGUE HILLS SUBDIVISION

PROJECT NO XX			
Road Name:	Bayview Dr. and Driftwood Dr.	**Project Limit (MP):**	0 - 0.06 (Bayview Dr.), 0 - 0.12 (Driftwood Dr.)
Region-Road No.:	Central-565.2 and 565.5	**Average Depth:**	Varies
County Rating:	2	**25 YR - 24 HR Basin Runoff:**	24 cfs
Culvert Diameter:	Varies	**Existing Culvert Capacity:**	Varies
Culvert Type:	Varies	**Fish Culvert:**	No
Length / Slope:	Varies	**Project Cost:**	TBD

EXISTING CONDITIONS:
Bayview Drive has substandard curb and gutters along each side of the roadway and does not contain any storm infrastructure. Surface water sheet flows west along the roadway and appears to flow down a private driveway on the south side of the road. On the north side of the road, storm water is contained in a series of catch basins at the west end of Bayview Drive. Flow is then directed to the north along Driftwood Drive through 12-inch storm drain lines, which connect to a grated manhole at the low end of Driftwood Drive. From the grated manhole the low point flows are conveyed through a 24-inch storm drain to the west, away from the subdivision.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the storm system in conjunction with the proposed road improvement plan from the *Six Year Capital Improvement Plan*, Project No. 10. The proposed storm infrastructure includes a series of new catch basins at the intersection of Bayview Drive and Driftwood Drive to direct flows away from the private driveways. From the new catch basins in the intersection flows will be conveyed through an upsized 18-inch smooth wall HDPE storm drain line on the west side of Driftwood Drive to the north. New catch basins will be installed to Curry County Standards. A new grated manhole will be installed at the low point of Driftwood Drive to replace the existing manhole. From the grated manhole a new 36-inch smooth wall HDPE storm drain line will convey flows to the west. The flows from the east side of the new grated manhole will be conveyed from a new 24-inch smooth wall HDPE storm drain line to a new manhole located on the east side of Driftwood Drive. The manhole collects flows across the private property from Hillside Terrace.

FIGURE 8.3.67
HILLSIDE TERRACE AT ROGUE HILLS SUBDIVISION

PROJECT NO. XX			
Road Name:	Hillside Terrace	**Project Limit (MP):**	0 -.0.27
Region-Road No.:	Central-565.6	**Average Depth:**	Varies
County Rating:	Varies	**25 YR - 24 HR Basin Runoff:**	22 cfs
Culvert Diameter:	Varies	**Existing Culvert Capacity:**	Varies
Culvert Type:	Varies	**Fish Culvert:**	No
Length / Slope:	Varies	**Project Cost:**	TBD

EXISTING CONDITIONS:
The existing storm drainage on Hillside Terrace consists of ditching and driveway culverts on the east and west side of the roadway which conveys flows to the low point of Hillside Terrace. On the east side of the low point an existing deep pit collects flows and conveys them through an 18-inch HDPE storm drain line to the west across private property then discharges to the Driftwood Drive system.

PROPOSED IMPROVEMENT PROJECT:
The proposed plan is to remove and replace the storm system in conjunction with the proposed road plan from the *2020 Six Year Capital Improvement Plan*, Project No. 11. The road project proposed full road reconstruction and road widening to the east with curb and gutters on each side of the road. The proposed storm drain system would fill existing ditching and remove driveway culverts on the east side of the road and replace with a series of catch basins and storm drain lines that would drain to the low point of Hillside Terrace. At the low point on the east side of Hillside Terrace the pit will be replaced with a new grated manhole. The existing 18-inch HDPE storm drain line could be reused to convey flows across private property to Driftwood Drive. It is recommended the private line is televised to assess the condition.

SECTION 9:

FINANCING

SECTION 9: FINANCING

9.1 Project Cost Summary

Table 9.1.1 includes a summary of all Capital Improvement Plan (CIP) projects recommended for the Curry County Road Department provided in Section 8.

TABLE 9.1.1
CIP PROJECT COSTS AND PRIORITIES

Priority	Cost
Priority 1	TBD
Priority 2	TBD
Priority 3	TBD
Total	**TBD**

Table 9.1.2 includes a summary table for all regional culvert recommendations for the Curry County Road Department provided in Section 7. The sum of these cost tables includes the replacement of all cross culverts rated poor (1) or fair (2) and any additional infrastructure projects requested by the County or public.

TABLE 9.1.2
REGIONAL CULVERT PROJECT COSTS

Region	Cost
Northern	TBD
Central	TBD
Southern	TBD
Total	**TBD**

9.2 Funding Sources

The Curry County Road Department receives funding from several resources that make up the total County Road Fund including the State Motor Vehicle Fuel Tax, Surface Transportation Program (STP) Fund Exchange, Secure Rural Schools (SRS) Funding, Reserve Fund Interest, and other outside funding sources.

The total amount of County Road Funds does not typically cover annual expenses and depends heavily on the Road Reserve Fund. The Road Reserve Fund is a limited resource that has been used each year for the completion of essential projects. The pending exhaustion of this resource emphasizes the need for securing external funding and maintaining a Road Reserve Fund for future emergency projects. Many of the Capital Improvement Projects will not be constructed without external funding assistance. It is essential to keep up to date with applications for future programs to help maintain the storm drainage system.

The following includes a brief description of potential funding programs or options for improvement projects. In addition to the listed programs that the County is eligible for the County may be able to partner with local watershed councils, tribes, non-profits and state agencies to obtain funds that are available to these partners.

System Development Charges

Oregon Revised Statute (ORS) 223 allows the County to recover the costs of a new development's share of the system capacity by collecting System Development Charges (SDCs). Under this statute, new developments must pay a proportional share of expenses to meet the increased demands placed on the system. The SDC fees will be imposed to offset the expense of any system accommodations made necessary by the new development.

Oregon Watershed Enhancement Board

The Oregon Watershed Enhancement Board (OWEB) is a state agency that provides grants to help Oregonians take care of local streams, rivers, wetlands and natural areas. Community members and landowners use scientific criteria to decide jointly what needs to be done to conserve and improve rivers and natural habitat in their surrounding community. The OWEB grants are funded from Oregon Lottery, federal dollars, and salmon license plates revenue.

The OWEB will be accepting applications for restoration, technical assistance and land acquisition. The grants support voluntary efforts by Oregonians to protect and restore healthy watersheds, including actions in support of the Oregon Plan for Salmon and Watersheds, and the Oregon Conservation Strategy.

National Fish Passage Program

The United States Fish and Wildlife Service (FWS) National Fish Passage Program is a voluntary, non-regulatory conservation assistance program that provides financial and technical support to remove or bypass artificial barriers that impede the movement of fish and other aquatic species and contribute to their decline. The program implements fish passage improvement-based, cost shared projects to protect, restore or enhance habitats that support fish and other aquatic species and their populations. All or a portion of project funds may be transferred to partner organizations through cooperative agreements if the FWS lacks the capability to implement a project.

Fish America Foundation

Fish America, in partnership with the National Oceanic and Atmospheric Administration (NOAA) Restoration Center, awards grants to local communities and government agencies to restore habitat for marine and anadromous fish species. Successful proposals have community-based restoration efforts with outreach to the local communities. The grants are small, but help with bridge scour projects.

Federal Emergency Management Agency

Federal Emergency Management Agency (FEMA) grant funds are available before and after emergency or disaster related projects. These funds support critical recovery initiatives, innovative research and many other programs. Grants are the principal funding mechanism FEMA uses to commit and award federal funding to eligible state, local, tribal, territorial, certain private non-profits, individuals and institutions of higher learning.

Water and Waste Disposal Program (Rural Development)

The Rural Development Administration has the authority to make loans to public bodies and non-profit corporations to construct or improve essential community facilities. Grants are also available to

applicants who meet the Median Household Income (MHI) requirements. Eligible applicants must have a population of less than 10,000. Priority is given to smaller public entities with populations of less than 5,500. Preference is given to requests that involve the merging of small facilities and those serving low-income communities. Loan and grant funds may be used for improvements to construct, repair, improve, expand, or otherwise modify drinking water, wastewater, solid waste, and storm drainage related projects.

9.3 Financial Strategy

As presented in Section 9.1, the total costs recommended for all capital improvements are estimated at over XX million 2022 dollars. An annual increase of roughly XX% (shown in Table 4.1.1) should be applied to this estimate for future budgeting purposes. The declining trend in revenue is inadequate to support Curry County's storm drainage maintenance and improvement needs. The depleted revenue will eventually compromise the County's ability to extend the life of its existing assets to avoid costly improvements in the future. Curry County should continue to aggressively seek grant funding to support planning and design efforts in order to increase the probability of receiving additional funding for project construction. This section provides a number of resources including state, federal, and local funding programs that will be essential to supplement the availability of County Road Funds for continual improvement and maintenance of the County's drainage system.

A financing strategy or plan must provide a mechanism to generate capital funds in sufficient amounts to pay for the proposed CIP projects. It is recommended the County complete a financial evaluation to determine how to implement storm drain infrastructure improvements by utilizing various funding resources

INFORMATION ITEM – B

DATE:	July 20, 2022
RE:	Dog Leash Law Enforcement
TO:	Honorable Board President and Harbor District Board Members
Request BY:	Larry Jonas, Commissioner

OVERVIEW

- Dog at large. County animal control at Kite Field, RV Park and sidewalks.

INFORMATION ITEM – C

DATE:	July 20, 2022
RE:	Small Debris Left Behind on the Jetty from Fireworks Show
TO:	Honorable Board President and Harbor District Board Members
Request BY:	Larry Jonas, Commissioner

OVERVIEW

- Rake jetty.

INFORMATION ITEM – D

DATE:	July 20, 2022
RE:	Boat Ramp and Boat Parking Area
TO:	Honorable Board President and Harbor District Board Members
Request BY:	Larry Jonas, Commissioner

OVERVIEW

- Standing vehicles.
- Wrong way traffic.
- Illegal parking from restaurant (guests).
- Boat ready area.
- Boat retrieval practice.