Scott Boettcher

From: Scott Boettcher
Sent: Wednesday, July 8, 2020 4:24 PM
To: Rick Rouse
Cc: Pat Sauter; paul@sheltonstructures.com; Paul Donahue; Randall Mueller
Subject: RE: LCFCD#1 Projects Applications

Thank you Rick. Your application has been received.
Scott

Scott Boettcher, Staff
Chehalis River Basin Flood Authority
360/480-6600
scottb@sbgh-partners.com

From: Rick Rouse <rrouse@portofchehalis.com>
Sent: Wednesday, July 8, 2020 4:09 PM
To: Scott Boettcher <scottb@sbgh-partners.com>
Cc: Pat Sauter <psauter@nffc.com>; paul@sheltonstructures.com; Paul Donahue <Pauld@rldcompany.com>; Randall Mueller <rmueller@portofchehalis.com>
Subject: LCFCD#1 Projects Applications

Good afternoon Scott:

Please see the attached application and supporting documents

Rick Rouse
rrouse@portofchehalis.com
Senior Director of Operations
321 Maurin Road
Chehalis, WA 98532
360-748-9365 (O)
360-520-6694 (C)

Part I

2021-23 Local Projects Recruitment Process, Schedule

FORM

Instructions:

1. Please submit project requests (via this recruitment form) to scottb@sbgh-partners.com no later than 5:00 p.m., 7/08/2020.

2. Please submit one recruitment form for each project proposed, even past projects previously or partially funded.

3. Note: Sections III and IV [marked by "(**)"] will be scored for review/evaluation. Sections I, II, and V will not be scored.

4. Note: Section V is necessary to help the Chehalis River Basin Flood Authority, Office of Chehalis Basin and Chehalis Basin Board understand the scope and scale of Local Projects into the future.

5. See https://www.ezview.wa.gov/site/alias__1492/37642/2021-23-local-projects-recruitment-process.aspx for more information.

Section I General	
1. **Date:**	July 7, 2020
2. **Project Name and Project Phase/Stage:**	Chehalis Industrial Park Stormwater Management Project
3. **Project Location --** Please provide location of project and latitude, longitude coordinates (e.g., 46.712222, -122.977811).	Vicinity of 46.633891/-122.925650 and 46.630536/-122.914868
4. **Project Manager/Contact** -- Please identify who will be responsible for overseeing, implementing the project on a day-to-day basis (i.e., name, organization, contact information).	Rick Rouse On behalf of Lewis County Flood Control District #1 Port of Chehalis 360-748-9365
5. **Project Sponsor and Key Partners --** Please identify project sponsor and key partners who will assist in project delivery, implementation.	Lewis County Flood Control District #1 (District) Port of Chehalis Lewis County Public Works Lewis County Board of County Commissioners

Section II Description, Timing and Cost	
6. **Project Description --** Please describe the project, what is intended to be accomplished, flood hazard reduction benefits to be accrued to whom and when. Please identify what phase/stage of the project funding is sought (e.g., study phase/stage, planning phase/stage, design/engineering/permitting phase/stage, construction/implementation phase/stage). Please identify any local or state funding previously secured for this project.	Annual flooding of streets and parking lots in the "older" portion of the Chehalis Industrial Park is a tragic result of inadequate drainage infrastructure and failing structures. This project will use the engineering study published by Gibbs & Olson, Inc. to correct specific deficiencies in the roadside stormwater flow and retention within the Chehalis Industrial Park. Funding is sought for the engineering design, plans & specifications, construction management and construction funding to perform the work necessary to prevent flooding of road intersections, road closures, and inundation of parking lots during storm events.
7. **Project Timeline** -- Please describe the timeline and phases/stages for completing the overall project and the timeline for completing the phase/stage to be funded by 2021-23 funding.	The initial study phase has been completed with the work required identified. With funding the District will schedule the design & engineering for Fall 2020 through Spring 2021 and construction the summer & Fall or 2021.
8. **Project Cost and Funding --** What is the cost of the overall project (or anticipated cost)? What is the cost of the phase/stage to be funded by 2021-23 funding? What are the on-going maintenance and operation requirements and costs? Who will cover on-going maintenance and operation requirements and costs?	The anticipated cost of the engineering design, construction management and construction is $1,725,000. This represents a 15% anticipated increase from the original 2018 engineer's estimate. On-going and maintenance costs will be absorbed by Lewis County in their routine roadside maintenance work. Anything outside the County's regular maintenance will be funded by the District. The District is requesting funding from the Flood

	Authority in the amount of $1,569,000.
9. **Other Funding --** Please describe other funding sources and partners that have already contributed (or could contribute in the future) to this project and for what phase/stage.	Lewis County Flood Control District #1 has funded the attached engineering study of the flooding sources and solutions at a cost of $51,106.00. Lewis County BOCC has committed $156,000 to the project via Resolution 20-163 (attached)

Section III (**) **Completion, Doability, Alternatives, and Impacts**	
10. **Project Completion --** Does the funding requested complete, substantially complete, or continue a project already started? If so, please explain.	The funding requested substantially completes the project.
11. **Project Doable --** Can this project or the phase/stage for which funding is sought be completed by June 30, 2023? Please describe any circumstances with potential to impact the project's doability or timeline (e.g., permitting or regulatory unknowns, lack of availability of other funding resources, etc.). Please describe any advance coordination or vetting with agencies, tribes, other entities, etc. and the outcomes of that effort.	Yes. This is road and drainage maintenance and is SEPA exempt. Advance coordination with Lewis County Public Works and affected businesses will be done by the District to minimize conflicts and delays.
12. **Project Alternatives --** Please describe alternatives to the project that were considered (including doing nothing), and the rationale for selecting the project described, proposed here.	There are no alternates to the project. Either the deficiencies in stormwater management and flow are corrected or roads and parking lots will continue to be flooded.
13. **Project Impacts Avoided, Mitigated --** Please identify how project impacts will be avoided and mitigated, and if that mitigation will be accomplished by June 30, 2023?	Negative project impacts are short term during construction and mitigation of impacts isn't required. Positive projects impacts will last at least 20+ years.

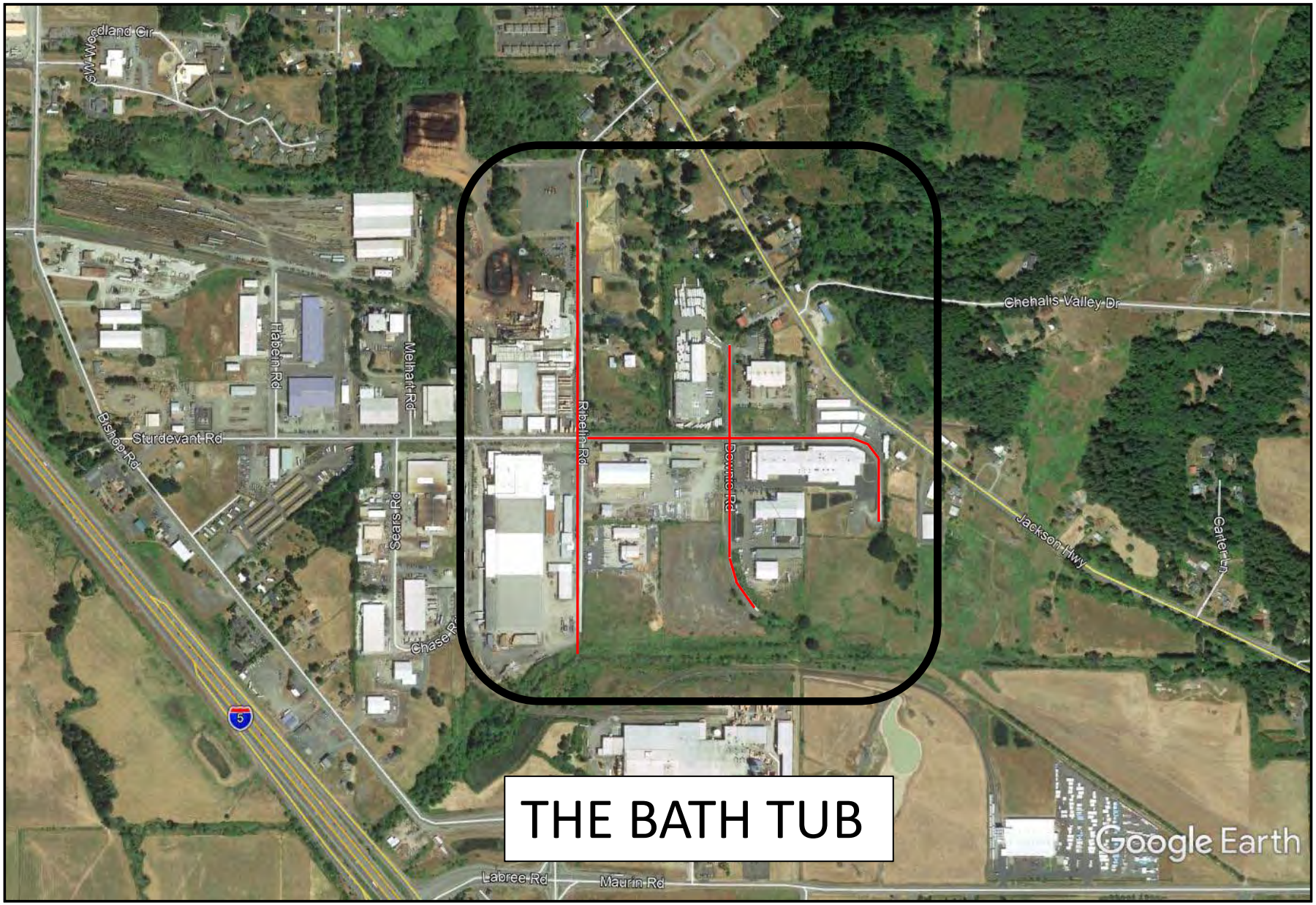
Section IV (**) **Benefits Stated and Quantified**	
14. **Emergency Response Benefits --** Please describe (and quantify) how this project enhances emergency response in a flood emergency (e.g., does it keep critical access roads and transportation facilities open/functional, does it enable easy movement of cattle, equipment and farm chemicals out of harm's way, is it part of a larger hazard mitigation plan, etc.).	The current situation is that during flood events businesses, roads and parking lots are closed from 1 to 3 days. This is localized flooding from the 5 major drainages off the hills NE of the older industrial park area and overland sheet overflow of Dillenbaugh and Berwick Creeks. Emergency vehicles can't reach some businesses in a timely fashion as vehicles must circumvent flooded areas creating several minutes of unnecessary delay. Once this project is completed, flooding will be diminished

	or eliminated by allowing stormwater drainage structures to more efficiently move water away from roads and businesses.
15. **Essential Infrastructure Protection Benefits --** Please describe (and quantify) how this project protects essential infrastructure and the risks or consequences of not acting this funding cycle.	The engineering study by Gibbs & Olson (attached) identifies several key failed drainage infrastructures that will continue to degrade making flooding conditions and damages in the industrial park worse over time. For instance failed culverts that have eroded to where their inlet is higher that their outlet will continue to worsen over time.
16. **Public Health, Safety and Welfare Benefits --** Please describe (and quantify) how this project protects public health, safety and welfare.	Flooded roads and parking lots prevent workers from getting to their place of employment. Flooded driveways put driveway approaches under water where drivers can't see the roadway. Flooding in plants floors creates potential electrocution hazards with workers as they try to safeguard equipment from flood waters.
17. **Residential, Commercial and/or Agricultural Protection Benefits --** Please describe (and quantify) how this project protects residential communities, commercial and/or agricultural interests and benefits of acting (or consequences of not acting) this funding cycle. Consider factors like number of structures and people at risk, historic frequency of flood damage, magnitude of benefit for the cost, etc.	Often, flooding puts 1" to 3" of water in the residence at the corner of Ribelin and Sturdevant Roads. This potentially creates mold in the home. Lack of a low levee on the north side of Dillenbaugh Creek allows floods waters from the Dillenbaugh Creek to flow Northwest through two residential properties.
18. **Habitat Benefits –** Please describe (and quantify) how this project benefits or improves existing or future habitat conditions.	Flood water that enter residential and industrial properties carry out with them various residues from those facilities back into the drainage system which eventually ends up in area streams and rivers. This project will reduce and/or eliminate flooding that can carry pollutants into the streams and rivers.
19. **Costs, Benefits, Impacts** – Please describe (quantify) anticipated: (a) <u>Costs</u> of this phase/stage of the project if funded, and if not funded? This would include any costs (beyond direct cost of the project) that might be incurred or avoided as a result of the project being funded (or not funded) and when. (b) <u>Benefits</u> of this phase/stage of the project if funded and when those benefits would be realized? (c) <u>Impacts</u> of this phase/stage of the project if funded, if not funded, and when those impacts would occur.	After the road/facility flooding and plant shutdowns on 12-19-2019 the following businesses were polled as to their daily loss from the shutdown and water entering their production/shipping facilities. Cascade Hardwoods: $225,000 Sound Wood products: $50,000 Shelton Structures: $100,000 This is the cost of **<u>One Day</u>** shutdown due to flooded roads and water getting into production facilities. After road flooding occurs Lewis County road maintenance is required to repair damaged shoulders and undersized drainage facilities. The cost of this work is not available. This project will directly address the causes of these loses. The repairs this project will complete will minimize, if not eliminate, these loses to businesses and the County.

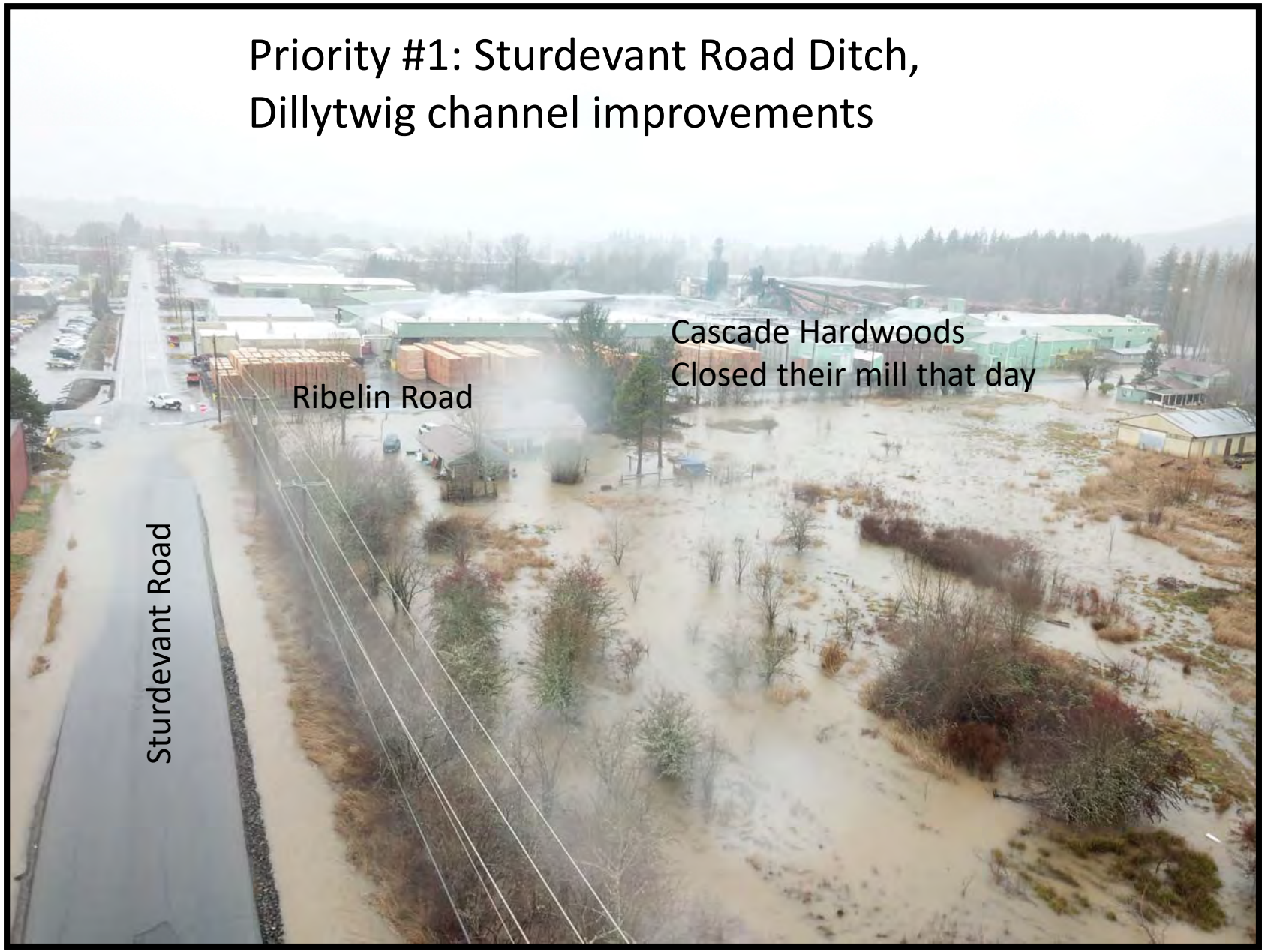
	If this project isn't funded annual flooding of roads and facilities will continue, losses will continue, and the failed and inadequate drainage infrastructure will continue to deteriorate.
20. **Other Project Benefits --** Please describe (and quantify) any other project benefits not already discussed. This could include how this project compliments, leverages, or implements another project or planning process already underway.	The funding of this project will leverage the $207,106 already spend and/or committed to this project.
21. **Anything Else --** Please offer any additional information (e.g., links, photos, maps, video, drawings, drone, etc.) that would help to better understand the scope, timing, and benefits of this project.	Please see attached for the following: Flooding photos on 12-19-2020 Regional Stormwater Management Plan, October 2018 Letter of support for this project from Lewis County Board of County Commissioners, 10-16-2018 Lewis County BOCC Resolution 20-163 In late January 2020 a contingent of local stakeholders consisting of representative from Industrial Park businesses, LCFCD#1 Commissioner, Lewis County EDC, and Port of Chehalis traveled to Olympia and met with Senator Braun and Representatives Orcutt, DeBolt and Walsh to present "our case". All agreed that the project is worthy of consideration by the Chehalis basin Flood Authority.

Section V Local Projects Beyond 2021-23	
22. **Project Name and Project Phases/Stage:**	District Drainage Maintenance Program Development
23. **Project Location --** Please provide location of project and latitude, longitude coordinates (e.g., 46.712222, -122.977811).	Vicinity of 46.633891/-122.925650 and 46.630536/-122.914868
24. **Project Sponsor and Key Partners --** Please identify who is sponsoring the project and key partners who will assist with project delivery, implementation.	Lewis County Flood Control District #1 Lewis County Public Works Port of Chehalis
25. **Project Description --** Please describe the project, what is intended to be accomplished, the flood hazard reduction benefits to be accrued and to who and when. Please identify what phase/stage of the project funding is sought (e.g., study, planning, design/engineering/permitting, construction/implementation).	Development of a cooperative plan among Key Partners to monitor and maintain the improved/repaired drainage infrastructure from the project. The plan will include MOUs among the Key Partners. The plan will include recommended improvement activities similar to that outlined in Table 2 of the Gibbs & Olson study, a suggested schedule for those activities and agreement with BNSF Railway Company to perform regular maintenance on their 2,400 feet of track side drainage

	ditch between Sturdevant Road and Bishop Road/SW 20th St.
26. **Costs --** Please describe (quantify) anticipated project costs.	$50,000
27. **Benefits –** Please describe (quantify) anticipated project benefits.	The plan will prevent loss of the value of the improvements/repairs made due to poor maintenance and negligence.
28. **Impacts --** Please describe (quantify) anticipated project impacts.	The $1.7M spent on the drainage improvements/repairs will be protected and we won't be back at this same situation of flooded streets and facilities in 20 years.


Woodland Cir SW
Habein Rd
Melhart Rd
Sturdevant Rd
Bishop Rd
Sears Rd
Chase Rd
Ripelin Rd
Downer Rd
Chehalis Valley Dr
Jackson Hwy
Carter Ln
5
Labree Rd
Maurin Rd
THE BATH TUB
Google Earth

Priority #1: Sturdevant Road Ditch, Dillytwig channel improvements



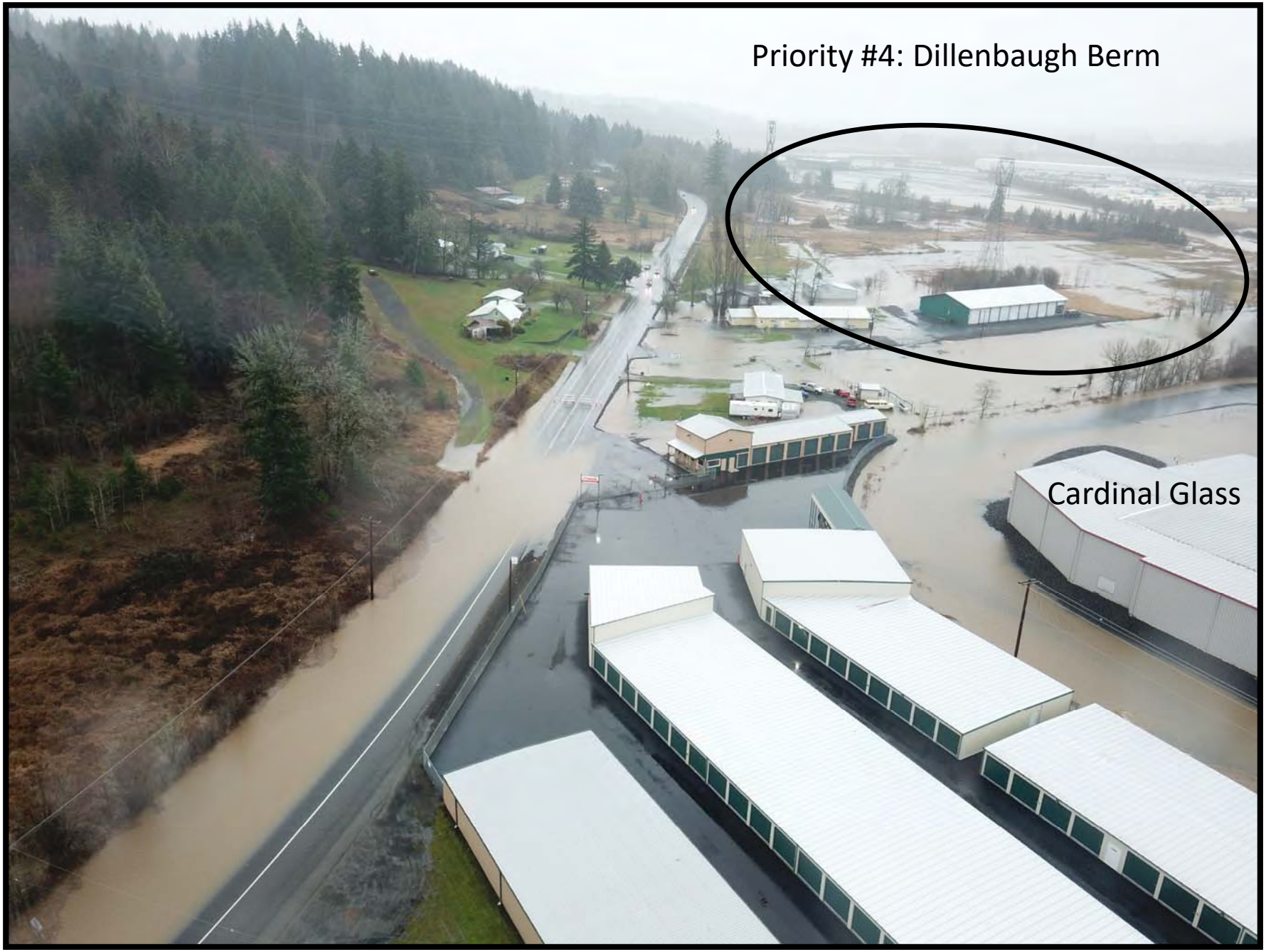
Priority #1: Sturdevant Road Ditch, Dillytwig channel improvements

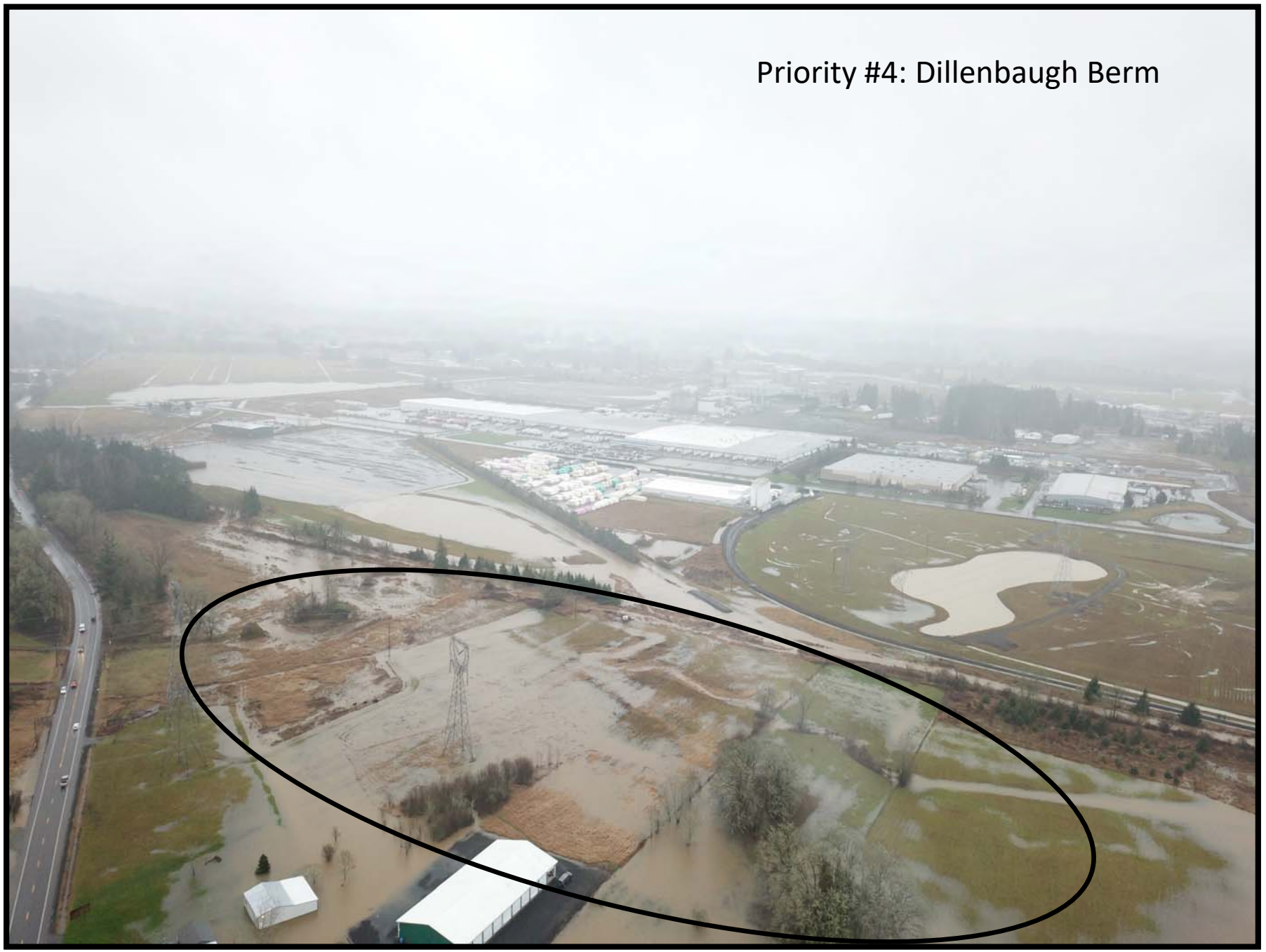

Priority #1: Sturdevant Road Ditch,
Dillytwig channel improvements
Al's Welding
Sturdevant Road
Downie Road


Priority #1: Sturdevant Road Ditch,
Dillytwig channel improvements
Shelton Lam & Deck
Downie Road
Cardinal Glass
Sturdevant Road
Al's Welding

Priority #2: Ribelin Road Twin 24” Culvert Replacement

Priority #3: Ribelin Road Arch Culvert Replacement


Priority #4: Dillenbaugh Berm
Cardinal Glass


Priority #4: Dillenbaugh Berm


Priority #5: Rush Road Culvert

Regional Stormwater Management Plan

Lewis County Flood Control District No. 1
Lewis County, WA

Prepared By:

GIBBS & OLSON
CIVIL ENGINEERS • LAND SURVEYORS

October 2018

Gibbs & Olson Project No. 0955.0011

Table of Contents

Tables

Appendices

Project Overview

The Lewis County Flood Control District No. 1 (District) was established to provide flood protection for the approximately 500 acres of rural, residential, commercial and industrial property within its boundary.

A large portion of the District is comprised of the Chehalis Industrial Park, operated by the Port of Chehalis. Development of the Chehalis Industrial Park began in the mid-1950's and has continued to grow. Many older industrial sites were not constructed with adequate stormwater facilities nor was land set aside for stormwater treatment and detention. Newer industrial development has had to comply with the stormwater regulations in effect at the time of their development. As a result, additional regional facilities may be needed to address localized flooding issues created by heavy and prolonged storm events.

The southern portion of the District is drained by Dillenbaugh Creek and the northern portion is drained by Dilly Twig Creek. See Figure 1 in Appendix A for the overall Drainage Map.

The Dillenbaugh Creek drainage basin begins in the foothills east of Jackson Highway and passes through the heart of the industrial park. Dillenbaugh Creek begins nearly 3.5 miles northeast of Jackson Highway and flows westerly, flattening out east of Jackson Highway, and continues westward towards Bishop Road, passing under the railroad trestle before dropping steeply towards Interstate 5 (I-5). The Dillenbaugh ultimately discharges to the Chehalis River near State Route 6. The downstream end west of I-5 flattens out again and is within the 100-year flood plain of the Chehalis River.

Dilly Twig Creek is a tributary to Dillenbaugh Creek and drains a sub-basin of the larger Dillenbaugh Creek drainage basin. The Dilly Twig begins along Sturdevant Road east of Downie Road, and flows to the northwest, crossing under both Ribelin Road and Bishop Road. Downstream of Bishop Road the Dilly Twig crosses I-5 and discharges into Dillenbaugh Creek west of I-5.

In addition to these two creeks that flow through the District, Berwick Creek is located just south of the district's southern boundary. Berwick Creek is located south of Marin Road and north of Bishop Road. It crosses Jackson Highway, Rush Road, Bishop Road and I-5, eventually discharging to Dillenbaugh Creek west of I-5. Like Dillenbaugh Creek, Berwick Creek is a fast-moving stream east of Jackson Highway. After crossing Jackson Highway, the creek flattens out and is unable to convey higher flows within its banks across the flatter basin topography. The District has indicated that in the past during larger storm events, water overtops the banks of Berwick Creek west of Jackson Highway and flows onto Port of Chehalis property. This water makes its way north-northwest and inundates the culvert under Rush Road.

The general topography of the area is such that it is bordered on the east by steeply sloped and predominately undeveloped forested/grassland which drains to the west toward residentially and industrially developed flatlands. The low-lying area is drained by a network of roadside ditches and culverts with very few catch basins and pipes. The challenge to be addressed is how to adequately handle and convey large quantities of runoff from the steeper eastern portion of the drainage area through the more developed and relatively flat area west of Jackson Highway. As a result, the roads and developed areas west of Jackson Highway within the District are frequently subjected to partial inundation.

Dillenbaugh Creek Drainage Area

The Dillenbaugh Creek begins nearly 3.5 miles northeast of Jackson Highway. The creek flows southwest and crosses under a bridge at Jackson Highway, where it enters the District. The total basin area consists of approximately 4,300 acres, the majority of which is located outside of the District's area and east of Jackson Highway. Dillenbaugh Creek continues flowing westerly flattening out east of Jackson Highway. At this point the creek transitions from a rapidly moving steep stream to a slow-moving flatter stream with an earth and grass-lined channel with reduced capacity. During heavy rainfall events, flow from Dillenbaugh Creek has been observed to overtop its banks in the area just west of Jackson Highway. The overflow generally flows overland to the northwest towards the Chehalis Industrial park and the Dilley Twig Creek channel.

Past Evaluations

In 2007, Lewis County prepared a Stormwater Report for the Rush Road Extension project. At that time, the portions of the Bezy Drainage Ditch, the Unzelman Drainage Ditch and the Bishop Drainage Ditch (south of Fred Meyer) east of the Rush Road Extension were re-routed to a culvert crossing approximately 725-feet south of Maurin Road. The installed culvert is a 10-foot 2-inch by 2-foot 8-inch aluminum box culvert with a natural bottom. The combined flow from these three drainages was re-routed to the Unzelman ditch north of Maurin Road. The treatment and detention facility for the runoff from the Rush Road Extension project was located at the southwest corner of the intersection of Maurin and Rush Road, with the discharge from the outlet structure discharging to the Bezy ditch north of Maurin Road. Two existing 24-inch culverts located under Maurin Road conveyed runoff from the south to the Bezy Ditch. Due to the reduced flow from Rush Road Extension re-routing, one of the 24-inch culverts was plugged as part of the Rush Road Extension construction project.

In early 2010, after construction of the Rush Road extension, the Port of Chehalis began experiencing flooding on a portion of their property during larger storm events as flow from Berwick Creek overtopped its banks west of Jackson Highway. At that time, the County recommend a berm be constructed along the Port's south property line, north of Berwick Creek, to prevent overtopping. Gibbs & Olson performed a hydrologic and hydraulic analysis and made recommendations for a berm north of Berwick Creek to contain runoff from the 25-year, 24-hour design storm with one-foot of freeboard. However, constructing a berm on the north of the creek would also require construction of a berm on the south side of Berwick Creek, to contain flow that would otherwise would then flow south and result in flood impacts south of the creek. Property would also need to be obtained to construct the proposed berms. In addition, construction of berms both north and south of the creek west of Jackson Highway could create tailwater conditions, possibly causing a backup of water to occur on the east side of Jackson Highway. For these reasons, the berm(s) have not yet been constructed.

Due to the increased flow from combining the three drainage ditches east of the Rush Road extension, both the Rush Road culvert and the Unzelman ditch south of Maurin Road, began experiencing problems. To reduce flow to these facilities, in late 2010, an overflow bypass from the Unzelman Ditch to the Bezy Ditch was constructed with the installation of an aluminum canal gate. The overflow was connected to the 24-inch concrete culvert that was previously plugged during construction of the Rush Road extension.

However, due to elevation constraints, the invert on the overflow is approximately 2-feet higher than the bottom of the ditch and as a result, the overflow is rarely used. However, this overflow is in place for use in emergency high flow situations.

Bezy Ditch

Prior to the Rush Road extension project, the Bezy Ditch began south of Jackson Highway in an open field. The ditch ran approximately 2,800 feet to the northwest until it discharged to the Dillenbaugh Creek just downstream of the bridge crossing at Jackson Highway. Several other field ditches between the Bezy and Jackson Highway drained into this conveyance channel. The basin contained approximately 71 acres, all located southwest of Jackson Highway. When the Rush Road extension was constructed, the majority of this flow was re-routed to the Unzelman Ditch. The Bezy ditch now begins north of Maurin Road and has been reduced to approximately 1,500 feet in length, with a drainage basin of approximately 30 acres. In addition, the Bezy Ditch conveys discharge from the Rush Road Extension detention facility that is located in the southwest corner of the intersection of Maurin Road and Rush Road. The 25-year and 100-year peak flows for this drainage area, along with the maximum peak discharge from the detention pond are estimated to be 10 cfs and 14 cfs respectively. The capacity of the existing Bezy ditch is approximately 30 cfs. On occasion, it also conveys overflow from the Unzelman Ditch. This overflow rate is hard to quantify but the existing ditch has excess capacity and to Gibbs & Olson's knowledge, has not experienced any issues in recent years. If the Dillenbaugh backs up it could create a tailwater condition for the Bezy Ditch, thereby reducing the capacity of the ditch.

Unzelman Ditch

Prior to the expansion of the Fred Meyer Distribution Center and Rush Road extension project, the Unzelman ditch began at a point very near Berwick Creek and traveled approximately 6,000 feet continuously to the northwest until it reached the Dillenbaugh Creek. The Unzelman flows into the Dillenbaugh Creek approximately 2,000 feet downstream of where the Dillenbaugh crosses Jackson Highway. When Maurin Road was constructed in the 1990's, twin 24-inch concrete culverts with a concrete wing wall were installed at the ditch crossing. When the Fed Meyer Distribution Center expanded, the ditch was rerouted east along the south side of Maurin Road and the east side of Fred Meyer's property. When the Rush Road extension was constructed, a 10-foot 2-inch by 2-foot 8-inch aluminum box culvert with a natural bottom was installed at the ditch crossing, approximately 725 feet south of Maurin Road. At this same time, the entire area east of Rush Road and southwest of Jackson Highway, which is comprised of open fields, was re-routed from the Bezy Ditch to the Rush Road crossing and the Unzelman ditch. The 25-year and 100-year peak flows for this increased drainage area is estimated to be 56 cfs and 81 cfs respectively. The capacity of the existing Unzelman ditch from Dillenbaugh Creek to Maurin Road is approximately 71 cfs. If Dillenbaugh Creek backs up it could create a tailwater condition for the Unzelman Ditch, further reducing the capacity of this section of the ditch. There appears to be a 1- to 2-foot drop from the twin culverts under Maurin Road that discharge to this portion of the Unzelman Ditch. Because of this drop, capacity of the ditch upstream of Maurin Road should not be reduced due to a backup of the Dillenbaugh.

Rush Road Culvert

During larger storm events, Port staff has observed that water backs up on the east side of Rush Road at the culvert crossing approximately 725' south of Maurin Road. However, observations during storm events indicate the culvert and ditch on the west side of the road are not flowing full. The ditch on the downstream side of the culvert appears to have sufficient gradient.

The drainage basin for the area served by the Rush Road culvert is approximately 114 acres of pasture/agricultural fields and approximately 40 acres of the Hillcrest basin east of Jackson Highway.

Evaluation of the arch culvert under Rush Road indicates the culvert has capacity for the flow reaching the culvert. However, the configuration of the culvert is perpendicular to the downstream receiving channel, with no outlet pool or area for discharge. Culverts are typically constructed with an alignment along the flow path or at least angled to direct the flow downstream. The channel on the downstream (west) side of Rush Road has a bottom width of 3', with 2:1 side slopes. As a result of the perpendicular alignment of the culvert with the ditch, flow exiting the Rush Road culvert experiences tailwater conditions, causing flow on the upstream end to backup. The flow at the culvert on the downstream end is likely not flowing full, while the upstream end of the culvert is full, resulting in a whirlpool effect at the entrance, which has been observed by Port staff.

Within the past year, the Port of Chehalis has made improvements to a ditch along the east side of this area and re-established flow from this ditch to Berwick Creek. Previously, when this ditch over topped its banks, runoff spread into the agricultural fields that drained to the Rush Road Culvert. This improvement has alleviated observed issues at this culvert, and no further evaluation of the Rush Road Culvert will be included in this report.

If flow problems at the culvert outlet occur in the future, it is recommended to provide a widened discharge area and a concrete wing wall at the outlet of the culvert on the west side of Rush Road, to help direct the flow down the alignment of the receiving Unzelman Ditch.

Planning level cost for this recommended improvement is provided later in this report.

Dilly Twig Creek Drainage Area

The Dilly Twig Creek drains the northern area of the District and is a sub-basin of the larger Dillenbaugh Creek drainage basin. The Dilly Twig begins along Sturdevant Road east of Downie Road, and flows to the northwest, crossing under Ribelin Road and Bishop Road. Downstream of Bishop Road, the Dilly Twig crosses I-5 and eventually discharges into Dillenbaugh Creek west of I-5. The portion of the Dilly Twig Creek within the district, drains approximately 1,185 acres of forested, rural residential and commercial property.

The Dilly Twig drainage area consists of an extensive system of ditches and drainage structures for the collection and conveyance of runoff east of Jackson Highway to the outlet at Bishop Road. The main channel of the Dilly Twig begins east of the intersection of Sturdevant Road and Downie Road. The main Dilly Twig channel flows from Sturdevant Road in a north and northwesterly direction, under Ribelin Road and through the Cascade Hardwoods property. Several smaller drainage channels connect and contribute flow to the Dilly Twig channel near where it crosses Ribelin Road. Approximately 900-feet northwest of Ribelin Road, the Dilly Twig turns and flows west toward Bishop Road and ultimately discharges into the Dillenbaugh Creek.

Past Evaluations

In 2013, Gibbs & Olson prepared an extensive stormwater management plan for the Dilly Twig sub-basin. This report focused on the hydraulic capacity of the Dilly Twig channel between Bishop Road and Sturdevant Road. The 2013 report made recommendations for increasing channel capacity within the segments analyzed. It is our understanding that some of these recommendations were implemented and drainage on the lower portion of the Dilly Twig has improved. To determine the hydraulic capacity of the channel, first a hydrological analysis was performed to determine flow from the basin. The overall Dilly Twig Creek drainage area was divided into 17 basins and the channel was divided into three segments. Please refer to the 2013 report for more detail.

The 2013 report details the modeling parameters and assumptions used to determine the runoff values and capacity calculations for the creek. The flows established in the 2013 report will be used for further evaluation in this report.

Needs Assessment of the Chehalis Industrial Park

A survey questionnaire was prepared to assess the impacts of periodic flooding within the Dilly Twig basin and distributed to select businesses within the Chehalis Industrial Park. District staff identified the businesses selected to participate in the survey along with business contact information. Gibbs & Olson prepared survey questions which were reviewed by District staff. The survey was distributed via email to the selected businesses. A copy of the survey is included in Appendix A.

Based on the initial responses to the survey, a follow-up phone interview was conducted with each of the nine businesses that received the survey. The results of the survey are included in Appendix B, along with a map showing the locations of the businesses that participated in the survey.

The primary concern identified in the survey was the flooding of the intersection of Downie Road and Sturdevant Road. This intersection is at the heart of the northern portion of the industrial park, and periodic flooding severely limits access to the businesses in this area. The periodic flooding directly affects five of the nine businesses surveyed as well as contributes to several other issues experienced by the surrounding businesses.

In addition, periodic overtopping of Ribelin Road around the Dilly Twig channel crossing was identified as an issue that results in flooding of the parking lot at Cascade Hardwoods.

Intersection of Downie Road and Sturdevant Road

Where the 2013 report focused on the main Dilly Twig channel between Bishop Road and Sturdevant Road, this report will focus on the area upstream of where the main Dilly Twig channel begins. This area is drained by roadside ditches along Sturdevant Road. Following a progression of Google Earth images, the upper portion of the Dilly Twig channel was modified and re-routed to serve as roadside ditches as Sturdevant Road and the surrounding Chehalis Industrial Park was developed.

This section of the of the channel consists of approximately 1,730 feet of roadside ditch and one major culvert crossing at Downie Road. The culvert at this crossing is a 4.75-foot high by 6.5-foot wide corrugated metal pipe (CMP) arch culvert that conveys drainage of all runoff east of Downie Road, including northeast of Jackson Highway and the south side of Sturdevant Road. Recent field observations, as well as past studies, indicate the water in this location to be slow moving, and the ditch as being choked with vegetation. The culvert also has a negative or adverse grade (lower upstream invert and higher downstream invert). This is a common feature of many industrial park culverts due to the heavy truck traffic and settlement.

Culvert under Downie Road

To evaluate the capacity of this portion of the Dilly Twig, the channel was the divided into six segments as shown in Figure 2 in Appendix A. The HEC-HMS modeling that was used to determine the runoff flows for the 2013 report were re-evaluated and re-distributed to apply additional detail for this portion of the channel. Flows utilized in this evaluation were similar to those used in the 2013 report. Please note that these flows do not account for any overflow that may occur from the Dillenbaugh drainage area. Based on survey data, the existing ditch capacity was estimated utilizing Manning's equation. See Table 1 below for the peak existing 25-year and 100-year flows as well as the existing ditch capacity.

Portions of the existing roadside ditch are heavily choked with vegetation such as grass, weeds, brush and trees, which reduces the flow capacity by reducing the effective channel cross-sectional area flow can pass through without being slowed due to increased resistance.

The existing profile of the ditch varies from very flat to moderately steep. Three out of the five segments of the existing ditch that were evaluated do not have enough capacity to convey the 25-year peak flow. It is recommended that the ditch be regraded with a more consistent slope. It is also recommended that the lower portion of the ditch be widened, as much as possible, to provide some detention storage volume as well as to provide improved conveyance. See Figures 3 through 6 in Appendix A for the plan and profile of the recommended ditch improvements as well as the proposed cross sections for the channel sections. Capacities for the proposed ditch cross sections were calculated using Manning's equation and are also included in Table 1.

The two channel sections adjacent to Mohawk (Parcel 010687001002) and Al's Welding (Parcel 010687002000) have the largest areas of improvement and would require obtaining additional easement or right of way area to construct.

Table 1
Sturdevant Road Ditch Capacity

Channel Station	Channel Segment	Existing Capacity (cfs)	25-year Existing Peak Flow (cfs)	100-year Existing Peak Flow (cfs)	Proposed Capacity (cfs)
10+00 to 10+68	1	76	78.2	96.9	124
10+68 to 13+90	2	--*	65.6	81.6	318
14+40 to 18+50	3	40	59.6	74.0	185
18+50 to 22+48	4	82	36.1	45.2	158
22+48 to 25+75	5	45	36.1	45.2	95
25+75 to 27+30	6	21	13.5	16.5	41

*No existing survey data available to develop cross section for existing capacity evaluation of segment 2.

Planning level cost for the recommended ditch improvements is presented in Table 3 of in the Recommended Construction Projects and Associated Opinions of Cost section of this report.

Ribelin Road Arch Culvert

Dilly Twig Creek passes under Ribelin Road through a 6.3-foot wide by 3.15-foot high CMP arch culvert. Recent field investigation noted this culvert is choked on both sides with heavy vegetation. This culvert also has an adverse grade which requires water to back up on the upstream side before it can flow through the culvert. This culvert has approximately 2 feet of cover which limits the amount of upstream head water that can be developed to pass more flow through the culvert before the roadway is overtopped.

Upstream view of CMP arch culvert, Ribelin Road near Cascade Hardwood's office

A capacity calculation of the existing arch culvert indicates it is undersized for modeled runoff rates, even if the existing culvert were to be re- set with a positive downstream slope. Therefore, it is recommended the existing CMP arch culvert be replaced with an 8'x3' concrete arch culvert, due to the lack of available cover under the existing road. In addition, a concrete headwall is recommended to protect the roadway from erosion on the upstream side of the arch culvert. Planning level costs for the recommended improvements are included in Table 4 in the Recommended Construction Projects and Associated Opinions of Cost section of this report.

Ribelin Road Twin Culverts

North of the Ribelin Road arch culvert are two 24-inch concrete culverts that convey flow from the east and northeast under Ribelin Road near Cascade Hardwoods. These two culverts appear to be undersized for the volume of runoff from the upstream basins and contribute a significant amount of flow to the Dilly Twig upstream of both the arch culvert and box culvert located on Cascade Hardwoods property.

Upstream view of twin 24-inch concrete culverts, Ribelin Road

The business survey results indicated that the northern culvert might be crushed. However, field observations indicated flow is passing through the northern culvert, but at a much slower rate than the southern culvert. This is likely due to the alignment of the ditch at the upstream end of the two culverts.

A capacity calculation of the existing twin culverts indicates these two culverts are undersized for modeled runoff rates, and it is recommended these culverts be replaced. Two 36-inch culverts would provide the needed capacity, however, is not feasible due to the lack of available cover under the roadway. Therefore, it is recommended these existing 24-inch twin concrete culverts be replaced with a 5'x3' concrete arch culvert. In addition, a concrete headwall at the upstream culvert inlet is recommended to improve hydraulics of flow entering the arch culvert. Planning level cost for this recommended improvement is included in Table 5 in the Recommended Construction Projects and Associated Opinions of Cost section of this report.

Dillenbaugh Overflow Area

The Dilly Twig drainage area is adjacent to and north of the Dillenbaugh Creek drainage area. Field observations noted a drainage path between the Dillenbaugh and Dilly Twig Creek between the cul-de-sac at the end of Sturdevant Road and Jackson Highway. This is identified in Figure 1 as the Dillenbaugh

overflow path. This was also identified in the 2006 Dillenbaugh Creek Basin and Surrounding Areas report prepared for the District. The area separating these two drainage areas is very flat, with a slight northerly slope, and the boundary between the areas is not clearly defined. During heavy rainfall events, Dillenbaugh Creek overtops its banks just west of Jackson Highway and the overflow flows to the north toward the Dilly Twig Creek drainage area near the cul-de-sac at the end of Sturdevant Road. The Dillenbaugh overflow adds additional flow to Dilly Twig Creek. The overflow from the Dillenbaugh was not quantified for previous projects but is noted as contributing flow at the upstream end of the Dilly Twig Creek during larger storm events. One option to eliminate the impact of the Dillenbaugh overflow on the Dilly Twig drainage area is to implement detention along the northern portion of Dillenbaugh Creek southwest of Jackson Highway. However, finding a suitable location for detention will likely require acquiring private property, and will be challenging due to the lack of change in elevation. Modifying the Dillenbaugh's channel to improve its hydraulic capacity is likely not a feasible option due to Dillenbaugh Creek being classified as a salmon bearing stream. Construction of a berm southwest of Jackson Highway to contain the Dillenbaugh overflow and keep it from flowing north and entering the Dilly Twig drainage area is the primary alternative that could be implemented. This berm is recommended to be located a minimum of 200 feet from the ordinary high water level of Dillenbaugh Creek to eliminate the need for a Shoreline permit. The 2006 report identified an area approximately 400 feet in length where the overflow from the Dillenbaugh appears to be flowing to the north-northwest to the Dilly Twig Creek drainage area. The cost to construct an overflow containment berm along this area, approximately 4 feet in height by 3 feet wide at the top with 3:1 side slopes (12 foot wide at base of berm), was calculated and is included in Table 6 in the Recommended Construction Projects and Associated Opinions of Cost section of this report.

Regional Stormwater Detention Facility

As discussed previously, the change of stormwater regulations over time has created some inconsistencies in how stormwater is handled within the Chehalis Industrial Park. Many older industrial sites were not required to construct on-site stormwater facilities at the time of development. Heavy prolonged storm events create localized issues consisting of flooded intersections, parking areas, and drainage ditches. One area that experiences this is the intersection of Sturdevant Road and Ribelin Road. A regional stormwater detention facility in this area could reduce the peak flow entering the existing ditches and culverts and thereby reduce flooding in this area.

The challenge to providing stormwater detention in this area is identifying available land with sufficient gradient to allow gravity discharge of the detained stormwater to the Dilly Twig. To provide storage with gravity discharge from a detention facility would likely require constructing a berm around the detention facility. A pump station may also need to be considered; however, a pump station would have ongoing operation and maintenance considerations and costs.

To date, no land has been set aside for a regional stormwater detention facility. There are approximately 6 acres of land on the northeast corner of Ribeln Road and Sturdevant Road that may be a suitable location for a facility to detain runoff from the upper Dilly Twig basin. See Figure 1 in Appendix A for the proposed location.

A stormwater detention facility would allow the peak runoff from the surrounding and downstream areas to pass, while delaying discharge of a portion of the peak flow from the upper portion of the basin to be released at a lower rate over a longer period of time.

Assuming a stormwater detention facility can be constructed with gravity discharge of the detained water, the cost for the facility is driven primarily by the cost to acquire land for the facility, and the cost of earthwork to construct the facility. The cost for land acquisition is dependent on the location of the property, other potential uses of the land that could be deemed to be highest and best use, and activities that may be required to address any environmental or other issues with the property, such as contaminated soil clean-up or building demolition. Therefore, estimating the cost for land for a regional stormwater detention structure is beyond the scope of this report.

If the 6-acre property is available and determined to be suitable for construction of a regional stormwater detention facility, it is reasonable to assume the facility would be able to utilize 75-80% of the surface area. This is approximately 5-acres, or 220,000 square feet. Assuming a pond depth of 3-feet over this area, the total estimated storage volume is on the order of 4- to 5-million gallons. This equates to a total volume of earthwork required to construct the detention facility is on the order of 25,000 cubic yards. At a planning level unit cost of $20/cy, a preliminary order of magnitude cost for construction is in the range of $500,000. Contaminated soil clean up, if required, would be an additional cost that cannot be estimated at this time.

Existing Infrastructure Inventory

The District's drainage area consists of an extensive system of ditches and drainage structures for the collection and conveyance of runoff. The District is drained is drained by two main drainage ways: Dillenbaugh Creek to the south and Dilly Twig Creek to the north. Drainage originating east of and crossing under Jackson Highway through culverts contribute flow to these creeks.

Infrastructure inventory has been developed based on previously prepared reports for the Dillenbaugh, Dilly Twig and Berwick drainage basins. See Appendix C. The structures listed in the inventory are shown on the map at the end of the inventory, for ease of reference. No additional structures were identified during the field investigation for this project, or was identified by the District.

Economic Impact

Most landowners within the District are industrial businesses. In the last 15 years, two large flood events impacted the Chehalis-Centralia area, resulting in the full closure of Interstate 5. Two of the highest, historically recorded crests on the Chehalis River occurred in 2007 and 2009. During the 2007 flood event, Cascade Hardwoods suffered an estimated $200,000 in damage to inventory alone. Adjusting for inflation, this total in 2018 dollars is approximately $243,000[1].

Selected property owners within the Chehalis Industrial Park were asked to estimate financial losses for temporarily suspended operations due to flooding. An aggregate cost of $250,000 per day of operational losses was estimated and does not include losses due to damaged inventory and facilities. The aggregate cost was determined by contacting six of the nine businesses that participated in the needs assessment survey. The six business are located in the vicinity of Sturdevant Road, an area within the district that experiences the most impact from flooding.

Districtwide Improvements

The following subheadings represent actions the District could take in a proactive effort to maintain good working conditions of the drainage systems within their boundary, and to account for future development within the District.

Development Review of Stormwater Regulations

It is recommended the District coordinate with the Lewis County Department of Community Development to receive notification when new development is proposed within the District's boundaries. This would provide the District the opportunity to review and comment on proposed development, and to ensure stormwater management practices consistent with current regulations are implemented as part of future development within the District.

District Maintenance Program

It is recommended that a proactive maintenance program be adopted by the District to achieve and maintain the highest levels of efficiency for the District's existing infrastructure. Table 2 presents a recommended list of improvement activities. In consideration of the District's limited staff, it is recommended the District adopt three improvement zones to maximize the potential usefulness of various labor sources. Under the recommended zone coverage plan, the District could elect to focus resources on one zone per year and rotate through the zones over a three-year cycle. Figure 1 in Appendix A provides a recommended division of the District into three improvement zones. It is recommended a visual inspection of the drainage structures be performed within the entire zone for that given year. Appendix C, Infrastructure Inventory, can be used to identify infrastructure within each zone for inspection and improvement activities. The zones are proportionally sized in accordance with infrastructure density. In addition, it is recommended the District inspect all major structures and

[1] https://www.usinflationcalculator.com/

conveyance paths prior to and immediately following a major storm event to ensure structures are in operable conditions and the system is functioning as intended.

Labor sources the District potentially could utilize include hiring summer help (high school or college students on summer break), requisitioning the use of the Lewis County Offender Labor Program, Lewis County Public Works maintenance staff, or contracting field maintenance and improvement work with a private contractor. If the District chooses to utilize the Lewis County Public Works maintenance staff, an interlocal agreement will need to be re-established between the District and Lewis County. A previous interlocal agreement between Lewis County and the District expired on December 31, 2017. The interlocal agreement was to establish a streamlined process for reimbursable work performed by County crews on behalf of the District. The agreement refers to a work order that that could be executed for providing any needed work within the District. Considering the previous interlocal agreement, it is recommended the District evaluate maintenance costs to effectively utilize the terms of a renewed interlocal agreement.

Table 2

Recommended Improvement Activities

Recommended Improvement Activity	Description
Ditch cleaning	Inspect ditches for debris and buildup of silt and vegetation. Grass height should be controlled through system wide mowing typically at the beginning and middle of the growing season. Areas where soil becomes exposed due to traffic or repair work should be promptly reseeded with erosion control grass species. Undesirable vegetation such as trees, shrubs, and invasive and noxious weed species should be controlled through machine and hand removal, as well as spraying with approved chemicals.
Channel cleaning	Inspect channel for debris and buildup of silt and vegetation. Remove excess silt and other debris to re-define channel. Undesirable vegetation such as trees, shrubs, and invasive and noxious weed species should be controlled through machine and hand removal, as well as spraying with approved chemicals.
Storm drainage infrastructure	Inspect catch basins, culverts and other conveyance structures for accumulation of silt and debris, and general condition of pipe for visual damage. Remove debris in catch basins with use of a vactor truck or other device to fully clean the structure. Replace any damaged infrastructure as needed.

Note: Dillenbaugh Creek is a fish bearing stream. Work inside and near the creek will require appropriate biological and environmental permitting.

BNSF Rail – Ditch Maintenance

Within the proposed Maintenance Zone 2, approximately 2,400 linear feet of the Dilly Twig channel, directly upstream of the Bishop Road box culvert crossing, is located on BNSF property. It is recommended that the District coordinate with the local BNSF Roadmaster to access this portion of the channel and visually inspect it on a three-year rotation. There is no vehicle access to this portion of the ditch. Therefore, when the ditch is in need of vegetation and silt removal, it is recommended the District continue to coordinate with the local BNSF Roadmaster to have the BNSF clean the ditch. BNSF has access to special track equipment for ditch cleaning as seen in the picture below.

BNSF Track Side Ditch Cleaning Equipment

Funding

In addition to the annual maintenance and infrastructure improvement program, construction of capital improvement projects recommended in this report should be pursued. Obtaining funding for the recommended improvement projects should be of the upmost importance to the District. The following represents a list of funding sources available to the District for the recommended capital improvement projects.

1. If possible, increase the tax rate per $1,000 of assessed value to the property owners within the District;

2. Washington State Public Works Trust Fund (administered by Public Works Board);

   Construction loans from the Public Works Board (PWB) face an uncertain future as the Washington State Legislature appropriates funds to the PWB account due to the account being depleted. Currently, construction loan applications are accepted prior to each budget biennium. Applications for pre-construction loans are currently being accepted thru September 13, 2018. Pre-construction activities include, but are not limited to, permitting, environmental studies, right-of-way acquisition, and design engineering.

3. Chehalis River Basin Flood Authority/Chehalis Basin Strategy.

   It is recommended the District contact the Chehalis River Basin Flood Authority to evaluate possibly becoming a member of this organization. The Flood Authority is comprised of many municipal members throughout the Chehalis River Basin. Projects are primarily funded by the Washington State Legislature. Scott Boettcher, staff member of the Chehalis River Basin Flood Authority, can be reached at 360.480.6600.

   The Chehalis Basin Strategy (CBS) is a consortium of potential actions addressing flooding and river habitat. It is recommended the District contact the CBS to familiarize itself with the basin-wide effort. Facilitated by the Ruckelshaus Center, the strategy guides the Governor's Chehalis Work Group. Jim Kramer, facilitator of the Chehalis Basin Strategy, can be reached at 206.841.2145.

Recommended Construction Projects and Associated Opinions of Cost

Based on review of the business survey and analysis of the existing drainage system within the District, five construction projects are recommended to be implemented by District. These projects are as follows:

- Sturdevant Road Ditch/Dilly Twig Channel Improvements
- Ribelin Road Twin 24-inch Culvert Replacement
- Ribelin Road Arch Culvert Replacement
- Dillenbaugh Overflow Berm Construction
- Rush Road Culvert Wing Wall

Planning level opinions of cost were prepared for the each of these projects and are included in the Tables 3 through 6 below. The opinions of cost include construction cost, sales tax, appropriate construction contingency, design engineering, construction management, permitting, and project administration. As these are planning level opinions of cost, values have been rounded up. Costs for easements and right-of-way acquisition were not included in these opinions of cost. Permits anticipated to be required may include: SEPA Checklist; Shorelines; JARPA (Washington Dept. of Fish & Wildlife Hydraulic Project Approval Permit, US Army Corps of Engineers Nationwide or Individual Project Permit, and a Washington Dept. of Ecology Water Quality Permit); Lewis County and City of Chehalis Grading and Erosion Control Permit depending on specific location; and Washington Dept. of Ecology Construction Stormwater Permit. Wetland delineations, biological evaluations, critical areas and cultural resource evaluations are all anticipated to be required to be performed as part of obtaining the above-listed permits. The opinions of cost are based on current public works construction costs. The ENR Seattle Construction Cost Index for August June 2018 is 11,515.25. This can be utilized to quickly update the total cost of each cost opinion to the relative value of future dollars, as appropriate in the future.

Table 3

Sturdevant Road Ditch/Dilly Twig Channel Improvements

Planning Level Opinion of Probable Costs

Item No.	WSDOT Spec	Item Description	Quantity	Unit	Unit Cost	Amount
1	1-09.7	Mobilization	1	LS	$16,000	$16,000
2	1-10	Project Temporary Traffic Control	1	LS	$10,000	$10,000
3	2-01	Clearing and Grubbing	1	LS	$10,000	$10,000
4	2-02	Removal of Structures and Obstructions	1	LS	$5,000	$5,000
5	2-03	Excav., Backfill, Comp. and Grading for Ditch, Incl. Haul	1700	CY	$50	$85,000
6	4-04	Crushed Surfacing Top Course	15	TN	$50	$750
7	4-04	Crushed Surfacing Base Course	25	TN	$50	$1,250
8	5-04	HMA Cl 1/2" PG 58-22 for Pavement	10	TN	$450	$4,500
9	7-04	Reset Ex. Arch Culvert (Incl bedding), Downie Rd	50	LF	$200	$10,000
10	7-08	Shoring or Extra Excavation	1	LS	$1,500	$1,500
11	8-01	Temp. Erosion/Water Pollution Control/Flow Rerouting	1	LS	$10,000	$10,000
12	8-02	Hydroseeding	2600	SY	$5	$13,000
		Subtotal				$167,000
		Contingency			30%	$51,000
		Subtotal				$218,000
		Sales Tax			8.2%	$18,000
		Subtotal				$236,000
		Design Engineering and Bid Assistance			15%	$35,500
		Construction Management			15%	$35,500
		Permitting			10%	$24,000
		Total Cost				**$331,000**

ENR Seattle Const. Cost
Index August 2018 – 11515.25

Assumptions:
- Trench Area = 37'x10'
- Pav't Area = 35'x12'
- HMA = 2.1 T/CY; CSTC = 1.95 T/CY; 10% contingency added to quantities
- Backfill for storm trench included in CSTC quantity
- Existing culvert to be reused
- Subtotal rounded to the nearest $1,000
- City of Chehalis Sales tax rate of 8.2% used

Table 4

Ribelin Road Arch Culvert Replacement

Planning Level Opinion of Probable Costs

Item No.	WSDOT Spec	Item Description	Quantity	Unit	Unit Cost	Amount
1	1-09.7	Mobilization	1	LS	$18,000	$18,000
2	1-10	Project Temporary Traffic Control	1	LS	$10,000	$10,000
3	2-01	Clearing and Grubbing	1	LS	$1,500	$1,500
4	2-02	Removal of Structures and Obstructions	1	LS	$10,000	$10,000
5	2-03	Excav., Backfill, Comp. and Grading for Culvert, Incl Haul	45	CY	$60	$2,700
6	2-03	Unsuitable Foundation Excavation, Incl. Haul	5	CY	$100	$500
7	4-04	Crushed Surfacing Top Course	10	TN	$50	$500
8	4-04	Crushed Surfacing Base Course	20	TN	$50	$1,000
9	5-04	HMA Cl 1/2" PG 58-22 for Pavement	10	TN	$450	$4,500
10	6-06	Concrete Wing Walls	100	CY	$1,000	$100,000
11	7-04	Storm Sewer Arch Culvert	50	LF	$500	$25,000
12	7-08	Shoring or Extra Excavation	1	LS	$2,500	$2,500
13	8-01	Temp. Erosion/Water Pollution Control/Flow Rerouting	1	LS	$15,000	$15,000
14	8-01	Ditch & Landscape Restoration	1	LS	$5,000	$5,000
15	8-22	Channelization	1	LS	$1,500	$1,500
		Subtotal				$198,000
		Contingency		30%		$60,000
		Subtotal				$258,000
		Sales Tax		8.2%		$22,000
		Subtotal				$280,000
		Design Engineering and Bid Assistance		15%		$42,000
		Construction Management		15%		$42,000
		Permitting		10%		$28,000
		Total Cost				**$392,000**

ENR Seattle Const. Cost
Index August 2018 – 11515.25

Assumptions:
- Trench Area = 30'x10'
- Pav't Area = 30'x12'
- HMA = 2.1 T/CY; CSTC = 1.95 T/CY; 10% contingency added to quantities
- Backfill for storm trench included in CSTC quantity
- Wing Wall 8-inch Thick
- Subtotal rounded to the nearest $1,000
- City of Chehalis Sales tax rate of 8.2% used

Table 5

Ribelin Road Twin 24-inch Culvert Replacement

Planning Level Opinion of Probable Costs

Item No.	WSDOT Spec	Item Description	Quantity	Unit	Unit Cost	Amount
1	1-09.7	Mobilization	1	LS	$19,000	$19,000
2	1-10	Project Temporary Traffic Control	1	LS	$10,000	$10,000
3	2-01	Clearing and Grubbing	1	LS	$1,500	$1,500
4	2-02	Removal of Structures and Obstructions	1	LS	$10,000	$10,000
5	2-03	Excav., Backfill, Comp. and Grading for Culvert, Incl Haul	40	CY	$60	$2,400
6	2-03	Unsuitable Foundation Excavation, Incl. Haul	5	CY	$100	$500
7	4-04	Crushed Surfacing Top Course	15	TN	$50	$750
8	4-04	Crushed Surfacing Base Course	25	TN	$50	$1,250
9	5-04	HMA Cl 1/2" PG 58-22 for Pavement	10	TN	$450	$4,500
10	6-06	Concrete Wing Walls	100	CY	$1,000	$100,000
11	7-04	Storm Sewer Arch Culvert	60	LF	$500	$30,000
12	7-08	Shoring or Extra Excavation	1	LS	$2,500	$2,500
13	8-01	Temp. Erosion/Water Pollution Control/Flow Rerouting	1	LS	$15,000	$15,000
14	8-01	Ditch & Landscape Restoration	1	LS	$5,000	$5,000
15	8-22	Channelization	1	LS	$1,500	$1,500
		Subtotal				$204,000
		Contingency			30%	$62,000
		Subtotal				$266,000
		Sales Tax			8.2%	$22,000
		Subtotal				$288,000
		Design Engineering and Bid Assistance			15%	$43,500
		Construction Management			15%	$43,500
		Permitting			10%	$29,000
		Total Cost				**$404,000**

ENR Seattle Const. Cost
Index August 2018 – 11515.25

Assumptions:
- Trench Area = 30'x10'
- Pav't Area = 30'x12'
- HMA = 2.1 T/CY; CSTC = 1.95 T/CY; 10% contingency added to quantities
- Backfill for storm trench included in CSTC quantity
- Wing Wall 8-inch Thick
- Subtotal rounded to the nearest $1,000
- City of Chehalis Sales tax rate of 8.2% used

Table 6

Dillenbaugh Berm Construction

Planning Level Opinion of Probable Costs

Item No.	WSDOT Spec	Item Description	Quantity	Unit	Unit Cost	Amount
1	1-07.15(1)	SPCC Plan	1	LS	$3,000	$3,000
2	1-09.7	Mobilization	1	LS	$13,000	$13,000
3	2-01	Clearing and Grubbing	1	LS	$7,500	$7,500
4	2-03	Excav., Backfill, Comp. and Grading for Ditch, Incl. Haul	675	CY	$50	$33,750
5	2-12	Construction Geotextile	900	SY	$5	$4,500
6	4-04	Crushed Surfacing Top Course	520	TN	$50	$26,000
7	4-04	Quarry Spalls	440	TN	$80	$35,200
8	8-01	Temp. Erosion/Water Pollution Control	1	LS	$15,000	$15,000
9	8-02	Hydroseeding	900	SY	$5	$4,500
		Subtotal				$143,000
		Contingency			30%	$43,000
		Subtotal				$186,000
		Sales Tax			8.2%	$16,000
		Subtotal				$202,000
		Design Engineering and Bid Assistance			15%	$30,500
		Construction Management			15%	$30,500
		Permitting			10%	$20,000
		Total Cost				**$283,000**

ENR Seattle Const. Cost
Index August 2018 – 11515.25

Assumptions:

- Native material to be used for creation of berm
- Surface of berm covered with CSTC 1' thick
- Surface of CSTC covered with Quarry Spalls 1' thick
- Subtotal rounded to the nearest $1,000
- City of Chehalis Sales tax rate of 8.2% used

Table 7

Rush Road Culvert Wing Wall

Planning Level Opinion of Probable Costs

Item No.	WSDOT Spec	Item Description	Quantity	Unit	Unit Cost	Amount
1	1-09.7	Mobilization	1	LS	$8,000	$8,000
2	2-01	Clearing and Grubbing	1	LS	$7,500	$7,500
3	2-02	Removal of Structures and Obstructions	1	LS	$5,000	$5,000
4	2-03	Excav., Backfill, Comp. and Grading for Ditch, Incl. Haul	15	CY	$100	$1,500
5	4-04	Crushed Surfacing Base Course	30	TN	$50	$1,500
6	4-04	Quarry Spalls	20	CY	$80	$1,600
7	6-06	Concrete Wing Walls	40	CY	$1,000	$40,000
8	7-08	Shoring or Extra Excavation	1	LS	$2,500	$2,500
9	8-01	Temp. Erosion/Water Pollution Control	1	LS	$5,000	$5,000
10	8-01	Ditch Restoration	1	LS	$7,500	$7,500
		Subtotal				$81,000
		Contingency		25%		$21,000
		Subtotal				$102,000
		Sales Tax		8.2%		$9,000
		Subtotal				$111,000
		Design Engineering and Bid Assistance		15%		$17,000
		Construction Management		15%		$17,000
		Permitting		10%		$11,000
		Total Cost				**$156,000**

ENR Seattle Const. Cost
Index August 2018 – 11515.25

Assumptions:
- Wing Wall 8-inch thick w/ 2' wide footing, 1' thick
- Subtotal rounded to the nearest $1,000
- City of Chehalis Sales tax rate of 8.2% used

Appendix A

Figures

NORTH

0 250 500 1000

Scale (in Feet)

DILLY TWIG CREEK

HABEIN RD

MELHART RD

SEARS RD

CHASE RD

RIBELIN RD

DOWNIE RD

STURDEVANT RD

DILLENBAUGH CREEK

BEAY DITCH

UNZELMAN DITCH

MCBRIDE CT

JACKSON HWY

INTERSTATE 5

LABREE RD

MAURIN RD

NALLEY RD

BERWICK CREEK

1

2

3

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Flood Control Dist No. 1 Boundary
Maintenance Boundary
Creek/Stream/Ditch
Creek/Stream/Ditch Original Flow
Dillenbaugh Overflow Path
Culvert
Potential Detention Facility
1 Maintenance Zones

Lewis County FCD No. 1
Regional Stormwater Management Plan
Drainage Map
Figure 1

NORTH

0 250 500 1000

Scale (in Feet)

RIBELIN RD
TWIN 24-IN
CULVERTS

RIBELIN RD
6' x 3' ARCH
CULVERT

STA 10+00

STA 10+68

STA 13+90

STA 14+40

STA 18+50

STA 22+48

STA 25+75

STA 27+30

1

2

3

4

5

6

STURDEVANT RD

RIBELIN RD

DOWNIE RD

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Flood Control Dist No. 1 Boundary

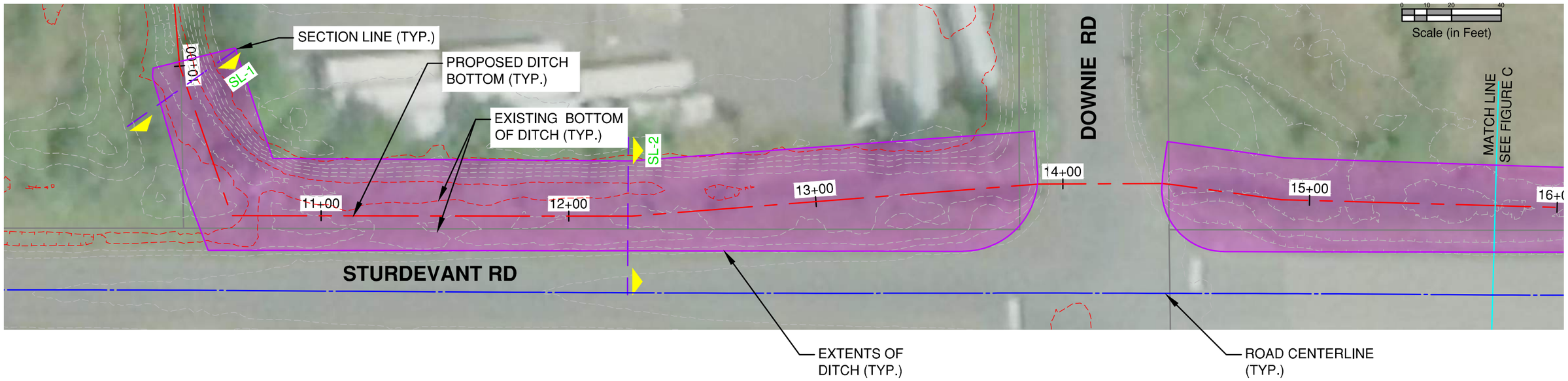
Creek/Stream/Ditch

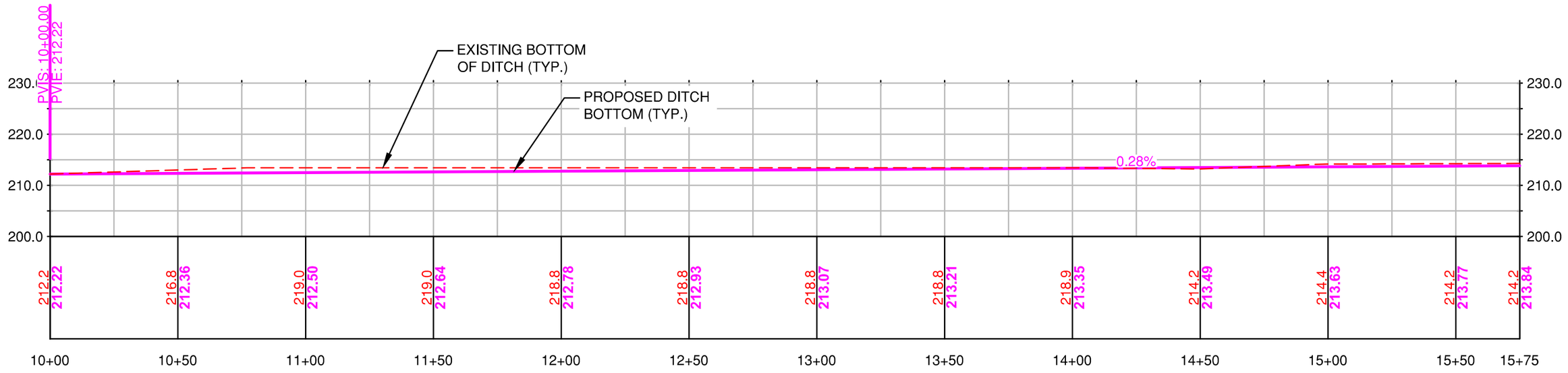
Dillenbaugh Overflow Path

Culvert

1 Ditch Segment

Lewis County FCD No. 1
Regional Stormwater Management Plan
Drainage Map
Figure 2





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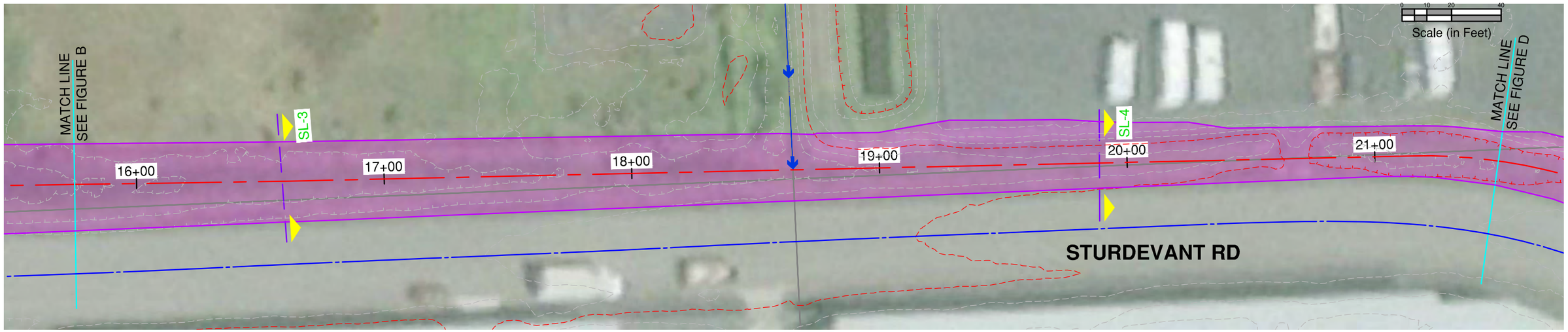
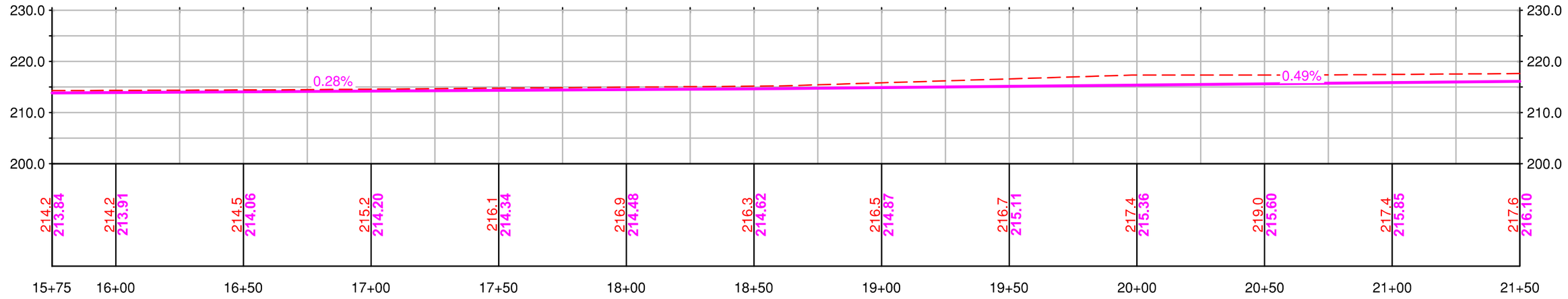
Lewis County FCD No. 1
Regional Stormwater Management Plan
Ditch Plan and Profile
Figure 3





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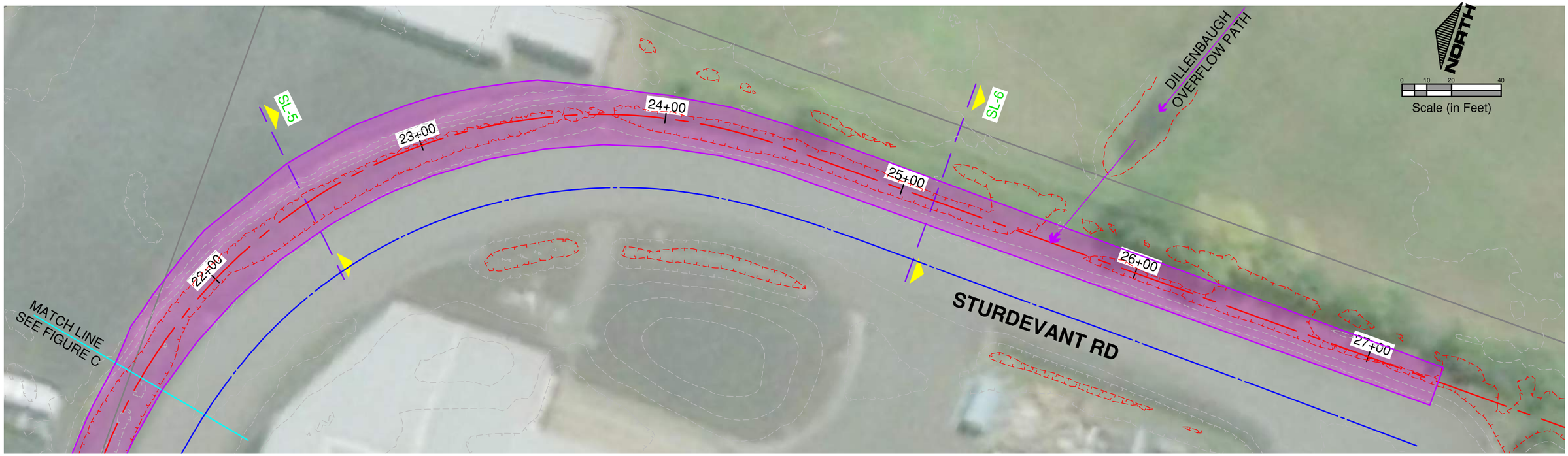
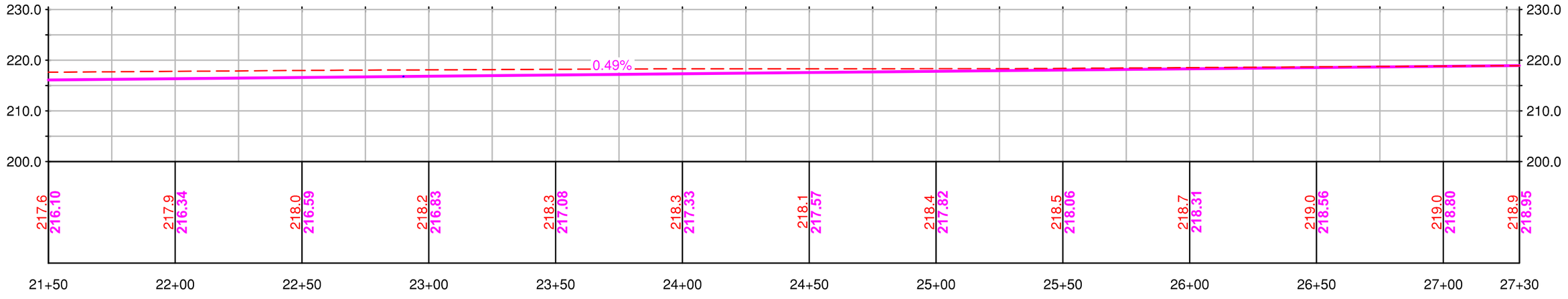
Lewis County FCD No. 1
Regional Stormwater Management Plan
Ditch Plan and Profile
Figure 4





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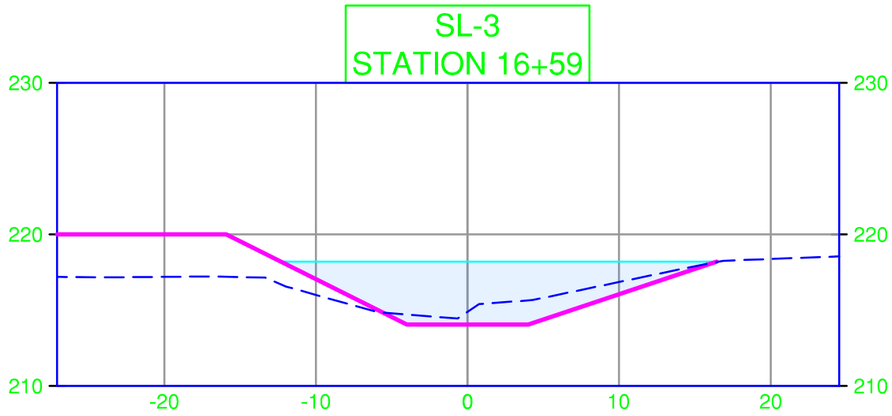
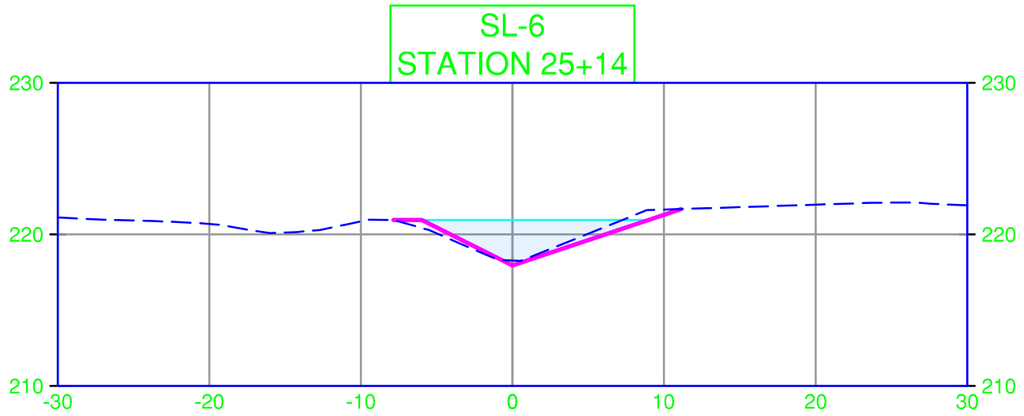
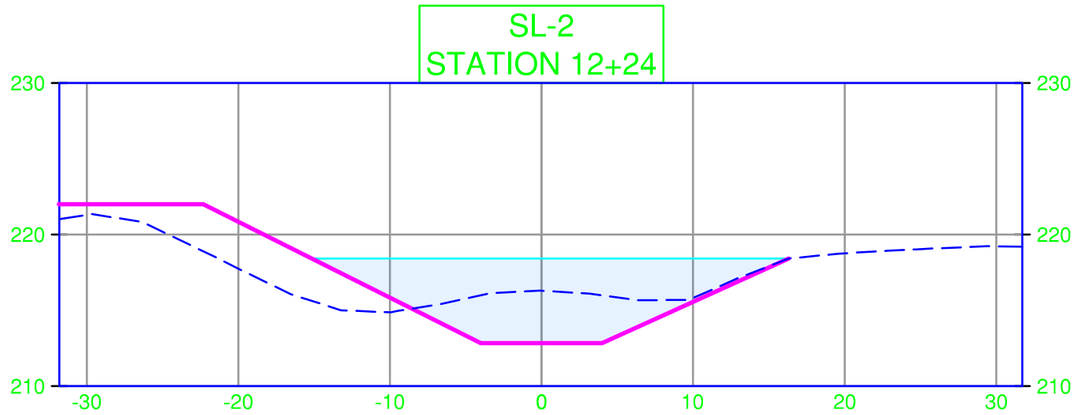
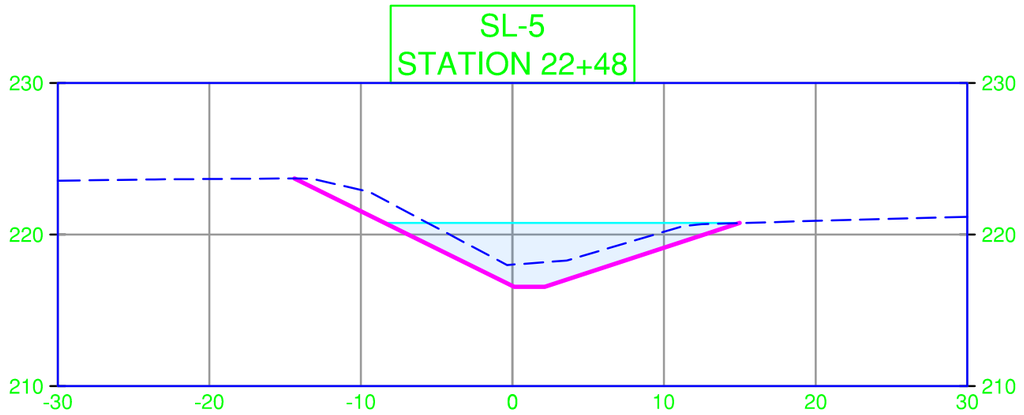
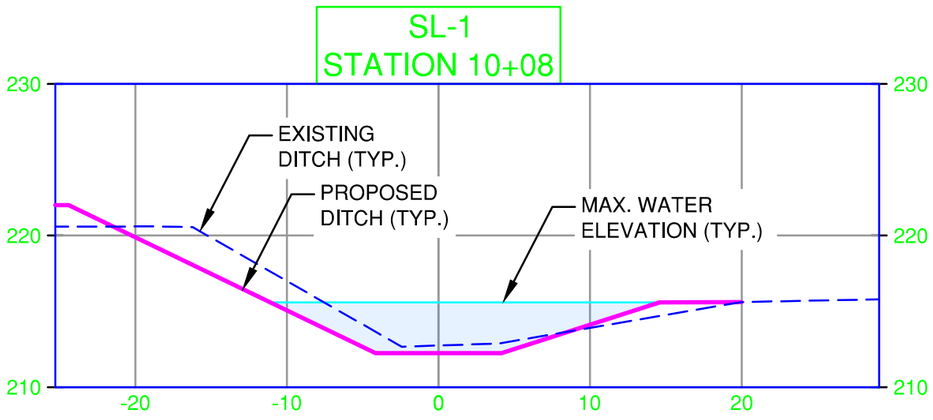
Lewis County FCD No. 1
Regional Stormwater Management Plan
Ditch Plan and Profile
Figure 5

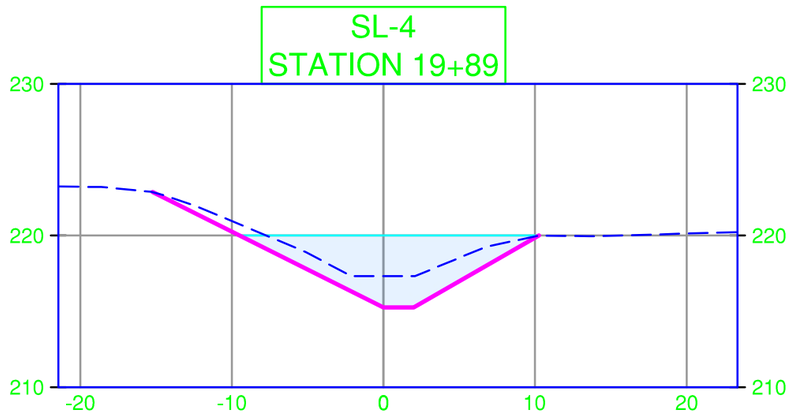












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Lewis County FCD No. 1
Regional Stormwater Management Plan
Cross Sections
Figure 6

Appendix B

Needs Assessment Survey

Lewis County Flood Control District No. 1
Regional Stormwater Management Plan
Business Survey

As part of preparing a Regional Stormwater Management Plan, Lewis County Flood Control District No. 1 is conducting a survey to seek input from businesses to aid in determining areas impacted by stormwater flooding, specific stormwater issues, and in preparing a district wide inventory. Please take a few minutes to review each question, check the appropriate answer and provide comments where requested. Your personal information is for work purposes only and will not be shared or used for any other purpose. Thank you for your willingness to participate and provide input.

Mr. Randy Mueller
Chief Executive Officer
Port of Chehalis
321 Maurin Road
Chehalis, WA 98532
(360) 748-9365
rmueller@portofchehalis.com

1. **Has this property or surrounding area had previous storm drainage work done by the Flood District, Lewis County or the City of Chehalis?**

   ☐ **Yes** ☐ **No**

   If yes, please use this space to share comments about the work performed. _____
   _____
   _____
   _____

2. **Are there any soil erosion problems from a stream or storm drainage system (i.e. pipes, drains, streams or ditches) on this property or surrounding area?**

   ☐ **Yes** ☐ **No**

3. **If there are any soil erosion problems, please describe the type of problem and the location. Please provide a ranking of the severity of the problem from 1 (minor) to 5 (severe) next to each location.**

DESCRIPTION AND LOCATION	SEVERITY

4. **Are there any other problems with the storm drainage system on this property or for the surrounding area? Please check all that apply.**
   - ☐ Corroded pipes
   - ☐ Sink holes
   - ☐ Submerged/buried pipes/culverts
   - ☐ Pipe blockage
   - ☐ Stream or ditch blockage
   - ☐ Drains in need of repair
   - ☐ Pipes/culverts too small
   - ☐ Other (please specify) _____

   a. **Please use this space to provide additional comments about the storm drainage system on this property or in the surrounding area.** _____

5. **Have you seen the stream actively shifting or eroding during recent storm events?**

   ☐ **Yes** ☐ **No**

   a. **If yes, please explain what you have seen with the stream actively shifting or eroding during recent storm events.** _____

6. **Have you ever noticed water in the building?**

   ☐ **Yes** ☐ **No**

   a. **If structural flooding has occurred, please list the approximate date(s), location and depth of flooding.** _____

7. **Have you ever noticed water in any parking and/or storage facilities?**

   ☐ **Yes** ☐ **No**

8. **Have you ever noticed flooded streets in the area?**

   ☐ **Yes** ☐ **No**

   a. **If you have noticed flooded streets, please provide the approximate date(s), location and depth of flooding.** _____

   b. **Please provide any additional information about street flooding in your area.** _____

9. **What improvements and repairs do you think are needed in the area around your business?** _____

10. **What financial or work loss impacts does your business experience when localized flooding occurs, such as blocked roads impacting business/employee access, flooded parking lots, or other stormwater related issues.** _____

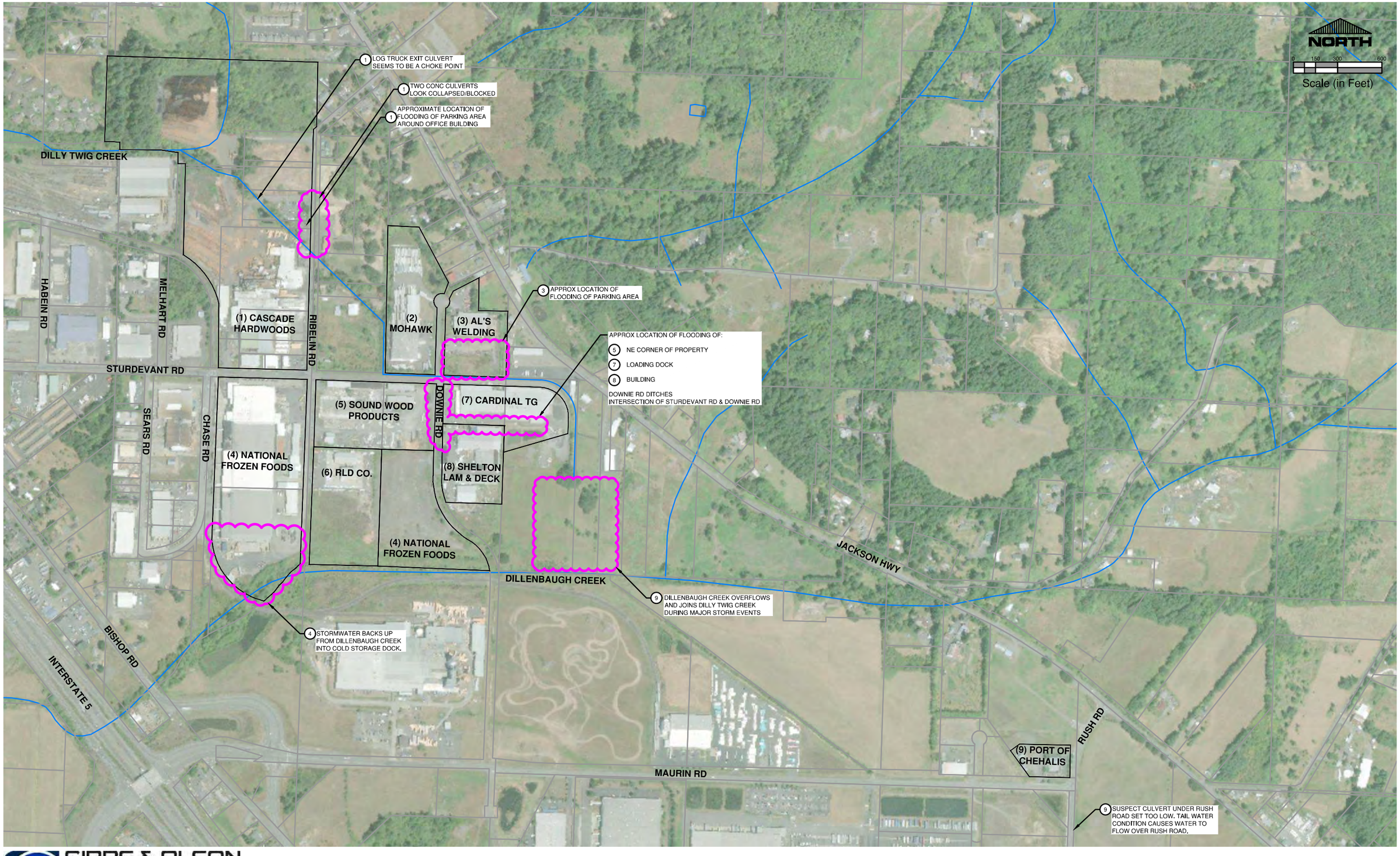
11. **Would you in general be supportive of the Flood District making drainage improvements on your property?**

    ☐ **Yes** ☐ **No**

12. **Please provide any other comments, questions or concerns you have.** _____

Business Survey Questions			1 Cascade Hardwoods	2 Mohawk Industries	3 Al's Welding*	4 National Frozen Foods	5 Sound Wood Products*	6 RLD Company	7 Cardinal TG	8 Shelton Lam & Deck	9 Port of Chehalis
1	Previous drainage work done by the Flood District, Lewis County or the City of Chehalis on the property or surrounding area		Dilly Twig Creek ditch cleaned out 3-4 years ago. This improved the flow through the site.	None		Lewis County cleans ditches.		None	"Token" grass cutting and ditch cleaning takes place randomly and only contributes to impeding the flow of storm water.	Occasional cleaning of the ditches.	Ditch cleaning and maintenance of ditches.
2, 3	Soil Erosion Problems from a steam or storm drainage system on the property or surrounding area		Junction of Dilly Twig Creek & Ribelin Rd runoff (severity: 1-2)	None	None	None	There is equipment on footings that appear to be eroding from water on property adjacent to Downie Road.	None	None	Not sure	None
4	Other storm drainage system problems on the property or surounding areas	Corroded Pipes									
		Sink Holes									
		Submerged/burried pipes/culverts	Yes						Yes		
		Pipe Blockage	Yes						Yes	Yes	Yes
		Stream or ditch blockage							Yes	Yes	
		Drains in need of repair									
		Pipes/culverts too small	Yes						Yes		Yes
		Other							Culverts do not have adequate capacity for rainfall events.		Suspect culvert under Rush Road is set too low.
		Additional Comments	The 2 concrete culverts under Ribelin Rd, to the property look collapsed/blocked. This seems to cause runoff to back up and flow over Ribelin Rd, through Cascade's parking lot. The log truck exit road culvert seems to be a choke point as well.		The property gets flooded from Dilly Twig Creek. The ditch on the south property line, adjacent to Sturdevant Road, fills with water and backs up into yard.		• Ditches on Sturdevant Road fill with water during storm events and push water into Sound Wood Products' yard. • Five years ago, the south side of the property flooded when Downie Road flooded. • There is a ponding area on the west side of Ribelin Road, two thirds of the way down Sound Wood Products property.		Property was constructed in 2005 and is permitted by the WA-DOE. Currently have permit exempt-site which requries that no direct discharge can be made from the site. All water is collected and released through a retention system. The system backs up and floods due to the downstream ditches being clogged and not properly sized. The site floods and the loading docks become unusable causing plant and production stoppage.	During heavy rain events, drain ditches will fill up. Water will cover the road and fill our outdoor area with up to 2 feet of standing water on occasion.	There is no comprehensive management plan in place for the older areas in the industrial park.
5	Observation of stream actively shifting or eroding during recent storm events		None	None	None	None		Yes, beaver dams are a problem	None	Yes. It seems like no two storm events are the same.	None. When we have major storm events, Dillenbaug Creek overflows parallel to Jackson Hwy and joins Dilly Twig Creek. Also, Tailwater from adjacent property east of Rush Rd flows over Rush Rd.
6	Observation of water in the building		Yes. December 2007, front office and shipping, approx 20" deep. 2015, shipping and receiving, approx 5-6" deep.	None	None	None	None	None	Yes	Yes. Approx 2 years ago (winter of 2016) there was 2-4" of water inside the building. This has happened a couple of previous years as well.	None
7	Observation of water in parking and/or storage facilities		Yes	Yes. Parking lot has flooded a few years ago. The loading docks get "backed up" with water occasoinally.	Yes. Two to three feet of water often fills the parking area but the building is 4 feet higher and has never been flooded.	Yes		None	None	Yes	Yes. Driveway at 209 Maruin Rd floods with major storm events
8	Observation of flooded streets in the area		Yes. 2006, 2007, 2009, 2012, 2015; Ribelin Road; depth varies from sheet flow to about 7". The 2012 event only occurred on Sturdevant Rd.	Yes. January 2015, Al's Welding and Sturdivant Rd and Ribelin Rd.		Yes. Dates unknown, storm water has backed up into the cold storage dock, flooded Sturdevant Rd and flooded, Cascade Hardwoods building across the street.	Yes. Flooding occurs when water flows over Downie Road onto the east side of the property. Water typically flows through the northeast corner of the property to Sturdevant Road during major storm events.	Yes. 2007 Sturdevant Rd and Ribelin Rd	Yes. The intersection of Sturdevant Rd and Downie Rd flood very easily, multiple times per year. Plugged ditches, incorrectly sized and elevated culverts, and neighbors having direct discharges.	Yes. Approx 2 years ago (winter of 2016), 1-2' deep. The water will get so deep as you cannot distinguish the road from the ditches.	Yes. 2009 & 2012, Sturdevant/Ribelin and Downie Rd intersection flooded.
9	Suggested improvements and repairs in the area around the business		Replace concrete culverts under Ribelin Rd. Increase size of culvert under the log truck exit road. Clean out ditches along Sturdevant Road	Not sure		-		More capacity and more retainage	A comprehensive storm water plan. All of the park tenants "neighbors," operate under the same set of rules. Everyone has a discharge permit they follow. Defined individual ownership and port owned distictions are clarified.	Clean the drain ditches of vegetation and debris annually. Address the sediment buildup of the surronding creeks.	Fix culvert under Rush Road.
10	Financial or work loss impacts		The 2007 flood caused $200,000 in lost inventory. Other storm events have been more of a minor disruption.	None		-		Blocked roads restrict employee access.	Loss of production with customers being impacted by our inability to operate.	Empoyees connot get to work. Trucks cannot deliver raw material or move finished products. Dollar loss can be significant if the disruption lasts more than a few days.	None
11	Would you be in general support of the Flood District making drainage improvements on your property?		Yes	-		Yes		Yes	Yes	Yes	Yes
12	Comments, questions, or concerns		The Port of Chehalis has not done any of the previously recommended work on the culverts on Cascade Hardwoods property. However, the Port of Chehalis has cleaned out the Dilly Tiw Creek that runs through the property and the ditches along Ribelin Road. This has helped with the flow of water.	Mohawk's stormwater pond discharges to the ditch along east property line. This ditch runs south to Sturdevant Road, then west along Sturdevant Road until it heads north and meets with Dilly Twig Creek.	Al's Welding would like to expand in the future, but the only place to expand is south of their buiding and north of Sturdevant Road. This is the area of their property that currently floods.	• Dillenbaugh Creek floods the cold storage parking lot on the south side of the building • Sturdevant Road has flooded over into Cascade Hardwoods on the north side of the road three times in the last thirty years (last occurrence was 6-7 years ago). • The northern part of National Frozen Foods property drains to the north, while the southern part of their property drains to Dillenbaugh Creek to the south.		Improve/increase drainage ditches, bioswales, and enlarge culverts. RLD developed their property in 2006, in which they installed a modern drainage system including swales around the north and east property line. The property does not flood during storm events as the bioswales have enough storage volume to contain the water. When flooding of surrounding businesses and roadways occurs, the RLD property remains above water.	This is a classic case of historic tentants not performing to the up-to-date standards and there is no juristictional authority taking ownership. We veiw this problem as being owned by the long term tennants of the park who wish to have their problems solved at no additional cost or oversite. I recently met with Rick Rouse. He and I had a very spirited conversation on this topic. I would be willing to participate however necessary.	There is thick vegetation in Dillenbaugh Creek and the water is very shallow. The creek lacks a defined channel and has no exposed soil or rock. -	During storm events, water overtops Rush Road, just south of Maurin Road, then overflows into the field to the east. The pond at the southeast corner of Rush Road and Maurin Road appears to be performing well and unaffected by these events. During storm events, Berwick Creek overtops Bishop Road where they meet.

*** These comments are from the phone interview notes.**
A completed questionnaire has not yet be received.



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Lewis County FCD No. 1
Regional Stormwater Management Plan
Questionnaire Results Map

Appendix C

Infrastructure Inventory and Maps

Dillenbaugh Drainage Basin Infrastructure Inventory

Culvert No.	Description	Structure Type	Size	Material	Shape	Recommendations
D-1	Arch culvert at STA 7+25	SD Culvert	10'-2" x 2'-8"	Corrugated Aluminum	Arched Pipe	Regular annual maintenance.
D-2	Overflow aluminum canal gate and culvert	Gate	24"	Aluminum	Gate & Circular Pipe	Regular annual maintenance.
D-3	Rush Road detention pond and outlet structure	SDMH	48" Diam.	Concrete	Circular	Regular annual maintenance.
D-4	Double culverts crossing Maurin Road to Bezy Ditch	SD Culvert	(2) 24"	Concrete	Circular	Regular annual maintenance.
D-5	Double culverts crossing Fred Meyer driveway	SD Culvert	(2) 36"	HDPE	Circular	Regular annual maintenance.
D-6	Double culverts crossing Maurin Road to Unzleman Ditch	SD Culvert	(2) 36"	Concrete	Circular	Regular annual maintenance.

Dilly Twig Drainage Basin Infrastructure Inventory

Culvert No.	Description	Structure Type	Size	Material	Shape	Slope (FT/FT)	Inventory Improvements	Channel Maintenance Recommendations
DT-1	Dilly Twig outfall culvert crossing Bishop Rd.	SD Culvert	6' H x 8' W	Concrete	Box	0.0125		Remove vegetation from streambed with regular annual maintenance
DT-2	Dilly Twig box culvert downstream from arch culvert.	SD Culvert	3' H x 5' W	Metal & Conc	Box Culvert	0.0067	Increase culvert size to 8x5	Remove vegetation and debris from streambed. Consider a culvert replacement and improving channel section based on recommendations.
DT-3	Dilly Twig arch culvert downstream of DT-4, on Cascade Hardwood property.	SD Culvert	3.35'/4.1' H x 9.3' W	CMP	Arched Pipe	-0.0820	Increase culvert size to 7x4	Remove vegetation and debris from streambed & consider removing some of the accumulate silt from culvert to improve slope and increase flow capacity. Consider a culvert replacement and improving channel section based on recommendations.
DT-4	Dilly Twig arch culvert crossing Ribelin Rd.	SD Culvert	3.15' H x 6.3' W	CMP	Eliptical Arched Pipe	-0.0038	Replace with 5x3 HDPE culvert	Remove vegetation and debris from streambed. Consider a culvert replacement and improving channel section based on recommendations.
DT-5	Dilly Twig arch culvert, E of Ribelin Rd on private road.	SD Culvert	6'	CMP	Arched Pipe	0.0065		No recommendations.
ST-6	Culvert outfalls into ditch that runs S along E side of Sturdevant cul-de-sac. Culvert inlet is outfall from JK-27cb.	SD Culvert	18"	ADS	Circular	-0.0002	Increase culvert size & slope	Regular annual maintenance.
ST-7	Culvert running E-W into ditch that runs S along the E side of Sturdevant cul-de-sac.	SD Culvert	18"	ADS	Circular	-0.0029	Increase culvert size & slope	Regular annual maintenance.
ST-9	Driveway culvert at SW side of Sturdevant, N of the cul-de-sac.	SD Culvert	24"	ADS	Circular	0.0200		Remove gravel blockage.
ST-11	Double dwy culvert crossing N-S into Storage Facility on N side of Sturdevant.	Double SD Culverts	(1) 12" (1) 18"	ADS	Circular	S1= 0.0014 S2= 0.0023	Increase culvert size & slope	Maintain grassy ditches with regular annual mainenance.
ST-12	Culvert crossing Sturdevant midway between Downie Rd intersection and bend in Sturdevant.	SDMH SD Culvert	24"	Concrete	Circular	-0.0014		Remove grass and sediment with regular annual maintenance.
ST-13	Second culvert crossing Sturdevant right next to ST-12 to the W. Outlet found in ditch, inlet not found.	SD Culvert	24"	Concrete	Circular	?	Increase culvert size & slope	Remove grass and sediment with regular annual maintenance.
ST-14	Double culverts crossing Sturdevant just E of Downie Rd.	Double SD Culverts	(2) 24"	Concrete	Circular	S1= -0.0008 S2= -0.0035	Increase culvert slope	Remove grass and vegetation with regular annual maintenance.
ST-15	Double culverts crossing Sturdevant about 350' W of Downie Rd.	Double SD Culverts	(2) 24"	CMP	Circular	S1= 0.0008 S2= -0.0011	Increase culvert slope	Clean out debris and sediment.
ST-17	Culvert crosses Sturdevant Road on the W side of RR tracks and outfalling into ditch. Inlet is SDCB on S side of Sturdevant, outlet is 15" CMP pipe on N side of Sturdevant.	SDCB SD Culvert	18" upstream 15" downstream	Conc/ CMP	Circular	0.0107		Remove gravel and vegetation with regular annual maintenance.
JK-18	Culvert flowing NE-SW, crossing Jackson Hwy, SE of JK-19.	SD Culvert	18"	Concrete	Circular	10.0000		Remove vegetation and blackberries with regular annual maintenance.

Dilly Twig Drainage Basin Infrastructure Inventory

Culvert No.	Description	Structure Type	Size	Material	Shape	Slope (FT/FT)	Inventory Improvements	Channel Maintenance Recommendations
JK-19	Culvert located on private property, W of JK-18 and E of transmission lines.	SD Culvert	24"	Concrete	Circular	?		Remove vegetation and concrete debris with regular annual maintenance. Consider replacing with an HDPE culvert.
JK-20	Culvert crossing marble shop parking lot in E-W direction. Culvert outfalls to approx. 12' wide ditch with 1:1 to 1:2 slopes, that flows into Sturdevant ditch.	SD Culvert	30"	HDPE	Circular	?	Increase culvert slope	Remove grass and sediment with regular annual maintenance.
JK-22	Culvert crossing Jackson Hwy, in front of marble shop, W of JK-21.	SD Culvert	18"	Conc/ CMP	Circular	0.0198		Maintain ditches along Jackson Hwy with regular annual mainenance.
JK-23	Dwy culvert approx. 100' NW of JK-21 on Jackson Hwy.	SD Culvert	18"	Conc/ HDPE	Circular	0.0143	Increase culvert slope	Maintain ditches along Jackson Hwy with regular annual mainenance.
JK-24	Dwy culvert approx. 80' NW of JK-23 on Jackson Hwy.	SD Culvert	18" upstream 2' H x 3' W down	Concrete	Varies	-0.0141	Increase culvert slope	Maintain ditches along Jackson Hwy with regular annual mainenance.
JK-26	Culvert flows W into JK-27cb, located in front of Storage facility @ Sturdevant.	SD Culvert	18"	HDPE	Circular	0.0013	Increase culvert size & slope	Maintain ditches along Jackson Hwy with regular annual mainenance.
JK-27cb	SDCB located at the NE corner of Self Storage building. Connects downstream to ST-7 culvert outlet.	SDCB	N/A	N/A	N/A	N/A		Typical annual maintenance.
JK-28cb	SDCB located N of the NW corner of Self Storage building. Pipe flows into fenced interior of Storage facility site (towards Sturdevant), then into a detention pond P-54.	SDCB	N/A	N/A	N/A	N/A		Typical annual maintenance.
JK-29cb	SDCB located on the S side of Jackson hwy, in front of the NE corner of Self-Storage fence.	SDCB	N/A	N/A	N/A	N/A		Clean out sediment from catch basin. Remove vegetation and debris from Jackson Hwy ditch with regular annual maintenance.
JK-30	Culvert crossing Jackson Hwy in front of house with large canopy structure, N of Storage facility. Culvert outfalls into JK-31cb SDCB.	SD Culvert	18"	Concrete	Circular	0.0086		Remove vegetation and trash from Jackson Hwy ditch with regular annual maintenance.
JK-31cb	2 SDCBs located on SW side of Jackson Hwy, in front of house with large trailer canopy structure.	SDCB	N/A	N/A	N/A	N/A		Investigate source of 12" culvert from SE.
JK-32	Long culvert NE-SW, crossing private property. Inlet is JK-31cb, outfalls into ditch approx. 205' SW of inlet.	SD Culvert	18"	Concrete	Circular	0.0034	Increase culvert slope	No recommendations.
DW-33	Culvert crossing Downie just N of Sturdevant intersection.	SD Culvert	4.75' H x 6.5' W	CMP	Arched Pipe	-0.0050	Increase culvert size & slope	Remove vegetation and sedimentation to limit the affects of the adverse grade.
DW-36	Dwy culvert W side of Downie cul-de-sac, S of detention pond.	SD Culvert	24"	HDPE	Circular	Flat	Increase culvert slope	Clean out gravel from end of pipe. Remove vegetation and debris from Downie Rd ditch with regular annual maintenance.

Dilly Twig Drainage Basin Infrastructure Inventory

Culvert No.	Description	Structure Type	Size	Material	Shape	Slope (FT/FT)	Inventory Improvements	Channel Maintenance Recommendations
DW-37	Dwy culvert W side of Downie, just N of Sturdevant.	SD Culvert	24"	CMP	Circular	Flat	Increase culvert slope	Clean out gravel from end of pipe. Remove vegetation and debris from Downie Rd ditch with regular annual maintenance.
RB-38	Culvert crossing Ribelin Rd, just S of intersection with Sturdevant. Inlet: SDCB on E side of Ribelin, Outlet: culvert on W side of Ribelin.	SD Culvert	18"	CMP	Circular	0.0038	Increase culvert size & slope	Typical annual maintenance.
RB-43	Dwy culvert E side of Ribelin, just N of Ribelin Box culvert. Address: 149 Ribelin Road.	SD Culvert	24"	CMP	Circular	?	Increase culvert slope	Regular annual mainenance of Ribelin Rd ditches.
RB-44	Access road dwy culvert on E side of Ribelin, just S of double culverts RB-45.	SD Culvert	24"	CMP	Circular	?	Increase culvert slope	Regular annual mainenance of Ribelin Rd ditches.
RB-45	Double Culverts crossing Ribelin Rd, N of Ribelin Box culvert just S of bend in Ribelin Rd.	Double SD Culverts	(2) 24"	Concrete	Circular	S1= 0.0033 S2= 0.0095	Increase size & Slope. Replace with 5x3 arch culvert.	Clean out debris from end of pipe. Remove vegetation and sedimentation with regular annual maintenance.
RB-46	Culvert at bend in Ribelin Rd, N of Cascade Hardwoods fenced parking lot.	SD Culvert	24"	CMP/ Concrete	Circular	0.0000		Clean out debris from end of pipe. Remove vegetation and sedimentation with regular annual maintenance.
RB-47	Culvert inlet just W of Ribelin double culverts (N of Ribelin box culvert). No outlet found - located on Cascade Hardwoods property.	SD Culvert	30"	CMP	Circular	?		Typical annual maintenance.
RB-48	SDCB, W side of Ribelin Rd, in front of Cascade Hardwood kilns.	SDCB	N/A	N/A	N/A	N/A		Typical annual maintenance.
RR-49	Culvert crossing RR tracks on N side of Sturdevant and E of intersection with Chase Rd.	SD Culvert	24"	CMP	Circular	0.0095	Increase culvert slope	Remove vegetation with regular annual maintenance.
RR-50	Culvert crossing N-S into railyard, just N of the end of Melhart Rd.	SD Culvert	24"	CMP	Circular	0.0100		Remove vegetation and sedimentation with regular annual maintenance.
RR-51	Culvert crossing N-S into railyard, located approx. 300' E of Habien Road.	SD Culvert	24"	CMP	Circular	0.0029		No recommendations.
RR-52	Culvert crossing N-S into railyard, just on the E side Habien Road.	SD Culvert	36"	CMP	Circular	0.0167		Clean out debris from end of pipe. Regular annual maintenance.
RR-53	Two culverts located at the intersection of Bishop and Interstate; crossing the RR tracks in the N-S direction on the E side of Bishop. Inlets: (1)SDCB & (1) Culvert inlet located S of RR tracks, Outlet: 2 concrete culverts located N of RR tracks.	SDCB Two SD Culverts	(2) 18"	Concrete	Circular	S1= 0.0341 S2= -0.0003	Add concrete wing wall for improved inflow conveyance	Clean out sediment & trash from catch basin. Remove vegetation and debris from ditch with regular annual maintenance.
P-54	Detention pond located on the N side of Sturdevant, at the SW corner of Armour Self-Storage site, on private property. Outlet culvert flows E to W into Sturdevant ditch.	Detention Pond	Approximately 10' x 150'	N/A	Rect.	N/A		Typical annual maintenance.
P-55	Detention Pond just N of Downie Rd cul-de-sac.	Detention Pond	Approximately 75' x 100'	N/A	Ellipse	N/A		Typical annual maintenance.

Berwick Drainage Basin Infrastructure Inventory

Culvert No.	Description	Structure Type	Recommendations
B-1	Berwick Creek culvert crossing under Rush Rd	SD Culvert	Regular annual maintenance.
B-2	Berwick Creek culvert crossing under Bishop Rd	SD Culvert	Regular annual maintenance.

NORTH

0 125 250 500

Scale (in Feet)

Structure Legend	
DT-#	Dilly Twig Structure
ST-#	Sturdevant Road Structure
JK-#	Jackson Highway Structure
RB-#	Ribelin Road Structure
RR-#	Railroad Structure
P-#	Detention Pond
DW-#	Downie Road Structure
D-#	Dillenbaugh Structure
B-#	Berwick Structure

DT-1
RR-53
RR-52
RR-51
RR-50
RR-49
ST-17
RB-46
RB-47
RB-45
RB-44
RB-43
RB-48
RB-38
DT-2
DT-3
DT-4
DT-5
P-55
DW-36
DW-37
DW-33
P-54
ST-15
ST-14
ST-13
ST-12
ST-11
ST-9
ST-8
ST-7
ST-6
JK-30
JK-32
JK-31cb
JK-29cb
JK-28cb
JK-26
JK-24
JK-23
JK-22
JK-20
JK-18
JK-19

DILLY TWIG CREEK

DILLENBAUGH CREEK

UNZELNAN DITCH

BEZY DITCH

HABEIN RD

MELHART RD

SEARS RD

CHASE RD

RIBELIN RD

DOWNIE RD

STURDEVANT RD

INTERSTATE 5

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www.gibbs-olson.com

Flood Control Dist No. 1 Boundary

Creek/Stream/Ditch

Lewis County FCD No. 1
Regional Stormwater Management Plan
Dilly Twig Existing Inventory
Figure C1

Structure Legend	
DT-#	Dilly Twig Structure
ST-#	Sturdevant Road Structure
JK-#	Jackson Highway Structure
RB-#	Ribelin Road Structure
RR-#	Railroad Structure
P-#	Detention Pond
DW-#	Downie Road Structure
D-#	Dillenbaugh Structure
B-#	Berwick Structure

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Flood Control Dist No. 1 Boundary
Creek/Stream/Ditch

Lewis County FCD No. 1
Regional Stormwater Management Plan
Dillenbaugh & Berwick Existing Inventory
Figure C2

LEWIS COUNTY
Washington's First County
est. 1845

Board of County Commissioners

Lewis County Courthouse
351 NW North Street
Chehalis, WA 98532-1900

October 16, 2018

Lewis County Flood District #1
ATTN: Commissioner Pat Sauter
Commissioner Paul Donahue
Commissioner Paul Ericson
321 Maurin Road
Chehalis, WA 98532

REF: Proposed EDA Application for Design & Engineering Planning Funds for Chehalis Industrial Park Drainage Repairs and Improvements.

Dear Commissioners:

The Lewis County Board of County Commissioners is committed to maintaining and improving the stormwater drainage infrastructure as well as preventing flooding within the Chehalis Industrial Park. The economic health of the industries located there is a vital part of the economic well-being in Lewis County.

The Regional Stormwater Management Plan formulated for the District by Gibbs & Olson Inc. has been reviewed by the Lewis County Public Works Department. The Lewis County Board of County Commissioners fully supports the funding application for the design and engineering of the five capital projects within that plan and the continued maintenance of the stormwater drainage infrastructure so outlined.

Once the design and engineering of the improvements are completed, the County will fully support and assist the District with obtaining funding for the construction of the improvements, provided the District can contribute any required funding matches. Once funding is obtained, the County will permit and support the needed work. Unfortunately, future budget projections for Lewis County don't allow the County to commit to a financial contribution to the construction costs at this time.

O 360.740.1120
F 360.740.1475
TDD 360.740.1480

Edna J. Fund — First District
Bobby Jackson — Second District
Gary Stamper — Third District
Rieva Lester — Clerk of the Board

bocc@lewiscountywa.gov

The Lewis County Board of County Commissioners is grateful for the District's work in the industrial park to maintain adequate stormwater drainage facilities and keep the roads, parking lots, and businesses open and will continue to support that work in any way feasible.

Sincerely,

BOARD OF COUNTY COMMISSIONERS
LEWIS COUNTY, WASHINGTON

Edna J. Fund, Chair | Robert C. Jackson, Vice Chair | Gary Stamper, Commissioner

BEFORE THE BOARD OF COUNTY COMMISSIONERS
LEWIS COUNTY, WASHINGTON

IN THE MATTER OF:	RESOLUTION NO. 20-163
APPROVE A .09 ("DISTRESSED COUNTIES") GRANT AGREEMENT WITH LEWIS COUNTY FLOOD CONTROL DISTRICT #1	

WHEREAS, by Resolution the Lewis County Board of County Commissioners approve funding in the amount of $156,000.00 for the Flood Reduction Projects in the LCFCD #1 a project to serve future demand, a project that meets the definition of a "public facility" under RCW 82.14.370; and

WHEREAS, the Comprehensive Economic Development Strategy (CEDS) is a list of projects maintained by the Lewis County Economic Development Council (EDC) (RCW 82.14.370); and

WHEREAS, Lewis County Flood Control District #1 application for funding of the Flood Reduction Projects in the LCFCD #1 project has been recommended for approval and listing in the CEDS by the Distressed Counties/Rural Economic Development Public Facilities Advisory Committee, the Committee created to recommend projects for listing in the CEDS; and

WHEREAS, the Lewis County Flood Control District #1 application is also supported by the attached Grant Agreement prepared by the EDC pursuant to the CEDS, which Agreement is incorporated herein by reference; and

WHEREAS, it is in the best interest of the citizens of Lewis County that the funds requested by CEDS be authorized in order to allow completion of the "Flood Reduction Projects in the LCFCD #1" a project that supports economic development in our community.

NOW THEREFORE BE IT RESOLVED that the Lewis County Board of County Commissioners (BOCC) approves the Flood Reduction Projects in the LCFCD #1 project as a public facility for purposes of RCW 82.14.370 and amends the Community Economic Development Strategies (CEDS) list to include that project in the county's overall economic development plan; and

NOW THEREFORE BE IT FURTHER RESOLVED that the BOCC authorizes Lewis County to enter into the attached Grant Agreement with the Lewis County Flood Control District #1, for the Flood Reduction Projects in the LCFCD #1 project, in the amount of $156,000.00 using monies from the "Distressed Counties Fund," all in accordance with RCW 82.14.370 and applicable law.

DONE IN OPEN SESSION this 18th day of May, 2020.

APPROVED AS TO FORM:
Jonathan Meyer, Prosecuting Attorney

Cullen Gatten
By: Cullen Gatten,
Deputy Prosecuting Attorney

BOARD OF COUNTY COMMISSIONERS
LEWIS COUNTY, WASHINGTON

Gary Stamper
Gary Stamper, Chair

ATTEST:

SEAL OF LEWIS COUNTY, WASHINGTON BOARD OF COUNTY COMMISSIONERS SINCE 1845 WASHINGTON'S 1ST COUNTY

Edna J. Fund
Edna J. Fund, Vice Chair

Rieva Lester
Rieva Lester,
Clerk of the Lewis County Board of County Commissioners

Robert C. Jackson
Robert C. Jackson, Commissioner

GRANT AGREEMENT BETWEEN LEWIS COUNTY AND THE LEWIS COUNTY FLOOD CONTROL DISTRICT #1

This Grant Agreement is made and entered into by Lewis County and the as to the conditions for acceptance of monies by the Lewis County Flood Control District #1 from the "Distressed Counties Fund" pursuant to RCW 82.14.370.

I. PURPOSE

RCW 82.14.370 authorizes the availability of a sales and use tax to be used to finance public facilities serving economic development purposes in rural counties. The name of this project shall be "Flood Reduction Projects in the LCFCD #1" and shall be funded in the amount of a grant for $156,000.00.

II. ELIGIBILITY

The public facility must be listed as an item in the officially adopted Lewis County Comprehensive Economic Development Strategy and must meet other requirements as set forth by County resolution, adopted policy, and growth management planning. Monies collected shall only be used to finance public facilities serving economic development purposes in rural counties.

III. APPLICANT'S RESPONSIBILITIES

Upon approval of application by the Lewis County Commissioners, applicant agrees that:

1. The project must be in progress within 6 months of the date of this agreement or grant funds shall revert back to the Lewis County "Distressed Counties Fund." For purposes of being "in progress," the project must have proceeded beyond the initial planning stage, and into the implementation stages of the project. The Lewis County Flood Control District #1 shall promptly notify Lewis County in writing of any actual or anticipated event that is delaying or could delay achievement of any milestone or performance of any critical path activity of the project. A copy of this report shall also be placed in the file of the Economic Development Public Facilities Advisory Committee.

2. The Applicant must provide semi-annual progress report to the Lewis County Board of County Commissioners in order to ensure satisfactory completion of the project and proper expenditure of grant monies. The scope of project work is contained in the .09 application dated February 27, 2020, and is hereby incorporated by reference into this agreement. Failure to provide progress reports or sufficient information may result in reversion to the "Distressed Counties Fund" of all or part of the funding balance. At such times as the Lewis County Board of Commissioners deems necessary for reasonable cause, the applicant shall permit the County to inspect and audit all pertinent books and records of the applicant or

other persons or entities that have performed work in connection with or related to this funding. The audit may take place up to three years after completion of the project. The books and records are to be made available at reasonable times at such reasonable location as County selects. At Lewis County's request, the applicant shall supply County with, or shall permit County to make a copy of, any books and records and any portion thereof.

3. Applicant has requested these County funds in order to reduce road and intersection flooding and closures. Failure to comply with the intent of this section may result in reversion to the "Distressed Counties Fund" of all or part of the funding balance. Funding to complete the full project as presented in the application must be confirmed and available prior to release of these grant funds. Failure to comply with this section may result in reversion to the "Distressed Counties Fund" of all or part of the funding balance.

4. Applicant shall provide documented evidence of expenditures of all funds for this project at the semi-annual updates denoted in item #2 (or within 60 [sixty] days of project completion) to both the Rural Economic Development Public Facilities Advisory Committee and the County. Funds spent under this program must be for the purpose of financing public facilities or supporting related economic development projects, as defined under RCW 82.14.370 and AGO 2002, No.1. Failure to comply with this section may result in reversion to the "Distressed Counties Fund" of all or part of the funding balance.

5. Billings and invoices together with audit-sufficient supporting documentation shall be remitted to the County for payment not more than one time each month. Within thirty (30) days of receiving a reimbursement claims voucher that meets the requirements of this Agreement and applicable law, the Clerk of the Board, on behalf of Lewis County, shall remit to the organization a warrant for the approved reimbursement amount. The applicant will be responsible to the County for the timely sharing and/or exchange of any or all documentation related to the project as well as accounting and record retention responsibilities for the project.

6. The applicant shall comply with and give notices required by all federal, state, and local laws, ordinances, rules, regulations, and lawful order of public authorities applicable to performance of the project. Lewis County reserves the right to terminate this Agreement and demand reversion of "Distressed Counties Fund" monies at any time during the undertaking of said project if it is discovered that said project is in violation of any local, state, or federal laws.

IV. ENTIRE AGREEMENT

This Agreement represents the entire Agreement between the parties and supersedes any prior oral statements, discussions or understandings.

V. FUTURE SUPCITY

Lewis County makes no commitment to future support and assumes no obligation for future support of the activity contracted for herein, except as expressly set forth in this Contract. The maximum amount of funding available is as stated in the Lewis County Economic Development Public Facilities Project Proposal attached herein. This item is hereby incorporated into this Agreement by reference.

VI. GOVERNING LAW

This Agreement is governed by, and shall be construed in accordance with, the laws of the State of Washington. Except as otherwise required by applicable law, any legal action under this Agreement shall be brought in the Superior Court of the State of Washington in and for Lewis County.

VII. WAIVER OF BREACH

No waiver of any breach of any covenant or agreement contained herein shall operate as a waiver of any subsequent breach of the same covenant or agreement or as a waiver of any breach of any other covenant or agreement, and in case of a breach by either party of any covenant, agreement or undertaking, the non-defaulting party may nevertheless accept from the other any payment or payments or performance hereunder without in any way waiving its right to exercise any of its rights and remedies provided for herein or otherwise with respect to any such default or defaults that were in existence at the time such payment or payments or performance were accepted by it.

VIII. INDEMNIFICATION

The Lewis County Flood Control District #1 shall protect, defend, indemnify and hold harmless Lewis County, the Board of County Commissioners, its officers, agents, and employees, or any of them from and against any and all claims, actions, suits, liability, loss, costs, expenses, and damages of any nature whatsoever, which are caused by or result from the performance of this Agreement by either party. This indemnity and hold harmless agreement shall not apply to acts or omissions of the County's officers, agents, and employees that are not in good faith and are outside the scope of their official duties.

IX. DISPUTE RESOLUTION

(a) If a dispute arises between the parties with regards to the performance of any provision of this agreement or the interpretation thereof, the parties agree to follow the procedure set forth below. It is the goal of the parties to resolve their differences as early and amicably as possible.

(b) The parties shall first meet to attempt to see if the matter can be informally resolved. This informal resolution attempt may involve more than one meeting but is not required to involve more than one meeting.

(c) If the parties are unable to resolve their differences, the parties will endeavor to settle the dispute by mediation under such mediation rules as shall be mutually agreeable to the parties. Such mediation shall be non-binding but shall be a condition precedent to having said dispute decided in court by a judge or jury. Mediation shall commence, unless otherwise agreed, within thirty (30) days of a party's written request for mediation of a dispute. Any resolution at this stage shall be reduced to writing and, if it involves an interpretation of the agreement, it shall be considered an addendum to this agreement without the need for formal adoption by the governing bodies of the jurisdictions that are parties to this agreement. Any costs related to mediation shall be shared equally by the parties.

Dated this 18th day of May 2020.

APPROVED AS TO FORM
Jonathan Meyer, Prosecuting Attorney

By Deputy Prosecuting Attorney

BOARD OF COUNTY COMMISSIONERS
LEWIS COUNTY, WASHINGTON

Gary Stamper, Chair

Edna J. Fund, Vice Chair

Robert C. Jackson, Commissioner

ATTEST

Rieva Lester, Clerk of the Board

SEAL OF LEWIS COUNTY, WASHINGTON BOARD OF COUNTY COMMISSIONERS SINCE 1845 WASHINGTON'S 1ST COUNTY

Applicant Name:

By:

Title: Flood Commissioner

For: LCFCD #1

APPLICATION CRITERIA

Purpose

Counties must consult cities, towns, port districts, and associate development organizations in order to disburse funds. As per RCW 82.14.370 the funds may only be used to:

- finance "public facilities" that facilitate the creation or the retention of business and jobs
- finance personnel in the office of a county, port district, or associate development organization that facilitate the creation or the retention of business and jobs

Public Facilities Definition

As per RCW 82.14.370 the public facility must be listed under the county economic development plan or the capital facilities plan and examples are included below:

- bridges, roads, railroads, and transportation infrastructure
- domestic & industrial water facilities, sanitary sewer facilities, and storm sewer facilities
- research, testing, training, and incubation facilities in innovation partnership zones (RCW 43.330.270)
- electrical facilities, natural gas facilities, telecommunications infrastructure, earth stabilization
- commercial infrastructure, port facilities, buildings, structures

Attorney General's Office

As per the 2001 opinion of the Washington State Attorney General's Office the following are uses as defined in the statute:

- capital facilities costs, including acquisition, construction, rehabilitation, alteration, expansion, or improvements of public facilities;
- costs of development and improvement for the public facilities;
- project-specific environmental costs;
- land use and permitting costs;
- costs of site planning and analysis;
- project design, including feasibility and marketing studies and plans, and debt and revenue impact analysis

Contact Information

Applicant:	Lewis County Flood Control District #1 (LCFCD#1)	Project Title: Flood Reduction Projects in the LCFCD#1	
Contact:	Lindsey Senter	Date:	February 27, 2020
Phone #:	360-748-9365	Email:	lsenter@portofchehalis.com
Address:	321 Maurin Road	City, State, Zip:	Chehalis, WA 98532
Loan Request Amount		Grant Request Amount	$156,000

By signing you confirm you have authority to submit this application for .09 funds on behalf of your organization. I affirm that the information is correct to my knowledge.

Signature:	Randall Mueller	Signatory's Position:	Chief Executive Officer

QUALIFICATIONS

Does Your Project Qualify?

Per RCW 82.14.370 the .09 funds may only be used to:

- finance public facilities that facilitate the creation or the retention of business and jobs
- finance personnel in the office of a county, port district, or associate development organizations that facilitate the creation or the retention of business and jobs

Which Public Facility Is Your Project?

The public facility must be specifically listed under RCW 82.14.370 and listed under the county economic development plan (or capital facilities plan). Please select the criteria which correspond to your project.

☐ Bridges	☐ Domestic water facilities	☐ Research facilities	☐ Electrical facilities	☐ Earth stabilization
☐ Roads	☐ Industrial water facilities	☐ Testing facilities	☐ Natural gas facilities	☐ Buildings
☐ Railroads	☐ Sanitary sewer facilities	☐ Training facilities	☐ Telecommunications infrastructure	☐ Structures
☐ Transportation infrastructure	☐ Storm sewer facilities	☐ Incubation facilities	☐ Commercial infrastructure	☐ Port facilities

How Can The Money Be Used For Your Public Facility Project?

The Washington State Attorney General 2001 No.5 opinion states that the funds for this statute may only be used in the following ways. Please select the criteria which correspond to your project.

☐ project-specific environmental costs	☐ costs of site planning & analysis	☐ land use & permitting costs
☐ capital facilities costs, including acquisition, construction, rehabilitation, alteration, expansion, or improvements of public facilities	☐ project design, including feasibility and marketing studies & plans, and debt & revenue impact analysis	☐ costs of development & improvement for the public facilities

YOUR PROJECT

What is your "Public Facilities" project?

Please provide a brief description of your project in the space below.

This project consists of multiple smaller flood reduction projects similar to those outlined in the attached report. A long standing issue is the annual closure of roads and businesses and inundation of parking lots due to failures of drainage structures. Every winter intersections and roads are closed for days due to flood water inundation. The Lewis County Flood Control District #1 (LCFCD#1) has several studies performed by civil engineers analyzing where the flood water comes from, where its supposed to go and why it isn't going there due to poorly functioning drainage structures.

Five key projects have been identified to reduce the road and intersection flooding and closures. The design, engineering and construction costs for these projects is estimated at $1.56M. The Flood Authority is being approached for 90% of the funds, and this grant request is for a 10% local match.

Besides keeping businesses open and roads open for commerce, this project will lessen the need for the County and City to reprair flood damaged road shoulders and surfaces annually. This will keep roads open for emergency services to respond to life threatening incidents. Finally, fish (Dace, Stickleback, Sculpin, Cutthroat, and Coho) exist in Dillytwig Creek and this project will improve fish health and habitat.

How Will This Project Create Or Retain Business Or Jobs?

"Jobs" are defined by the .og advisory committee as employment that produces products and services and exports products and services outside of Lewis County that results in new money coming into the community. This is traditionally manufacturing, logistics, and other production facilities. This typically excludes retail and service sectors and other tertiary jobs producers.

When businesses can't operate or their employees can't get to work production is lost, wages are lost, and business revenues are reduced. Hundreds of local workers can't work during each day of these localized flood events. Affected industrial businesses report that they lose hundreds of thousands of dollars per day when their plants close. Not only do the workers and businesses lose money, but the effects are then passed on to local business suppliers, landlords of workforce housing, and local retailers and service businesses of all kinds.

Closures of roads and flooded parking lots also discourage new businesses from locating and/or building in the industrial park, putting Lewis County at a disadvantage when working to attract new jobs. This project will reduce or eliminate that problem. Construction of the projects will create approximately 20 direct or indirect construction jobs and put the $1.56M into the local economy.

Category	Created (1 yr.) - Name/Number	Retained (1 yr.) - Name/Number
Businesses	0	Approximately 87 in the affected industrial area
Direct full time jobs, Direct part time jobs, indirect jobs	0	Approximately 2,500 in the affected industrial area

What Will Be The Cost Of The Project?

The County Commission may disburse funds as both grants and loans. No funding will exceed $600,000 unless it is deemed an extraordinary circumstance by the County Commission. The County negotiates the terms of each award. This may include interest rates or disbursement schedule.

Total Project Cost: $1,560,000		Requested Amount:	
☐ Loan	Amount:	☐ Grant (Limit $200,000)	Amount: $156,000

What Is The Timeline To Completion?

Articulate the projected timeline of for this project as well as its completion date.

Description:

Completion of design, engineering, and construction slated for August 2021.

COMMITTEE EVALUATION

Committee Use Only Do Not Fill Out

Economic Benefits

The following are metrics that provide an aid in determining which projects may receive funding:

Questions	Metric
Does the proposed project create jobs? How many?	
Does the proposed project retain jobs? How many?	
What is the cost per job created/retained? (divide dollars requested by jobs created and/or retained)	
What is the total number of full time jobs created/retained?	
What is the total number of part time jobs created/retained?	
How many businesses will directly benefit from this project?	

Readiness to Proceed

The following are metrics that we have identified as an aid in determining projects may receive funding:

Questions	Metric
Is this project a "Public Facility" that has an economic development purpose?	Y/N
Have entitlements been obtained and required permits issued/in process?	None/Some/All
Does this project have a clear timeline and scope of work?	Y/N
If this request is approved, what is the amount of match funding that is secured?	
What is the probability of completion from 1-10 (10 indicates a high probability)?	

Date of Application	Project Name	Applicant	Total Project Amount	Brief Description of Project	Status
.09 CEDS List					
Feb. 27, 2020	Flood Reduction Projects in the LCFCD#1	Lewis Couty Flood Control District #1	$156,000.00	Reduce road and intersection flooding and closures.	
Feb. 28, 2020	Chehalis Basin Flood Damage Reduction Project	Chehalis River Basin Flood Control District	$750,000.00	Advancing engineering for continued development of the proposed flood retention facility.	
Feb. 28, 2020	NW Sports Hub Expansion	Lewis County Public Facilities Dept.	$300,000.00	Expand the service capacity of the NW Sports Hub	
Feb. 26, 2020	EDC Operations and Implementation of Strategic Initiatives	Lewis EDC	$165,000.00 annually for two years for a total of $330,000.00 over two years.	To provide for the operations of the Economic Development office and Implement the Strategic Initiatives	
9/6/2019	North Lewis County Industrial Access	Lewis County Public Works		Fund the project design of North Lewis County Industrial access	
1/14/2019	Building a biorefinery based indistrial park in Lewis County	University of Washington	$120,000.00	Cover cost of development and engineering analysis study to address economic and environmental benefits	
5/21/2019	Mickelsen Parkway Constructin	Lewis County Public Works	$1,125,380.00	Construction of Mickelsen Parkway	
2/11/2019	Rail transload and grain facility	Port of Chehalis	$ 800,000.00	Installation of a rail spur	
2/7/2019	Water Main Extension SR505	City of Winlock	$ 300,000.00	Finance public facilities serving economic development purposes in rural counties	
2/19/2019	Comprehensive Plan Update	City of Vader	$ 25,000.00	Complete state mandated update of City of Vader Comprehensive Plan	
8/21/2018	McBride Court Phase II	Port of Chehalis	$ 400,000.00	Build a 20,000 sf facility	
3/9/2018	Packwood Sewer	Lewis EDC	$ 30,000.00	Rendering of Wastewater Treatment Plant	
3/9/2018	EDC Operations	Lewis EDC	$ 330,000.00	Implementation of Strategic Plan and initiatives	
8/1/2017	Co-Working facility	Port of Chehalis	$ 125,000.00	Acquire and remodel facility for co-working	
8/24/2017	Airport Project Planning	City of Chehalis/Centralia Chehalis Airport	$ 38,000.00	Collection & analysis of market data for land use planning	
5/24/2017	Lewis County Water Dist. 1 Feasibility Study and Engineering Report	Lewis Co. Water Dist. 1	$ 40,000.00	Feasibility Study and Engineering Report to repair or replace Hampton Reservoir	
5/18/2017	Business Dev. At the Industrial Park at TransAlta	Lewis EDC	$ 380,000.00	Economic development planning and business recruitment	
2/11/2016	Curtis Rail Line Natural Disaster Repair	Port of Chehalis	$ 100,000.00	Repair trestle and tracks	
2/22/2016	Habein Road Industrial Complex	Port of Chehalis	$ 750,000.00	Env. sampling, site design, permitting	
10/30/2015	Chehalis Industrial Park Site Prep.	Port of Chehalis	$ 275,000.00	clearing, fill, excavation, permitting	
8/26/2015	Discover! Childrens Museum	City of Chehalis	$ 4,200,000.00	Construction of a childrens museum	
5/28/2015	Chehalis Industrial Park Rail Infrastructure Expansion	Port of Chehalis	$ 885,271.00	Build 700 ft. of rail	
5/27/2015	Discover! Childrens Museum	City of Chehalis	$ 4,200,000.00	Construction of a childrens museum	
5/15/2015	Historic Fox Theatre South Wall and Roof Restoration Project	City of Centralia	$ 365,855.00	Preserve structual integrity of building	
2/20/2015	Steam Engine #15 - 15 yr. rebuild	City of Chehalis	$ 135,276.00	Overhaul of Locomotive #15	
8/29/2014	Steam Engine #15 - 15 yr. rebuild	City of Chehalis	$ 158,340.00	Overhaul of Locomotive #15	
7/2/2014	North County Industrial Access	Lewis Co. Public Works	$ 500,000.00	Transportation access to industrial area	Funded

Rural Economic Development Public Facilities Advisory Committee
Minutes
March 13, 2020, @ 8:30am
Lewis EDC Conference Room

8:30 A.M.: call to order by Dan Rich

Committee Members Present: Dan Rich, EDC Chair; Dan Mortenson, City of Morton Mayor; Sue Luond, City of Centralia Mayor; Mark Anders, Port of Chehalis Commissioner; Dan Keahey, Port of Centralia

Others Present: Randy Mueller, Todd Chapput, Tom Bradley, Paul Ericson, Lexi

Staff Present: Matt Matayoshi, Lewis EDC; Marrianne Schumacher, Lewis EDC

New Business:

8:30 A.M.: Dan Mortensen made a motion to approve minutes from the September 13, 2019 meeting. Edna Fund provided a second to the motion. The motion passed unanimous.

8:35 A.M.: Matt Matayoshi provided an update of the policies for .09. Matt will send the updated revised policy to committee members.

8:40 A.M.: Lexi (public works) presented the Chehalis River Basin Flood Control Zone District application for the grant request amount of $750,000. Funds will be for engineering and keeping the project moving forward until federal funding for the project comes through. Edna Fund stated that legislators have stated that they want to see support from the local community of match funds. Moving forward would focus on further refining the proposed action for the environmental and biological assessment and subsequent permitting applications. A letter was received from Senator Braun showing support of the application. Dan Keahey asked if the $750,000 was open ended. Matt stated that there is a sunset date in the .09 policy. Matt stated that this is a business retention project and without this we suffer in economic growth.

8:45 A.M.: Dan Keahey made a motion to approve the application and .09 grant of $750,000.00 for the Chehalis River Basin Flood Control Zone District Application payable within 18 months. Mark Anders added to the motion that the invoices would be reimbursed through the county and provided a second to the motion. The motion passed unanimous.

8:50 A.M.: Matt presented the Lewis County Economic Development application for the grant request amount of $165,000.00 over two years. Matt stated that the Economic Development Council is designated as an associate development organization. A little over a 1/3 of the EDC funding comes from the County. Other local contracts as well as EDC memberships provide

additional funds for operations and organization expenses. Matt provided committee members with the EDC marketing plan.

9:00 A.M.: Mark Anders made a motion to approve the application and .09 grant of $165,000.00 a year for two years, for a total of $330,000 for the Economic Development Council. Edna Fund provided a second to the motion. The motion passed unanimous.

9:05 A.M.: Todd Chapput presented the Lewis County Public Facilities Departments .09 application and grant request for the amount of $300,000.00. The funds would help increase the expansion of the Sports Hub. Todd stated the expansions will make us unique to the region. The match provided by the PFD is $1.96 million. For smaller communities, this is a big part of the revenue coming into the community. This is a public facility which falls within the .09 guidelines. Dan Rich stated that this application is for a facility with a return on investment. This is not going to an event but to a facility and is well within .09 guidelines. Randy Mueller stated that this is not a tourism project. This is a public facilities project.

9:10 A.M.: Dan Mortenson made a motion to approve the application and .09 grant request of $300,000.00 for the Lewis County Public Facilities Departments Sports Hub Expansion. Mark Anders provided a second to the motion. The motion passed unanimous.

9:15 A.M.: Chehalis River Basin Flood Control District #1 application and grant request in the amount of $156,000.00 was presented by Randy Mueller. Rick Rouse and Paul Ericson provided background and an explanation of the intent for the funds. Paul Ericson stated that employees cannot get to work when streets are flooded, and local businesses have to close. Randy stated that these issues affect that whole area, not only the businesses, as roads close and prohibit access to other businesses in the area. Deliveries cannot get through. Rick stated, "we met with J. Vander Stoep to come up with a match. We will strongly advocate for funds in the next biennium. If the Flood Authority will approve 90% then the .09 grant will provide the 10% local match.

9:25 A.M.: Dan Mortenson made a motion to approve the $156,000.00 grant request contingent on the approval of 90% from the Flood Authority. Edna Fund provided a second to the motion. The motion passed unanimous.

9:30 A.M.: Meeting Adjourned

BOCC AGENDA ITEM SUMMARY

Resolution:

BOCC Meeting Date: May 18, 2020

Suggested Wording for Agenda Item:

Agenda Type: Deliberation

Approve a .09 ("Distressed Counties") grant agreement with Lewis County Flood Control District #1

Contact: Rieva Lester

Phone:

Department: BOCC - Board of County Commissioners

Description:

Approve a .09 (Distressed Counties") grant agreement with Lewis County Flood Control District #1

Approvals:

User	Status
PA's Office	Approved

Publication Requirements:

Publications:

Additional Copies:

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