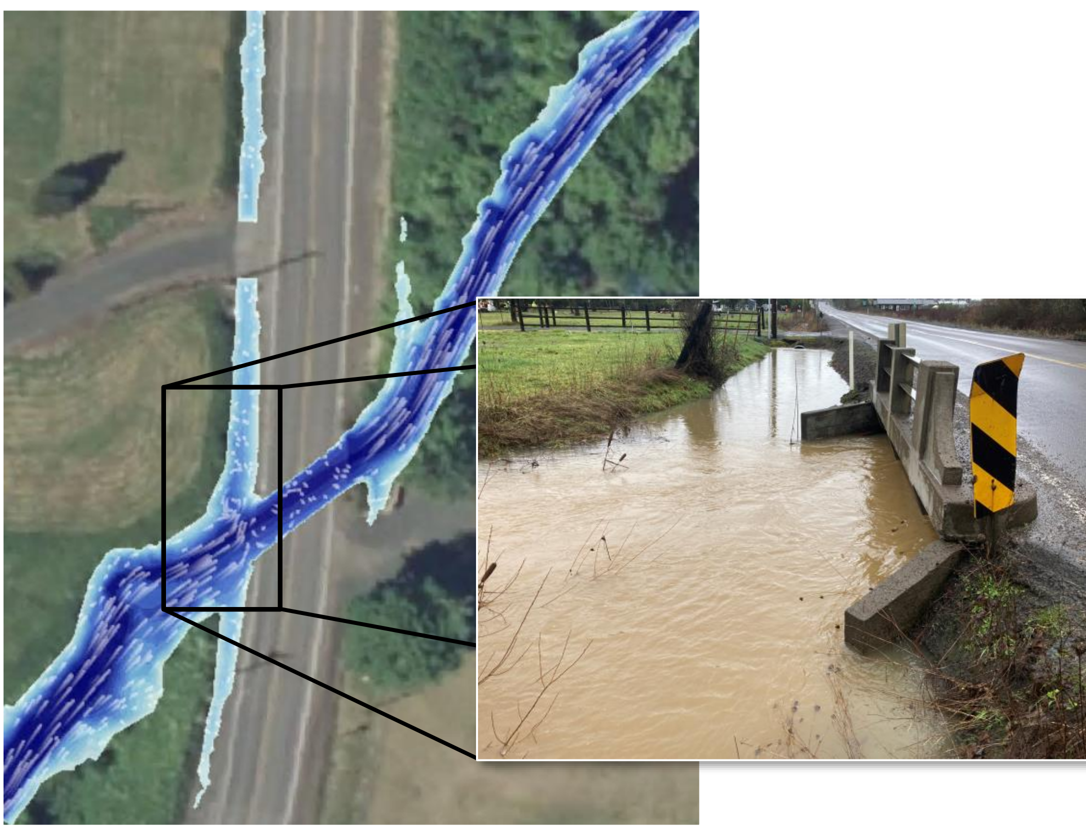
North Fork Ash Creek Flood Mitigation Feasibility Study and Model

Document No: 230614130752_7c2db9e6
Revision No: 0

City of Dallas, Oregon

June 15, 2023



North Fork Ash Creek Flood Mitigation Feasibility Study and Model

Client name:	City of Dallas, Oregon		
Client reference:	Tom Gilson	**Project No:**	D3540100
Document No:	230614130752_7c2db9e6	**Project manager:**	Meabon Burns, PE
Revision No:	0	**Prepared by:**	Tim Bedford, PE and Jordan Laundry, EIT
Date:	June 15, 2023	**File name:**	Feasibility_Study_DRAFT

Jacobs Engineering Inc.

2020 SW Fourth Avenue
3rd Floor
Portland, OR 97201
United States

T +1.503.235.5000
www.jacobs.com

Executive Summary

Purpose and Background

This feasibility study addresses flood vulnerabilities on North Fork (NF) Ash Creek and North Fork Tributary through the southern portion of Dallas, Oregon (City). The NF Ash Creek watershed has an extensive history of hydromodification from logging, channelizing for agriculture and urbanization which have altered the hydrologic regime and geomorphic characteristics of the stream in recent years. Industrial use surrounding the creek can be dated back to 1909 where Southern Pacific Railroad, Willamette Valley Lumber and Mountain States Power Company all had facilities directly adjacent to the impounded creek.The purpose of this flood mitigation feasibility study is to determine the current causes of flooding in the creek system and recommend a prioritized list of improvements that mitigate flooding throughout the project area (Figure ES-1). This aligns with the public works charter to improve infrastructure, safety, and health of all who live and work in the City. Flood mitigation recommendations were developed in coordination with ongoing planning and design efforts that intersect the creek, for the 100-year design storm. The model developed for the feasibility study should be consulted and updated as capital improvement projects near NF Ash Creek are in planning and conceptual design. Finally, the feasibility study also discusses the current floodplain mapping, environmental permitting, and recommended next steps for how to improve the fluvial corridor.

The Ash Creek Water Control Board (ACWCB) 10-year plan (Whitaker Engineering Inc, 2016) provides a comprehensive summary of historical studies and flood mitigation activities in the Ash Creek basin. This report identifies areas of flood concern across all studies which includes the entire project area, from Highway 223 to G Way Ranch (page 3-3) on NF Ash Creek. The 2016 Stormwater master Plan (SWMP) (CH2M, 2016) identified seven distinct locations on NF Ash Creek in the City vulnerable to flooding, Figure EC-1. One key recommendation from the SWMP was to develop a reach-scale interconnected hydraulic model to evaluate sources of flooding and evaluate mitigation strategies. In 2018, Jacobs evaluated the feasibility of providing upstream stormwater detention on select parcels and the potential downstream benefit this attenuation may provide. Results were inconclusive, but the option was not dismissed. The report indicated dynamic hydraulic modeling would be required to vet the concept, which initiated this feasibility study.

The feasibility study includes data collection to support the development and calibration of both a hydrologic and 2-dimensional (2D) hydraulic model. The hydrologic model quantifies the magnitude and distribution of runoff generated from precipitation falling on the watershed based on regional measured rainfall data. The total storm volume is important when considering floodplain attenuations alternatives. The 2D hydraulic model determines water depth and velocity at all locations in the model domain for both the existing condition and conceptual flood mitigation alternatives.

Existing Conditions

Field reconnaissance included survey data collection, real time streamflow and precipitation monitoring, and reference reach data collection. The stream survey data collection occurred from September 27, 2021 to October 5, 2021 and included channel cross sections every 100-150 feet from RM 5.6 - 8.6 on NF Ash Creek and on NF Tributary and Kings Valley Tributary; over 2,220 topographic data points were collected. Three reference reach locations were identified where beneficial hydraulic, geomorphic, and biological functions are occurring. These reaches will be used as a template where channel redesign is required. The Upper (RM 8.5), Middle (RM 6.5) and Lower (RM 5.8) reference reaches each had pebble counts, bankfull width measurements, and detailed topographic data collected.

ADS Environmental Services managed the real time streamflow and precipitation monitoring gages. Four depth meters, two current (flow) meters, and one rain gauge within the study area were operational from December 2, 2021 to June 2, 2022 (Appendix B). The two largest storm events that occurred within the measured timeframe were from December 18 to December 20, 2021 (referred to as December event), and January 2 to January 4, 2022 (referred to as January event). The December event was initiated by 4.56 inches of precipitation falling in 72 hours, resulting in a peak runoff of 342 cubic feet per second (cfs) at Godsey Road. The January event was initiated by 2.95 inches of precipitation falling in 72 hours, resulting in peak runoff of 406 cfs at Godsey Road. The January event occurred after light snowfall fell in the basin from December 26 to 30. The hydrologic model was calibrated to the December event and validated by the January event, Figure ES-2. The hydrologic model calibration process included: adding baseflow, assuming saturated initial soil conditions, and providing greater attenuation of the runoff hydrograph. Following calibration, design storm (2-,10-, 50-, 100- and 2080 100-year) hyetographs were modeled to generate runoff hydrographs at Kings Valley Highway, Main Street and NF Tributary. Results are summarized in Table ES-1.

Table ES-1. Dallas WWTP Rain Gauge IDF Results, 24-hour Storm

Return Interval	24-hour Precipitation Depth	Peak Discharge			
		At Kings Valley Highway	Kings Valley Tributary	At Main St	NF Tributary
-	inches	cfs	cfs	cfs	cfs
2-yr	2.82	185	25	260	115
10-yr	4.14	315	45	445	140
50-yr	4.93	430	60	605	185
100-yr	5.63	595	80	840	215
2080 100-year	6.50	685	93	965	250

The 2D hydraulic model was constructed using the stream survey data, publicly available light detection and ranging (LiDAR) data (Watershed Sciences, 2009) and manual terrain modifications, Figure ES-4. The existing conditions hydraulic model was calibrated to the January event and validated to the December event at all 6 measuring locations. Results from the calibration process indicated an overall reduction in channel roughness was required, to increase velocity and reduce model error. At bridge structures, the model was anecdotally calibrated to estimated water surface elevations (WSE) shown on field photos taken on January 3 to validate conveyance through the bridge structures. Following calibration to the January 3 event, the 2-, 10-, 50-, 100- and 2080 100-year design storm events were modeled. Key conclusions are presented as follows and shown on Figure ES-3.

- Many of the bridge/culvert structures in the project area are undersized for the 100-year event. Scour and undermining at bridge abutments in excess of 24 inches was observed at multiple crossings during site reconnaissance indicating significant channel contraction and high stream power. Two structures (Kings Valley Highway and Monmouth Cutoff Rd) are listed on the ODOT bridge inventory as being scour critical and have a "fair" bridge rating, while Godsey Road is scour critical with a "poor" rating. Bridges vary in size significantly from 12-foot span at Main Street to 50-foot span at Monmouth Cutoff Road.
- Upstream of the former mill site (Industrial Site) is a significant source of flooding that overtops Main Street, inundates the site, and overtops Uglow Avenue. The flowpath to the north of the creek is directed back into the channel by Monmouth Cutoff Road. The flowpath to the south of the creek overtops Holman Avenue and intersects the Tributary channel.
- NF Tributary floods to the east, as floodwater backs up behind Monmouth Cutoff Road and to the north of Monmouth Cutoff Road following the historic channel. Additionally, the re-direction of NF Tributary into NF Ash Creek at RM 6.6 causes flooding at the Godsey Road bridge, flooding Olive, Arthur, and Brookside Streets.
- Flowpaths consolidate back into NF Ash Creek near G Way Ranch at RM 5.5.

Recommended Improvements

Developing solutions to flooding on NF Ash Creek is challenging for two reasons: (1) space constraints present limited opportunities to increase the floodplain buffer around the stream and (2) the interconnected nature of the flooding necessitates integrated improvements to avoid adverse impacts. Addressing upstream flooding by increasing channel conveyance capacity increases the flood risk downstream. This highlights the importance of evaluating the creek and stormwater drainage system as a combined, integrated system. To evaluate proposed mitigation strategies throughout the entire project area, the project was broken into four distinct reaches. Reach designations were defined based on unique flood mitigation approaches and alternatives. The four reaches are shown on Figure ES-4. The 100-year design storm was used as the baseline flood event of interest; however, the 2080 100-year event was also modeled for resiliency considerations throughout the structure design life. All design storms are run on NF Ash Creek and NF Tributary concurrently. In reality, the peak of these two hydrographs will be marginally offset due to travel time within the watershed; however, it is reasonable and conservative to assume coincident peaks.

Reach 1: Upper North Fork Ash Creek

Reach 1 is located directly outside the City Urban Growth Boundary (UGB) in Polk County zoned for Farm/Forest land. Oregon Route 223 (Kings Valley Highway) is a low volume (less than 5,000 vehicles per day, ODOT 2021) state highway, which runs between Wren and Dallas, Oregon. The current bridge crossing at NF Ash Creek was originally constructed in 1958 as a two-lane, 18-foot span cast in place concrete bridge. The bridge is undersized for the 100-year event. During the January 2022 event, high flows almost reached the low chord of the bridge super structure; Refer to Appendix A-#2-3 for photos.

At higher flows upstream of the bridge, water inundates the low lying floodplain to the north and begins to overtop the road (Figure 4-2). A larger structure is required at Kings Valley Highway. Additionally, it is necessary to raise the road grade in order to convey the 100-year event with the freeboard required by ODOT. A 35-foot span structure and roughly 2 foot increase to the vertical road profile is required to meet ODOT Hydraulic Design Manual requirements (ODOT, 2020).

Reach 2: Kings Valley Tributary

The King's Valley Tributary is a small tributary (0.38 square mile) that contributes 10% (80 cfs) of the total streamflow to NF Ash Creek. The watershed is entirely within the UGB of the City and zoned for residential development. Currently there are 2 by 24-inch-diameter corrugated metal pipe (CMP) culverts beneath Kings Valley Highway that are undersized. Flooding begins to overtop the road at roughly the 10-year event. Two private properties to the southeast of Kings Valley Highway are at flood risk when the road overtops. Two 4 by 2-foot box culverts are required to adequately convey the 100-year event without overtopping the highway. It is recommended to relocate the northern culvert 75 feet south for a more efficient alignment with the upstream and downstream channel. This realignment will reduce flood risk.

Reach 3: Middle North Fork Ash Creek

Reach 3 encompasses NF Ash Creek through the western half of the City where much of the current flooding originates. The Industrial Site (former Weyerhaeuser property), which is currently owned by an industrial dismantler company, is being studied through and ODOT funded project for redevelopment opportunities in coordination with the City. This area is a central component of the opportunities for flood mitigation on NF Ash Creek and should be integrated into future discussions of zoning and City planning. Reach 3 also includes the lumber laydown area, bus yard parking lot and bridge, Main Street bridge, and Uglow Avenue bridge. The primary driver of flooding in Reach 3 is twofold: (1) the undersized capacity of the Main Street bridge and (2) the timber bridge directly upstream of the Industrial Site culvert. Both have a similar capacity to convey roughly 400 cfs, just over the 2-year event, before water exits the channel, becoming overbank flooding. The Industrial Site conveys the creek through a 7-foot-diameter culvert, 760 feet to a short open trench roughly 120 feet long before entering another 7-foot-diameter culvert for the remaining 660 feet. The second (eastern) culvert has the capacity to convey just over the 10-year event (450 cfs), prior to flooding the site. Between the Kings Valley Tributary confluence (RM 7.8) and the Industrial Site (RM 7.4), the longitudinal slope of NF Ash Creek is also flatter than adjacent reaches, 0.3% compared to 0.5% for much of the rest of the project area (Figure 3). As a result, the cross-sectional flow area in the channel and at structures must be greater through this flatter section than within the steeper sections for the equivalent flowrate.

In- and off-channel storage upstream of Main Street at the lumber laydown property was investigated. The lumber laydown property is not large enough to meaningfully attenuate downstream flooding. An in-channel flood control reservoir large enough to mitigate downstream flooding was found to be infeasible to permit and construct. The preferred alternative is to realign and daylight the creek across the Industrial Site. However, there is flexibility to resolve much of the flooding by daylighting the creek in place instead. Realigning the channel to the south allows the profile to be steepened to be more consistent with the upstream reach. This realignment would result in lowering peak WSE at Main Street by roughly 4 feet (Figure ES-5). The current channel alignment is undermining two buildings on Uglow Avenue, which can be addressed with channel realignment. Additionally, there are construction-related benefits to realigning the creek, such as reduced inwater work and temporary water management design. The Main Street bridge and Uglow Avenue CMP arch culvert should be replaced alongside any improvements at the Industrial Site.

Reach 4: Lower North Fork Ash Creek

Reach 4 encompasses the project area downstream of Uglow Avenue. This includes NF Ash Creek at Monmouth Cutoff Road, Holman Avenue, Godsey Road, the Diversion structure, and the NF Tributary at Monmouth Cutoff Road to its terminus. The preferred alternative for Reach 3, discussed earlier, is a wider channel than the existing channel downstream of Uglow Avenue. One possibility, suggested in the SWMP, is to widen the channel for the remainder of Reach 4. This widening would require replacing all the crossings on the creek. Evaluation of this widening was carried forward for a baseline cost comparison, but this alternative is not recommended. Rather the flood mitigation strategy on Reach 4 is to intentionally route overland flow to the east, following the natural topography. This avoids having to widen the entire channel and all stream crossing structures in this reach. This overland routing leverages current flood flowpaths and future Reach 3 improvements such that Reach 4 is both independent from and forward compatible with Reach 3 improvements.

Various auxiliary relief channels were analyzed for their current and theoretical capacity to carry excess floodwater from NF Ash Creek and NF Tributary through the eastern half of the City (Figure ES-6). All alternatives require the double box culvert on NF Tributary at Monmouth Cutoff Road to be replaced. The auxiliary channels are required to convey all or part of the overland flooding from the 100-year event (300 cfs). Each route has significant challenges with nearby residential and commercial properties. The channel size required to route 250 cfs is 20 to 30 feet wide, depending on the route and based on the terrain slopes. The most efficient route is to construct a channel following the historical NF Tributary flowpath directly east to and across Godsey Road until the overland flow channel intersects NF Ash Creek ("Straight East" route on Figure ES-7). This alternative was not ruled out, but not recommended due to the multiple easements and property acquisitions required. The preferred alternative is to construct a new channel in the path of the historic NF Tributary channel, which routes into a stormwater detention pond that can capture and attenuate the excess floodwater before releasing it back into NF Ash Creek (Figure ES-8). The preferred alternative requires the acquisition of a single property and easement on a second.

A new, wider bridge at Godsey Road has been designed as part of larger improvements to the Godsey Road corridor. This bridge has a 45' span, over double the current bridge width, and is roughly 3 feet higher than the existing bridge. The proposed bridge geometry was confirmed to convey the anticipated 100-year flowrate derived by this feasibility study. The conceptual flowpaths for improvements to all four reaches are shown on Figure ES-8.

Costs

The Opinion of Probable Construction Costs (OPCC) are Class 5 estimates, as defined by the Association for the Advancement of Cost Engineering (AACE) International and adopted by the American National Standards Institute. A Class 5 estimate is expected to be within +100% or -50% of the actual construction cost and corresponds to 2% level of engineering design. The final cost of the projects will depend on actual labor and materials costs, actual site conditions, productivity, competitive market conditions, bid dates, seasonal fluctuations, final project scope, final project schedule, and other variables. As a result, the final project costs will vary from the estimates presented in this report.

Additionally, an allowance for fees associated with administration, engineering, and permitting was calculated for each project. Given the potential difficulty and complexity associated with designing and permitting the proposed projects in Reaches 3 and 4, the allowance was increased to 45% of the construction cost. The projects in Reaches 1 and 2 were priced with a 30% allowance. Costs were rounded to the nearest $1,000. Refer to Table 7-1 for a summary of the construction and total costs

Table ES-2. Cost Estimate Summary

	Alternative	Construction Cost	Allowance for Administration, Engineering, and Permitting	Total Cost
Reach 1	Alternative 1: Kings Valley Highway Bridge Replacement	$9,340,000	$2,802,000	$12,142,000
Reach 2	Culvert Replacement	$1,687,000	$506,000	$2,193,000
Reach 3	Alternative 1: Daylight in Place	$22,977,000	$6,893,000	$29,870,000
	Alternative 2: Daylight to the South	$30,146,000	$9,044,000	$39,190,000
Reach 4	Alternative 1: Channel Widening and Structure Replacement	$62,604,000	$18,781,000	$81,385,000
	Alternative 2: Stormwater Detention Pond	$29,467,000	$8,840,000	$38,307,000

Conclusion and Recommended Next Steps

Flooding on NF Ash Creek through Dallas is widespread, complex, and costly to address. The feasibility study is intended to be a benchmark document for future structure replacement projects and flood mitigation projects. The hydrologic and hydraulic model tools should be updated when new data becomes available and projects in the floodplain are being evaluated.

While implementing the comprehensive solution, all of the preferred project alternatives, to mitigate flooding for the 100-year event is cost prohibitive, the following work is recommended to explore additional opportunities to improve the NF Ash Creek stream corridor:

- Floodplain Management: update the existing Flood Insurance Rate Map (FIRM) to reflect existing conditions using the 2D HEC-RAS existing conditions model developed as part of this feasibility study.
- Study to Mitigate more frequent flooding: evaluate opportunities to reduce flooding for more frequent events that exceed bankfull capacity (2-year to 25-year flows) with a focus on lower cost options.
- Explore Grant Funding and Cost Sharing Opportunities: funding could be utilized for implementation of projects for the comprehensive solution and/or to mitigate more frequent flooding events.
- Emergency Response Planning Support: updated existing conditions information, especially flood mapping, should be packaged and presented to local emergency services to support their emergency planning.

Figure ES-1. Overview and Project Area Map

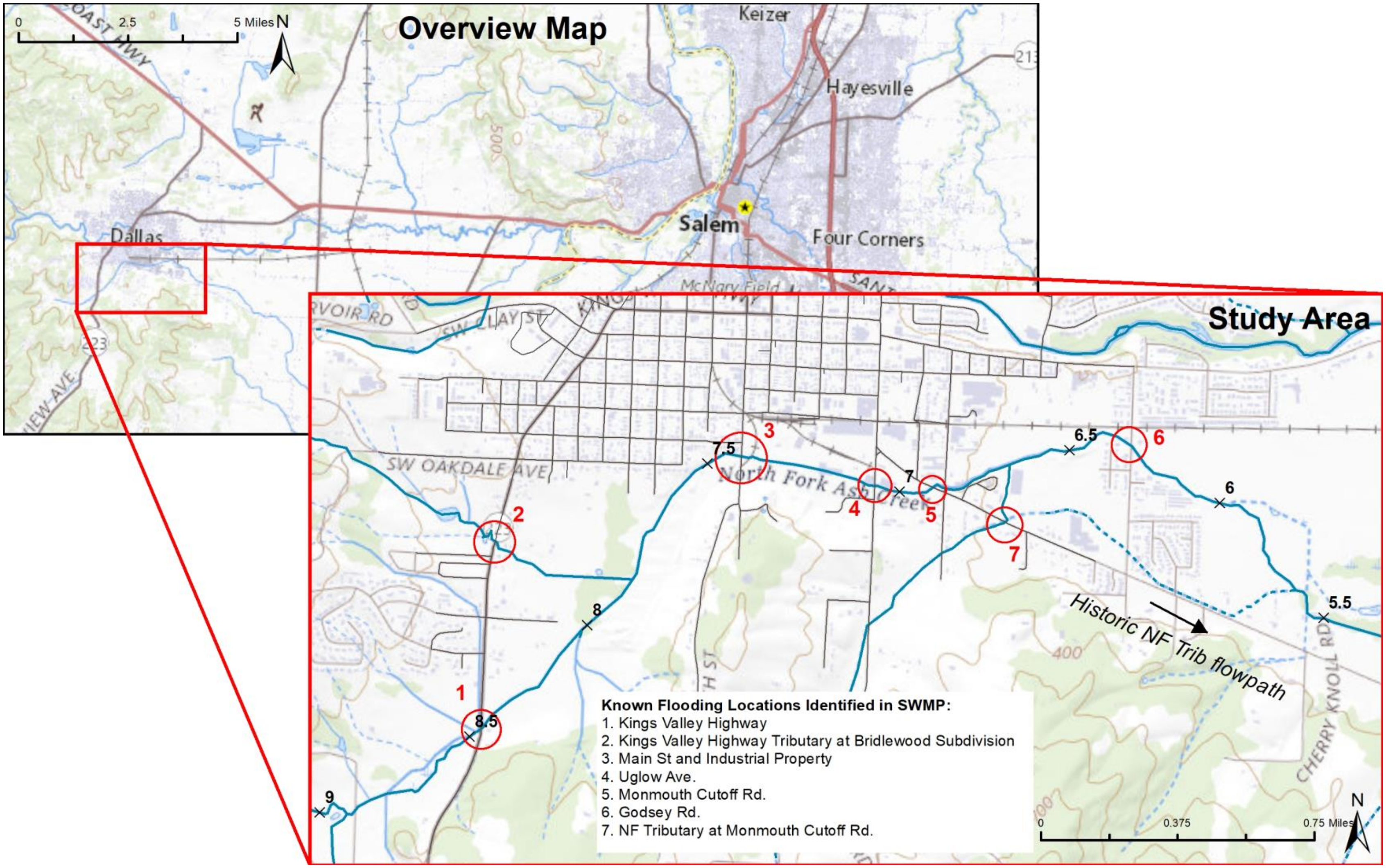


Figure ES-2. Hydrologic Model Calibration Event, December 18 – 21, 2021

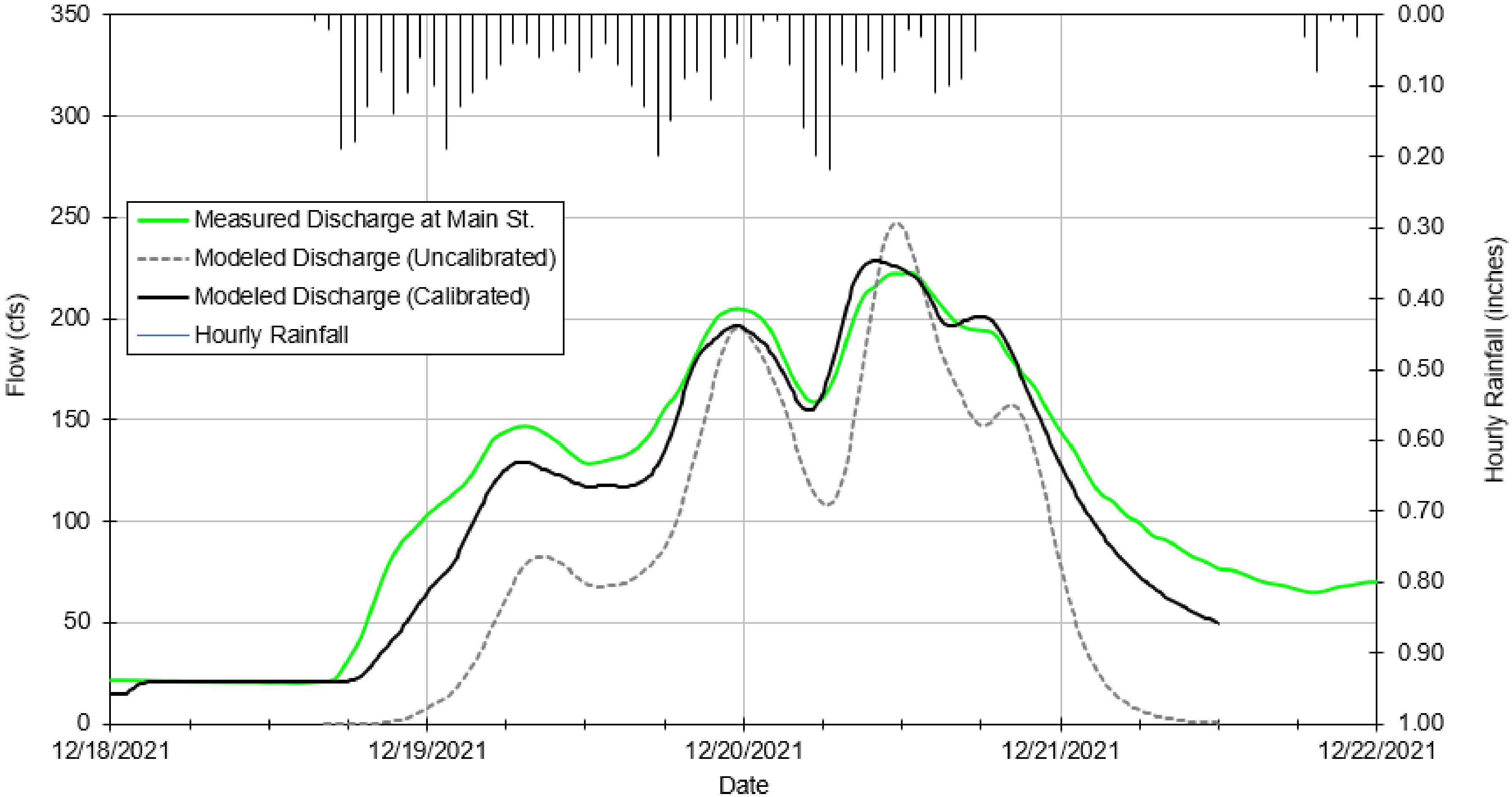


Figure ES-3. Conceptual Depiction of Flowpath Vectors, Existing Conditions

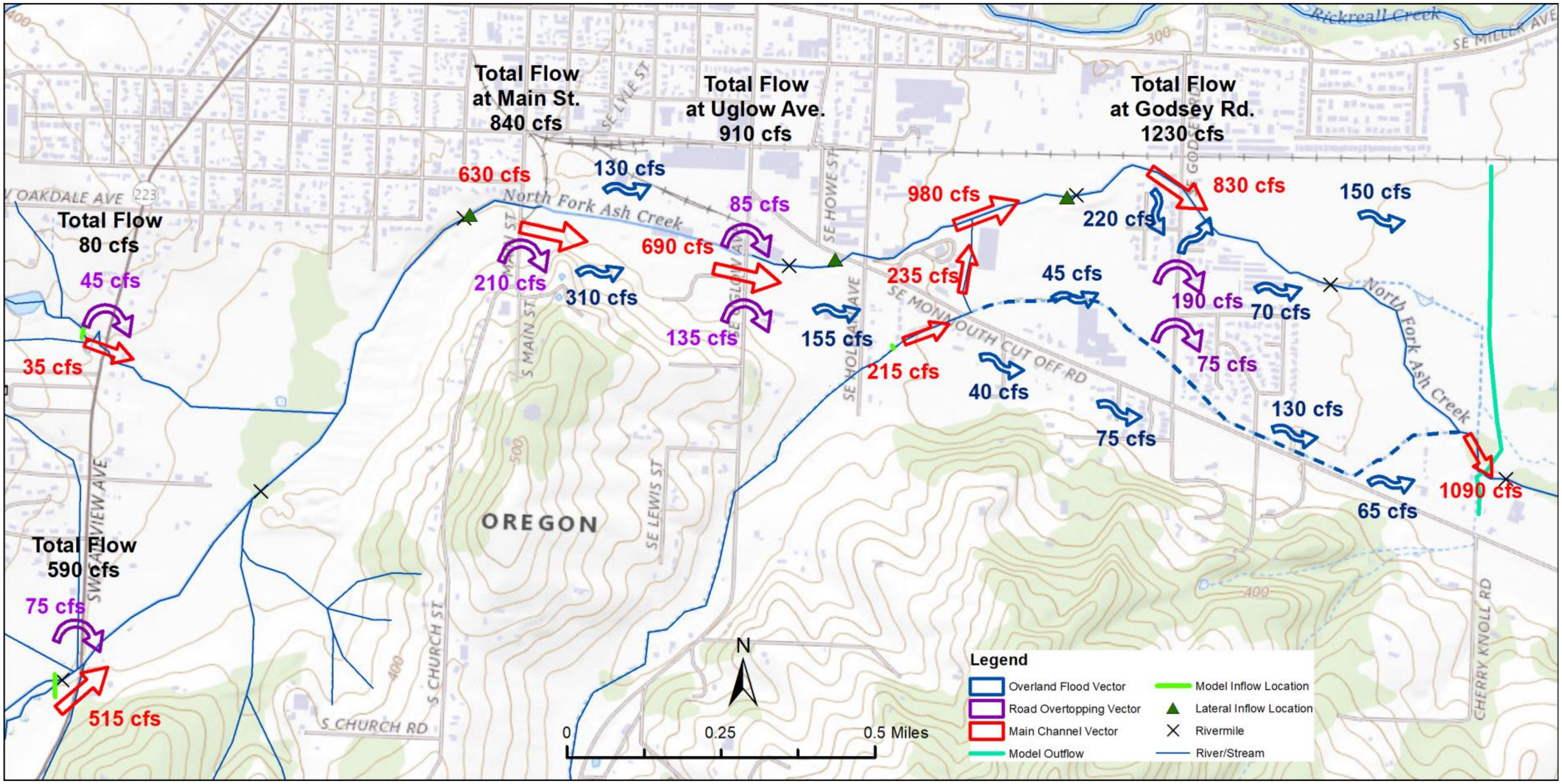


Figure ES-4. Project Reaches

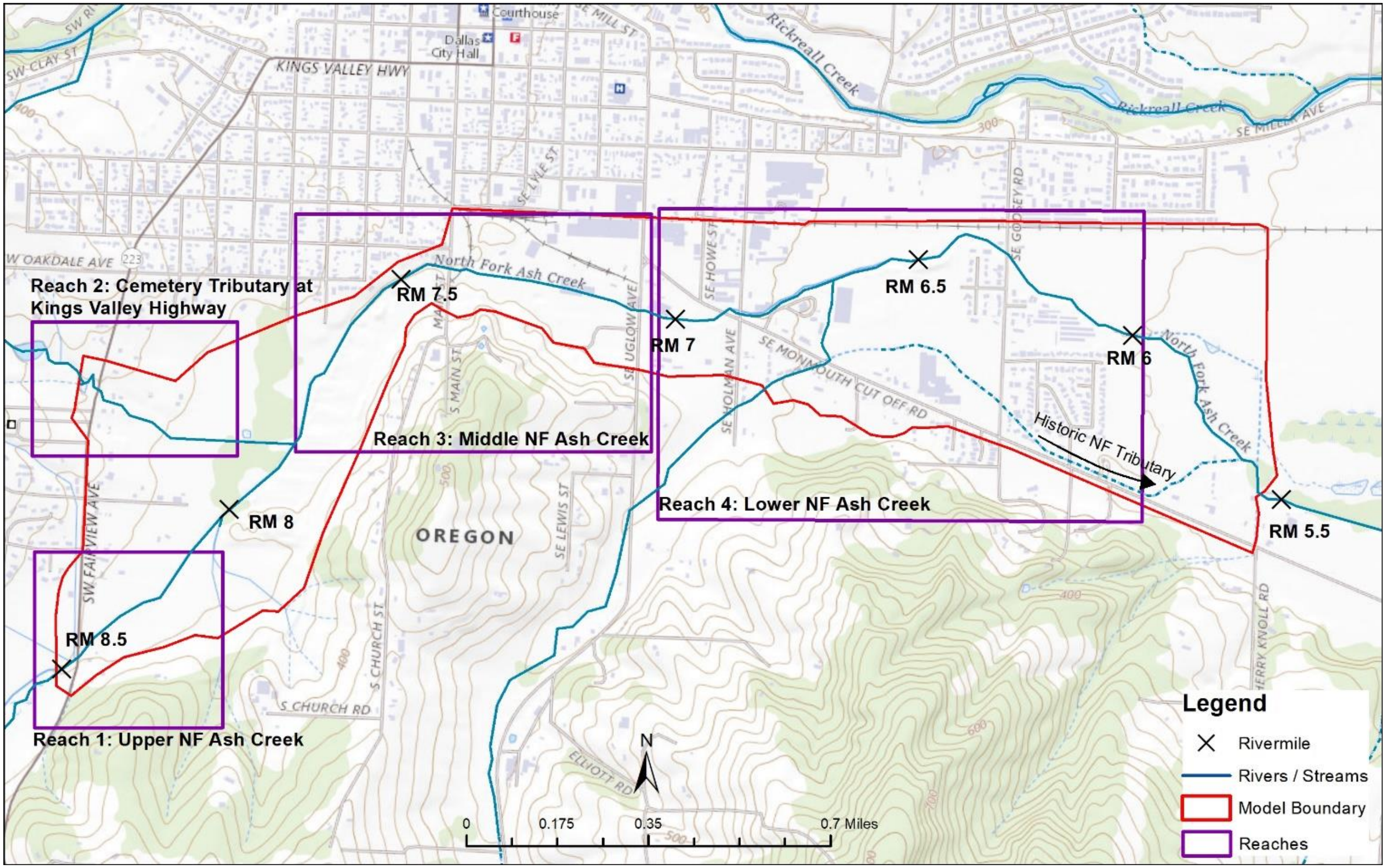


Figure ES-5. Plan and Profile of Alternatives Evaluated at the Lumber Laydown Area

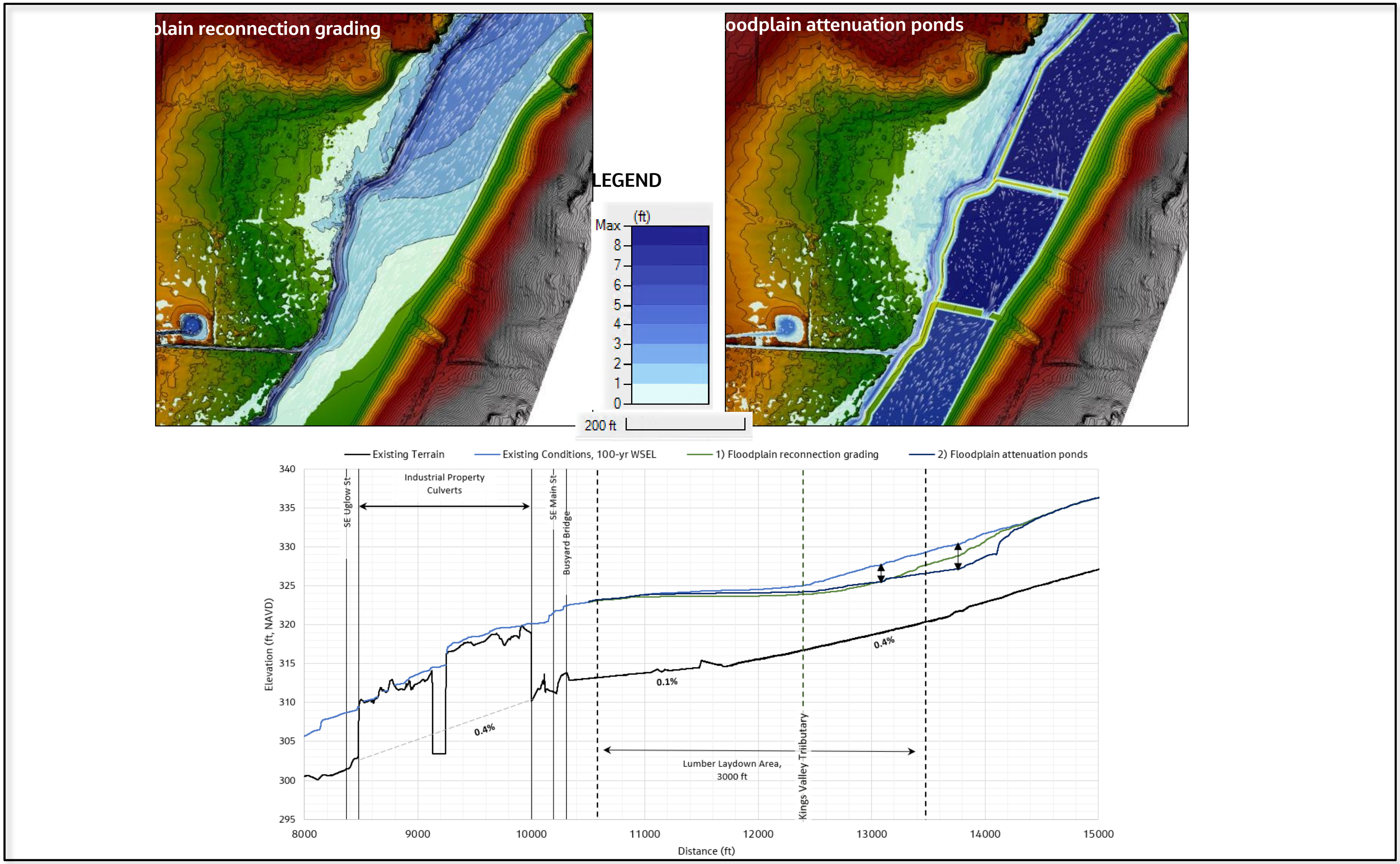


Figure ES-6. Reach 4 Auxiliary Channel Routes from NF Tributary to

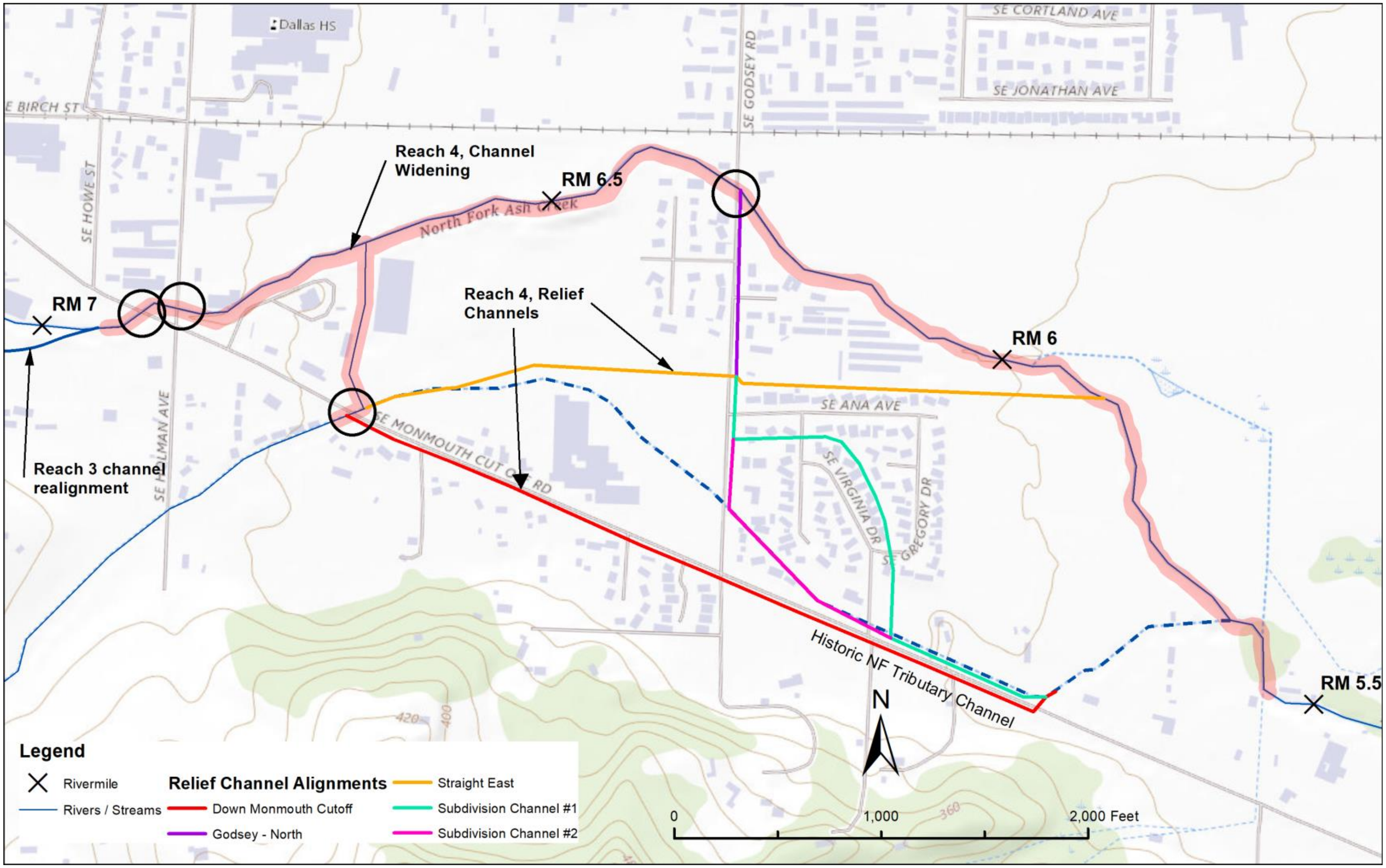


Figure ES-7. Conceptual Depiction of Flowpath Vectors, Comprehensive Proposed Conditions

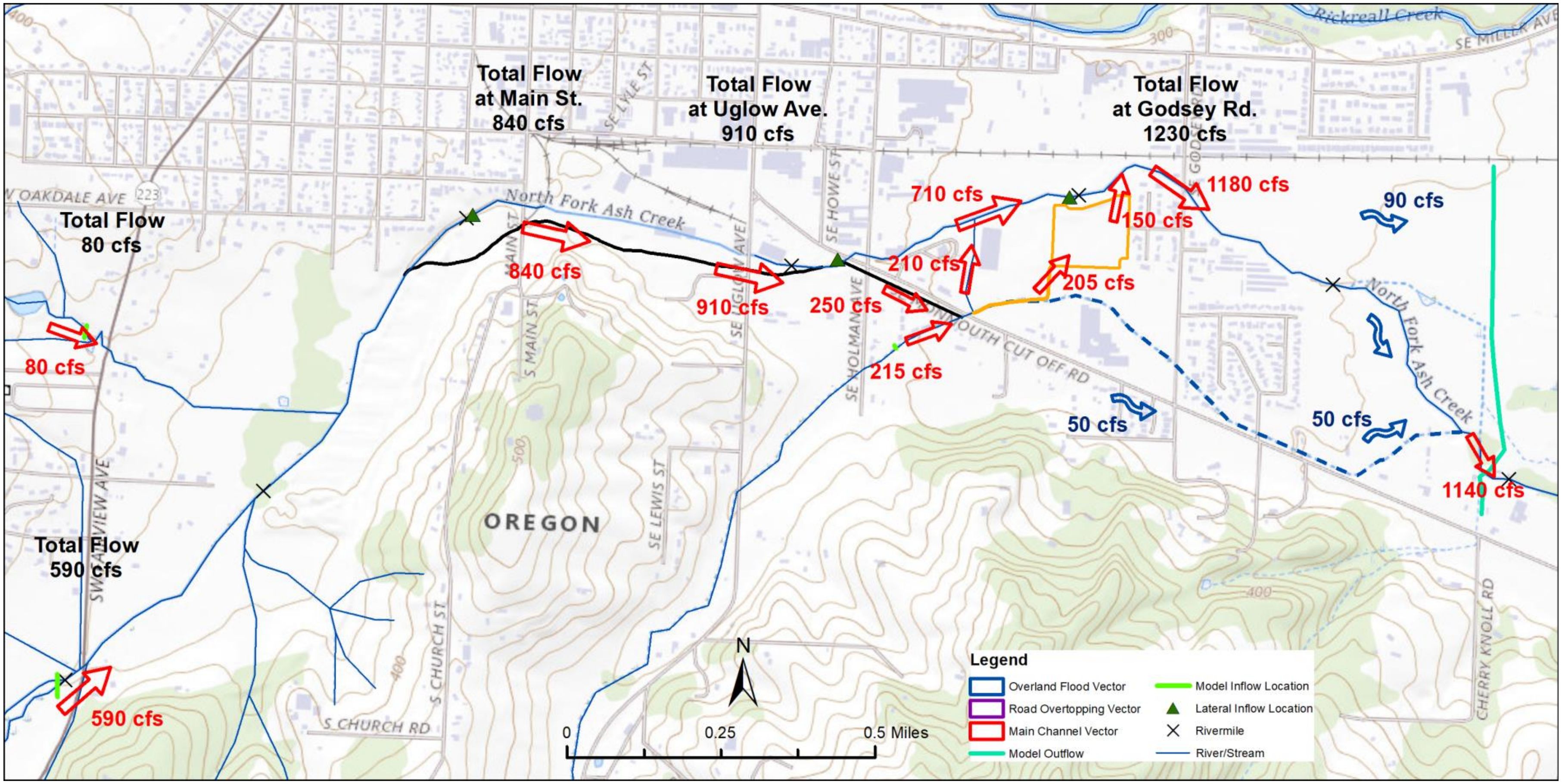
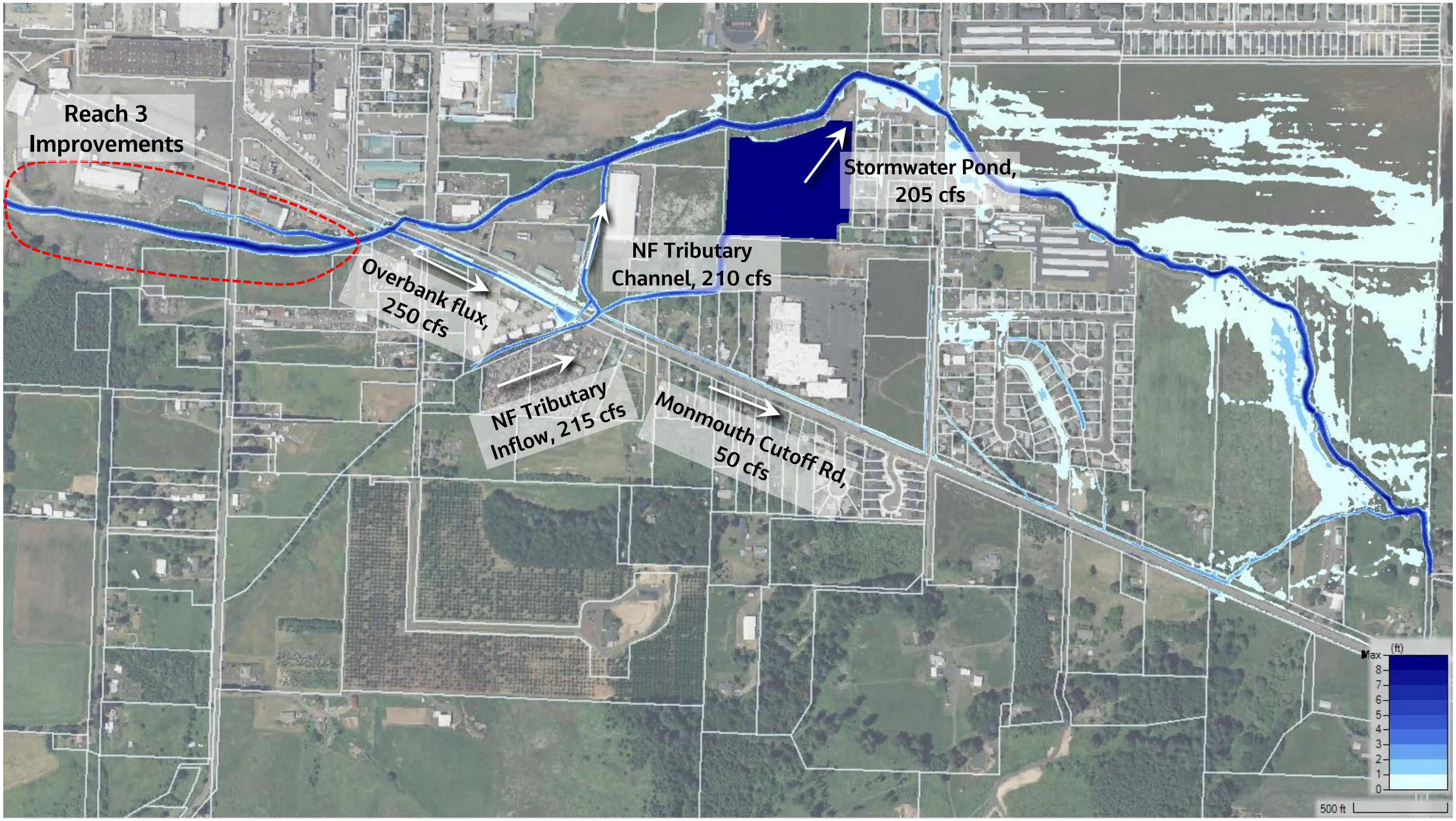


Figure ES-8. Reach 4 Preferred Alternative



Contents

Executive Summary ES-1

Purpose and Background ES-1

Existing Conditions ES-1

Recommended Improvements ES-3

Conclusion and Recommended Next Steps ES-5

Acronyms and Abbreviations v

1. Introduction 1-1

1.1 Background 1-1

1.2 North Fork Ash Creek – Study Area Description 1-2

1.3 Project Goals and Broader Vision 1-3

2. Existing Conditions Assessment 2-1

2.1 Field Reconnaissance 2-1

2.2 Flow, Stage, and Precipitation Data Collection 2-5

2.3 Hydrologic Analysis 2-7

2.4 Hydraulic Model Development 2-16

3. Conceptual Design 3-1

3.1 Conceptual Design Approach and Challenges 3-1

3.2 Reach Designation 3-2

4. Proposed Projects 4-3

4.1 Opinion of Probable Construction Costs 4-3

4.2 Reach 1: Upper North Fork Ash Creek 4-3

4.3 Reach 2: Kings Valley Tributary 4-5

4.4 Reach 3: Middle North Fork Ash Creek 4-6

4.5 Reach 4: Lower North Fork Ash Creek 4-13

4.6 Upstream Flood Control Dam Option 4-20

4.7 Comprehensive Solution 4-21

4.8 Proposed Project Sequencing 4-23

5. Environmental Permitting 5-1

5.1 Current Conditions/Features Common to All Reaches 5-1

5.2 Environmental Conditions Overview of Alternatives 5-1

5.3 Data Needs 5-2

5.4 Summary of Anticipated Permits and Approvals 5-4

6. Floodplain Management 6-1

6.1 Current Status 6-1

6.2 Floodplain Management Pathways 6-1

6.3 Approach Options 6-2

7. Conclusion and Recommended Next Steps 7-1

7.1 Summary of Projects and Estimated Costs 7-1
7.2 Overarching Next Steps 7-1
7.3 Next Steps by Reach 7-2
8. References 8-1

Appendices

Appendix A Field Photo Log
Appendix B ADS Final Flow Monitoring Report on NF Ash Creek
Appendix C U.S. Forest Service Flow Resistance Coefficient Computation Tool
Appendix D Cost Estimate
Appendix E Existing Conditions Model Results Map Book
Appendix F Proposed Conditions Model Results Map Book

Tables

ES-1 Dallas WWTP Rain Gauge IDF Results, 24-hour Storm ES-2
ES-2 Cost Estimate Summary ES-5
2-1 Dallas WWTP Rain Gauge IDF Results, 24-hour Storm 2-9
2-2 Dallas WWTP Rain Gauge IDF Results, 24-hour Storm 2-10
2-3 Weighted Curve Numbers 2-11
2-4 Time of Concentration and Lag Time 2-12
2-5 General Calibration/Validation Targets or Tolerances for Applications (Donigian, 2000) 2-14
2-6 Summary of Calibration Parameters and Adjustments 2-15
2-7 Summary of Peak Flowrates on NF Ash Creek and NF Tributary 2-16
2-8 Modeled Peak Inflows for the 2-, 10- and 100-year Design Storm Events 2-19
2-9 Inputs for Manning's Roughness Coefficient Quantitative Predictions 2-20
2-10 Flow Roughness Values used in the Hydraulic Model 2-20
2-11 Stream Crossing Conveyance Structure Location and Geometry 2-21
5-1 Surveys to Support Environmental Permitting by Reach 5-3
5-2 Regulatory Authority and Anticipated Permit 5-5
7-1 Cost Estimate Summary 7-1

Figures

ES-1 Overview and Project Area Map ES-6
ES-2 Hydrologic Model Calibration Event, December 18 – 21, 2021 ..... ES-7
ES-3 Conceptual Depiction of Flowpath Vectors, Existing Conditions ES-8
ES-4 Project Reaches ES-9
ES-5 Plan and Profile of Alternatives Evaluated at the Lumber Laydown Area ES-10
ES-6 Reach 4 Auxiliary Channel Routes from NF Tributary to ES-11
ES-7 Conceptual Depiction of Flowpath Vectors, Comprehensive Proposed Conditions ES-12

ES-8 Reach 4 Preferred Alternative ES-13
1-1 Overview and Project Area Map 1-2
1-2 Ash Creek River from Headwaters to Terminus at Willamette River in Independence, Oregon 1-3
2-1 Longitudinal Profile of NF Ash Creek through the Project Area 2-2
2-2 Typical Stream Transect Data Collection Points 2-3
2-3 Left: Top of Reference Reach 1, Looking Downstream. Right: Bottom of Reference Reach 1, Looking Upstream 2-4
2-4 Reference Reach 2, Looking Upstream 2-4
2-5 Reference Reach 3, Looking at the Right Bank (with cross sections looking downstream) 2-5
2-6 Locations of Depth and Flow Meters 2-5
2-7 Left: Depth Meter Installed on Monmouth Cutoff Road (NF Tributary); Right: Flow Meter Installed on Godsey Road (NF Ash Creek) 2-6
2-8 December Storm Event, Hourly Rainfall, and WSE at Godsey Road 2-7
2-9 January Storm Event, Hourly Rainfall, and WSE at Godsey Road 2-7
2-10 Hydrologic Modeling System Model Subbasins 2-8
2-11 Precipitation Station Locations and 100-year Precipitation Depths Compared Against NOAA Atlas 2 Isopluvial 2-10
2-12 The 100-year Rainfall Hyetograph at the Dallas WWTP 2-10
2-13 December 18–21, Calibration Event, Measured vs Modeled Discharge at Main Street 2-13
2-14 January 1–5 Validation Event, Measured vs Modeled Discharge at Main Street 2-14
2-15 February 28–March 5 Validation Event, Measured vs Modeled Discharge at Main Street 2-14
2-16 Calibrated Design Storm Hydrographs on NF Ash Creek and NF Tributary 2-15
2-17 Merged Terrain Dataset, zoomed in at confluence of NF Tributary and NF Ash Creek 2-17
2-18 Model Mesh with Breaklines, zoomed in at Confluence of NF Tributary and NF Ash Creek 2-18
2-19 Boundary Conditions in the 2D Model 2-19
2-20 Flow Roughness Parameterization in the 2D Model 2-20
2-21 3D Visualization of Bridge Crossing at Kings Valley Highway 2-22
2-22 3D Visualization of Bridge Crossing at Godsey Road 2-22
2-23 Rating Curve for Structures on NF Ash Creek (structures marked with an asterisk are backwatered by downstream structures) 2-23
2-24 Calibration results from January 2022 2-25
2-25 Calibration Results from January 2022; Time Series of Velocity 2-26
2-26 January 3, 2022, Field Photo and Model Results at Godsey Road 2-27
2-27 Validation Results from December 2021 2-27
2-28 Conceptual Flood Flowpaths during the 100-year Design Storm 2-30
3-1 Reach Designation for Proposed Project Evaluation 3-2
4-1 AACE International Construction Cost Estimate Classification System 4-3
4-2 Depth Inundation at Kings Valley Highway at (a) 50-year event and (b) 100-year event 4-4
4-3 Road Profile along Kings Valley Highway during the 100-year Design Storm, Overtopping Elevation Shown 4-4

4-4 Road Profile along Kings Valley Highway during the 100-year Design Storm 4-5
4-5 Plan View of the Kings Valley Tributary Channel and Impoundments 4-6
4-6 Plan view of the Three Locations within Reach 3 Investigated 4-7
4-7 Comparison of flood peak attenuation between Wooded and Un-wooded Floodplain (Thomas and Nisbet, 2007) 4-7
4-9 Longitudinal profile with Floodplain attenuation ponds during the 10-year flood event 4-9
4-10 Plan and Profile of Alternatives Evaluated at the Industrial Site 4-10
4-11 Typical Cross Sections for Creek Daylighting Alternatives 4-12
4-12 Reach 4 Alternatives, Channel Widening and Auxiliary Relief Channels 4-14
4-13 Route Floodwater in Roadside Channel Along Monmouth Cutoff Road 4-15
4-14 Route Floodwater in Historic Channel to Godsey Road, Then North 4-15
4-15 Route Floodwater in Historic Channel to Godsey Road, Then South Through Subdivision Channel 2 4-16
4-16 Route Floodwater in Historic Channel to Godsey Road and Continue East to NF Ash Creek 4-16
4-17 Locations of Stormwater Detention Ponds Explored 4-17
4-18 Stage Storage Curve of Site 2 Stormwater Detention Pond 4-18
4-19 Routing of Inflow and Outflow from Stormwater Detention Pond 4-18
4-20 Plan view of Stormwater Detention Pond and Flow Routing 4-18
4-21 Plan View of Upstream Flood Control Dam and Stage/Storage Curve 4-20
4-22 Inflow and Outflow Hydrographs 4-21
4-23 Comprehensive Solution Flood flowpaths during the 100-year design storm 4-22

Acronyms and Abbreviations

1D	one-dimensional
2D	two-dimensional
3D	three-dimensional
AACE	Advancement of Cost Engineering
ADS	ADS Environmental Services
BO	Biological Opinion
cfs	cubic feet per second
City	Dallas, Oregon
CLOMR	Conditional Letter of Map Revision
CMP	corrugated metal pipe
CN	Curve Number
DUH	dimensionless unit hydrograph
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FIS	Flood Insurance Study
HEC-RAS	Hydrologic Engineering Center's River Analysis System
IDF	Intensity-Duration-Frequency
LiDAR	Light Detection and Ranging
LOMR	Letter of Map Revision
NEPA	National Environmental Policy Act
NF	North Fork
NF Tributary	unnamed tributary
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
ODFW	Oregon Department of Fish and Wildlife
ODOT	Oregon Department of Transportation

OPCC	Opinion of Probable Construction Cost
PRF	peak rate factor
RM	River Mile
SCS	Soil Conservation Service
SHPO	State Historic Preservation Office
SWMP	Stormwater Master Plan
UGB	Urban Growth Boundary
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WSE	water surface elevation
WWTP	Wastewater Treatment Plant

1. Introduction

The North Fork (NF) Ash Creek Flood Mitigation Feasibility Study and Model Project (Project) encompasses over 3 miles of NF Ash Creek running through the city of Dallas, Oregon (the City). Project boundaries extend from the Kings Valley Highway upstream to the G Way Ranch footbridge downstream and incorporate both NF Ash Creek and an unnamed tributary (NF Tributary) (Figure 1). The desired outcome of the Project is to complete an integrated hydrologic and hydraulic study of the system to recommend projects that mitigate flooding as currently observed. This Feasibility Study characterizes the existing hydraulic conditions and lays out conceptual designs of recommended projects.

1.1 Background

The 2016 Stormwater Master Plan (SWMP) (CH2M, 2016) document flooding along NF Ash Creek at the following locations:

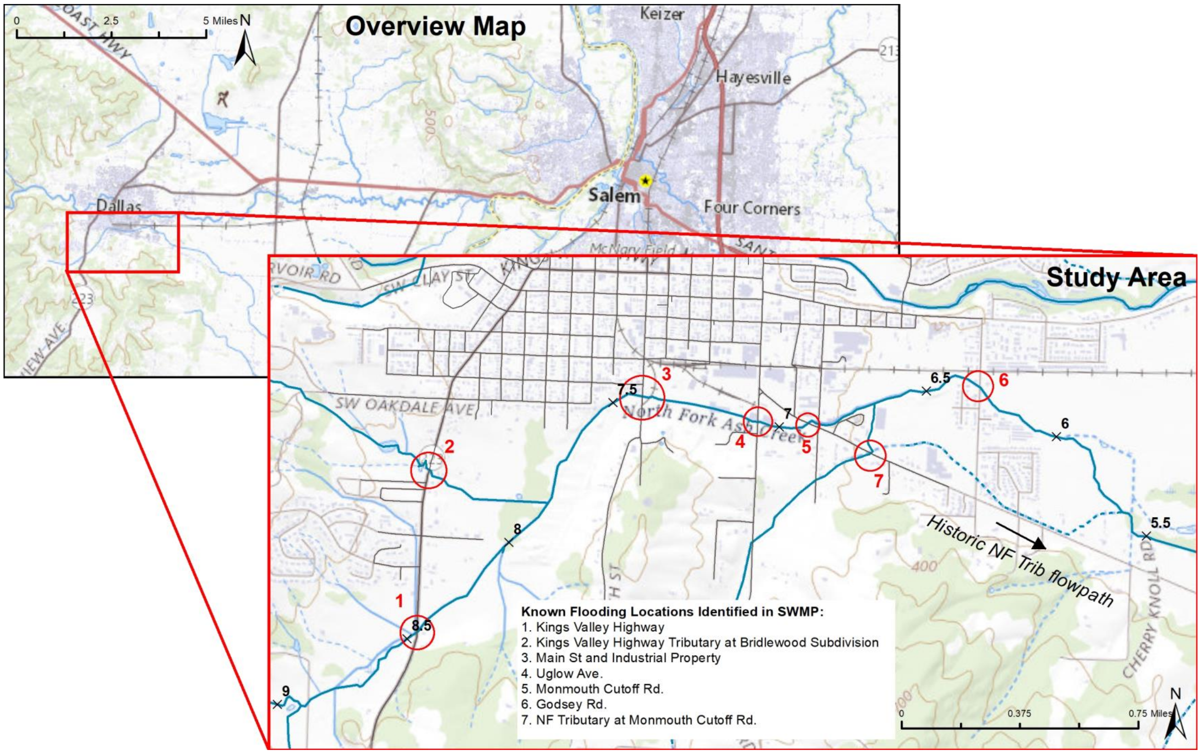
1. Kings Valley Highway crossing of NF Ash Creek at the Bridlewood subdivision
2. Culverts under Kings Valley Highway near the cemetery, on a small tributary to NF Ash Creek
3. NF Ash Creek from Main Street through the Industrial Site (former Weyerhaeuser property)
4. NF Ash Creek at Uglow Avenue
5. NF Ash Creek at Monmouth Cutoff Road
6. NF Ash Creek at Godsey Road
7. NF Tributary at Monmouth Cutoff Road

The SWMP performed limited location-specific hydraulic analysis at and near the identified problem areas on NF Ash Creek. The plan recommended 9,000 linear feet of channel widening and replacement of 6 bridge structures, with a total cost near $20 million. Through discussion with the City, an alternative consisting of stormwater storage upstream of Main Street with minimal channel improvements through the City was preferred due to the estimated engineering and capital costs. Prior to any design work, the SWMP recommended developing an integrated, dynamic surface water hydraulic model (a two-dimensional- [2D] model) to validate the concept of upstream stormwater detention and characterize the hydraulic interaction of the areas prone to flooding.

In December 2018, the City retained Jacobs to evaluate the feasibility of upstream stormwater detention between Kings Valley Highway and Main Street on two parcels adjacent to NF Ash Creek identified as potentially for sale, as well as the former lumber laydown area. Analysis was limited due to several key data gaps, including the limited extents of the available one-dimensional (1D) hydraulic model and lack of a continuous rainfall/runoff model to inform the shape of the storm event hydrograph. The 1D hydraulic model used was the Federal Emergency Management Agency (FEMA) effective model (FIS, 1980) developed as part of the National Flood Insurance Program (NFIP). The detailed study for this model begins downstream of Uglow Avenue. Jacobs concluded that upstream stormwater detention may be possible on the former lumber laydown area; however, the available storage on the parcels for sale was insufficient. Jacobs also recommended that the City conduct the comprehensive feasibility study as recommended in the SWMP to address the data gaps and to evaluate flood mitigation strategies more broadly.

Concurrent to Jacobs performing the upstream stormwater detention feasibility study, WEST Consultants used the FEMA effective model to perform bridge hydraulics analyses in support of the Godsey Road improvements and bridge widening project. Although likely accurate when initially published, the effective model shows the alignment of the NF Tributary entering NF Ash Creek near River Mile (RM) 5.6, not at its current location of RM 6.7, roughly 1.1 miles upstream. The rerouting of the NF Tributary was undertaken by a private landowner in the early 1980s; likely an attempt to consolidate and manage stormwater runoff and flooding along the historic flowpath. The FEMA effective model and Flood Insurance Rate Map (FIRM) continue to show the historic flowpath (Figure 1-1) as an area of high flood risk, including a subdivision of homes on the northeast corner of Godsey Road and Monmouth Cutoff Road. In addition to the bridge hydraulics report, WEST Consultants prepared a Conditional Letter of Map Revision (CLOMR) application to update the floodplain mapping for portions of NF Ash Creek and NF Tributary with the City.

Figure 1-1. Overview and Project Area Map



An additional hydraulic model developed by the Ash Creek Water Control District for the *Ash Creek Flood Study* (Streamline Engineering, 2002) was reviewed and considered for use in the current hydraulic analysis. However, the model domain did not include a variety of key infrastructure such as the NF Tributary inflow or the culvert through the former Weyerhaeuser property and was therefore of limited use as a tool for evaluating current or proposed conditions for comprehensive flood mitigation strategies.

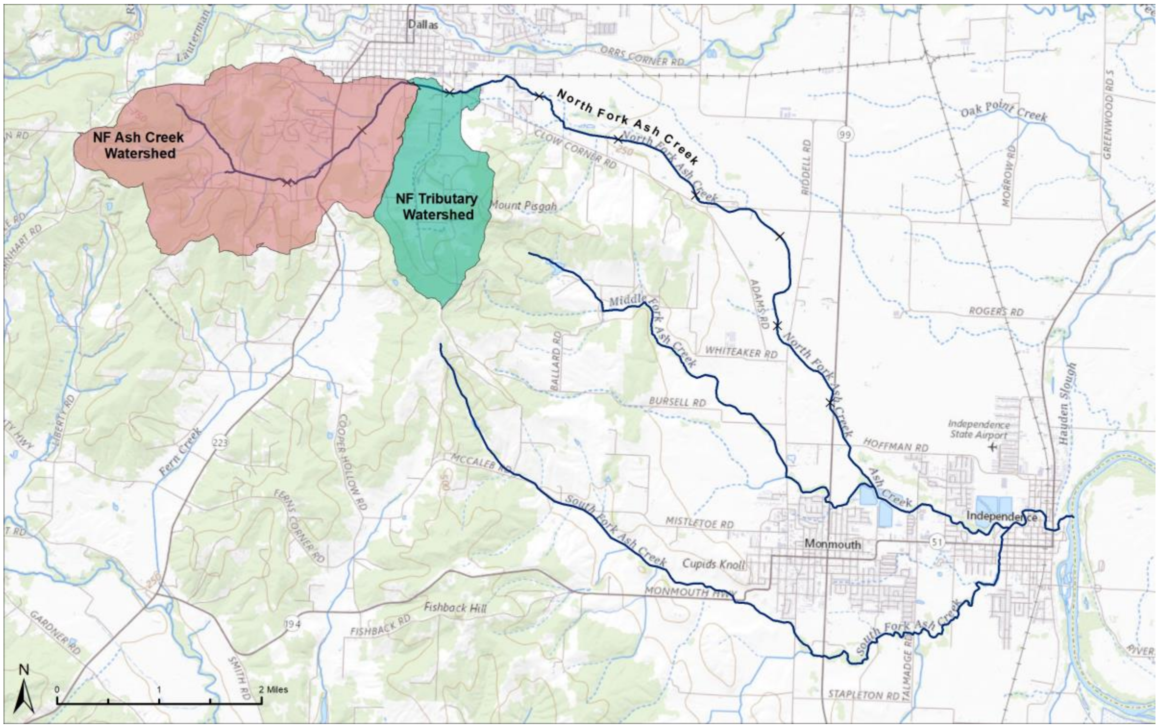
This study leverages work performed in the SWMP and expands on the 2018 stormwater detention feasibility study to better characterize the sources of flooding on NF Ash Creek and NF Tributary and develop recommendations for flood mitigation solutions.

1.2 North Fork Ash Creek – Study Area Description

NF Ash Creek is approximately 13 miles long, beginning in the foothills to the west of Dallas and joining the mainstem of Ash Creek near Monmouth, Oregon. There is 4.3 square miles of watershed upstream of NF Ash Creek as it enters the City, consisting of forested hills and agricultural crop land (Figure 1-2). The NF Tributary combines with NF Ash Creek at RM 7.2, between Holman Road and Godsey Road. NF Tributary drains a 1.6-square-mile watershed composed of mainly farmland, and as discussed in Section 1.1, was realigned in the early 1980s to flow directly north into NF Ash Creek.

The study area of this project is 3.4 river miles from Kings Valley Highway (RM 9.3) west of the City to G Way Ranch east of the City (RM 5.9). Creek stationing for the project reach begins at the downstream end and extends upstream of Kings Valley Highway. The study area is bounded by the toe of the hillslope to the south and SE Ash Street and SE Miller Street to the north, which is the drainage divide between Rickreall Creek and NF Ash Creek.

Figure 1-2. Ash Creek River from Headwaters to Terminus at Willamette River in Independence, Oregon



NF Ash Creek enters the Project area at the Kings Valley Highway crossing and continues through agricultural fields before flowing adjacent to an old lumber laydown area from RM 8.8 to 7.4. A small unnamed tributary (Kings Valley Tributary) enters NF Ash Creek at RM 7.85. NF Ash Creek crosses under a bus yard bridge (RM 7.42), the Main Street (RM 7.40), and an old timber bridge (RM 7.39) before entering a 7-foot-diameter pipe under the Industrial Site (former Weyerhaeuser property) for 1,530 linear feet with a narrow 120-foot open trench near the middle of the property. The creek daylights on the east side of the property 270 feet upstream of the corrugated metal pipe (CMP) arch culvert crossing at Uglow Avenue. The creek continues to flow through the City and crosses Monmouth Cutoff Road (RM 6.91) and Holman Avenue (RM 6.87) upstream of the confluence with the NF Tributary at RM 6.68. NF Ash Creek crosses Godsey Road at RM 6.30 and the diversion structure at RM 5.76. The downstream extent of the project area is at G Way Ranch at RM 5.5.

1.3 Project Goals and Broader Vision

The three primary goals for the Project are as follows:

1. Establish existing conditions for NF Ash Creek by the following:

- Characterize existing site conditions through field and office-based work, including data collection for model calibration.
- Update and expand the existing hydrologic model.
- Develop projected future-case (2080) hydrology.
- Develop a 2D hydraulic model.
- Calibrate and finalize existing conditions hydrologic and hydraulic models.

The hydraulic interactions between the floodwaters from the Industrial Site, the NF Tributary, and the mainstem of the NF Ash Creek are complex and have not previously been documented using an interlinked dynamic 2D hydraulic model.

2. Develop, evaluate, and select preferred conceptual design alternatives to reduce flooding within the Project limits. Qualitative and quantitative design criteria used to develop the alternatives include the following:

- Mitigation of flooding for the 100-year storm event and considering the future 2080 100-year storm event based on a future climate adaptation.
- Where possible, Improve floodplain connectivity.
- Approaches that work with the morphologic, hydraulic, and biological processes present in the system for long term resilient designs.

Additional considerations for the development, evaluation, and selection of conceptual design alternatives include the following:

- Construction costs
- Constructability
- Operations and maintenance requirements
- Environmental clearance and permitting requirements
- Planned locations for growth and development within the City
- Landowner and/or public impacts

3. Provide the City with a roadmap for next steps, including recommended phasing for the preferred alternatives.

The broad vision for NF Ash Creek is to work rather than against the natural process to achieve multi-functional goals of flood risk management, ecosystem health and recreation. This Project represents a substantial step forward toward achieving this vision.

2. Existing Conditions Assessment

2.1 Field Reconnaissance

Jacobs staff conducted fieldwork from September 27 through October 5, 2021, within the study area to accomplish the following:

1. Survey the stream corridor between Kings Valley Highway (RM 8.5) and G Way ranch (RM 5.5) and NF Tributary from confluence with NF Ash Creek to upstream of Monmouth Cutoff Road.
2. Identify a reference reach where the stream is functioning in a desirable dynamic balance of hydraulic capacity, geomorphic stability, and biological habitat.
3. Identify other project opportunities.

Refer to Appendix A for photo logs of the fieldwork.

2.1.1 Survey Data Collection

The stream survey was generally conducted by wading in the channel; the riparian area adjacent to the channel was thick and limited access to the channel in some sections. Rainfall during the first week September 27 to 30 of field work raised water levels in NF Ash Creek and made some areas difficult to access and wade. These areas were revisited the following week after streamflow receded to baseflow. Pools greater than 6 feet deep under baseflow conditions were encountered at two locations (RM 8.3 and RM 5.7). The distance between transects varied depending on channel complexity, accessibility, and the presence of a feature of interest. Upstream of Main Street, transects were frequently spaced at 100 to 150 feet, for a total of 1,230 shots. Downstream of Main Street, transects did not exceed 75 feet, except on NF Tributary, for a total of 2,220 shots.

The stream survey was collected via a Trimble R12 GPS receiver. The density of transects points varied but typically included thalweg (channel invert), toe of inset channel, top of inset channel, toe of channel, and top of channel for a total of nine points along the transect. Additional topographic breaklines were collected as necessary. Shots were also taken to capture the elevation and size of existing infrastructure (such as culverts and bridges).

The reference reach areas (discussed in Section 2.1.2) were surveyed with more detail; spot elevations were collected roughly every 15 feet for detailed topographic data to support the reference reach analysis. Figure 2-1 shows the thalweg longitudinal profile along the entire project reach. Figure 2-2 shows an example cross section with topographic breakpoints labeled.

Figure 2-1. Longitudinal Profile of NF Ash Creek through the Project Area

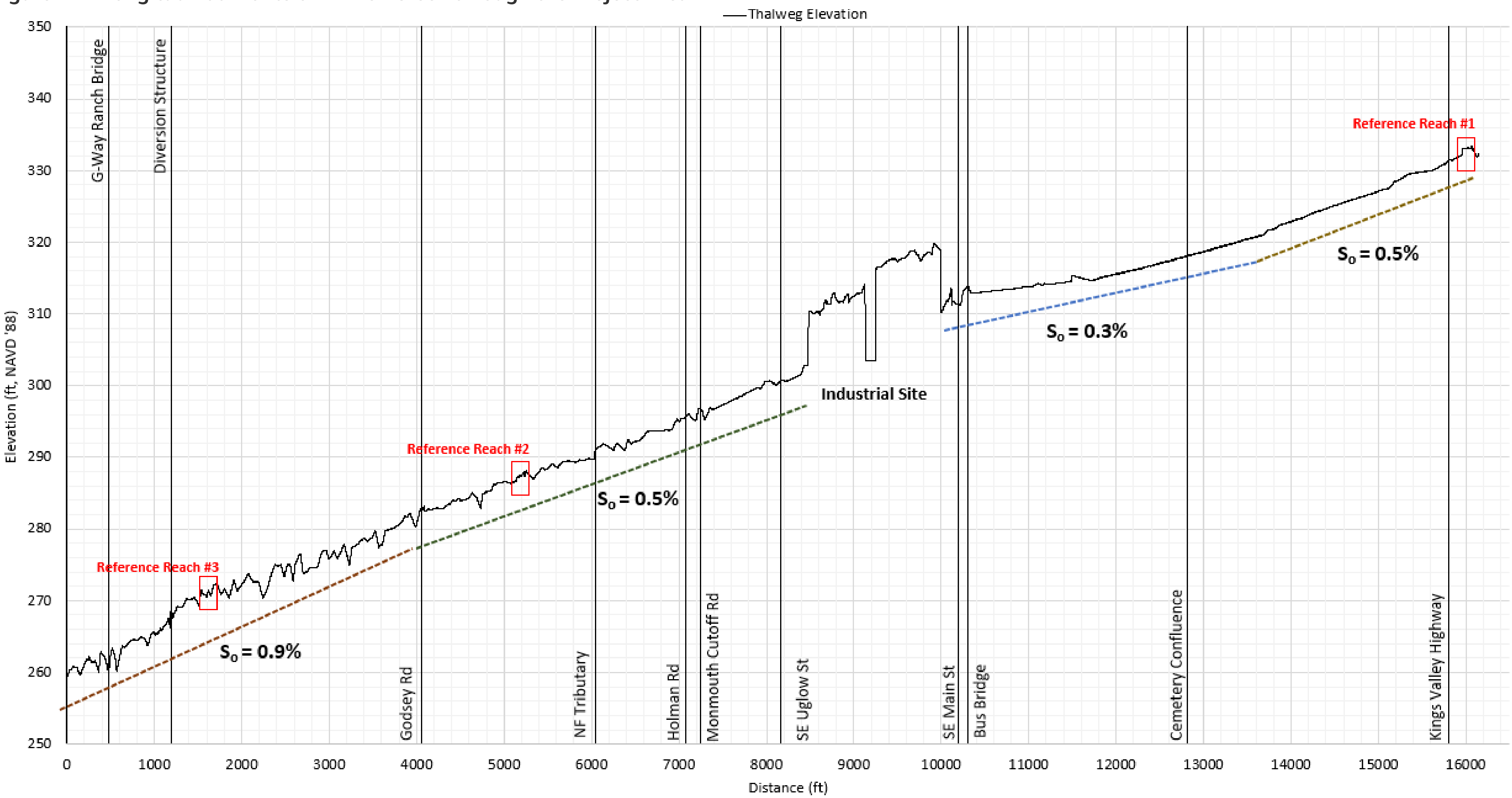
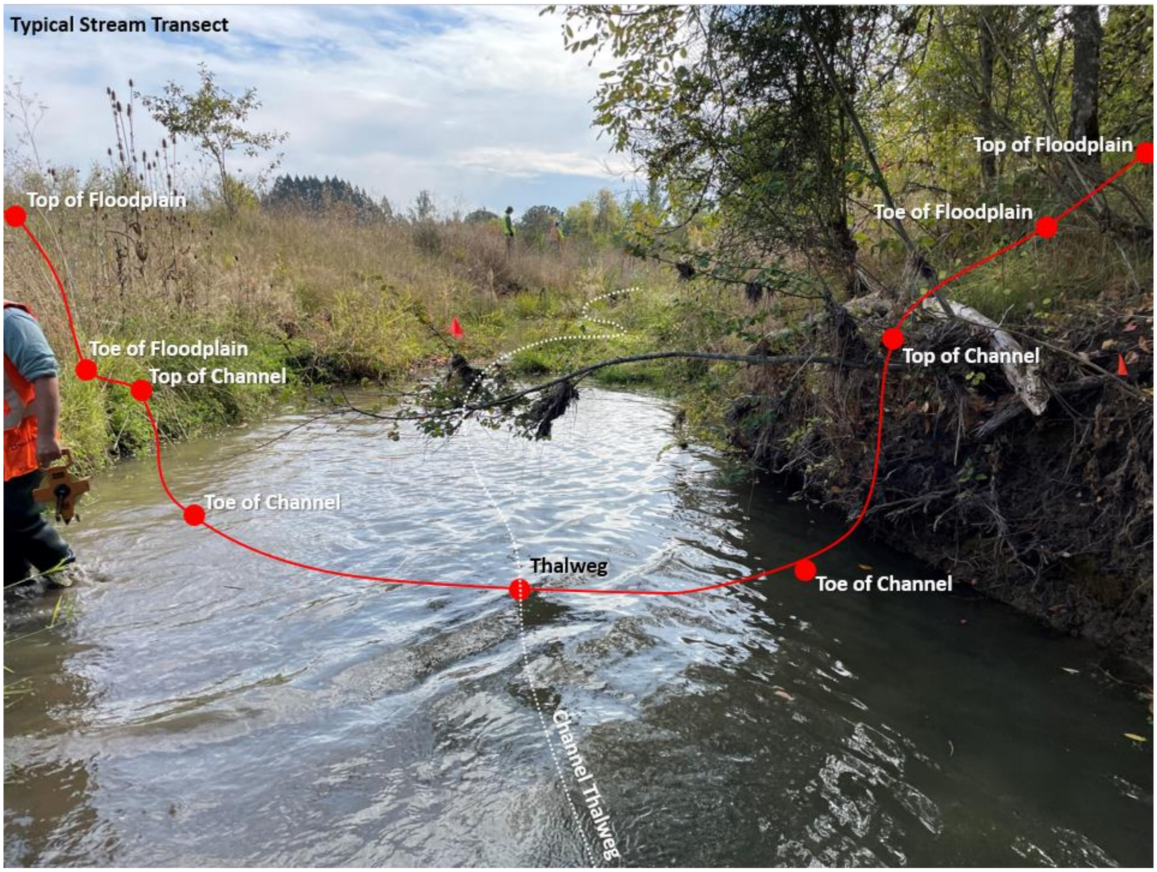


Figure 2-2. Typical Stream Transect Data Collection Points



2.1.2 Reference Reach Selection

The purpose of a reference reach assessment is to identify areas in a stream corridor where beneficial hydraulic, geomorphic, and biological functions are occurring, document what is driving those beneficial processes, and use the reference reach as a basis for restoration design where channel redesign is being proposed. Jacobs staff conducted a reference reach assessment of the project area on September 28 and October 4.

NF Ash Creek has been subject to significant alteration and hydromodification due to logging, farming, grazing, and development in the watershed. This has resulted in evidence of lateral and vertical degradation, disconnection with the floodplain, and loss of native riparian vegetation throughout the project area. Despite these challenges, three locations of relative channel stability were identified and selected as reference reaches. The three reference reaches are located in the upper, middle, and lower sections of the study area and are shown on the profile on Figure 2-3. The Upper Reference Reach is located immediately upstream of the Kings Valley Highway crossing at RM 8.5. The Middle Reference Reach is located at RM 6.5, about 2,000 feet upstream of the Godsey Road bridge. The Lower Reference Reach is located at RM 5.8, approximately 400 feet upstream of the diversion structure. The following information was collected at each reference site:

- Wolman pebble count
- Documentation of vegetation and floodplain connectivity characteristics
- Bankfull width measurements
- Detailed topographic survey

The upper reference reach (1) sediment is primarily composed of gravels with a D50 of 17.2 millimeters and a D84 of 42.1 millimeters. The upstream section of the reach is heavily shaded by mature alders. The understory is comprised of sparse forbs and horsetails. A deep pool transitions to a downstream riffle and vegetated island. The downstream section of the reach is more open, and the banks are heavily vegetated with short shrubs and grasses. The average bankfull width is 19 feet and the longitudinal slope is 0.7%. Refer to Figure 2-3 for photographs of the reach.

Figure 2-3. Left: Top of Reference Reach 1, Looking Downstream. Right: Bottom of Reference Reach 1, Looking Upstream

The middle reference reach (2) sediment is primarily composed of coarse gravels and small cobbles with a D50 of 55.3 millimeters and a D84 of 108.9 millimeters. The floodplain is confined on both sides by steep berms: (1) left bank at 5 feet tall and (2) right bank at 13 feet tall. The top of these berms are heavily vegetated blackberry brambles. The floodplain of the stream is heavily vegetated with a mixture of mature willows, various grasses, and patches of thistles. The stream demonstrates a unique morphology with pools alternating with islands of vegetation. The vegetation is comprised mostly of thick mats of mint. The average bankfull width is 31 feet and the longitudinal slope is 0.8%. Refer to Figure 2-4 for a photograph of the reach.

Figure 2-4. Reference Reach 2, Looking Upstream

The lower reference reach (3) sediment is primarily composed of gravels with a D50 of 17.4 millimeters and a D84 of 47.1 millimeters. The banks are heavily vegetated with tall grasses interspersed with mature trees. The right bank is artificially raised to the level of the bordering agricultural field. The middle of the reach has a vegetated bar with grasses and few short shrubs. The average bankfull width is 25 feet and the longitudinal slope is 1.3%. Refer to Figure 2-5 for a photograph of the reach.

Figure 2-5. Reference Reach 3, Looking at the Right Bank (with cross sections looking downstream)

2.2 Flow, Stage, and Precipitation Data Collection

Jacobs subcontracted ADS Environmental Services (ADS) to deploy and monitor four depth meters, two current (flow) and depth meters, and one rain gauge within the study area from December 2, 2021, to May 2, 2022. The location of each in-stream instrument (Figure 2-6) was determined based on locations of interest and suitability for installation and maintenance. The rain gauge, not shown on Figure 2-6, was placed at the Dallas Wastewater Treatment Plant (WWTP), located 2 miles to the east of Godsey Road. The purpose of the depth meters is to characterize peak water surface elevation (WSE) at multiple locations along the NF Ash Creek channel during the same storm events. The purpose of the flow meters is to determine channel discharge; placing one flow meter upstream and the second downstream of NF Tributary allows characterization of NF Ash Creek flows as well as the flow volume contributed by NF Tributary. An example of the installed depth and flow meters are shown on Figure 2-7. Data from storm events during this period were used to calibrate the existing conditions hydrologic and hydraulic models.

ADS hosted real-time results for all seven gauges on their PRISM[1] cloud-based web application. The PRISM site allows for instantaneous visualization, interpretation, and download of the data. ADS provided a final data collection report in July 2022 (Appendix B).

Figure 2-6. Locations of Depth and Flow Meters

[1] PRISM website https://prod-web-adsprod3.adsprod3.p.azurewebsites.net/welcome

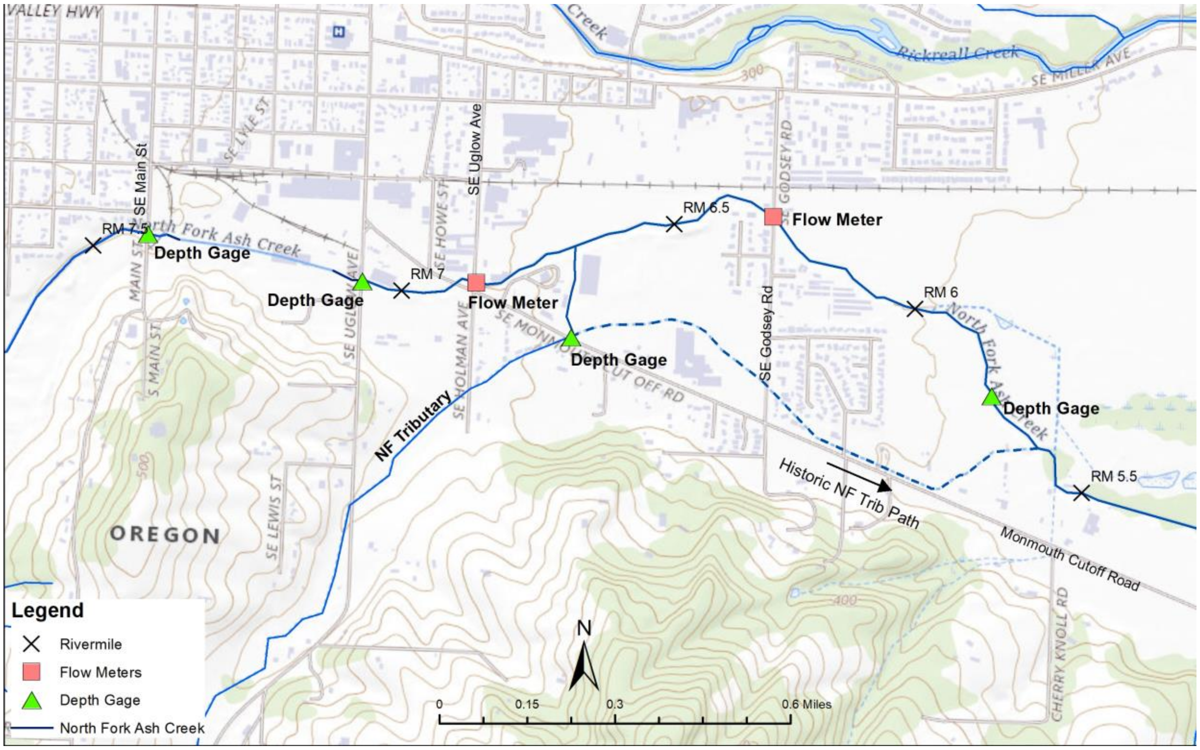


Figure 2-7. Left: Depth Meter Installed on Monmouth Cutoff Road (NF Tributary); Right: Flow Meter Installed on Godsey Road (NF Ash Creek)

The two largest storm events during the data collection period occurred within 3 weeks of each other in December 2021 and January 2022. The December event that occurred between December 18 to 21 was characterized as an atmospheric river with 4.56 inches of rainfall over 72 hours. The January event occurred between January 3 and 4 after low elevation snowfall in the Willamette Valley occurred in late December. The January event had less total precipitation (3.16 inches) but resulted in the highest flowrate of the winter season due to snowmelt. Figure 2-8 shows WSE, and hourly rainfall for the December event at Godsey Road; Figure 2-9 shows the same information for the January event.

Figure 2-8. December Storm Event, Hourly Rainfall, and WSE at Godsey Road

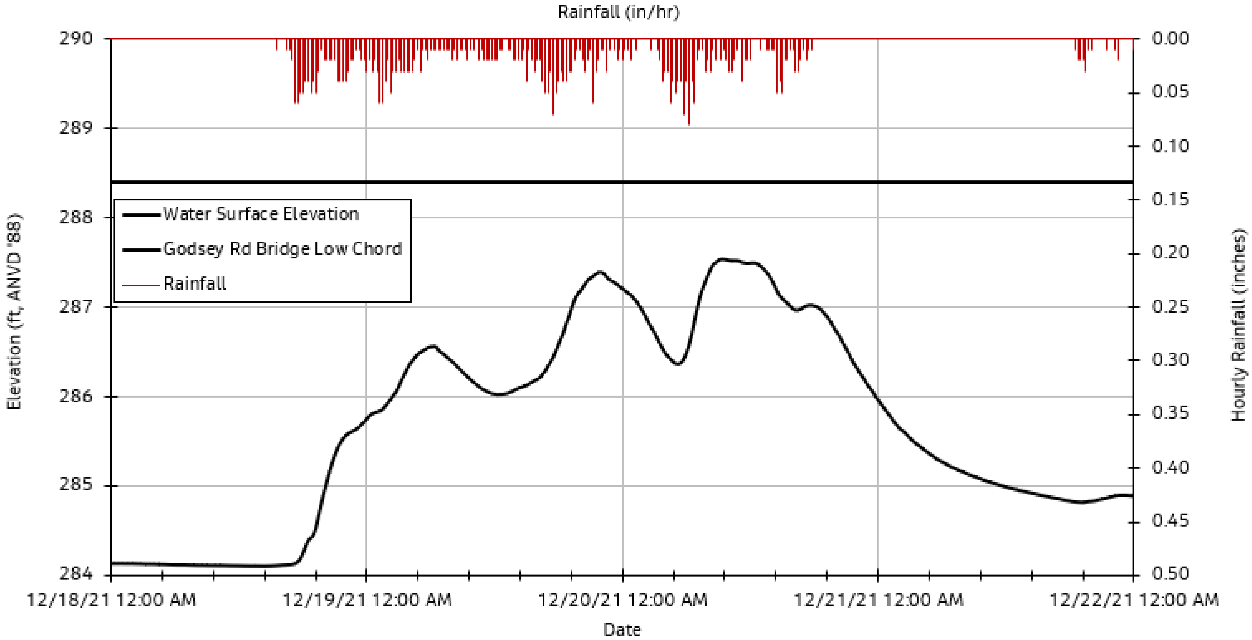
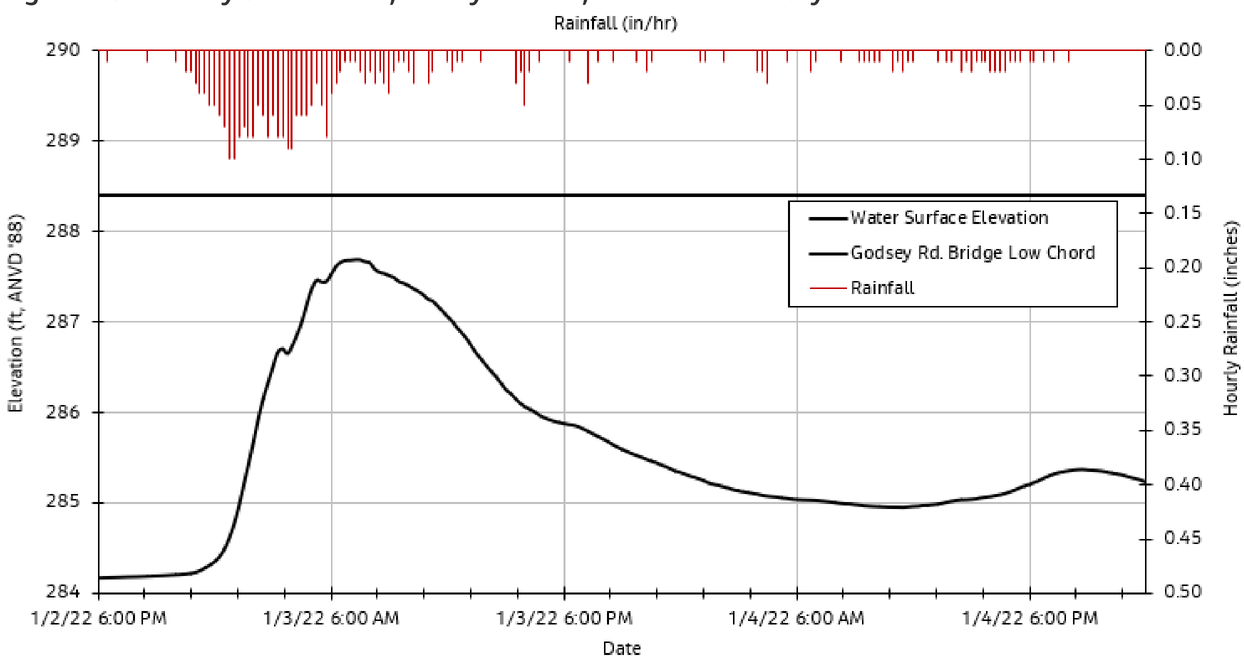


Figure 2-9. January Storm Event, Hourly Rainfall, and WSE at Godsey Road



2.3 Hydrologic Analysis

Extreme flowrates in a river system can be correlated to a statistical frequency of occurrence such as the 100-year flood event through a variety of empirical and quantitative approaches. If a location has a long history of measured streamflow data, statistical analyses can be performed with a relatively high degree of confidence. Alternatively, rainfall-runoff hydrologic models use historical measured rainfall data in conjunction with soil and land cover data to represent the basin scale processes that generate surface water runoff. The validity of hydrologic models is dependent on the quality of each data input and should be calibrated and validated whenever possible (Scharffenberg and Fleming, 2010).

Because historical gaged streamflow data for NF Ash Creek, NF Tributary, or an adequate nearby stream with similar characteristics are not available, a rainfall-runoff model was developed for NF Ash Creek and the NF Tributary. The modeling software Hydrologic Engineering Center Hydrologic Modeling System (HEC-HMS) developed by the U.S. Army Corps of Engineers (USACE) Version 4.9 was used to perform this analysis. The Soil Conservation Service (SCS) empirical approach methodology, developed by the Natural Resources Conservation Service (NRCS) was used in the HEC-HMS model development. This approach is documented in the National Engineering Handbook Part 630 Hydrology (2004). The following sections describe each required input to the HEC-HMS hydrologic model.

2.3.1 Watershed and Subbasin Delineation

The first required input to the HEC-HMS model relates to the topographic properties of the watershed of interest. The contributing area, or watershed delineation of NF Ash Creek and NF Tributary, was determined using HEC-HMS and light detection and ranging (LiDAR) data collected in 2009 (Watershed Sciences, 2009). The NF Ash Creek watershed was broken into seven subbasins based on characteristics such as hillslope relief and land use. The runoff hydrograph for each individual subbasin is computed and joined with downgradient subbasins to determine the final hydrograph at the outlet. The NF Tributary was assigned a single subbasin. The contributing area for NF Ash Creek extends to Main Street while the NF Tributary watershed extends to its confluence with NF Ash Creek. Refer to Figure 2-10 for a map of subbasin locations and Table 2-1 for subbasin properties.

Figure 2-10. Hydrologic Modeling System Model Subbasins

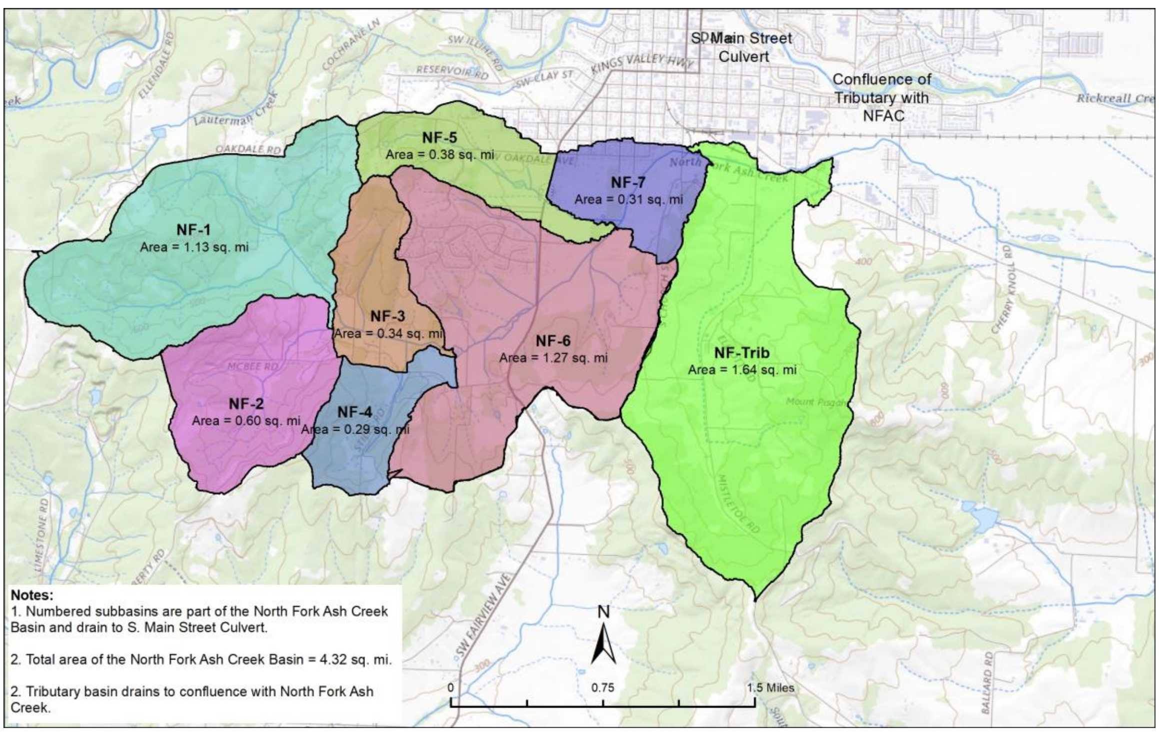


Table 2-1. **Dallas WWTP Rain Gauge IDF Results, 24-hour Storm**

Subbasin	Area (square miles)	Average Basin Slope (%)
NF-1	1.13	0.20
NF-2	0.60	0.21
NF-3	0.34	0.16
NF-4	0.29	0.20
NF-5	0.38	0.12
NF-6	1.27	0.12
NF-7	0.31	0.11
NF Tributary	1.64	0.15

2.3.2 Intensity-Duration-Frequency Analysis

Five measured precipitation stations near the NF Ash Creek and NF Tributary watersheds were evaluated for suitability (Figure 2-11). An Intensity-Duration-Frequency (IDF) analysis was performed on each gauge to determine the total depth for the 24-hour storm event. The IDF results were checked against National Oceanic and Atmospheric Administration (NOAA) Atlas 2 precipitation depths. The closest station, located at the Dallas WWTP, was used in the HEC-HMS model. The distribution of rainfall followed the SCS type IA distribution based on the physiographic region to create hyetographs for the 24-hour 2-,10-, and 100-year storms (Figure 2-12).

Climate escalated precipitation depths were also calculated to predict future storm magnitudes in the year 2080. Climate escalated rainfall calculations were prepared with SimCLIM software using the representative concentration pathway (RCP) 8.5 emissions change scenario. (Yin, Li, Urich, 2017). The RCP 8.5 scenario is described by the International Panel on Climate Change as the highest baseline emissions scenario in which emissions continue to rise throughout the twenty-first century. It represents the more conservative “business as usual” pathway that assumes emissions will not decline significantly from current levels. The 2080 precipitation depths are 13.6% to 15.4% higher than present day. Table 2-2 shows the precipitation depths for the design storms at the WWTP.

Figure 2-11. Precipitation Station Locations and 100-year Precipitation Depths Compared Against NOAA Atlas 2 Isopluvial

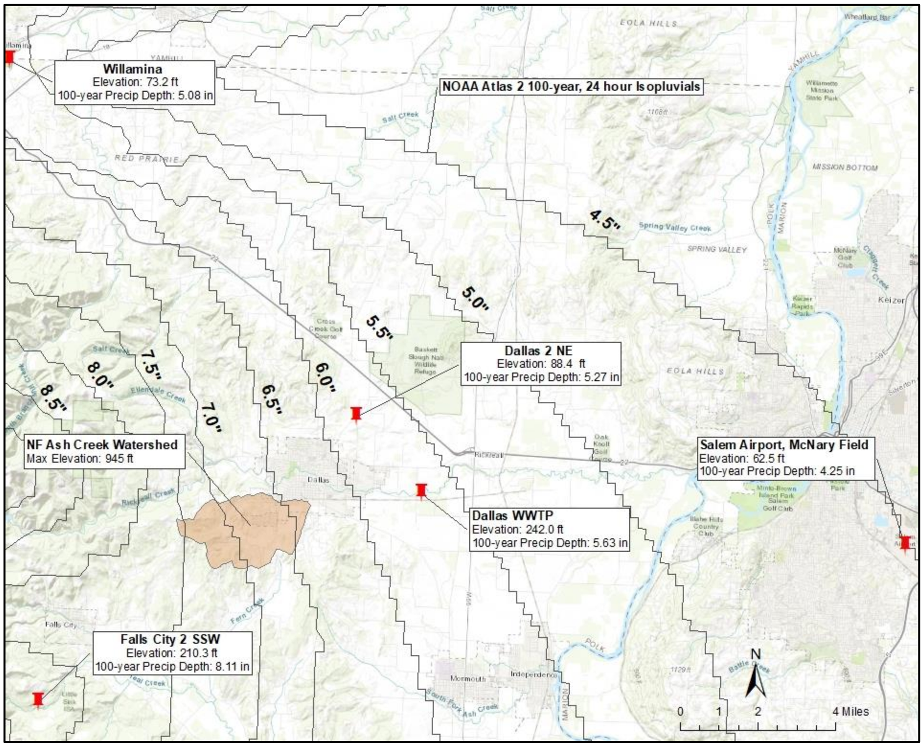


Figure 2-12. The 100-year Rainfall Hyetograph at the Dallas WWTP

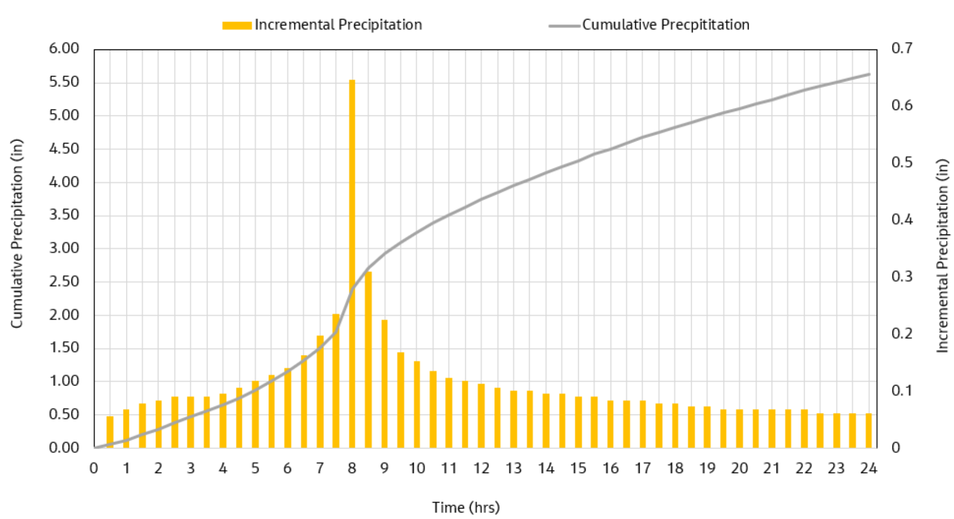


Table 2-2. **Dallas WWTP Rain Gauge IDF Results, 24-hour Storm**

Return Interval	Present Day Precipitation Depth (inches)	2080 Precipitation Depth (inches)	Percent Increase (%)
2-year	2.82	3.20	13.6
10-year	4.14	4.74	14.4

Return Interval	Present Day Precipitation Depth (inches)	2080 Precipitation Depth (inches)	Percent Increase (%)
100-year	5.63	6.50	15.4

2.3.3 Loss Method – SCS Curve Number

The SCS Curve Number (CN) Method was used to calculate loss (infiltration) for each subbasin. Input parameters included a basin-averaged CN and percent impervious surface. The CN is an aggregate value representing the geologic conditions of the soil (called the hydrologic soil groups) and land cover characteristics of the basin. CNs range from approximately 30 for highly permeable soils to 100 (for waterbodies). The greater the CN, the more impervious the soil is to infiltration and the greater the percentage of runoff. Spatial land cover was defined using the 2019 National Land Cover Database (Dewitz, 2021) and spatial hydrologic soil group data came from the NRCS SSURGO Database (NRCS, 2021). Land use types take percent impervious area into account, so this was not factored into loss calculations separately from CN.

The initial abstraction represents the initial interception of runoff at the beginning of rainfall event due to surface depressions, water intercepted by vegetation or saturation of dry soil. The antecedent soil moisture conditions are important to define and for this application values are set to zero to represent saturated wet conditions at the beginning of the storm event. Refer to Table 2-3 for the weighted CN assigned to each subbasin.

Table 2-3. **Weighted Curve Numbers**

Subbasin	Weighted Curve Number (baseline)	Weighted Curve Number (calibrated)
NF-1	71	75
NF-2	73.1	76.8
NF-3	73.9	77.6
NF-4	73.3	77.0
NF-5	79.1	83.1
NF-6	79.4	83.4
NF-7	85.1	89.4
NF Tributary	76.1	79.9

2.3.4 Transform Method – SCS Unit Hydrograph

The surface runoff calculations for each subbasin were calculated using the SCS Unit Hydrograph Method. The SCS Unit Hydrograph, or dimensionless unit hydrograph (DUH), method defines a curvilinear unit hydrograph by first setting the percentage of the unit runoff that occurs before peak flow. In effect, the unit hydrograph defines the flashiness of the runoff hydrograph and is based on a variety of factors such as size, slope and length of the watershed, geologic characteristics, and amount of storage. The standard unit hydrograph peak rate factor (PRF) where 37.5% of the unit runoff occurs before the peak was developed studying small agricultural drainages and was used for all subbasins in the baseline model.

The required inputs for the unit hydrograph are lag time (in minutes) and the PRF of the DUH. Lag time is a function of time of concentration and is the time difference between the peak precipitation intensity and the peak runoff rate from the subbasin in question. For ungauged watersheds, the lag time is estimated as 0.6 times the time of concentration. The time of concentration is defined as the time required for water to travel from the most remote point in the watershed to the outlet point and is calculated based on the watershed terrain. It is recommended that the standard PRF be used unless calibration is available; the PRF was used during the calibration process (refer to Section 2.3.6).

Table 2-4. Time of Concentration and Lag Time

Subbasin	Time of Concentration (minutes)	Lag Time (minutes)
NF-1	412.3	247.4
NF-2	247.5	148.5
NF-3	325.2	195.1
NF-4	264.1	158.5
NF-5	376.0	225.6
NF-6	402.2	241.3
NF-7	231.5	138.9
NF Tributary	511.3	306.8

2.3.5 Routing Method – Lag Routing

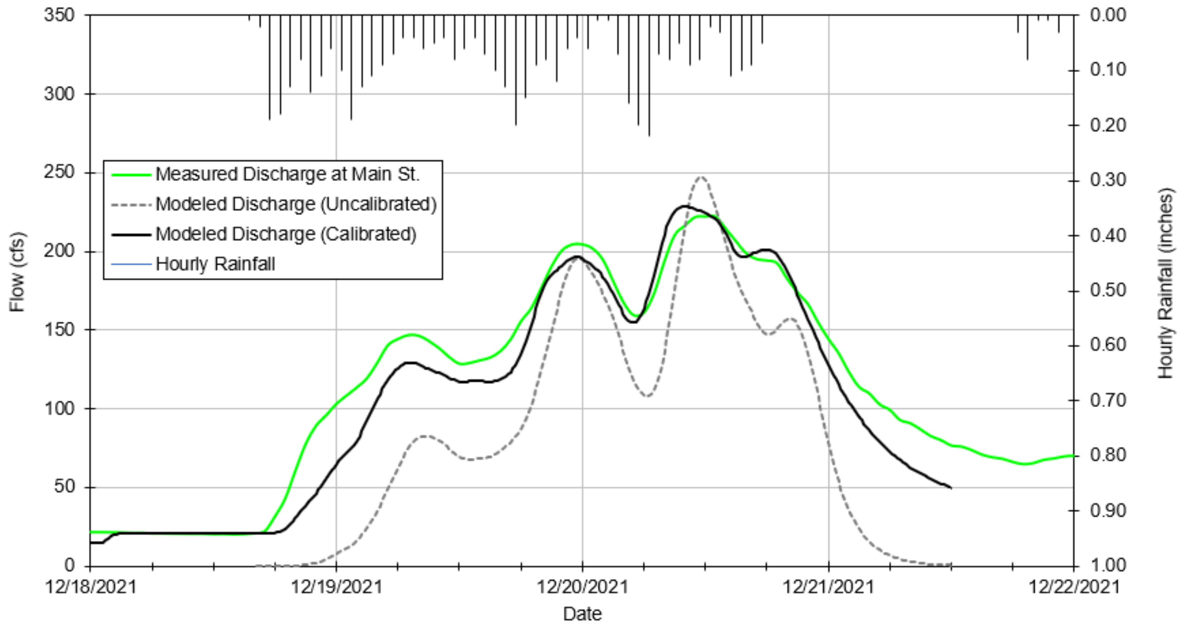
A routing method is required to simulate the flow hydraulics once runoff has consolidated beyond sheet or rill flow to streamflow. Hydrologic models have simplified forms to represent flow hydraulics and caution should be used if long reaches of flow routing is performed with these simplified approaches. The Lag Routing method was chosen to represent the hydrograph translation downstream and does not include any attenuation or diffusion processes. A steady state condition was assumed so that no losses or gains occurred once flow reached the stream. Discharge was set equal to inflow for each of the reaches. Routing lag time (in minutes) is the time that the inflow hydrograph will be translated. Inflow to the reach is delayed in time by an amount equal to the specified lag, and then becomes outflow. The lag for each reach was roughly estimated using Manning's equation and the length of the reach.

The result of the HEC-HMS modeling process is the computation of subbasin runoff hydrographs (runoff from each individual subbasin versus time). These hydrographs are then routed downstream and combined at junctions to provide a combined hydrograph at the model outlet.

2.3.6 Calibration

The hydrologic model was calibrated using observed rainfall data at the Dallas WWTP and discharge data collected at Holman Avenue for the December 2021 event. For comparison to modeled discharge at Main Street, assumed stormwater inflows were subtracted from the measured discharge at Holman Avenue to produce "measured" discharge at Main Street. The January event was not used for calibration due to low elevation snow in the watershed; rain on snow events were not accounted for in the hydrologic model. Figure 2-13 shows the results of the baseline (uncalibrated) model versus observed and the final (calibrated) model.

Figure 2-13. December 18–21, Calibration Event, Measured vs Modeled Discharge at Main Street



The following observations and model calibration parameters were made based on the measured data:

The uncalibrated model produced flashier (quicker discharge increases and decreases) results with less total volume compared to measured data. As a result, the PRF was adjusted to represent the attenuation and wider hydrograph. CNs were globally raised to increase the total runoff volume to better match measured data. There is clear baseflow during the December event, this changes by month and antecedent conditions. A baseflow of 20 cubic feet per second (cfs) was added for December and January.

Little to no initial abstraction is present for the December event as surface depressions and soil moisture were saturated; initial abstraction defines the amount of precipitation that must fall before surface runoff results. The default initial abstraction value in HEC-HMS was changed and set to zero for all subbasins to represent saturated initial conditions.

In addition to the December calibration event, two other events (January 1 to 4 and February 28 to March 5) were modeled as validation to the calibration process performed on the December event. These charts are shown on Figure 2-14 and Figure 2-15. Mean residual, or difference between modeled and measured data for flowrates above 100 cfs for the January and February events are 11.6% and 2.0%, respectively. A threshold was applied for summary of residuals given the interest and calibration focus on high flow events. Flows when rainfall is below 0.08 inch/hour are less well predicted by the model due to subtle interactions in the basin and are particularly acute on the receding hydrograph limb.

Figure 2-14. January 1–5 Validation Event, Measured vs Modeled Discharge at Main Street

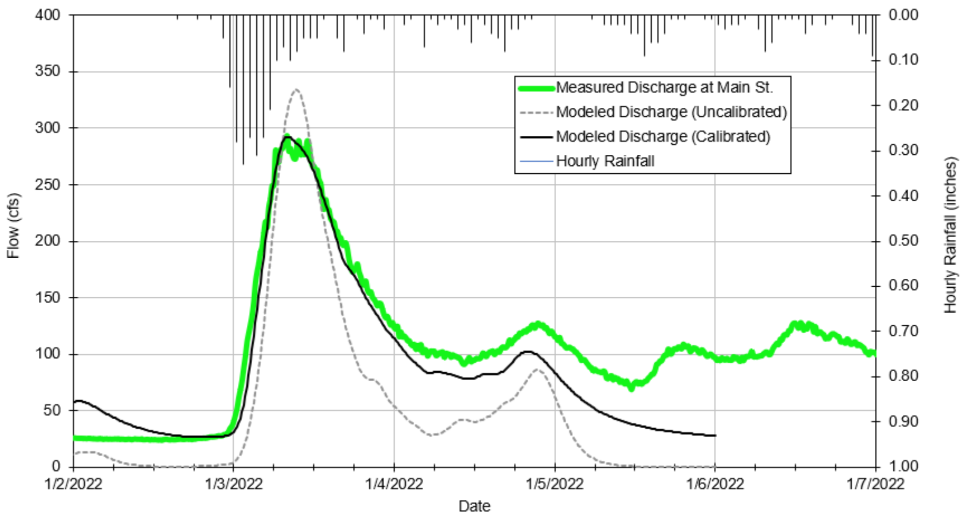


Figure 2-15. February 28 – March 5 Validation Event, Measured vs Modeled Discharge at Main Street

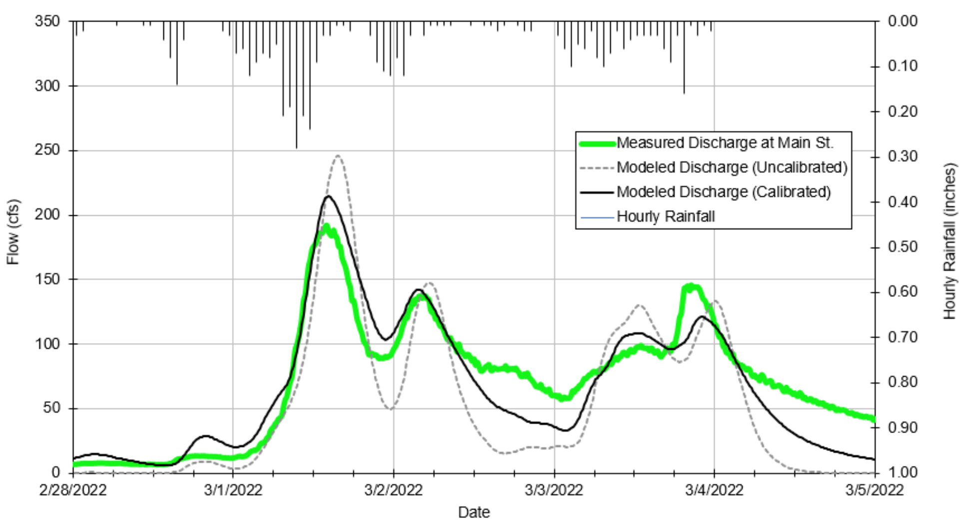


Table 3-5 summarizes hydrologic model calibration investigation performed by Donigian (2000) to help put the mean residual values in context. The values in the table attempt to provide some general guidance, in terms of the percent mean errors or differences between simulated and observed values, so that users can gage what level of agreement may be expected from the model application. The NF Ash Creek hydrologic model falls within 2 to 12% modeled error, falling in the “good” to “very good” brackets. Any future monitoring data programs should be used to validate and update the current model with a specific interest in flows outside the range of data presently available. The final calibrated model input parameters are summarized in

Table 2-5. General Calibration/Validation Targets or Tolerances for Applications (Donigian, 2000)

	% Difference Between Simulated and Recorded Values		
	Very Good	**Good**	**Fair**
Hydrology/Flow	<10	10–15	15–25
Sediment	<20	20–30	30–45
Water Temperature	<7	8–12	13–18

	% Difference Between Simulated and Recorded Values		
Water Quality/Nutrients	<15	15–25	25–35
Pesticides/Toxics	<20	20–30	30–40

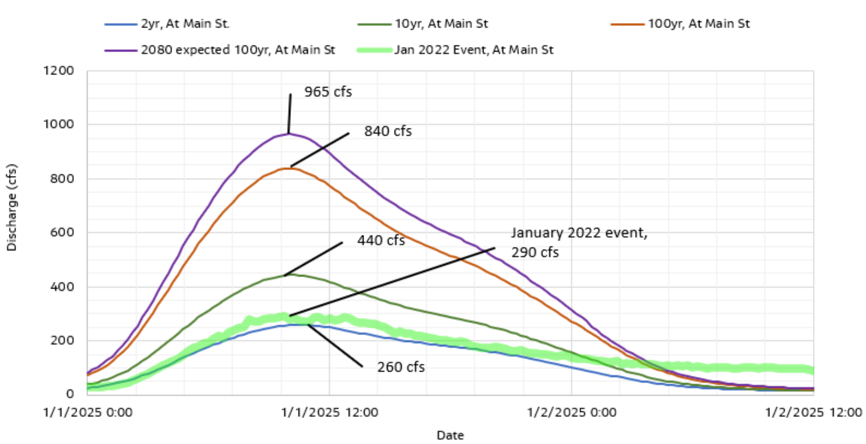
Table 2-6. **Summary of Calibration Parameters and Adjustments**

Subbasin	Curve Number		Initial Abstraction		Peak Rate Factor	
	Baseline	**Calibrated**	**Baseline**	**Calibrated**	**Baseline**	**Calibrated**
NF-1	71	75 (+5%)	0.82	0	484	250
NF-2	73.1	76.8 (+5%)	0.74	0	484	250
NF-3	73.9	73.9 (+5%)	0.71	0	484	250
NF-4	73.3	77.0 (+5%)	0.73	0	484	250
NF-5	79.1	83.1 (+5%)	0.53	0	484	200
NF-6	79.4	83.4 (+5%)	0.52	0	484	150
NF-7	85.1	89.4 (+5%)	0.35	0	484	250
NF Tributary	76.1	79.9 (+5%)	0.63	0	484	250

2.3.7 Model Results

The calibrated HEC-HMS model was applied to the 24-hour design storm hyetographs previous discussed in Section 2.3.2. The resultant hydrographs for the 2-, 10- and 100-year storms are displayed on Figure 2-16. Table 2-7 summarizes the peak flowrate derived from the HEC-HMS model compared to previous analyses performed on NF Ash Creek.

Figure 2-16. Calibrated Design Storm Hydrographs on NF Ash Creek and NF Tributary



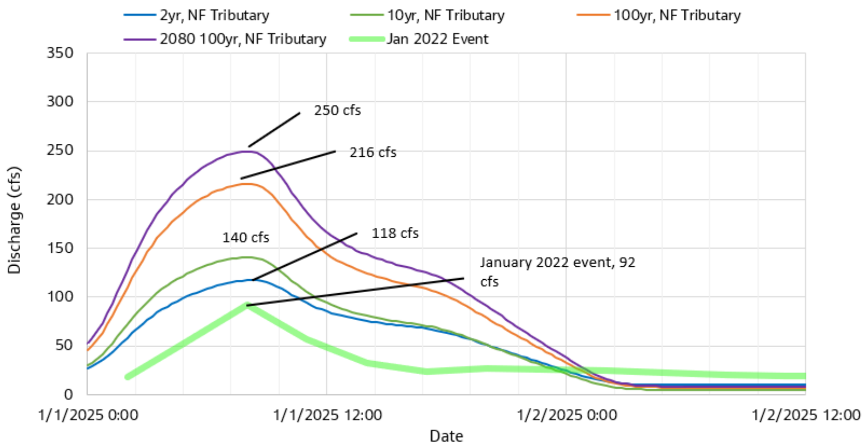


Table 2-7. Summary of Peak Flowrates on NF Ash Creek and NF Tributary

Creek	Location	100-year Discharge		
		Flood Insurance Study (1985)	SWMP (2014)	NF Ash Creek Feasibility Study (2023)
NF Ash Creek	Uglow Street	810	1,077	840
	Monmouth Cutoff Road	1,000	1,281	910
	Godsey Road	1,000	1,694	1,230
NF Tributary	Monmouth Cutoff Road	-	306	215

Notes:

1. USGS regression equations (Cooper, 2006)
2. SWMM model developed as part of SWMP (CH2M, 2016)
3. Discharge frequency relationship LPIII (FIS, 2006)
4. 2022 NF Ash Creek Basin Hydrologic Model

2.4 Hydraulic Model Development

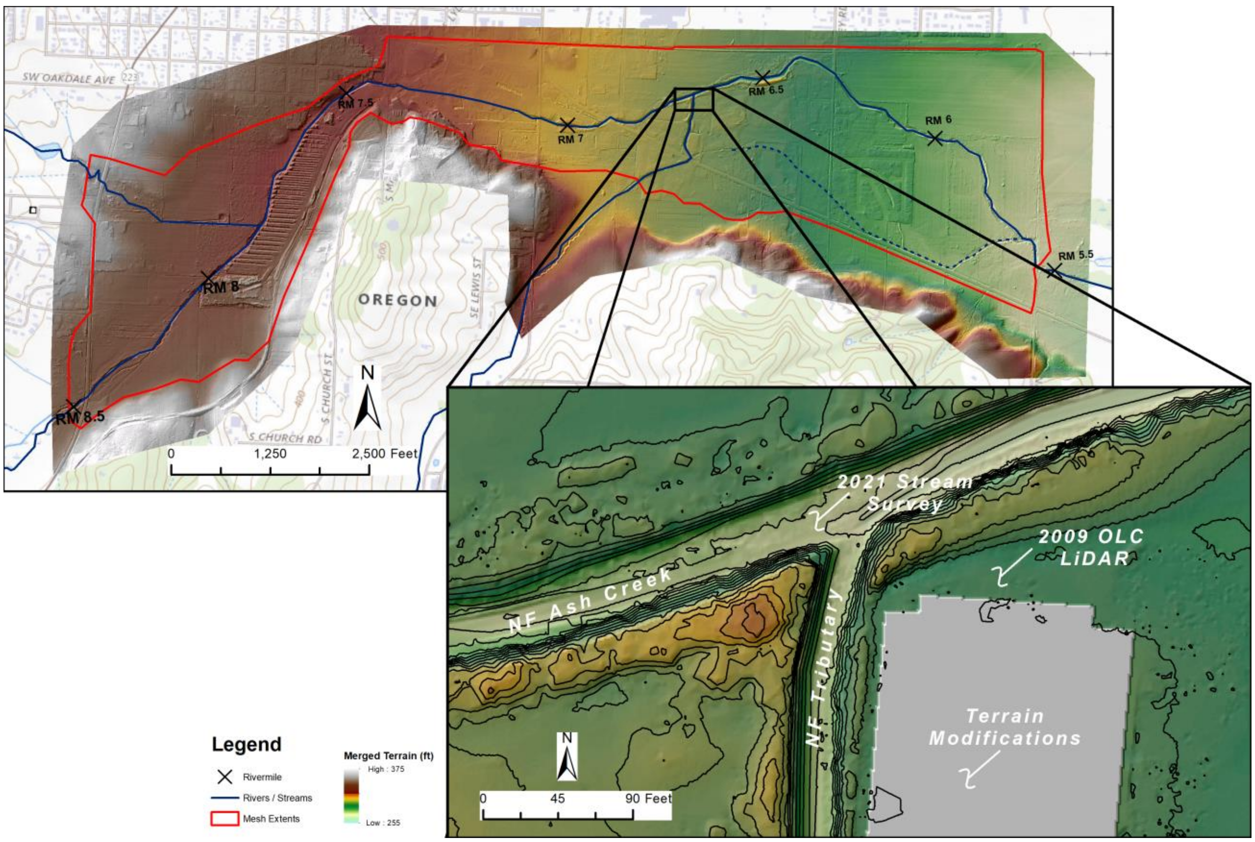
A 2D, unsteady hydraulic model was developed for the project area using the USACE Hydrologic Engineering Center's River Analysis System (HEC-RAS) Version 6. A 2D hydraulic model solves a generalized form of the Navier Stokes equations, referred to as the shallow-water equations (SWE) where the vertical length scale is considered negligible relative to the horizontal components. 2D SWE models determine water depth and velocity in the x- and y-directions and are depth averaged (z-direction). A digital terrain model covering the area of interest is discretized into unique cells (or elements) which provide the foundational mesh over which surface water is routed. Cells vary in size and shape to represent the contours, gradient changes of the topography, and areas of particular interest, the appropriate number of cells in a model is a balance of the desired spatial discretization and computational efficiency. HEC-RAS uses sub-grid bathymetry (Casulli, 2008) which computes flow area hydraulic tables to retain the underlying complexity of the terrain for mass conservation.

The existing conditions hydraulic model was calibrated to the January 2022 storm event using measured stage data to adjust channel flow roughness. The calibrated roughness map was then applied to the design storm model simulations. The proposed conditions model evaluates the effectiveness of various projects on the intended result of lowering WSE during a flood event on adjacent structures and residents. This is evaluated for more frequently occurring floods (10-year) and extreme widespread floods (100-year and 2080 100-year). The preferred alternative is a comprehensive solution for each sub-reach within the project area.

2.4.1 Topographic Data and Model Mesh

Topographic data for the hydraulic model was derived from two primary sources: Oregon LiDAR Consortium data from 2009 and stream survey data collected in fall 2021 (refer to Section 2.1.1). The Oregon LiDAR Consortium LiDAR was used in all areas outside the immediate stream channel where dense canopy cover is not present to impair the laser scanner from returning a signal of the ground elevation. NF Ash Creek and its tributaries have prolific aquatic and upland vegetation impeding on the streambed and banks and degrading the quality of topographic LiDAR data. To alleviate this, the field stream survey intentionally collected data in the creek channel and banks so that the LiDAR could be supplemented with this ground survey data. Additional terrain modifications were performed in HEC-RAS to represent miscellaneous terrain elements not included in the survey such as buildings, surface depressions with standing water, and small culverts in roadside ditches. The merged terrain dataset is shown on Figure 2-17.

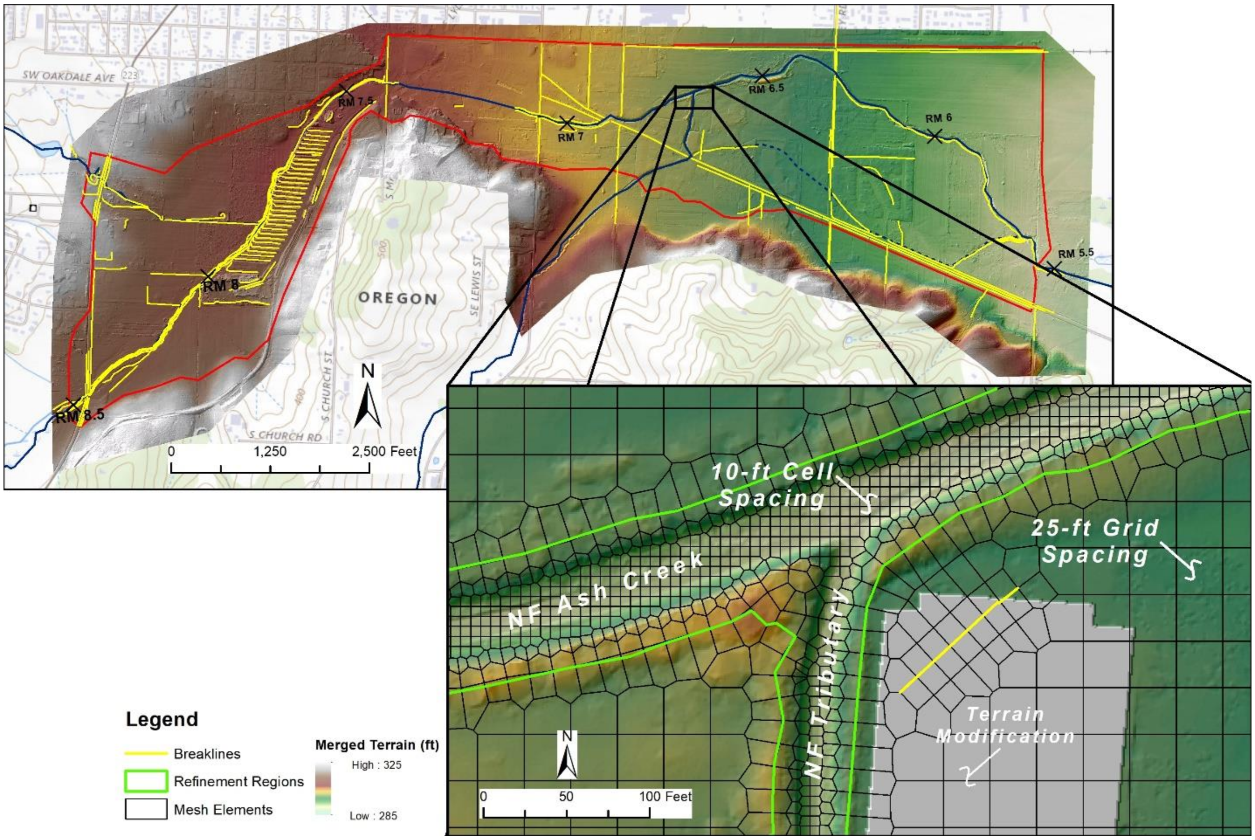
Figure 2-17. Merged Terrain Dataset, zoomed in at confluence of NF Tributary and NF Ash Creek



The model mesh is centered on the NF Ash Creek and NF Tributary channel and floodplain. The floodplain is comprised of quadrilateral elements that are 25 square feet, the channel is comprised of quadrilateral elements that are 10 square feet. This results in 57,000 total elements in the model domain. Breaklines are added throughout the model domain on high ground. Aligning cell faces to high ground is good practice to accurately represent flowpaths, particularly on low gradient floodplains. Figure 2-18 shows the model mesh and underlying terrain.

Each proposed conditions model has a unique model mesh based on the underlying proposed terrain and need to customize the mesh. Each proposed conditions mesh has similar channel and floodplain cell sizes and total number of cells.

Figure 2-18. Model Mesh with Breaklines, zoomed in at Confluence of NF Tributary and NF Ash Creek



2.4.2 Boundary Conditions

Boundary conditions are required to simulate the flow of water into and out of the model domain. There are three primary inflows, five lateral stormwater inflows, and one outflow at the downstream end of the model as shown on Figure 2-19. Table 2-8 summarizes the inflow locations and magnitudes.

The three primary inflow locations: (1) Kings Valley Tributary Inflow, (2) NF Ash Creek Inflow, and (3) NF Tributary are dynamic hydrographs based on the specified design storm and are derived from the HEC-HMS modeling described in Section 2.3. The lateral inflow location and magnitudes are informed by the 2016 SWMP, which identified primary outfall locations from the stormwater system into NF Ash Creek. The outflow boundary condition spans the length of inundated area from SE Miller Avenue to Monmouth Cutoff Road, allowing water in creek and adjacent fields to leave the system. The outflow boundary condition assumes uniform (normal) flow conditions continue downstream of the modeled flow domain; the defined normal depth slope is 0.19%.

In the case of the calibration events, all inflows are represented as each respective percentage of the total drainage area contributing to the discharge measured at Holman Avenue and Godsey Road.

Figure 2-19. Boundary Conditions in the 2D Model

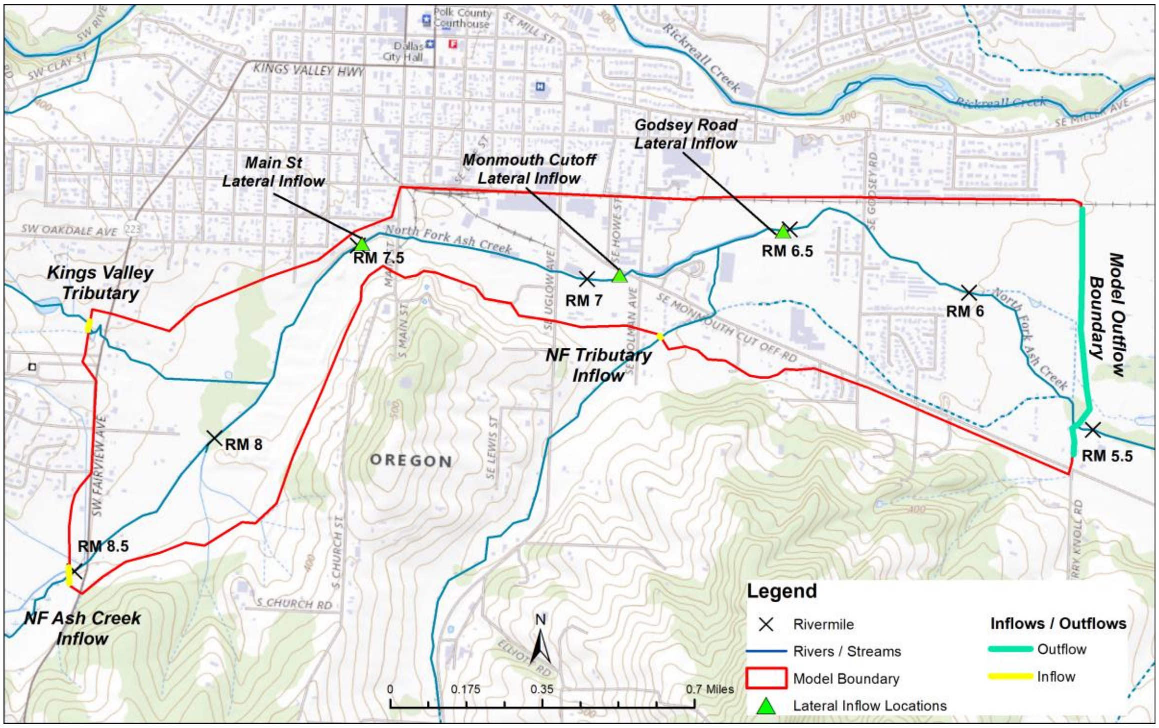


Table 2-8. Modeled Peak Inflows for the 2-, 10- and 100-year Design Storm Events

Inflow	2-year	10-year	100-year
NF Ash Creek Inflow	185	315	595
Kings Valley Tributary	25	45	80
NF Tributary Inflow	120	175	215
Main Street Lateral Inflow	50	90	165
Monmouth Cutoff Road Lateral Inflow	55	80	140
Total Inflow	435	730	1,320

2.4.3 Roughness Coefficients

Flow roughness in stream channels is due to kinetic friction induced by bed and bank grain material, bedforms, planform, vegetation, large instream wood, and other obstructions (Yochum, 2018). Stream channel roughness values were estimated using the U.S. Forest Service flow resistance coefficient Computation Tool (Yochum, 2018). The tool uses tabular, photographic, and quantitative predictions to provide various estimates of roughness, the spreadsheet is provided in Appendix C. An average of four applicable quantitative methods, Rickenmann and Recking (2011), Jarrett (1984), Hey (1979) and Limerinos (1970), were used alongside photographic guidance as an initial estimate of channel roughness. The quantitative equations are based on streambed aggregate size (D50 and D84) and hydraulic parameters such as median thalweg depth. The streambed aggregate size is based on three pebble counts collected in each reference reach (Section 2.1.2) and hydraulic parameters based on hydraulic model results. The inputs and results for Manning's roughness coefficients are presented in Table 2-9.

Table 2-9. Inputs for Manning's Roughness Coefficient Quantitative Predictions

Input Parameter	Reference Reach 1	Reference Reach 2	Reference Reach 3
Inputs			
Average Slope *(%)*	0.5%	0.5%	0.9%
D50/D84 *(millimeters)*	17.2/42.1	55.3/108.9	17.4/47.1
Hydraulic Radius, R *(feet)*	5.8	4.8	6.0
Mean Flow Depth, d (feet*)*	4.9	4.3	4.5
Resultant Roughness Coefficients			
Rickenmann and Recking (2011)	0.03	0.035	0.031
Jarrett (1984)	0.039	0.041	0.049
Hey (1979)	-	0.035	-
Limerinos (1970)	0.028	0.035	0.029
Photographic Guidance: Arcement and Schneider (1989)	0.062	0.062	0.062
Average	0.043	0.045	0.039
Average N-Value Across Reaches	**0.043**		

The overall channel n-value for NF Ash Creek was 0.043; this was adjusted during calibration as described in Section 2.4.6. Existing floodplain roughness was estimated using aerial imagery and field observations. Manning's n-values were assigned using guidance from *Open Channel Hydraulics* (Chow, 1959).Table 2-10 shows the existing Manning's n-values used for channel and floodplain modeling. Refer to Figure 2-20 for a map of existing conditions Manning's n-values.

Figure 2-20. Flow Roughness Parameterization in the 2D Model

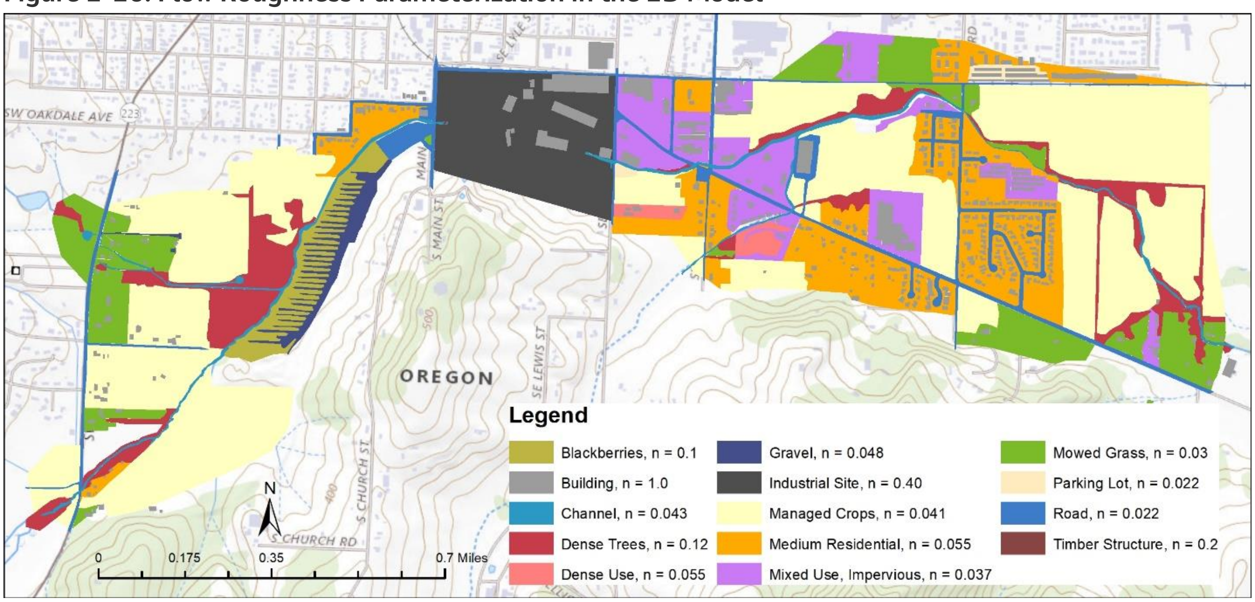


Table 2-10. Flow Roughness Values used in the Hydraulic Model

Cover Type	Existing Conditions Manning's N	Cover Type	Existing Conditions Manning's N
Stream Channel	0.043	Dense Use	0.055

Cover Type	Existing Conditions Manning's N	Cover Type	Existing Conditions Manning's N
Timber Bridge	0.2	Industrial Site	0.04
Road	0.022	Gravel	0.048
Building	1.0	Dense Trees	0.120
Parking Lot	0.022	Blackberries	0.100
Mixed Use, Impervious	0.037	Managed Crops	0.041
Residential, Medium	0.055	Mowed grass	0.030

2.4.4 Structures

A total of 11 structures are included in the 2D model, nine of which cross NF Ash Creek and a single crossing on both NF Tributary and the Kings Valley Tributary. The field survey collected key structure information such as structure span and length, inlet/outlet configuration, low chord elevation and road crown elevation.

HEC-RAS has the ability to model crossings as either bridges or culverts that use two separate approaches for calculating conveyance and head loss through the structure. Seven of the nine structures on NF Ash Creek were modeled as bridges, while two (culverts across Industrial Site and Kings Valley Highway) were modeled as culverts. The timber bridge (Appendix A-#81-35) is a matrix of partially failed wood columns, supporting members and transient debris. The timber bridge was not surveyed because of these complexities and was incorporated into the model as a discrete area of high roughness (n=0.10). Table 2-11 summarizes the bridge structures, location, and geometry.

Table 2-11. Stream Crossing Conveyance Structure Location and Geometry

Structure Location	Stream	River Mile	Modeled Structure Geometry
Kings Valley Tributary Culverts (by Cemetery)	Kings Valley Tributary	0.42 (on Cemetery Tributary)	Two 24-inch-diameter Culverts
Kings Valley Highway Bridge	NF Ash Creek	8.53	20-foot Span Bridge
Bus Yard Bridge	NF Ash Creek	7.45	50-foot Span Bridge
Main Street Bridge	NF Ash Creek	7.40	12-foot span by 6 foot rise box culvert
Industrial Site Culverts	NF Ash Creek	7.10–7.38	Two sections of 84-inch Culvert
Uglow Avenue Bridge	NF Ash Creek	7.06	40-foot Span Arch Bridge
Monmouth Cutoff Bridge (NF Ash Creek crossing)	NF Ash Creek	6.91	50-foot Span Bridge
Holman Road Bridge	NF Ash Creek	6.88	30-foot Span Arch Bridge
Godsey Road Bridge	NF Ash Creek	6.30	40-foot Span Bridge
Diversion Structure	NF Ash Creek	5.76	Bridge and Weir
Monmouth Cutoff Bridge (NF Tributary Crossing)	NF Tributary	0.17 (on NF Tributary)	Two 6 by 4-foot Box Culverts

Additionally, handheld LiDAR was collected at three of the of the nine NF Ash Creek crossings to provide three-dimensional (3D) visualization and greater detail of structure complexities that interact with and influence flow through each bridge. Figure 2-21 shows the 3D rendering of the Kings Valley Highway Bridge with the various flow widths due to columns and the simplified cross section in the hydraulic model.

The structures on NF Ash Creek play a key role in flooding of adjacent areas. The hydraulic capacity of the structures on NF Ash Creek also varies greatly at each crossing. To graphically represent the relative difference in hydraulic capacity, a rating curve (stage-discharge curve) for all structures was created (Figure 2-23). The end point of each rating curve represents the point at which overbank flooding occurs. The 2-, 10-, and 100-year recurrence interval discharges are marked on the graph for reference. These discharges were calculated at Main Street and are inclusive of flows from NF Ash Creek, the Kings Valley Tributary, and the Main Street lateral inflow. Several of the structures are undersized for the 10-year event, including the Kings Valley Highway bridge and the Industrial Site culverts. The Godsey Road, Uglow Avenue, and Main Street bridges are significantly undersized for the 100-year event. It is difficult to determine the exact capacity of several of the structures because they are under the influence of backwater from downstream structures. For example, the bus yard bridge and the Monmouth Cutoff bridge may be able to convey the 100-year flow if the structures immediately downstream from them (Main Street and Holman Avenue bridges) were removed.

Figure 2-21. 3D Visualization of Bridge Crossing at Kings Valley Highway

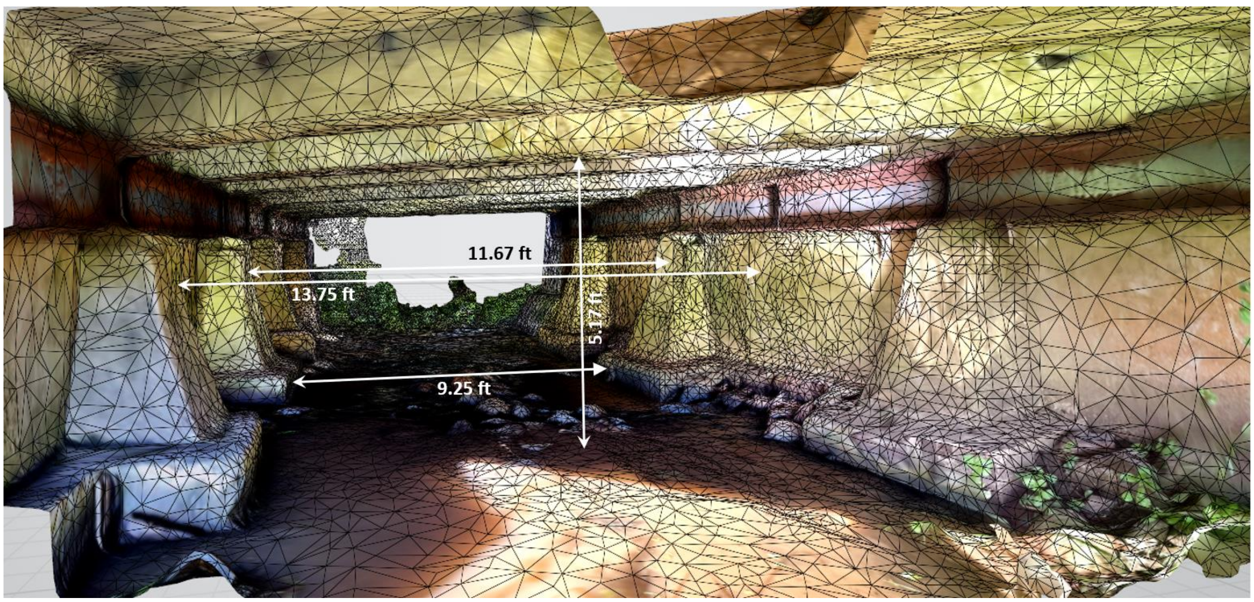


Figure 2-22. 3D Visualization of Bridge Crossing at Godsey Road

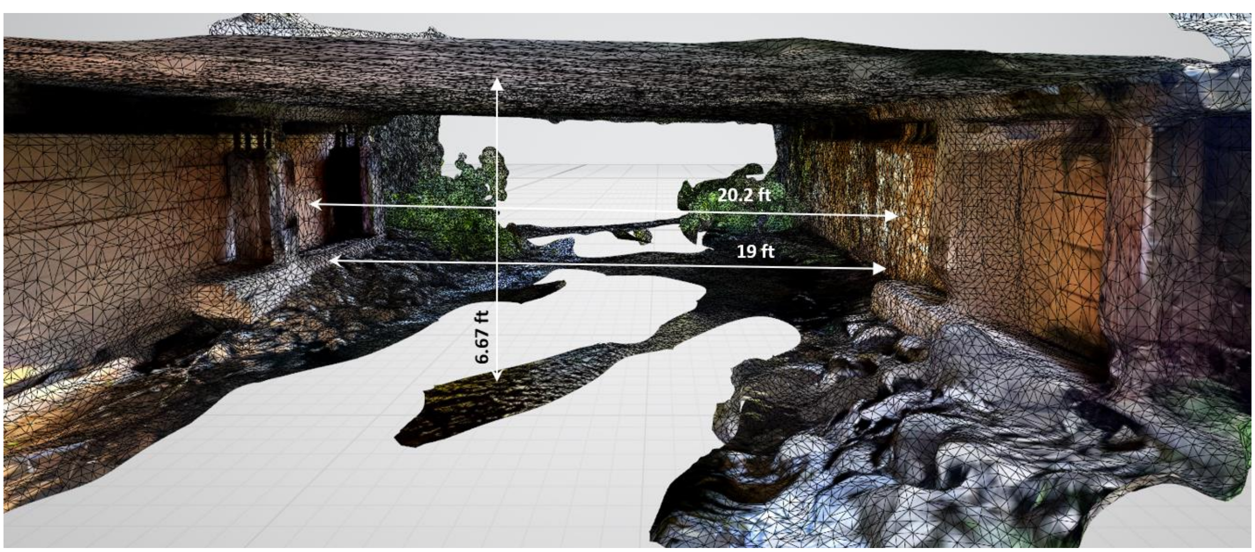
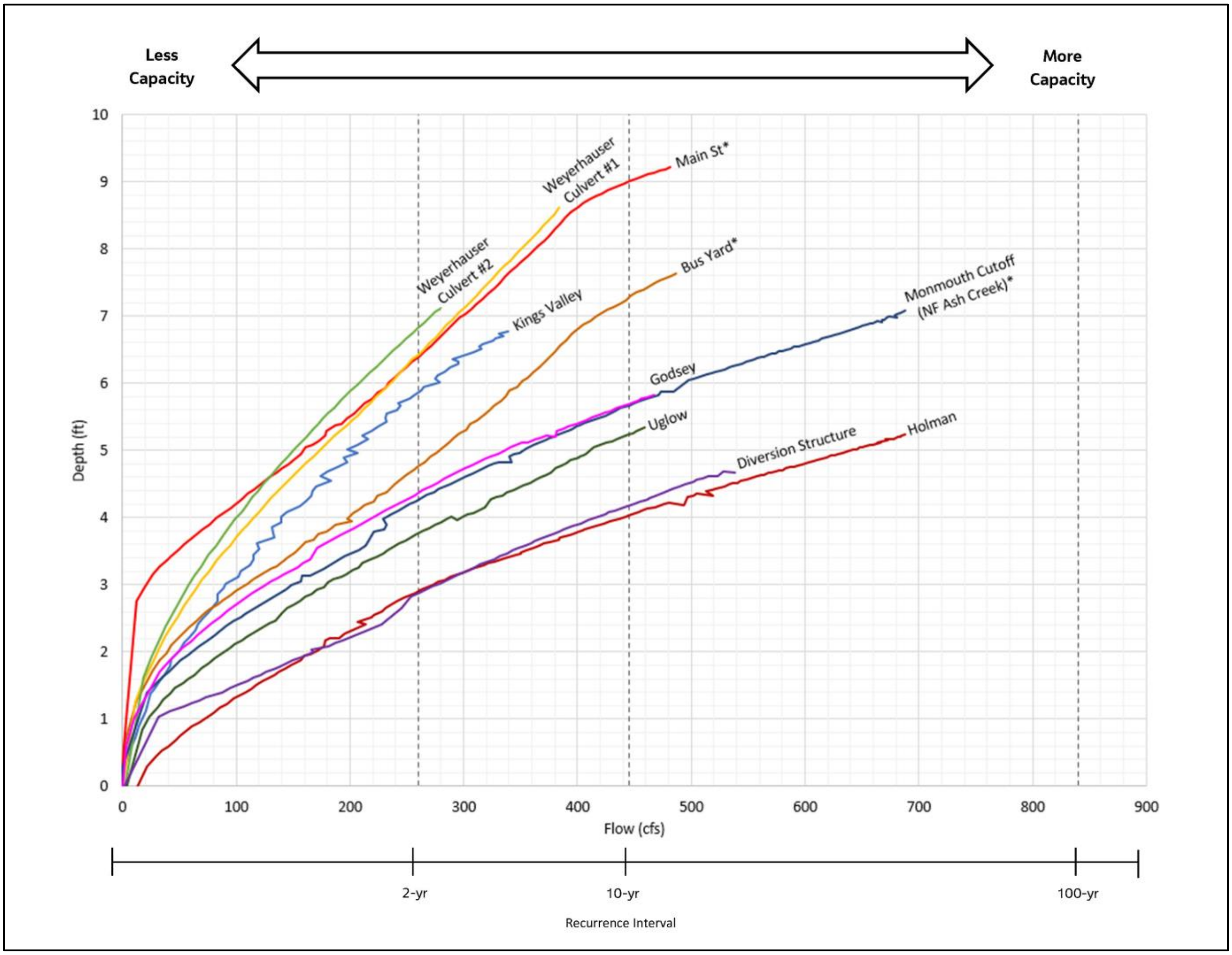


Figure 2-23. Rating Curve for Structures on NF Ash Creek (structures marked with an asterisk are backwatered by downstream structures)



2.4.5 Model Run Controls and Assumptions

All model simulations are unsteady (dynamic) models which means the flowrate varies with time to simulate a flood hydrograph. The simulated length of time for all design events was 30 hours, which allows the 24-hour design storm to route through the project reach. The modeled timestep is variable based on the Courant number and varies from 0.6 to 10 seconds. The Courant number is a ratio of velocity and timestep over cell size and is a measure of model stability a value of less than 1 being stable, and a value greater than 1 being less accurate and possibly unstable. The numerical solution scheme is set to SWE-ELM (Shallow water equation Eulerian-Lagrangian Method), which is recommended for models with abrupt contractions and expansions and highly dynamic flood waves. Key limitations of the hydraulic model include:

The model assumes constant flow resistance across flow depths and is limited to using Manning's *n* to characterize resistance, which is independent from flow depth. At lower flow depths, friction is higher relative to larger flow depths. Flow resistance, particularly on the floodplain, also varies seasonally as deciduous trees and shrubs shed their leaves in winter.

The model is fixed bed; all features are static. However, at flood stage a fraction of the bed material is mobile and creates pools and gravel bars, resulting in dynamic channel morphology. The evolution of the bed is not captured in the model.

The hydraulic model does not account for infiltration loss, groundwater, or hyporheic flow.

2.4.6 Calibration

Measured discharge data from the January 1 to 4, 2022, event was used to calibrate the hydraulic model to depth data collected at Main Street, Holman Avenue, and Godsey Road on NF Ash Creek and Monmouth Cutoff Road on NF Tributary. The goal of model calibration is for modeled results to match field data and anecdotal observations. Calibration on NF Ash Creek was guided by the following principles:

- The resolution and magnitude of adjustments made for calibration must be consistent with the resolution and accuracy of the data being used to guide calibration
- Parameter adjustments should be small (relative to initial estimates) and only implemented when strongly supported by the data.
- The goal is not to reduce model errors to absolute minimums but rather to make reasonable adjustments based on physical observations and then quantify and document the resulting model error and bias.

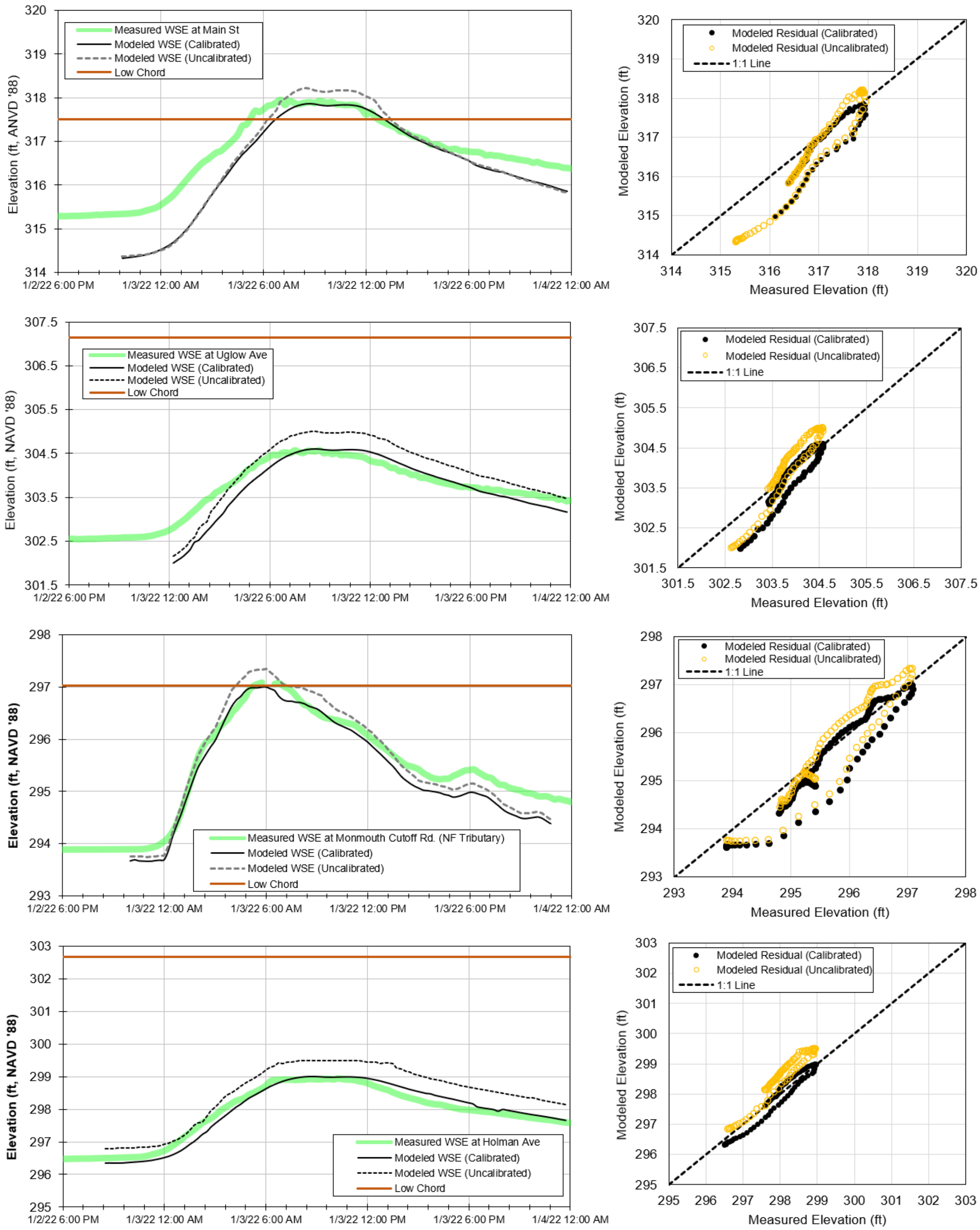
The January event was near bankfull but was confined to the channel and adjacent low-lying drainages. As a result, the primary calibration parameter was channel roughness. Flow resistance is the most common calibration parameter because of its high uncertainty and relatively high sensitivity to influence results (Kuhanestani et al, 2022). There are, however, other calibration parameters that were investigated but ultimately not implemented, such as hydraulic structure coefficients or topographic data calibration. Flow roughness is an inherently dynamic parameter and difficult to define across a range of storm events and flowrates, as such it serves as an appropriate calibration parameter.

No temporal shifting of the data between the measured location and the boundary condition where flow enters the model domain occurred. Therefore, a small temporal offset in the timing of the modeled and measured data is expected; this offset is within an hour, as travel time in the model is relatively short (less than 1 hour). The fourth ADS instrument at the diversion structure (Mile Post 5.7) was dislodged on December 23, 2021, and not operational during the January event (refer to Appendix B for details). Discharge and velocity were compared to measured data at the flow meters (Holman Avenue and Godsey Road) but no calibration to the data was performed.

The primary outcome of the calibration process is greater spatial detail of roughness features in and around the channel. Objects such as the timber bridge, which was not in the baseline model, were included to better reproduce WSEs upstream of Main Street. Similarly, regions with Himalayan blackberry and other grasses were characterized and added to the calibrated model. The baseline composite channel roughness value of 0.043 was globally reduced to 0.032 to approximate the channel substrate roughness, and locally high roughness added where appropriate.

A time series of WSE at all four locations of measured and pre- and post-calibrated results along with model residual is shown on Figure 2-24 and Figure 2-25. Field photos (Appendix A; pages 2 to 17) were collected on January 3 from 11:00 a.m. to 1:30 p.m., during the January flood event for reference. Figure 2-26 shows Godsey Road compared with the model predicted WSE at the same time. At low flows, the accuracy of the terrain dictates model performance, not roughness or bridge structure capacity. As such, the model residual is inversely proportional to flowrate, driven by the inverse relationship between roughness and flow depth. This phenomenon is discussed at length *in Calibration approaches for Hydraulic River Models for High and Low Flows: A Review* (Kuhanestani, 2022). In short, models are biased towards the range of flows over which calibration occurred, in the case of this project, the bankfull discharge.

Figure 2-24. Calibration results from January 2022



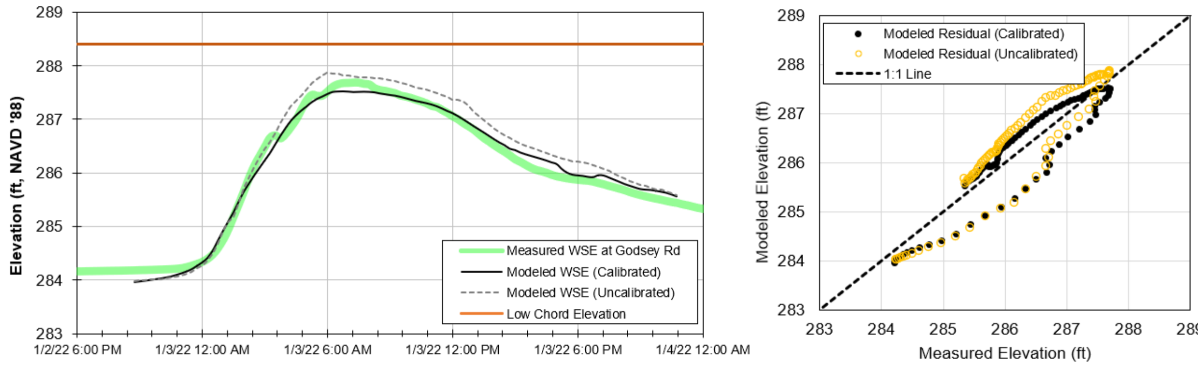


Figure 2-25. Calibration Results from January 2022; Time Series of Velocity

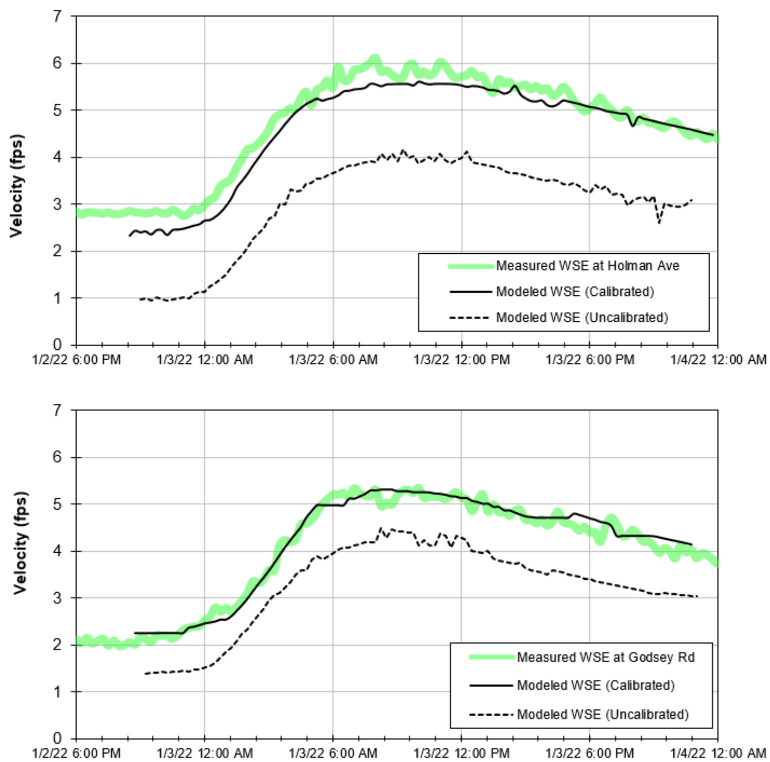
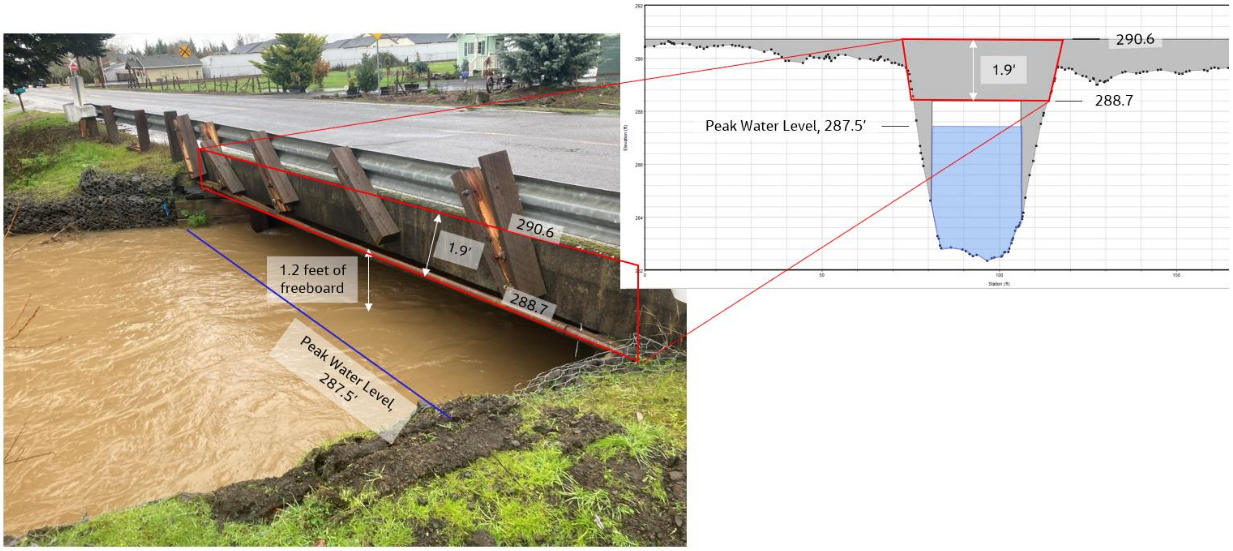


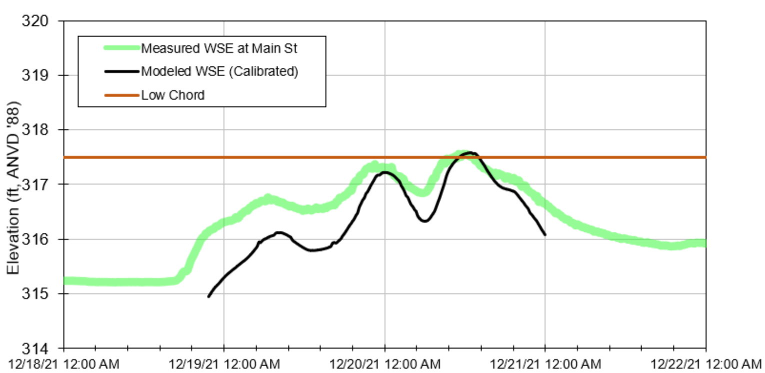
Figure 2-26. January 3, 2022, Field Photo and Model Results at Godsey Road

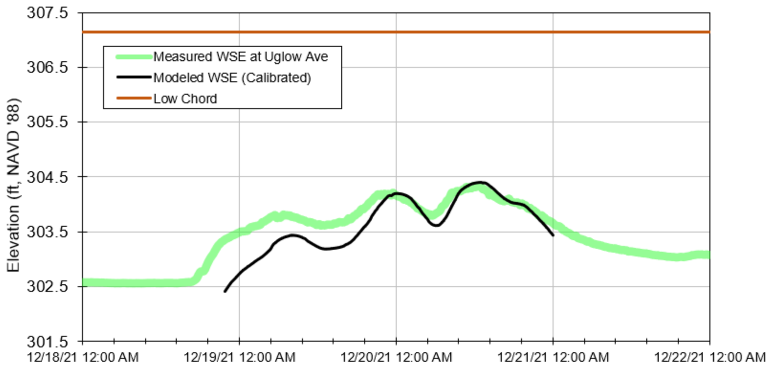


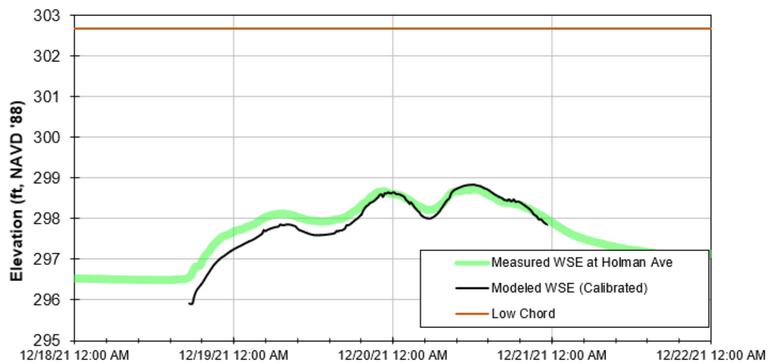
The December 2021 event was used as the validation event and is shown on Figure 2-27.The model predicts an average peak WSE within 1 inch of measured and a mean residual of −2.9 inches. The mean velocity residual is −0.21 feet per second. The validation event performs very well compared to measured data for flows at and up to bankfull. Due to lack of calibration events, the model performance at flowrates above bankfull is unknown, but the current roughness map is conversative at higher flowrates as roughness will continue to decrease with increased depth.

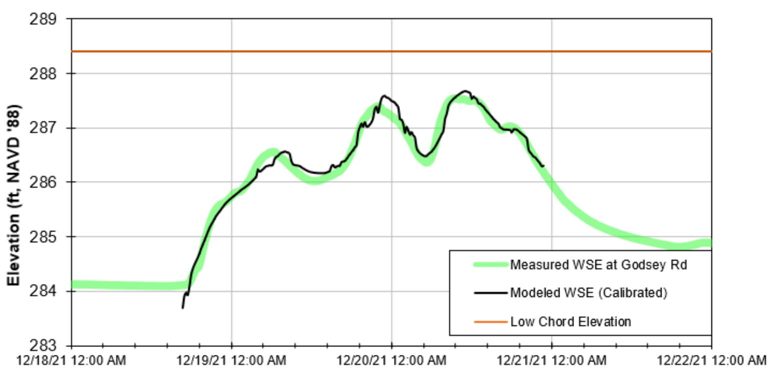
If measured data becomes available at high flowrates this should be documented, and the model accuracy re-calibrated or validation to a wider range of flows.

Figure 2-27. Validation Results from December 2021









2.4.7 Model Results

After model calibration, the 24-hour design storm hydrographs, as described in Section 2.3 for the 2-, 10- and 100-year events were modeled using the calibrated roughness. These events were modeled for 30 hours to allow for the hydrograph to route through the project area. Detailed map books of the entire project area depicting depth, velocity, and WSE for each event can be found in Appendix E. A conceptual graphic depicting the flowpaths during the 100-year event can be found on Figure 3-28. The following model result comments are oriented from upstream to downstream, with the panel number included to orient readers to the map book page number; all comments are based on the 100-year design storm results:

Panel A: River Mile 7.8 to 8.5

- The bridge beneath Kings Valley Highway on NF Ash Creek is undersized. The roadside ditch to the west of Kings Valley Highway fills and the road is overtopped at the low spot on the road, roughly 50 feet to the north of the bridge. Photos 2 and 3 in Appendix A shows NF Ash Creek at Kings Valley Highway at nearly the 2-year flowrate (January 3, 2022).

- NF Ash Creek below Kings Valley Highway floods adjacent to low-lying agricultural fields, and no residential structures are inundated. Floodplain depths are generally less than 1 foot deep. Allowing NF Ash Creek to access a wider floodplain is a beneficial natural process that allows nutrient-dense sediment to deposit and stream power to dissipate over a wide area.
- The Kings Valley Highway Tributary culverts (2 x 24-inch) near the cemetery are undersized, and the road overtops over the southern culvert.

Panel B: River Mile 7.4 to 8.0

- The right bank of NF Ash Creek from RM 8.0 to 7.5 is referred to as the lumber laydown area, the historic location of lumber storage. This area is on a significant wedge of unconsolidated fill which remains dry during winter months. This precludes floodplain access on the right bank of the channel and causes deeper left bank inundation, upwards of 2 to 3 feet.
- The right bank adjacent to the bus parking lot is a local low spot, and backwater from downstream constrictions (Main Street and Industrial Site culverts) first spills out onto the bus yard, and over Main Street.

Panel C: River Mile 6.9 to 7.4

- As previously mentioned, roughly 300 cfs exits the channel before entering the Industrial Site culverts. The overbank flow travels east over the Industrial Site, in some locations greater than 1 foot deep.
- Uglow Avenue is overwhelmed by the magnitude of overbank flows and is overtopped both to the north and south of the existing channel. The flowpath to the north of Uglow Avenue is directed back into NF Ash Creek by Monmouth Cutoff Road.

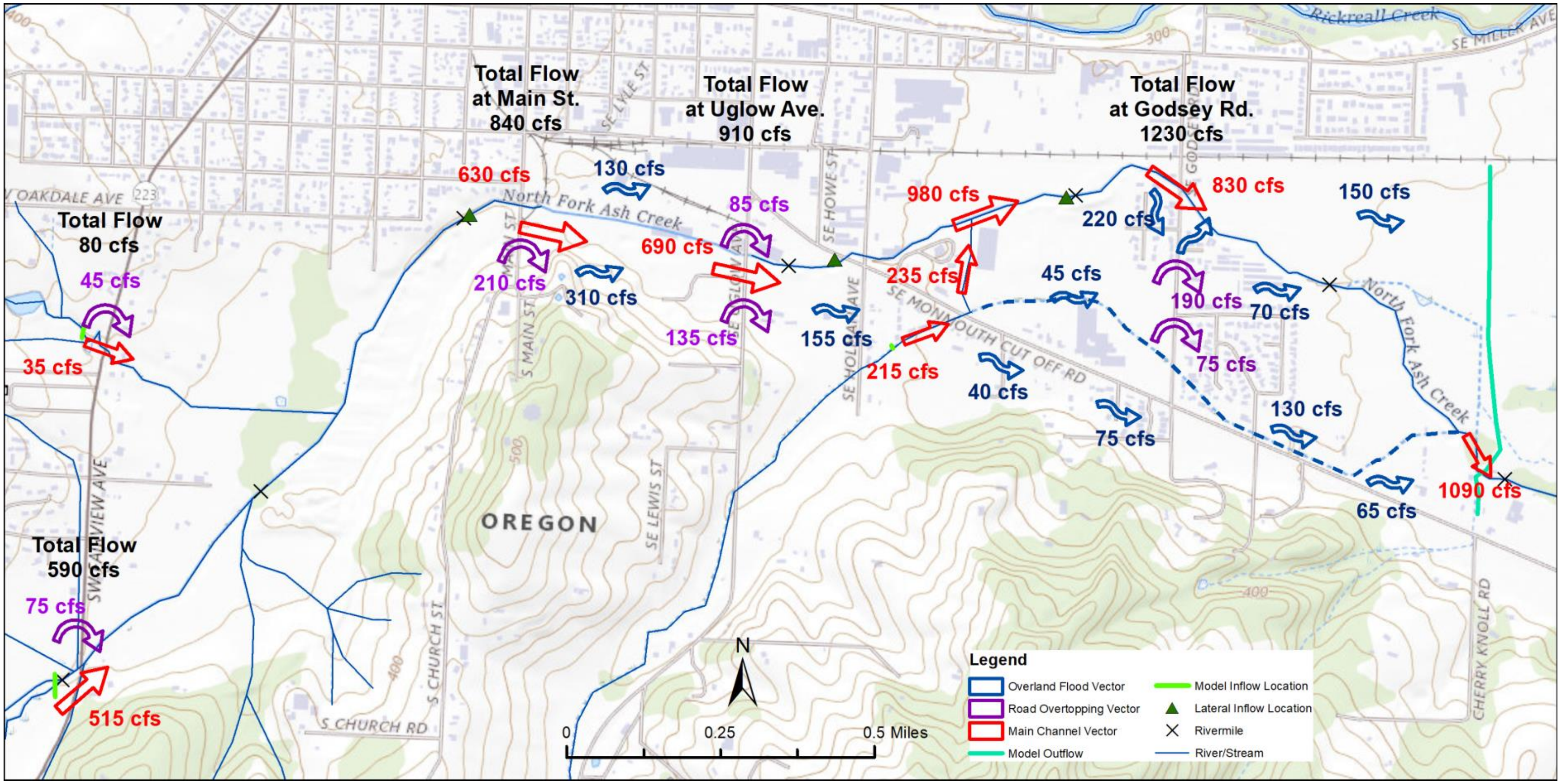
Panel D: River Mile 6.3 to 7.4

- The flowpath to the south of Uglow Avenue collides into NF Tributary and overtops Monmouth Cutoff Road near the tributary crossing.
- Neither Monmouth Cutoff Road bridge (on NF Ash Creek) or Holman Road are overtopped during the 100-year event.
- To the east of NF Tributary, a portion of water is routed east on either side of Monmouth Cutoff Road.
- The historical NF Tributary channel is re-engaged to the east of its northern reroute, inundating the large commercial building. Flow exits the main channel upstream of Godsey Road and inundates the residential neighborhood of SE Arthur Street and SE Olive Street.

Panel E: River Mile 5.6 to 6.3

- Flow overtops Godsey Road for roughly 650 feet to the south of the Godsey Road bridge, inundating residential properties along Godsey Road and Brookside Street and the storage units. Farther to the south along Godsey Road, culverts convey water across Godsey Road and into stormwater swales and the historical channel. This flowpath consolidates with flow along Monmouth Cutoff Road and follows the historical channel back to NF Ash Creek at RM 5.6.
- The undeveloped parcel to the north of NF Ash Creek experiences shallow (less than 6 inches) flooding before exiting the model domain.

Figure 2-28. Conceptual Flood Flowpaths during the 100-year Design Storm



3. Conceptual Design

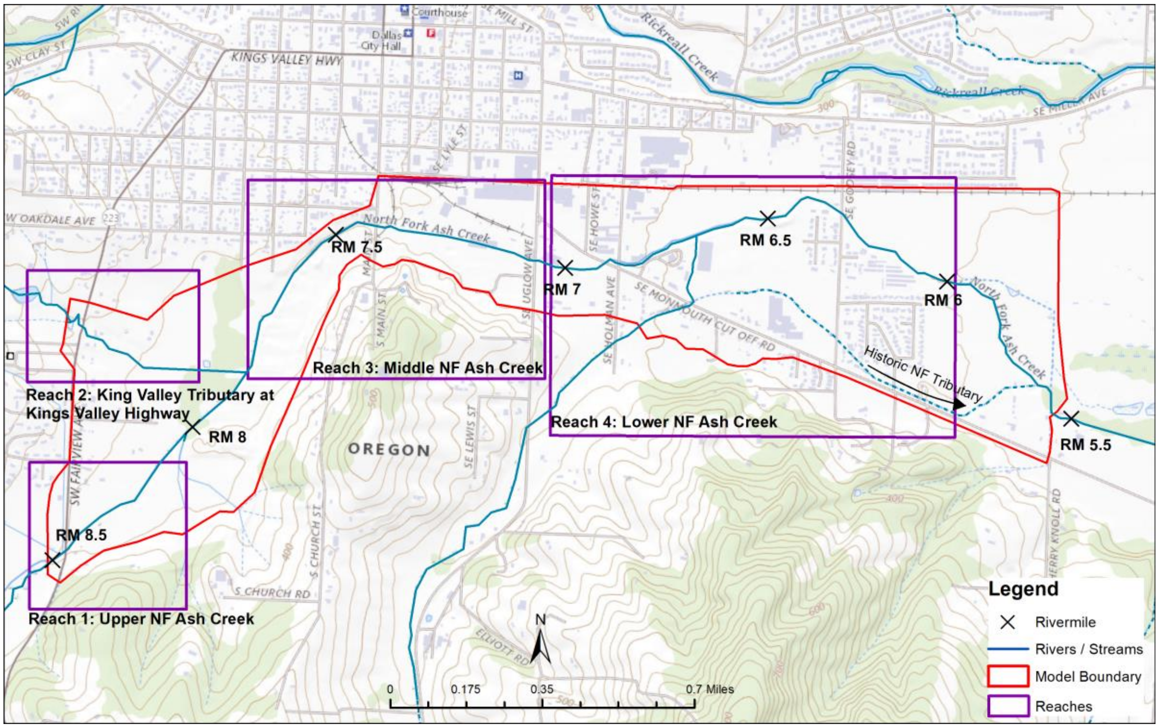
3.1 Conceptual Design Approach and Challenges

Developing solutions to flooding on NF Ash Creek is challenging for two reasons: (1) space constraints present limited opportunities to increase the floodplain buffer around the stream and (2) the interconnected nature of the flooding. Addressing upstream flooding by increasing channel conveyance capacity increases the flood risk downstream and may result in adverse impacts. This highlights the importance of evaluating the creek and stormwater drainage system as a combined, integrated system.

Several anthropogenic modifications to NF Ash Creek and NF Tributary have exacerbated flooding issues. First, in the early 1980s, NF Tributary was realigned from its historic channel by a landowner. The tributary was rerouted directly north after crossing Monmouth Cutoff Road. This realignment causes the tributary to enter NF Ash Creek 1.1 river miles upstream (RM 6.7) from its original confluence (RM 5.6). As a result, NF Ash Creek between RM 6.7 and 5.6 is responding to streamflow historically not present through this section. The bridge at Godsey Road was built before this realignment and, therefore, was not sized for the additional streamflow from NF Tributary. Second, the Main Street bridge and culverts that convey NF Ash Creek beneath the Industrial Site generate significant overbank flow (flooding) that does not reenter the channel until it reaches the downstream limit of this study. As a result, mitigation strategies that focus on increasing channel conveyance require downstream improvements to the undersized channel and water crossings.

To evaluate proposed mitigation strategies throughout the entire project area, the project was broken into four distinct reaches. Reach designations were defined based on unique flood mitigation approaches and on projects that could be completed collectively that will not have negative impacts to upstream or downstream areas. The four reaches are shown on Figure 3-1 and described in Section 3.2. The 100-year design storm was used as the baseline flood event of interest; however, the 10-year and 2080 100-year events were also evaluated and are discussed in Section 4 as part of proposed project considerations. All design storms are run on NF Ash Creek and NF Tributary concurrently; in reality, the peak of these two hydrographs will be marginally offset due to travel time within the watershed; however, it is reasonable and conservative to assume coincident peaks.

Figure 3-1. Reach Designation for Proposed Project Evaluation



3.2 Reach Designation

Reach 1 and 2 are both located on Kings Valley Highway on NF Ash Creek and the Kings Valley Tributary, respectively. These two reaches both have undersized structures beneath Kings Valley Highway, both of which can be rectified with a larger structure. Reach 1 has a few additional requirements due to Oregon Department of Transportation (ODOT) hydraulic bridge design minimum standards, but the approach is the same.

Reach 3 includes the lumber laydown area, bus yard bridge, Main Street, timber bridge, Industrial Site, and Uglow Avenue. Much of the flooding that originates in Reach 3 continues as overbank flow to the north and south of the channel into Reach 4. Projects in Reach 3 are dependent on the City's partnership with landowners and development plans for the Industrial Site. Alternatives for Reach 3 include a variety of options at the Industrial Site for flexibility with future planning of the site. The mitigation strategy in Reach 3 is to increase channel capacity and adequately size structures to prevent overbank flooding from occurring.

Reach 4 includes Monmouth Cutoff Road, Holman Avenue, NF Tributary, Godsey Road, and the diversion structure. This is the downstream reach in the study area and the primary strategy for addressing flooding is to distribute and/or detain floodwater to avoid having to replace all structures on NF Ash Creek, ultimately having all floodwater re-consolidate back to NF Ash Creek at RM 5.6 where the historic tributary channel terminates. Various alternatives were investigated, Section 4 describes the results of that investigation and a comprehensive recommendation for the project area.

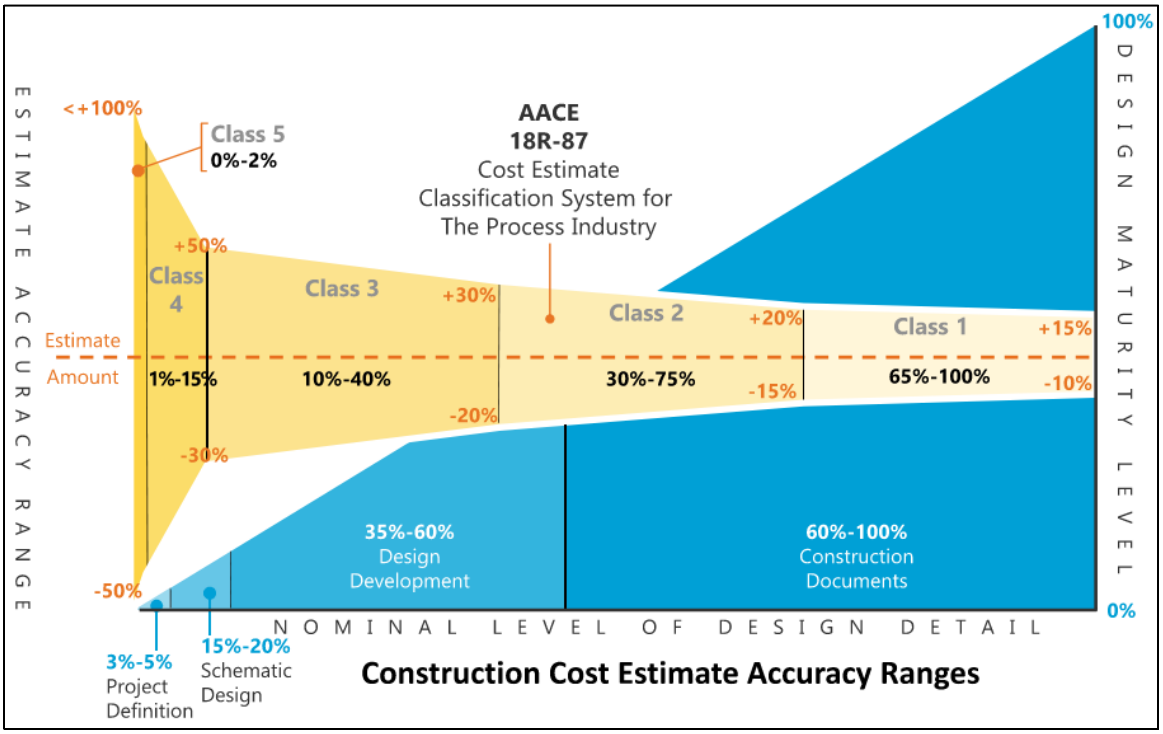
4. Proposed Projects

Proposed projects are presented by reach and include a description of existing conditions, alternatives analysis and project selection, and the Opinion of Probable Construction Costs (OPCCs).

4.1 Opinion of Probable Construction Costs

The OPCCs are Class 5 estimates as defined by the Association for the Advancement of Cost Engineering (AACE) International and adopted by the American National Standards Institute. A Class 5 estimate is expected to be within +100% or -50% of the actual construction cost and corresponds to 2% level of engineering design. The final cost of the projects will depend on actual labor and materials costs, actual site conditions, productivity, competitive market conditions, bid dates, seasonal fluctuations, final project scope, final project schedule, and other variables. As a result, the final project costs will vary from the estimates presented in this report.

Figure 4-1. AACE International Construction Cost Estimate Classification System



The OPCCs for the proposed projects are presented by reach and include project specific assumption. Refer to Appendix D for the full OPCC. The full OPCC includes a summary of major assumptions and general exclusions. Exclusions include, but are not limited to, property acquisition, temporary construction easements, permanent easements, utility impacts, excavation and disposal of contaminated soils, or other unforeseen existing conditions that are beyond the scope of this Project.

4.2 Reach 1: Upper North Fork Ash Creek

Reach 1 is located directly outside the City Urban Growth Boundary (UGB) on Polk County, zoned for Farm/Forest land. Oregon Route 223 (Kings Valley Highway) is a low volume (less than 5,000 vehicles per day) (ODOT 2021) state highway, which runs between Wren and Dallas, Oregon. The current bridge crossing at NF Ash Creek was originally constructed in 1958 as a two-lane, 18-foot span cast in place concrete bridge. The bridge is listed as scour critical on the ODOT bridge inventory; no reason is specified. However, it was common at the time of bridge construction for bridge foundations to be constructed on shallow spread footings susceptible to exposure, undermining, and failure.

The bridge is undersized for the 100-year event, and as evidenced during the January 2022 event, almost reaches the low chord at roughly the 2-year event. Refer to Appendix A-#2-3 for photos from January 3, 2022, at Kings Valley Highway. At higher flows upstream of the bridge, water inundates low-lying floodplain to the north and begins to overtop the road, depth inundation Figure 4-2. The maximum overtop depth is roughly 6 inches and occurs over roughly 300 feet, cross section Figure 4-3.

Figure 4-2. Depth Inundation at Kings Valley Highway at (a) 50-year event and (b) 100-year event

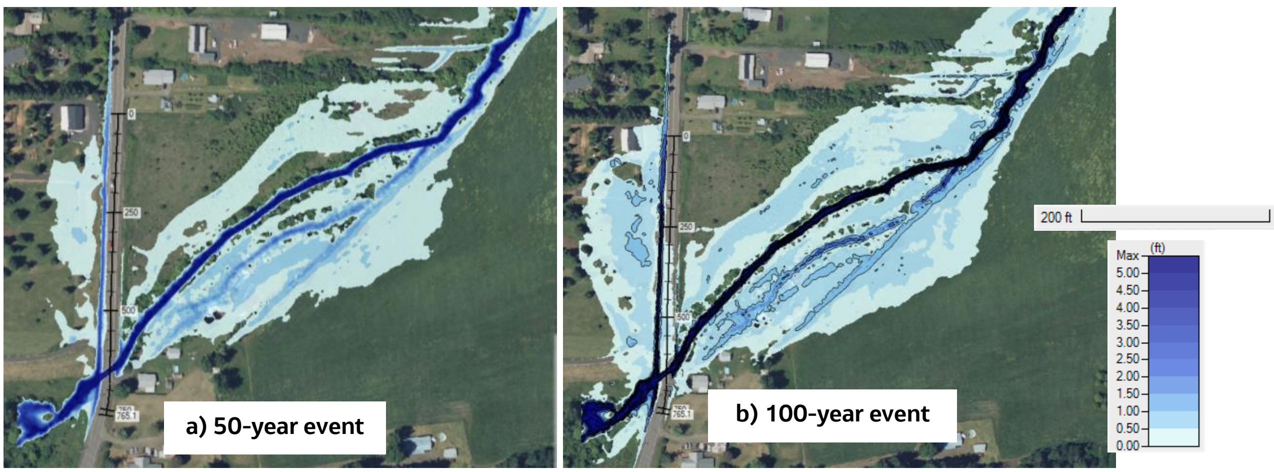
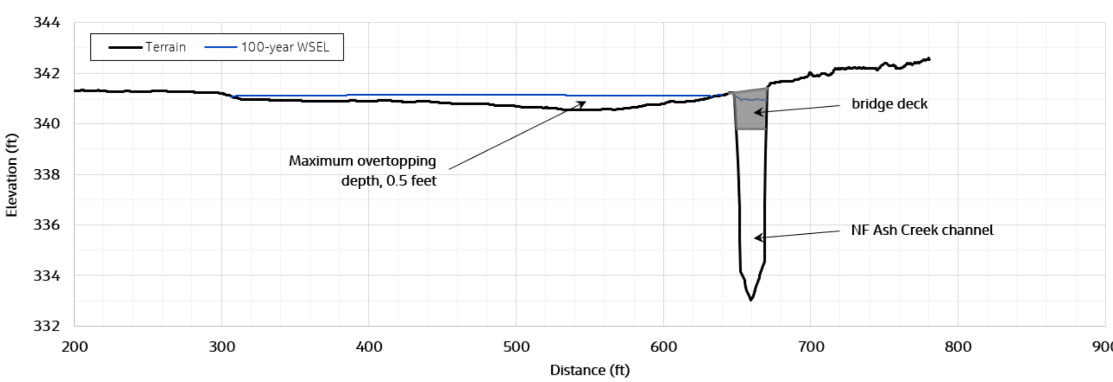


Figure 4-3. Road Profile along Kings Valley Highway during the 100-year Design Storm, Overtopping Elevation Shown

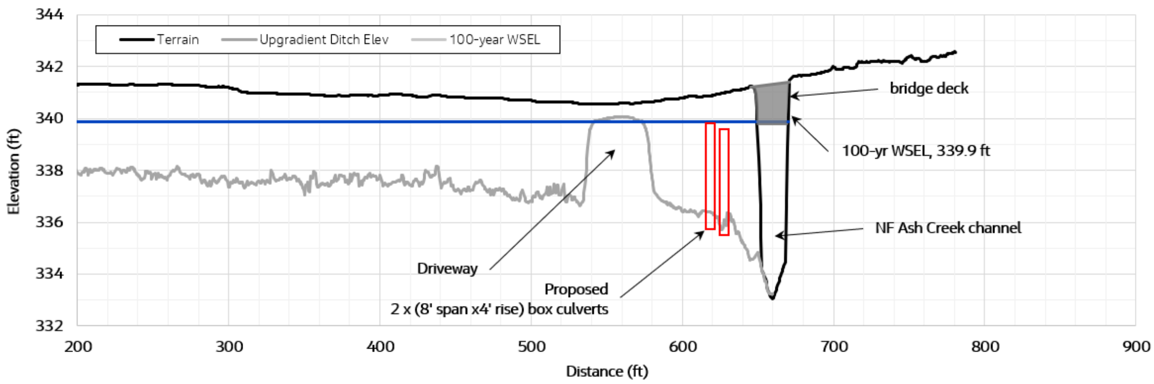


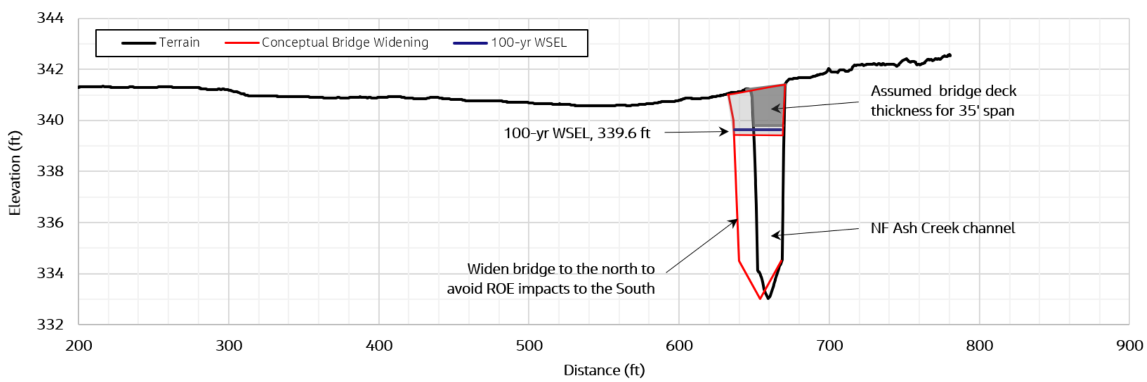
4.2.1 Alternatives Analysis

The 2016 SWMP recommended replacing the existing bridge structure at Kings Valley Highway with two 8-foot by 6-foot concrete box culverts, based on hydrology available at the time of the study. This feasibility study investigated two unique alternatives: (1) widening and replacement of the existing structure and (2) placement of auxiliary high flow culvert where overtopping currently occurs. Cross section Figure 4-4 shows a road profile for each conceptual layout and the resulting 100-year WSE.

The two box culverts provide a form of additional conveyance that does not require extensive rehabilitation to the existing bridge. In contrast, the bridge widening alternative needs to consider current ODOT bridge and hydraulics design manual requirements, such as fluvial performance standards, freeboard, scour, and floodplain impacts.

Figure 4-4. Road Profile along Kings Valley Highway during the 100-year Design Storm





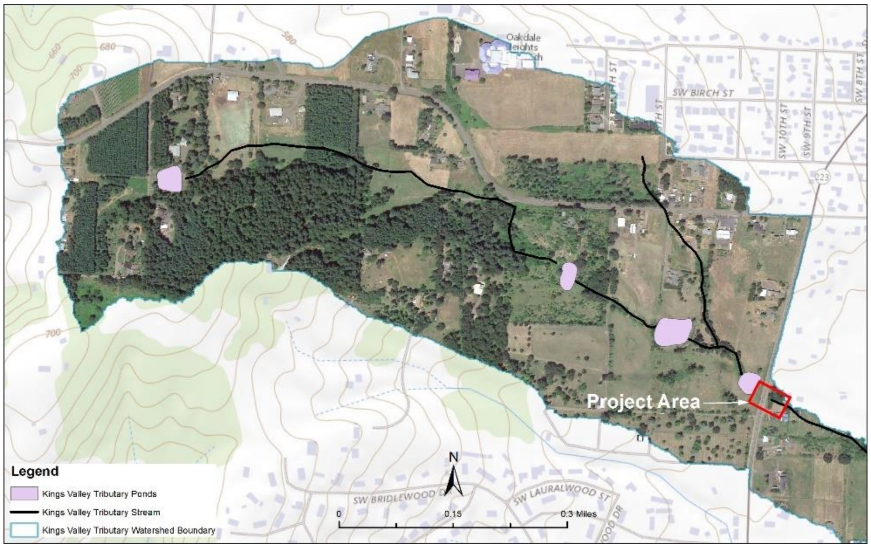
4.2.2 Opinion of Probable Construction Cost

Construction costs for Alternative 1 to replace and upsize the Kings Valley Highway are estimated to be $9,340,000. Construction costs for Alternative 2 to install auxiliary culverts are estimated to be $7,923,000. Both alternatives were priced under the assumption that the road must remain open during construction. No feasible detour options were identified. Traffic would temporarily be diverted to directly to the west of the existing road and NF Ash Creek would be routed through a temporary culvert while bridge/box culvert construction occurred. A temporary easement from the impacted landowner would be required. Refer to Appendix D for the full OPCC.

4.3 Reach 2: Kings Valley Tributary

The King's Valley Tributary is a small tributary (0.38 square mile) (refer to Figure 4-5) that contributes 10% of the total streamflow to NF Ash Creek. The watershed is entirely within the UGB of the City and zoned for residential development. A series of small impoundments along the tributary inhibit the natural routing of water to Kings Valley Highway. Currently there are 2 x 24-inch CMP culverts beneath Kings Valley Highway that are undersized and begin to overtop the road at roughly the 10-year event. The 2016 SWMP recommended replacing the northern culvert with a 3 by 4-foot concrete box culvert and the southern culvert with a 2 by 4-foot concrete box culvert. This updated hydrologic and hydraulic analysis confirms those structures sizes are adequate to convey up to the 100-year flow with a headwater to depth ratio greater than 1 (357.21 feet), or two (3 by 4 feet) with a headwater depth ratio less than 1 (356.9 feet).

Figure 4-5. Plan View of the Kings Valley Tributary Channel and Impoundments



4.3.1 Opinion of Probable Construction Cost

Construction costs for replacing both culverts are estimated at $1,687,000. The project was priced under the assumption that the new culverts would be placed in the same alignment as the existing culverts. The road would be open trenched to remove the existing culverts and install the new culverts. No reasonable detours were identified, so it was assumed that the highway would remain open during construction. Temporary culverts and road diversions would be required.

4.4 Reach 3: Middle North Fork Ash Creek

Reach 3 encompasses NF Ash Creek through the western half of the City where much of the current flooding originates. The Industrial Site, which is currently owned by an industrial dismantler company, is being evaluated for rezoning and redevelopment options as part of an ODOT funded project in coordination with the City. This is a central component of the opportunities for flood mitigation on NF Ash Creek and should be integrated into future discussions of zoning and City planning. The preferred alternative is to realign and daylight the creek across the Industrial Site as described in Section 4.3; however, there is flexibility to resolve much of the flooding sources by either daylighting in place or continuing to route the creek through a large culvert for a portion of the site. Pros and cons for these alternatives are discussed further in this section.

Reach 3 also includes the lumber laydown area, bus yard parking lot and bridge, Main Street, and Uglow Avenue. The primary driver of flooding in Reach 3 is twofold: (1) the undersized capacity of the Main Street bridge and (2) the timber bridge directly upstream of the Industrial Site culverts. Both have a similar capacity to convey roughly 400 cfs, just over the 2-year event, before water exits the channel, becoming overbank flooding. The 7-foot-diameter culvert has the capacity to convey just over the 10-year event (450 cfs), prior to flooding the site. Between the Kings Valley Tributary confluence and the Industrial Site., the longitudinal slope of NF Ash Creek is also flatter than adjacent reaches, 0.3% compared to 0.5% for much of the rest of the project area (Figure 2-1). As a result, the cross-sectional conveyance area in the channel and at structures must be greater through this flatter section than within the steeper sections for the equivalent flowrate.

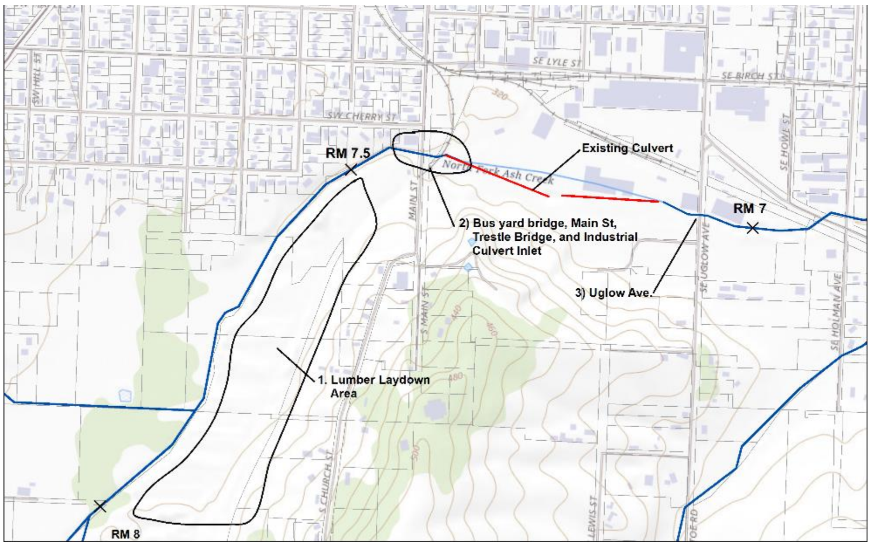
A variety of alternatives were explored to detain or attenuate flows before reaching Main Street such as off-channel storage on the lumber laydown property (discussed in Section 4.3.1) or an in-channel flood control dam (Section 4.5).

4.4.1 Alternatives Analysis

The alternatives analysis for Reach 3 was broken into three sub-regions for investigation (three locations shown on Figure 4-6) as follows:

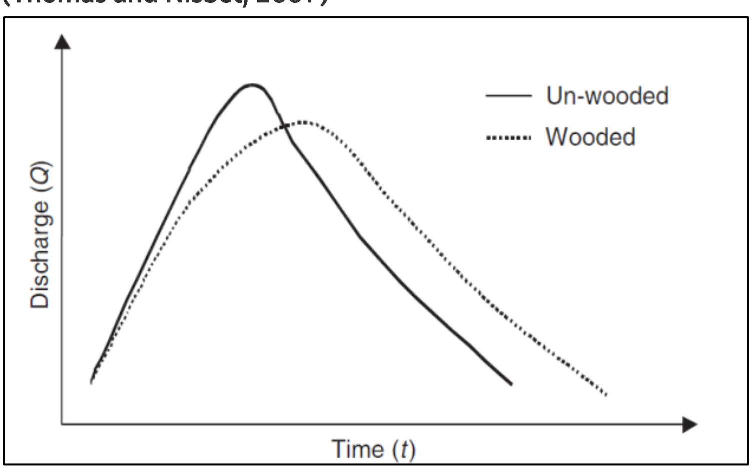
- The lumber laydown area and potential downstream improvements with restoration on this property.
- The bus yard bridge, Main Street, timber bridge, and the Industrial Site, all within 300 feet of each other.
- The downstream channel at Uglow Avenue.

Figure 4-6. Plan view of the Three Locations within Reach 3 Investigated



Two alternatives were investigated for the lumber laydown area. Both alternatives include excavation of the unconsolidated fill on the property. The first alternative is to match the floodplain grading similar to the left bank. The second alternative is to build a series of gravity flowing ponds that would engage at the 2-year event. The concept for both alternatives is to slow the routing of the flood wave downstream and detain a portion of flow to reduce the peak of the event. The theoretical impact of this can be observed on the runoff hydrograph (Flood peak attenuation shown on Figure 4-7).

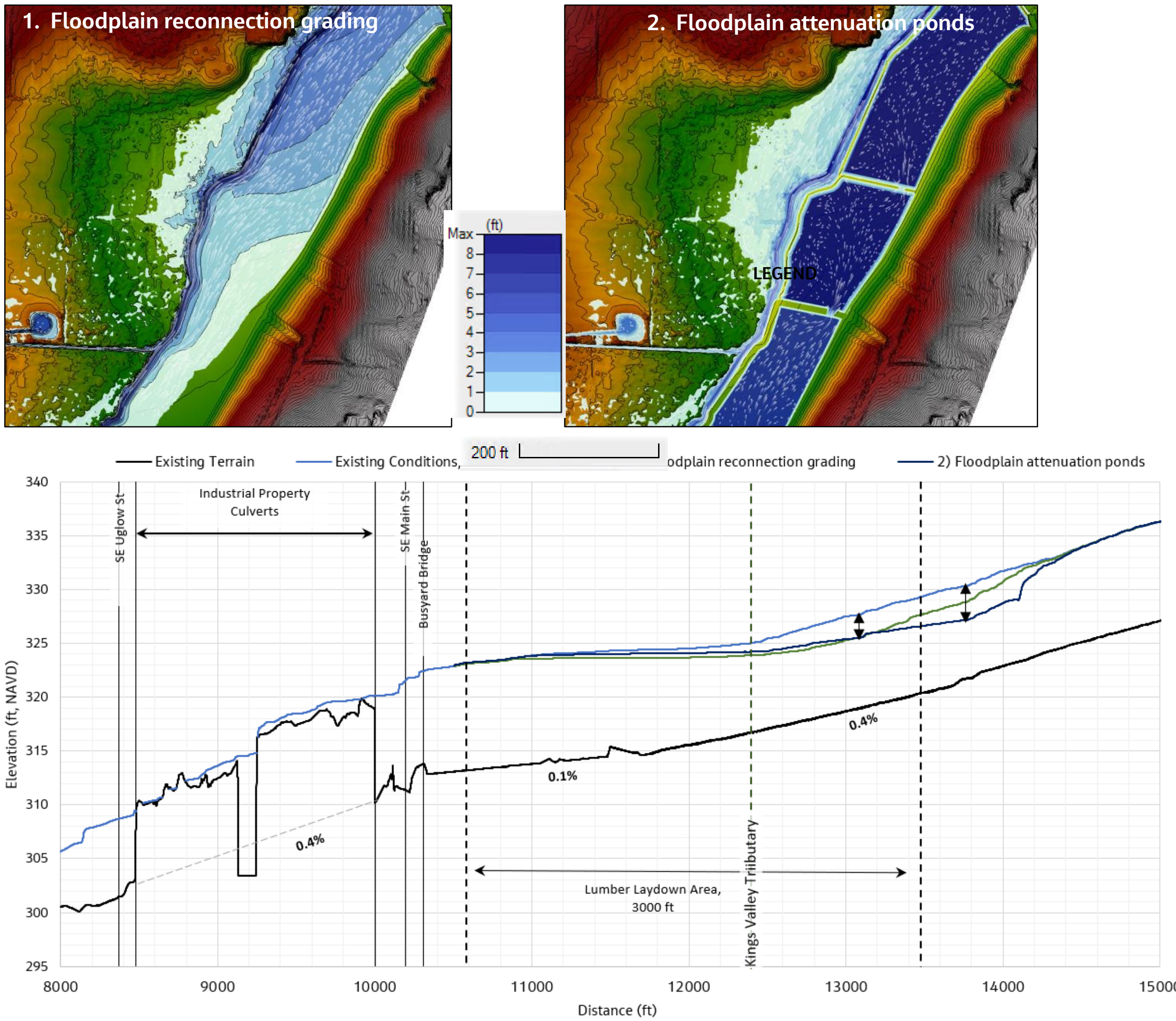
Figure 4-7. Comparison of flood peak attenuation between Wooded and Un-wooded Floodplain (Thomas and Nisbet, 2007)



The results for both lumber laydown area alternatives are shown on profile **Error! Reference source not found.**. Both have a positive local benefit; however, there is no downstream persistent benefit below the

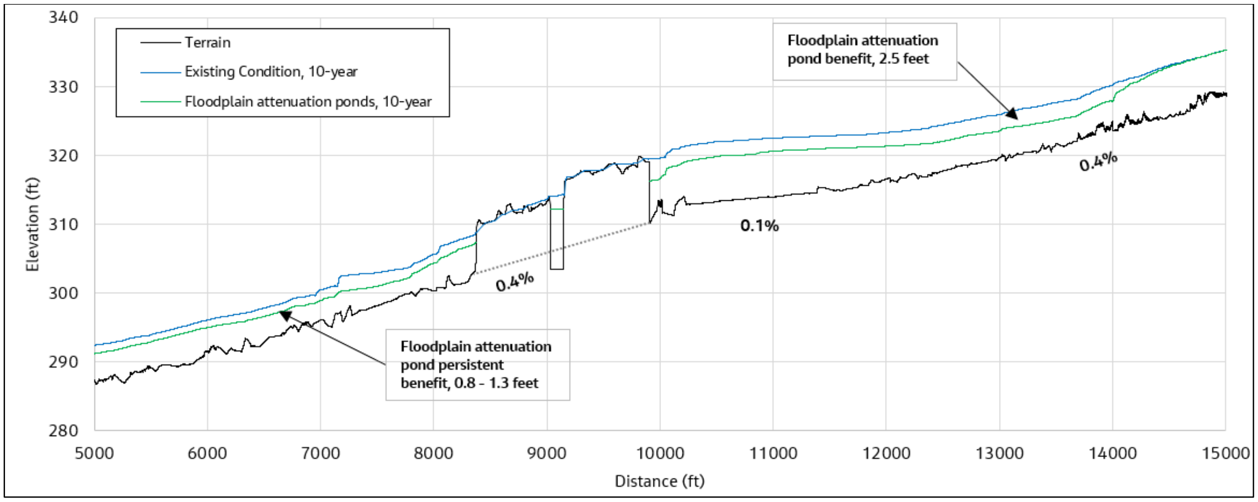
Main Street bridge. There are likely two reasons why attenuating flow is ineffective at this site: (1) the flat slope directly downstream slows channel velocity and attenuation is already occurring and (2) the volume detained on the floodplain is not large enough to meaningfully attenuate the hydrograph.

Figure 4-8. Plan and Profile of Alternatives Evaluated at the Lumber Laydown Area



The floodplain attenuation ponds are effective at lowering WSE's downstream with no other improvements during less significant flood events, such as the 10-year event, Figure 4-9. The 10-year event exhibits some flooding across the Industrial site and along the historic NF Tributary channel and Godsey Road. This is mitigated by the floodplain attenuation ponds of the lumber laydown yard.

Figure 4-9. Longitudinal profile with Floodplain attenuation ponds during the 10-year flood event



Directly upstream of Main Street is where the most significant flooding in the project area occurs. This is caused by the combined effect of the Main Street bridge, timber bridge, and Industrial Site culvert. The 12-foot Main Street bridge and 7-foot-diameter culvert beneath the Industrial Site are the two smallest structures on NF Ash Creek. The capacity of each structure is shown on the rating curve (Figure 2-23). Photographs of the Main Street bridge and timber bridge during the January 3, 2022, flood event are shown in Appendix A-#9-10.

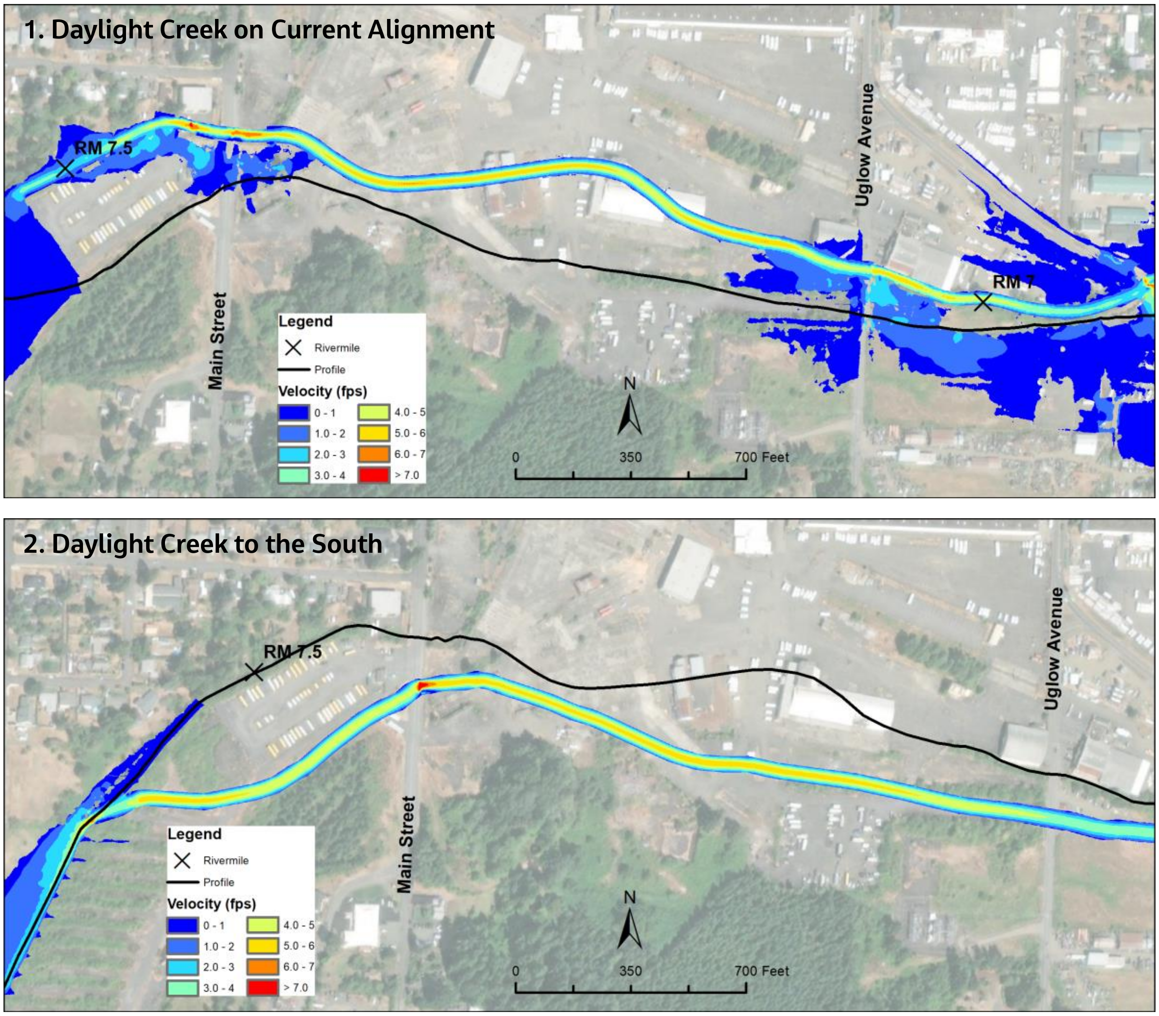
Any future development on the Industrial Site should include improvements to the Main Street bridge and Uglow Avenue bridge. If these crossings are not addressed during site redevelopment flooding will persist. To comply with the Oregon Department of Fish and Wildlife (ODFW) fish passage requirements (OAR 635-412-0035) a structure spanning the Active Channel Width is required, 31 feet as measured in reference Reach 2 (Section 2.1.2). Constructing a culvert across the site was modeled with a 35-foot-wide by 8-foot-tall structure and can convey the 100-year design event. Maintenance considerations with a large, buried structure is significant, both from a sediment and debris management perspective and limiting wildlife and pedestrian intrusion. The structure height, 8 to 10 feet, may require raising finish grade of the site depending on cover requirements. The alternative to replace the existing culvert, while feasible, was not carried forward for these reasons.

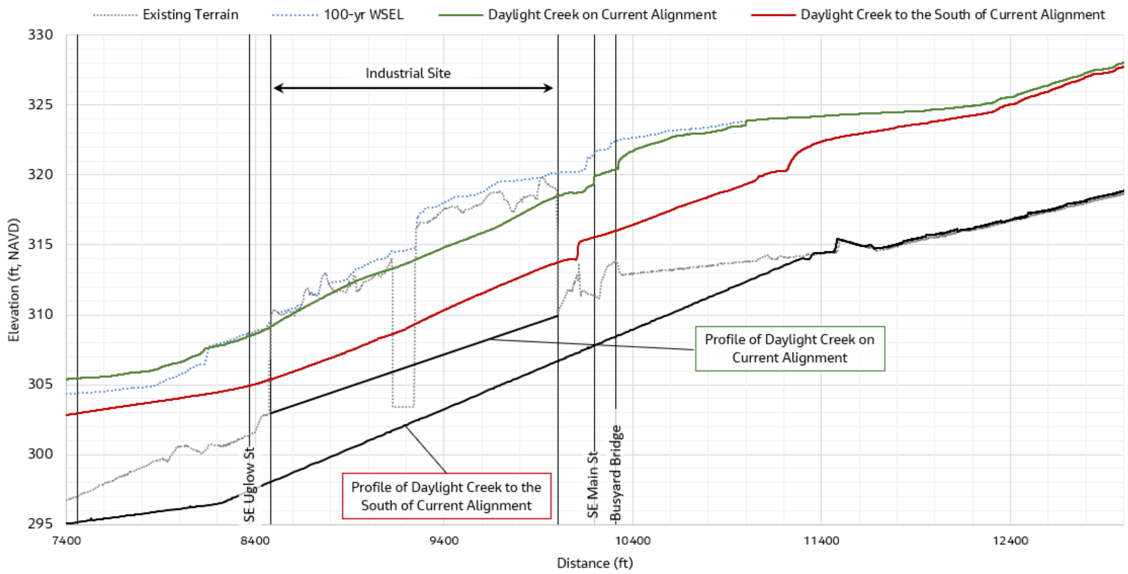
Daylighting NF Ash Creek across the Industrial Site can address both the City's concern with flooding and improve the aquatic ecology of the stream, a key component of project environmental approvals. Conceptual alignments for daylighting NF Ash Creek were modeled for a daylighted channel near its current alignment and realigned to the south. The current alignment alternative ties into the existing stream at the existing culvert inlet and outlet and has a small degree of sinuosity. The realigned alternative ties into the existing creek, 1,400 feet upstream of the culvert inlet and 1,100 feet downstream of the culvert outlet. The purpose for the much longer channel realignment is to steepen the channel to match the upstream and downstream reaches. The creek invert (lowest point in the channel) for the realigned alternative would be 3 to 4.5 feet deeper than daylighting in-place, reducing the risk of overbank flood events and requires a smaller channel top width than the in-place alternative. The realigned channel is expected to have less annual maintenance than daylighting in place as the steeper slope provides sediment continuity with the upstream and downstream reaches as well. Results for both alternatives are shown on Figure 4-10.

From a constructability perspective, realigning the creek allows for channel construction to take place outside of the limited in-water work window, eliminating the need for temporary water management while constructing the channel. It also provides flexibility for development opportunities, with potential for the channel to be moved based on the design of the site. Finally, the current channel is under-cutting two structures to the north of the creek to either side of Uglow Avenue. The structure on the west is a large storage building, while the other is a commercial hardware store. For channel widening to occur adjacent to these two structures, only the southern bank can be moved, impacting the property to the south.

Cost estimates for both alternatives are summarized in Section 4.3.3 and Appendix D. A smaller channel top width is required to realign the creek, 55 feet instead of 65 feet. Typical cross sections are shown on Figure 4-11.

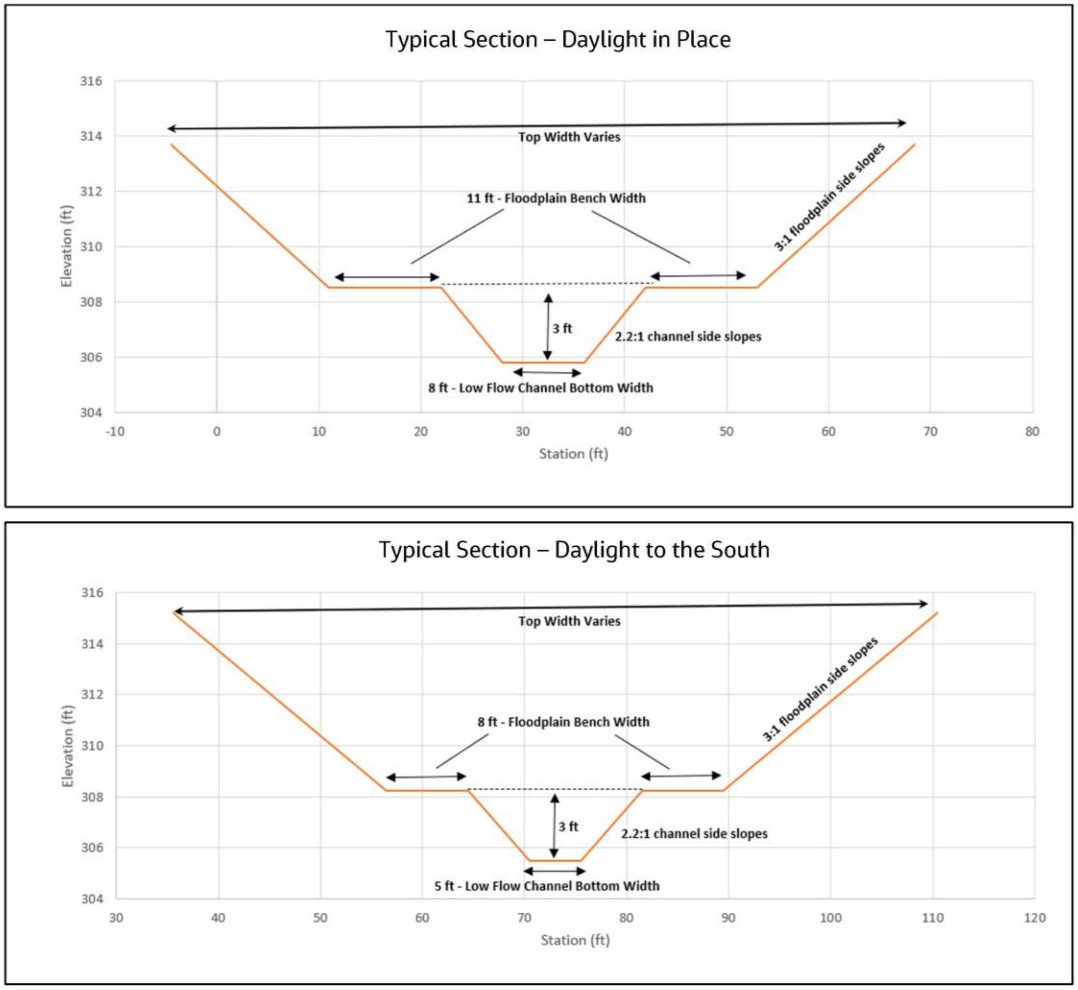
Figure 4-10. Plan and Profile of Alternatives Evaluated at the Industrial Site





Existing Terrain
100-yr WSEL
Daylight Creek on Current Alignment
Daylight Creek to the South of Current Alignment
Industrial Site
Profile of Daylight Creek on Current Alignment
Profile of Daylight Creek to the South of Current Alignment
SE Uglow St
SE Main St
Busyard Bridge
Elevation (ft, NAVD)
Distance (ft)
330
325
320
315
310
305
300
295
7400
8400
9400
10400
11400
12400

Figure 4-11. Typical Cross Sections for Creek Daylighting Alternatives



4.4.2 Preferred Alternative

The preferred alternative for Reach 3 is for no action to be taken on the lumber laydown area and daylighting NF Ash Creek to the south of its current alignment through the Industrial Site. Main Street bridge and Uglow Avenue bridge replacement is included in the creek realignment alternative.

4.4.3 Opinion of Probable Construction Cost

Both daylighting options were costed out for comparison purposes. The following assumptions were made for the OPCC:

- The existing material at the Industrial Site will be hauled offsite and not reused. A site assessment should be completed during detailed design for this project to determine if this material is contaminated and reuse/disposal requirements.
- Any required building demolition on the Industrial Site will be part of a separate project and is not included in this estimate.
- Main Street and Uglow Avenue must remain open during bridge replacement/construction.

- The typical cross sections shown on Figure 4-11were used to estimate total cut material, bed material, and bank stabilization/revegetation quantities.
- Construction of the channel for the daylight in place alternative would be completed over at least two in-water work periods in compliance with ODFW requirements. The alignment of the existing culvert must be verified before construction to avoid impacts to flow outside those windows.
- The new bridges at Main Street and Uglow Avenue would be designed with 2 feet of freeboard at the 100-year event.

The total construction cost for the daylight in place option is $22,977,000. The total construction cost for the daylight to the south option is $30,146,000. Refer to Appendix D for the full OPCC.

4.5 Reach 4: Lower North Fork Ash Creek

Reach 4 encompasses the project area downstream of Uglow Avenue. This includes NF Ash Creek at Monmouth Cutoff Road, Holman Avenue, Godsey Road, the Diversion structure, and the NF Tributary at Monmouth Cutoff Road to its terminus. The preferred alternative from Reach 3 is a wider channel than the existing channel downstream of Uglow Avenue. One alternative is to tie the realigned channel back into the existing channel and widen the channel for the remainder of Reach 4, which would. would require replacing all the crossings on the creek. This alternative was carried forward for a baseline cost comparison but is not recommended. Rather, the flood mitigation strategy in Reach 4 is to intentionally route overland flow outside of the NF Ash Creek channel in order to avoid having to widen the entire channel length through this section. Additionally, it is beneficial for the Reach 4 flood mitigation approach to be independent from the Reach 3 activities; if not independent, the Reach 4 solution would need to be overdesigned or partially redesigned in order to prevent flooding being worsened between the construction of Reach 4 and Reach 3 improvements.

During the 100-year event under existing conditions, a significant overland flowpath to the south of NF Ash Creek crosses Uglow and Holman Avenues and joins with the NF Tributary. The two box culverts on NF Tributary are not equipped to convey the excess water from NF Ash Creek and Monmouth Cutoff Road overtops. Flooding continues to the east, both south and north of Monmouth Cutoff Road. The alternatives analysis begins at the intersection of NF Tributary and Monmouth Cutoff Road. Several secondary channels were investigated to consolidate overland flow to the east of NF Tributary including re-engaging the historical NF Tributary channel. These alternatives are discussed in Section 4.4.1.

4.5.1 Alternatives Analysis

4.5.1.1 Channel Widening

Widening the existing channel for the entirety of Reach 4 requires 8,000 linear feet of channel widening and replacement of all five structures in the reach: two on Monmouth Cutoff Road, Holman Avenue, Godsey Road, and the Diversion structure. Monmouth Cutoff Road (over NF Ash Creek) and Holman Avenue could be combined into a single crossing due to their proximity and orientation of the creek. NF Ash Creek runs through private property, meaning temporary easements would be required for the channel-widening work. Construction in most locations could be done from one side of the channel; however, further analysis would be required to develop a comprehensive work plan.

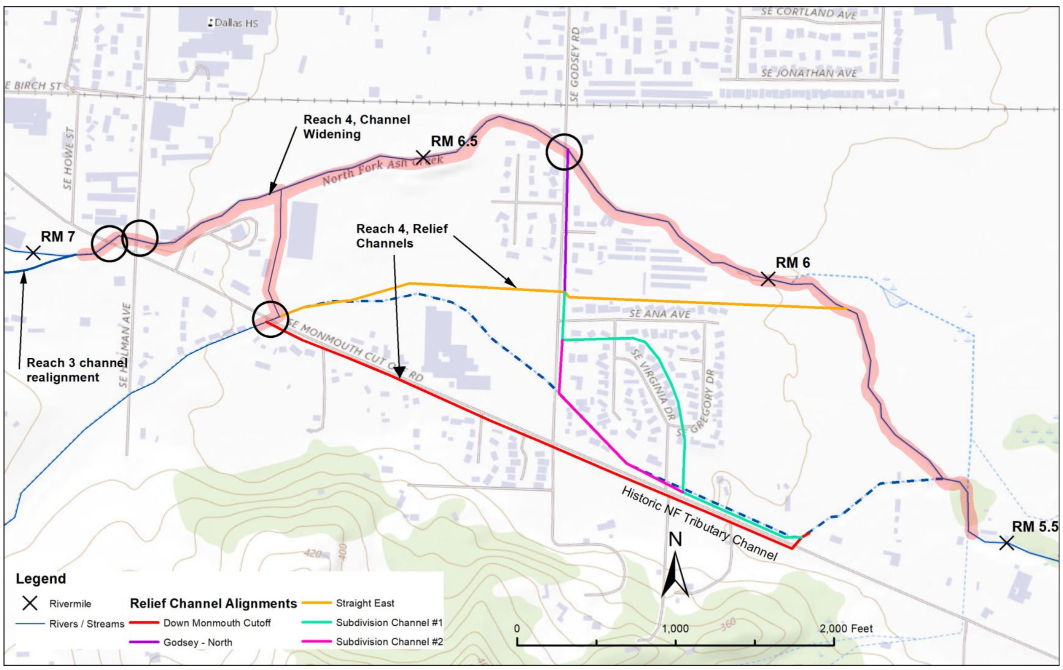
This alternative was not explored further as it will be cost prohibitive and require extensive in-channel work and habitat disruption. The thick vegetation (blackberry brambles) along the banks of the creek would need to be removed and the new channel banks graded at a shallower slope to allow for revegetation.

4.5.1.2 Auxiliary Relief Channel

This alternative analyzed current and theoretical capacity of different auxiliary channels to carry excess floodwater from NF Ash Creek and NF Tributary through the eastern half of the City. These alignment locations are shown on Figure 4-12 and include paralleling Monmouth Cutoff Road or using the historical NF Tributary channel. All alternatives require the double box culvert on NF Tributary at Monmouth Cutoff Road to be replaced. The auxiliary channels are designed to convey 300 cfs of overland flow at the 100-year design event. This alleviates the need to replace the Monmouth Cutoff Road and Holman Avenue bridges on NF Ash Creek.

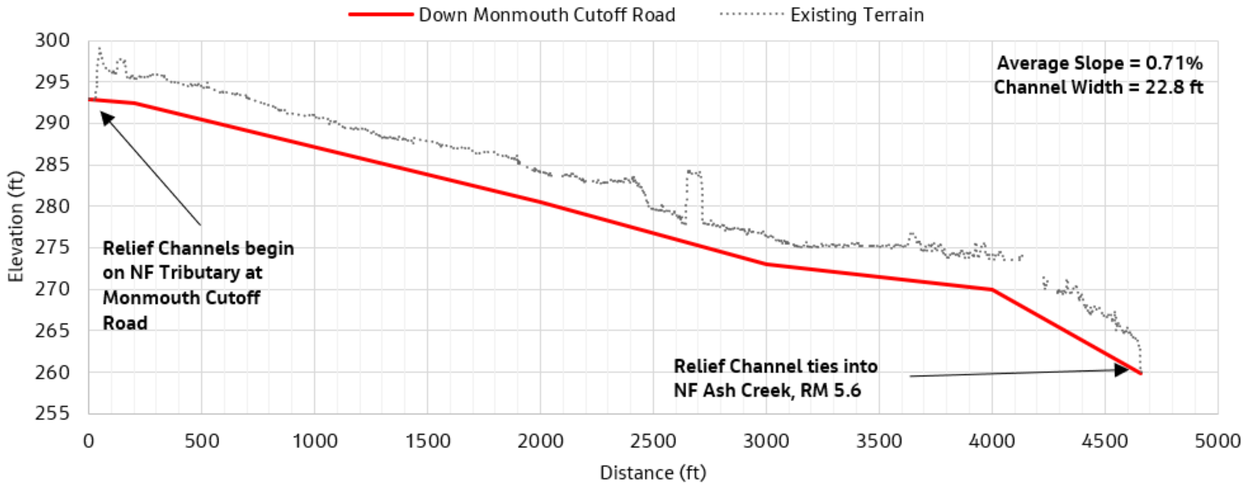
The longitudinal profile for each auxiliary channel is included on Figure 4-13 through 4-16, both the current ground elevation and potential ditch invert elevation. The preliminary channel size is shown on each profile and is based on a simple trapezoidal cross section, average slope and 300 cfs flowrate. A qualitative discussion is provided for each alignment.

Figure 4-12. Reach 4 Alternatives, Channel Widening and Auxiliary Relief Channels



Existing ditches currently convey a fraction of the overland flow along Monmouth Cutoff Road during flood events. However, they were not intended to convey a significant portion of overflow. Monmouth Cutoff Road (Figure 4-13) is the steepest route to rejoin NF Ash Creek downstream at 0.71% slope, however there is roughly 500 feet of flat ground just east of Godsey Road. Based on the average slope, a 22.8-foot channel width would be required.

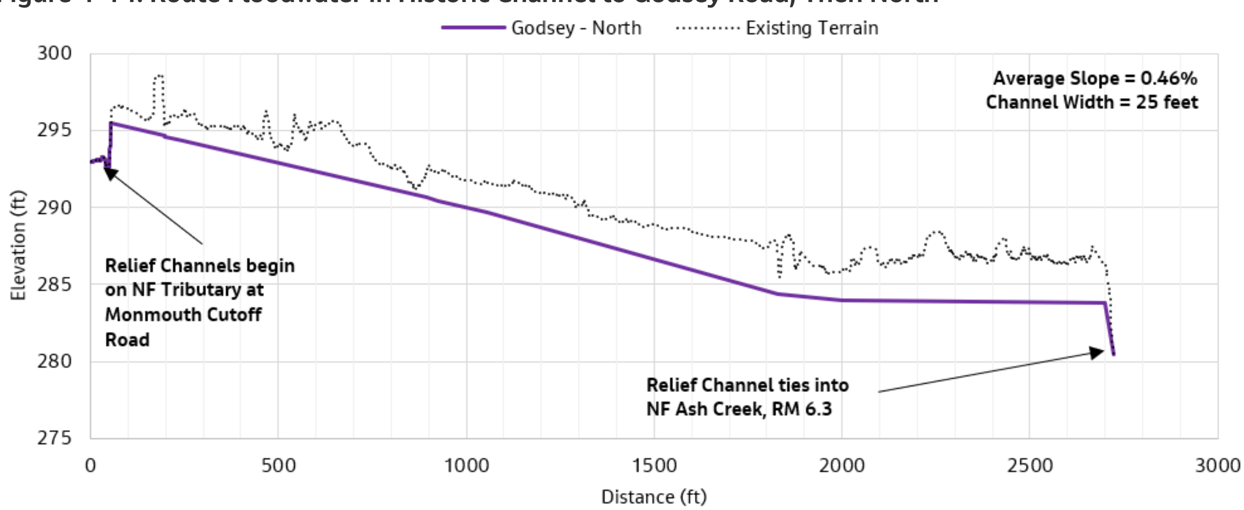
Figure 4-13. Route Floodwater in Roadside Channel Along Monmouth Cutoff Road



Conveying the flow in a pipe within Monmouth Cutoff Road was also considered. A 72-inch-diameter pipe would be required to convey 300 cfs on a consistent 0.71% slope. Maintenance on a pipe this large would be difficult as it would convey significant flows on an irregular basis. Debris could accumulate within the pipe and reduce its effectiveness during high flow events. Additionally, the connection between the end of the pipe back into the receiving stream channel would be difficult due to high scour potential. The alternative was not pursued further due to these design and maintenance challenges.

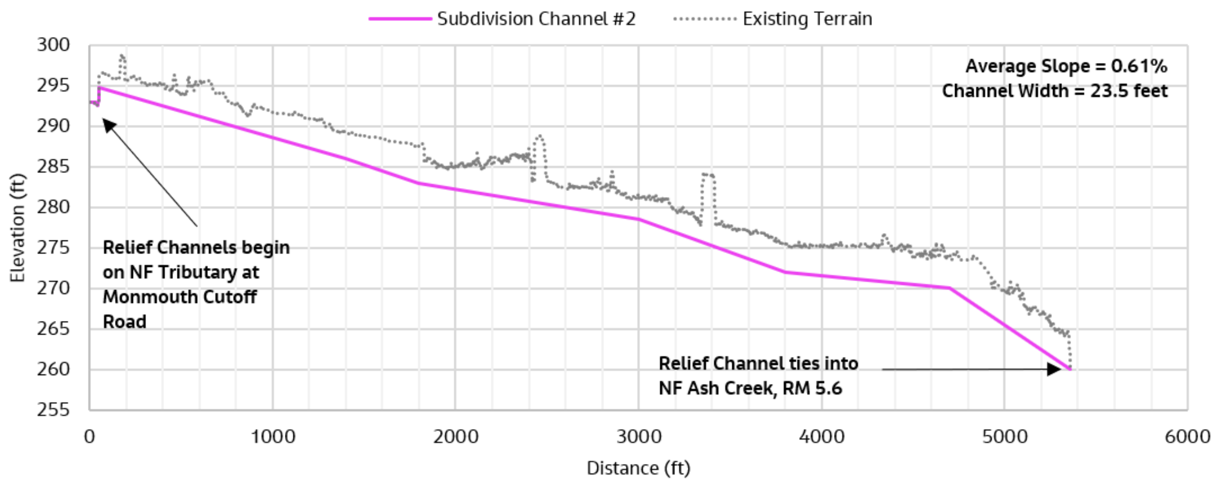
Routing floodwater in the historical channel to Godsey Road, then North to NF Ash Creek is the shortest auxiliary channel route (profile Figure 4-14). Once parallel to Godsey Road, there is an adverse slope (uphill) to NF Ash Creek. Because of this adverse slope, channel design would require a wide footprint (25 feet) and lowering the grade to provide positive drainage. Given site constraints around Godsey Road this route was not considered further.

Figure 4-14. Route Floodwater in Historic Channel to Godsey Road, Then North



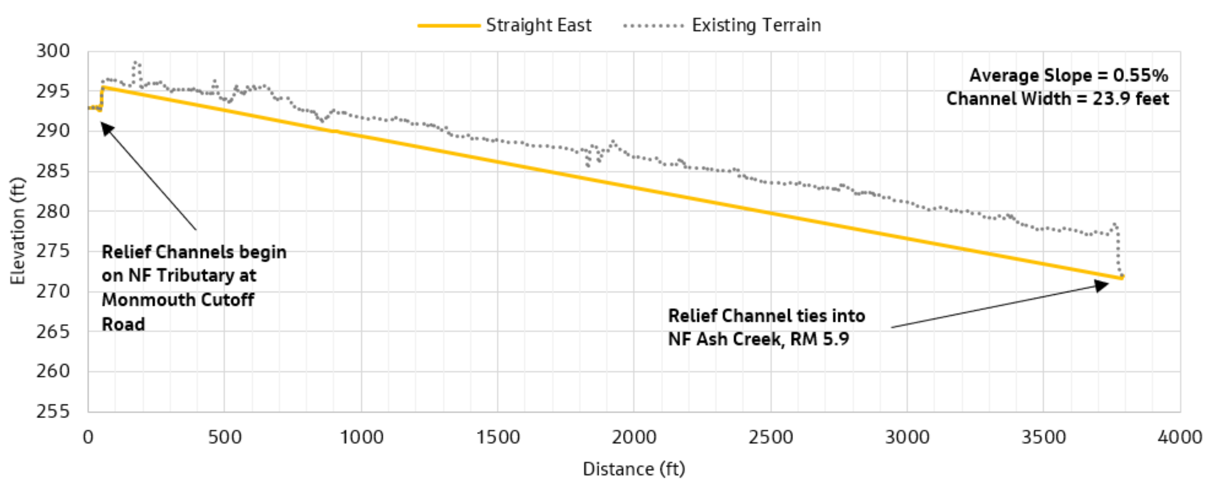
Two alternatives to route floodwater in the historical channel to Godsey Road, then south through the subdivision following the historical flowpath were considered. The longitudinal slope for these alternatives (Figure 4-15) is more favorable than previous alternatives and the potential to leverage both channels is advantageous. The primary concern with either alternative is proximity to the residential community, which both channels bisect.

Figure 4-15. Route Floodwater in Historic Channel to Godsey Road, Then South Through Subdivision Channel 2



The most direct route, "Straight East" follows the historical channel to and across Godsey Road then continues east to NF Ash Creek. This route has a consistent slope of 0.55% and a roughly 24-foot channel required (Figure 4-16). There are several residential properties along Godsey Road at this location, and no clear route through the community exists for an auxiliary channel. Property acquisition will likely be required based on the channel size and risk associated with the project.

Figure 4-16. Route Floodwater in Historic Channel to Godsey Road and Continue East to NF Ash Creek



Ultimately, none of the relief channel alternatives were carried forward due to feasibility concerns. Constructing a supplementary auxiliary channel would put residential structures at an increased risk due to the proximity of the flood protection channel.

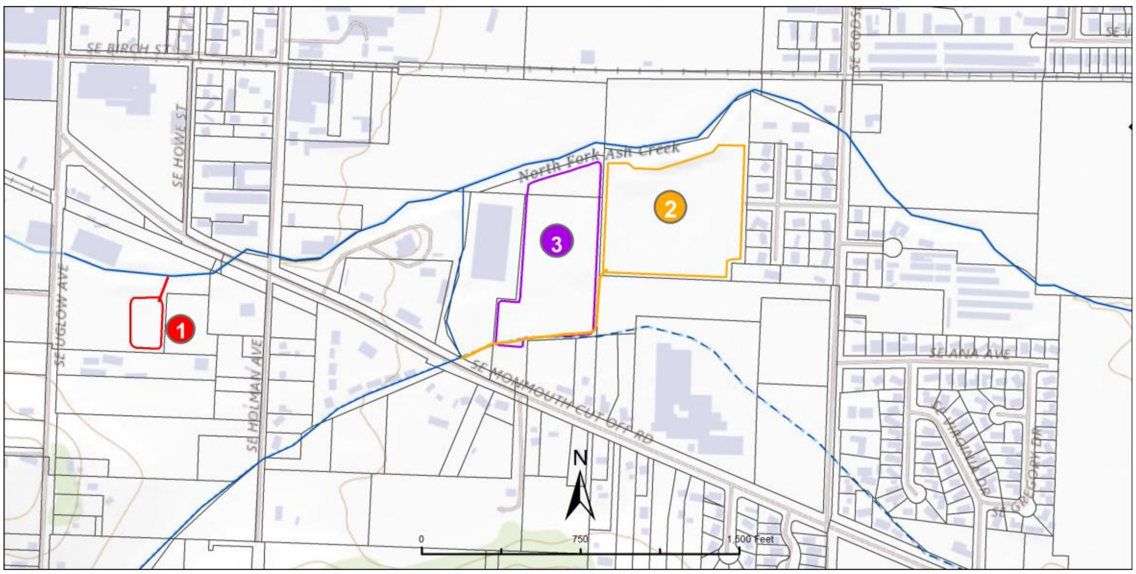
4.5.1.3 Off-Stream Stormwater Detention Ponds

The 2016 SWMP recommended providing off-stream detention upstream of the Main Street bridge. As discussed in Section 4.4.1, providing upstream detention via floodplain reconnection is not effective. Flood reduction benefits from the detention were localized and not large enough to reduce the total flood hydrograph. Section 4.6 evaluates a structure upstream of Main Street large enough to provide substantial downstream benefit

Instead, downstream stormwater detention pond (SWDP) options were explored. Providing detention is favorable for reducing flood impacts when conveyance is not possible. Additionally, a detention facility in Reach 4 only needs to attenuate the overflow 300 cfs, not the entire creek storm hydrograph. If a sufficient volume of water can be attenuated, channel widening and replacement of structures can be avoided.

Figure 4-17 shows the location of three potential SWDP locations. Detention Pond 1 is located where significant overland flow currently occurs during the 100-year event. The intent was to capture and detain the overland flow in this location without requiring an inlet/outlet channel. The perimeter of the pond follows tax lot parcels; however, the size available on this lot does not meaningfully capture or detain the overland flooding.

Figure 4-17. Locations of Stormwater Detention Ponds Explored



Detention Ponds 2 and 3 are located between NF Tributary, NF Ash Creek, and Godsey Road. Similar to the auxiliary channel discussion, routing to either site would follow the historic tributary channel for 500 feet, then diverge to the north. Both sites are located on a single tax lot parcel; however, Site 2 would require an easement across the property where Site 3 resides. The two sites are similar, and final recommendation for site layout should be based on property acquisition and future site assessment work. Site 2 was used for hydraulic analysis feasibility and cost estimating.

The total parcel area where Site 2 is located is 15 acres, with a stormwater pond area is 10.5 acres, and total volume of 90 ac-feet. Figure 4-18 shows the stage-storage curve for the Site 2 stormwater pond and Figure 4-19 shows the inflow/outflow hydrograph. The detention pond reduces the peak discharge by 25% and total volume by 45%. Of the peak overflow magnitude (250 cfs), roughly 20% (50 cfs) can be routed down Monmouth Cutoff Road without significant conveyance structure improvements. The remaining overland flow (205 cfs) is routed into the detention pond before returning to NF Ash Creek. The capacity of the current NF Tributary channel is 210 cfs and will continue to function in that capacity.

Figure 4-18. Stage Storage Curve of Site 2 Stormwater Detention Pond

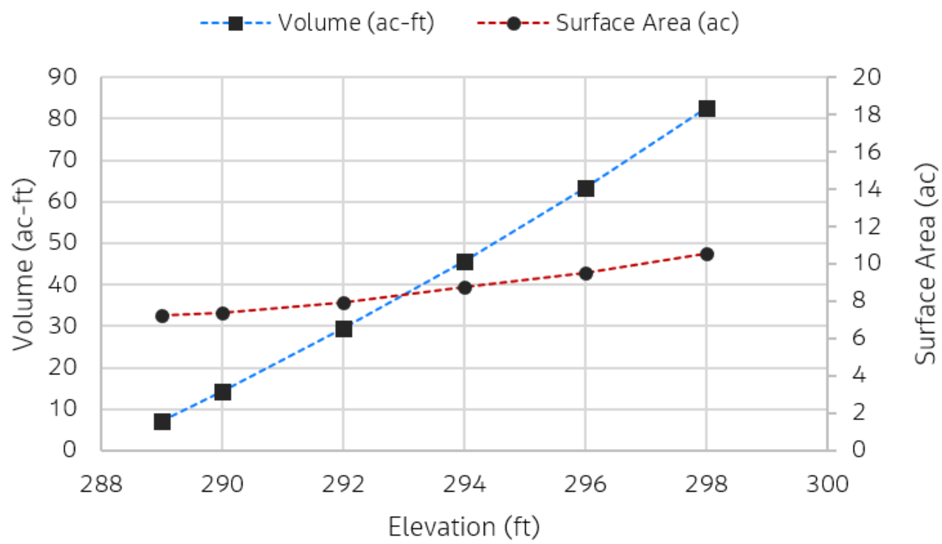


Figure 4-19. Routing of Inflow and Outflow from Stormwater Detention Pond

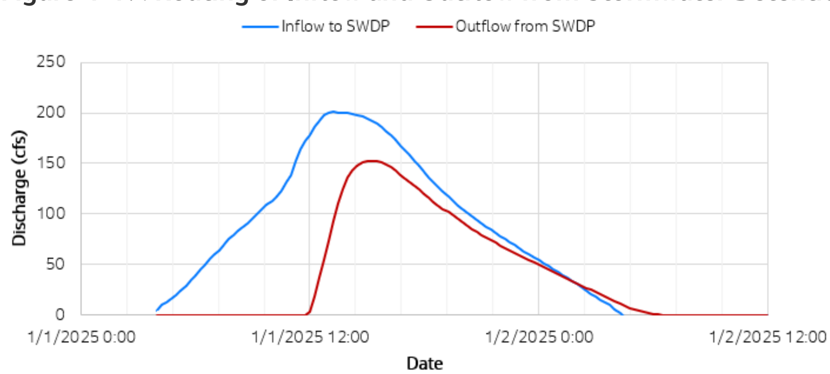
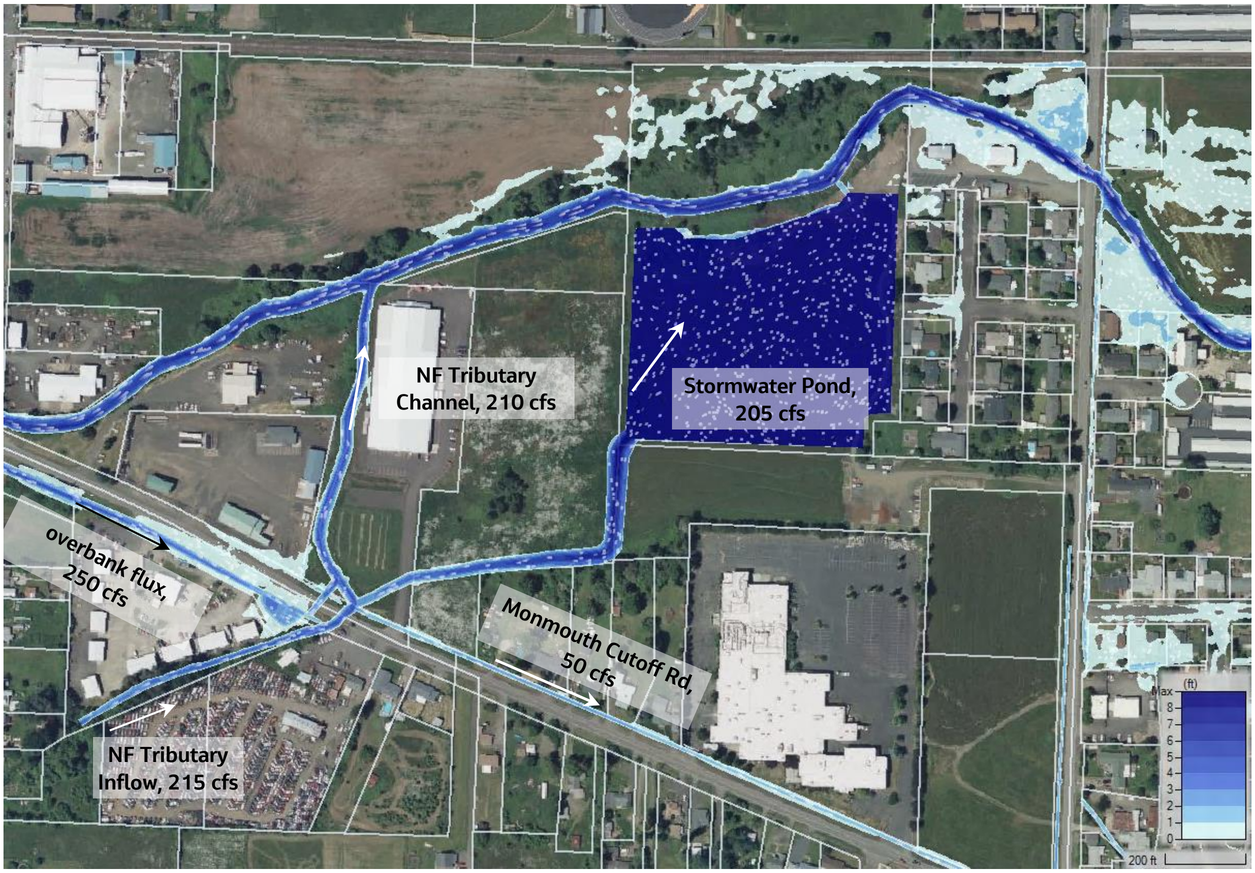


Figure 4-20 shows a plan view of the flow split between the various streams, overflow channels and detention pond. The conceptual design of the pond would receive inflow at roughly 400 cfs at Godsey Road, near the 2-year event. A variety of multi-beneficial use options are available for the SWDP such as perimeter berm pathway or maintained park in the interior for the remainder of the year.

The Reach 4 improvements are fully independent from Reach 3 improvements, because overland flow reaches NF Tributary during existing conditions. Once Reach 3 improvements have been complete and the upstream channel is widened, a channel along Monmouth Cutoff Road would divert and convey flow from NF Ash Creek to the tributary.

Figure 4-20. Plan view of Stormwater Detention Pond and Flow Routing



The existing bridge at Godsey Road is currently being designed for replacement as part of safety improvements to the Godsey Road corridor. Jacobs received the 2020 final design submittal (Keller Associates, 2020) for the Godsey Road Improvements and used the structure geometry to confirm that the bridge size adequately conveys the 100-year design storm. The new bridge design, which includes raising Godsey Road and superstructure low chord elevation by roughly 3 feet, also widens the span from 25 feet to 45 feet. These improvements provide conveyance of the 100-year event, with minor inundation of low-lying areas to the west of Godsey Road (Figure 4-20). Directly downstream (east) of Godsey Road, the roadside ditch provides a pathway for flooding both to the north and south of the creek. The two adjacent structures in both directions are at risk of creek flooding. Floodproofing of these structures is recommended rather than improvements to the creek.

4.5.2 Preferred Alternative

This preferred alternative will still require several infrastructure replacements and some localized channel improvements. The existing 4 feet x 6 feet double box culverts at the Monmouth Cutoff Road crossing of the NF Tributary will need to be upsized to prevent channel overtopping and overflow. Two 8 feet span x 4 feet rise precast box culverts are recommended.

It is also recommended to remove and/or replace the private diversion structure at RM 5.7 as part of Reach 4 improvements. The diversion structure currently constricts the 35-foot channel down to 10 feet, creating a large water surface drop and debris and scour concerns. It is also a permanent barrier to fish migration. Removing the diversion structure and replacing it with a prefabricated pedestrian bridge would open up currently inaccessible fish habitat.

4.5.3 Opinion of Probable Construction Cost

Both the stream channel widening and stormwater detention pond alternatives were costed for comparison purposes. The following assumptions were made for the OPCC:

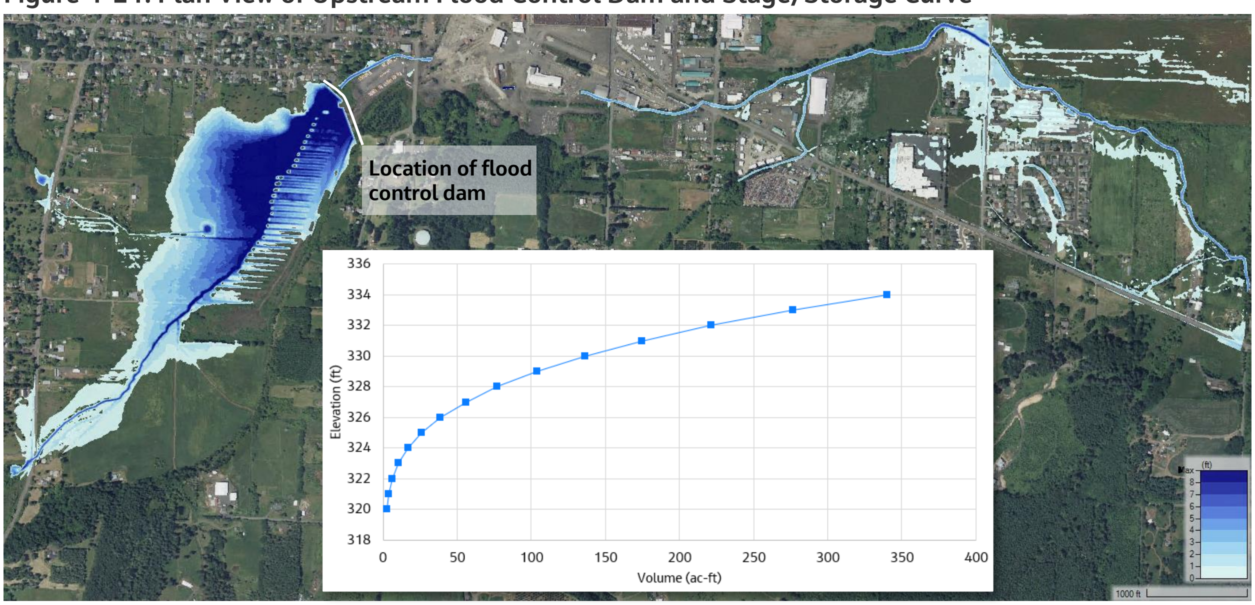
- Property acquisition and easement costs were not included in the estimate.
- A 2-foot bridge deck thickness and 2-foot of required freeboard was assumed for bridge height and road-conforming calculations.
- For all bridge or culvert replacements the road must remain open to traffic during construction. No suitable detour routes were identified.
- Native cut materials are not suitable for use as berm construction material. Further site analysis would be required to confirm or reject this assumption.
- At least three in-water work periods would be required to perform the channel widening work.
- Replacement of the private diversion structure was included in the price for both alternatives.

The total cost for the channel widening option is $62,604,000. The total cost for the stormwater detention pond option is $29,467,000. Refer to Appendix D for the full OPCC.

4.6 Upstream Flood Control Dam Option

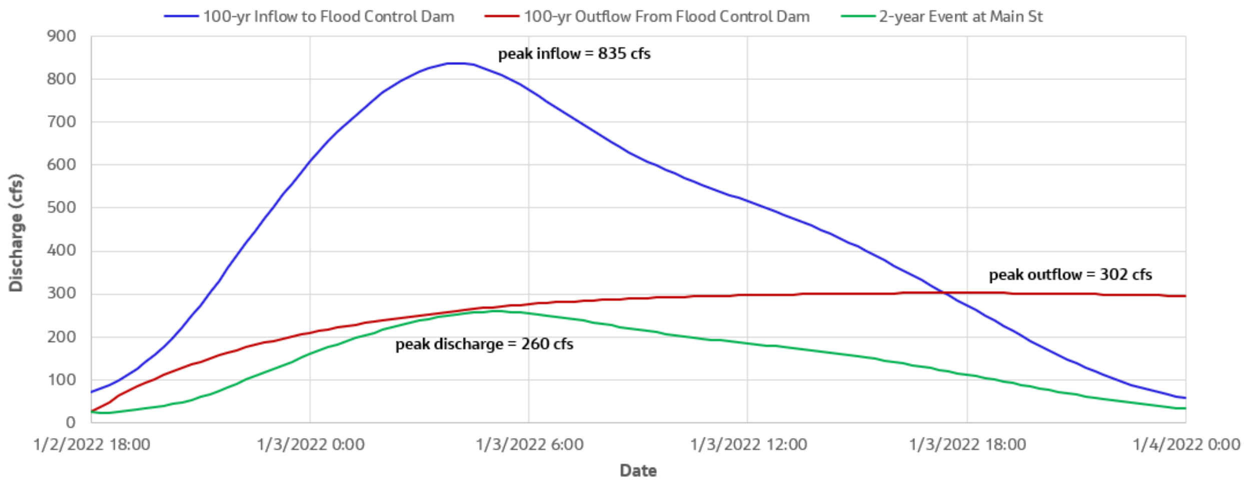
The preferred alternative from the 2016 SWMP was to provide flood detention upstream of Main Street. This flood detention would capture and attenuate a significant portion of the flood hydrograph to prevent downstream flooding and therefore limit the number of required improvements. This concept was implemented by modeling a roughly 20-foot-tall dam directly upstream of the bus storage yard, at a natural constriction in the NF Ash Creek valley. The reservoir of this structure would extend nearly up to Kings Valley Highway and would submerge properties along the creek from RM 7.6 to 8.4,Figure 4-21. The total structure volume is estimated at 340 ac-ft at an elevation of 334 feet, stage-storage curve shown on Figure 4-21.

Figure 4-21. Plan View of Upstream Flood Control Dam and Stage/Storage Curve



During the 100-year storm event (835 cfs), outflow from the flood control dam is 302 cfs, or 15% greater than the 2-year event. Inflow and outflow hydrographs are shown on Figure 4-22. This mitigates almost all of the downstream flood impacts through the City; however, it does not resolve flooding on NF Tributary and flooding can still be observed near Godsey Road (Figure 4-21). The cost, permitting and property acquisition costs combine to make this alternative infeasible, and this alternative was not carried forward due to these challenges.

Figure 4-22. Inflow and Outflow Hydrographs

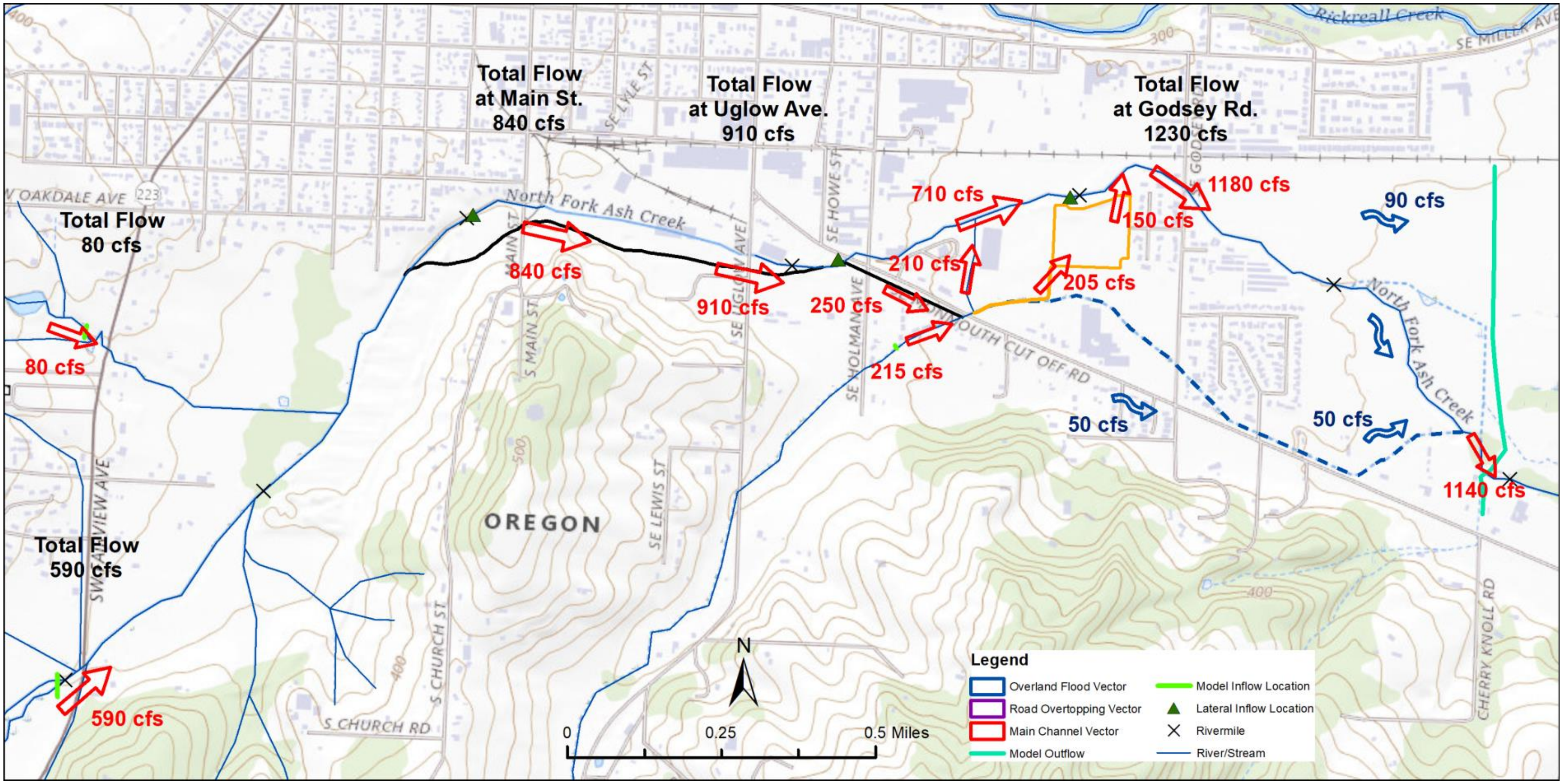


4.7 Comprehensive Solution

The comprehensive solution is the modeled scenario with each of the preferred alternative for each of the four reaches and was run for both the 100-year and 2080 future 100-year design events. Appendix E, Mapbook 5 and 6 shows the results for each of the respective design events. Similar to existing conditions, a conceptual graphic depicting the flowpath vectors is provided on Figure 4-23. The preferred alternative for each reach is summarized as follows:

- Reach 1. Kings Valley Highway bridge widened to 35 foot to prevent overtopping to the north of Kings Valley Highway.
- Reach 2. Existing 2 x 24-inch diameter culverts are replaced with 2 x (4-foot span x 2-foot rise) box culverts to prevent overtopping of Kings Valley Highway.
- Reach 3. NF Ash Creek is daylighted and realigned between RM 6.9 to 7.6, which has the potential to significantly reduce peak WSE's. Main Street and Uglow Avenue each have 35-foot-wide structures across NF Ash Creek.
- Reach 3. A bypass channel between NF Ash Creek and NF Tributary is required to the South of Monmouth Cutoff Road to allow for high flows to be routed to the tributary and into the SWDP. During current conditions, this flowpath occurs as shallow overland flooding.
- Reach 4. Replace the NF Tributary crossing culverts with 2 x (8-foot span x 4-foot rise) box culverts across Monmouth Cutoff Road. Grade the historic NF Tributary channel into the SWDP on site 2. Replace the Godsey Road bridge as designed (Keller Associates, 2020). Remove/replace the diversion structure at RM 5.7.

Figure 4-23. Comprehensive Solution Flood flowpaths during the 100-year design storm



4.8 Proposed Project Sequencing

Flood mitigation improvements are typically implemented progressively from the downstream to the upstream limits of construction. Should a flood event occur prior to full implementation, this sequencing approach usually retains existing flooding patterns within the unconstructed areas; implementation from upstream to downstream often results in increased flooding ahead of full implementation.

For NF Ash Creek, however, some of the projects can be implemented independently. The project alternatives for Reaches 1 and 2 along Kings Valley Highway are hydraulically independent of the downstream reaches for the 100-year event comprehensive solution and therefore could be completed at any time. The Reach 4 projects should be sequenced as follows:

1. Replace diversion structure; replacement of the diversion structure is hydraulically independent of the other Reach 4 projects and can be implemented based on other project drivers, such as mitigation requirements.
2. Replace Godsey Bridge
3. Construct stormwater detention pond and associated inlet and outlet channels.
4. Replace Monmouth Cutoff Rd culverts on the NF Tributary

- For Reach 3, the daylighted channel could be constructed outside of in-water work periods as long as the existing culverts remained undisturbed. The exact location and alignment of the existing culverts needs to be identified before designing the new daylighted channel. As part of the Reach 3 projects, it is important to construct the diversion channel along Monmouth Cutoff Road from NF Ash Creek to the NF Tributary before allowing water in the new daylighted channel. This will prevent flooding at the Monmouth Cutoff and Holman Bridges and direct the appropriate quantity of flows to the stormwater detention pond. The new channel will convey a similar amount of flow to the NF Tributary as overland flow it was receiving under existing conditions.

If Reach 3 needs to be implemented prior Reach 4, analysis and design work would be required to evaluate impacts to flooding in Reach 4. it is possible that additional design elements would be required to mitigate adverse flooding in Reach 4 but allow for Reach 3 improvements prior to Reach 4.

5. Environmental Permitting

This section summarizes current conditions, data needs, and presumed permitting requirements for preferred alternatives for the four reaches.

5.1 Current Conditions/Features Common to All Reaches

NF Ash Creek is a fish-bearing waterbody and is documented to support resident and coastal cutthroat trout. Anadromous Endangered Species Act (ESA) listed fish may be present within the project area. The reaches that would be affected are not designated Critical Habitat under the ESA, but the watershed is mapped as Essential Fish Habitat for Chinook and coho, as NF Ash Creek is within historic anadromous salmon range. No planned restoration projects have been identified on NF Ash Creek by the Luckiamute Watershed Council.

Minimal existing information on current and potential fish distribution or occurrence is readily available; therefore, it is recommended that the ODFW District Biologist and other agency sources be consulted for more information. It is assumed that the private diversion structure at RM 5.7 currently acts as a fish passage barrier. There may be other partial or full barriers that would be improved; these will need to be assessed as the projects progress. It is expected that modifications to enhance fish passage would be installed as practicable, including meeting ODFW state fish passage standards at all locations where structure are removed or modified.

Wetland and riparian areas occur adjacent to and in-water work is required in all reaches. It is assumed that all work will occur during the published ODFW in-water work window (July 1 to October 15) for NF Ash Creek. A wetland and waters delineation would be required within the proposed project footprints.

ESA Critical habitat for Fender's blue butterfly and its host plant Kincaid's lupine is documented to occur in Dallas, but outside the project areas. However, these species have potential to occur within the project areas. Kincaid's lupine occurs in upland prairie and is not likely to be found near the project locations. Nelson's checker-mallow and Willamette daisy also have known occurrences in the general area. These federally listed plant species have potential to occur in riparian and adjacent areas and could be affected by work in all reaches. An inventory for these species during the spring is recommended during site investigations

5.2 Environmental Conditions Overview of Alternatives

- ***Reach 1* –** Refer to Section 5.2.1 for a description and scope of the proposed projects.
  - Up to two water crossings, can be constructed during in-water work window
  - Kings Valley Highway bridge mapped as an ODOT fish barrier by ODFW– passability unknown
  - Land is private and ODOT (Kings Valley Highway) right-of-way
- ***Reach 2* –** Refer to Section 5.3 for a description and scope of the proposed projects.
  - Two water crossings; can be constructed during in-water work window
  - Not mapped as barrier by ODFW
  - Land is private and ODOT (Kings Valley Highway) right-of-way
- ***Reach 3* –** Refer to Section 5.4.2 for a description and scope of proposed projects.
  - In-water work at two tie-in points of the daylighted channel. In-water work area isolation and fish salvage needed for channel fill locations and other in-water work areas.
  - Barrier mapped on SE Uglow would be removed (stream routed to south, this area filled). ODFW identifies this as completely passable.
  - Soil/water contamination is expected on the Industrial Site. A portion of the daylighted channel would flow through the old lumber laydown area, which may have water quality impacts

  - Work is primarily on private land; bridges are owned by the City.
- ***Reach 4 –*** Refer to Section 5.5.2 for a description and scope of proposed projects.
  - In-water work at existing crossings, barriers, and tie-in points (four locations)
  - Double box culvert on Monmouth Cutoff Rd would be upsized (at intersection of inlet channel and conveyance channel). ODFW identifies this as passable.
  - Stormwater detention pond excavation (more than 1 acre) would trigger 1200-C permit but is not expected to require any impoundment permitting
  - Some soil contamination may occur in the area from existing and previous commercial and industrial facilities
  - Work is primarily on private land; bridges are owned by the City.

Fish passage improvement is expected to occur in all reaches, with the most significant benefits expected to be realized at Reaches 3 and 4. There is potential for riparian restoration in all reaches, with significant gains occurring at Reach 3 with the daylighting of the channel. Projects with aquatic habitat restoration components may be subject to permitting streamlining. There is potential for all reaches of the project to be covered under a programmatic ESA consultation, such as Standard Local Operating Procedures for Endangered Species (SLOPES) for Restoration, which would streamline the process. Coordination with relevant agencies early in the design process is advised to review potential mitigation opportunities. ODOT should be consulted to determine if any state or federal funds are available for enhancement work by replacement of culverts on Kings Valley Highway.

It is assumed that no new impervious surface would be added as part of project alternatives.

Based on the results of the Phase 1 (and possibly Phase 2) Site Assessment, soils may need to be tested. If soils are determined to be nonhazardous, they may be able to be used onsite or taken to a landfill. If any soils are determined to contain hazardous materials, they would need to be transported to an approved State disposal facility. Best Management Practices would be implemented in all areas to minimize runoff into wetlands and streams.

5.3 Data Needs

The following surveys and data collection efforts are anticipated to be needed to support permitting at the four reaches. Additional information would be needed to provide a more accurate estimate of level of effort for these tasks. Table 5-1 summarizes survey and data needs required for permitting by reach.

Table 5-1. Surveys to Support Environmental Permitting by Reach

Survey/Data Need	Survey Timing/Expiration	Applicable Agency and Permit	Reach 1	Reach 2	Reach 3	Reach 4
Phase I Site Assessment, Phase 2 Site Assessment may be required depending on findings of Phase 1	Can be conducted anytime, property transfer must occur within 6 months of Phase 1 completion. Phase 1 older than 6 months would need to be updated; expires and would need to be reconducted after 1 year	U.S. Environmental Protection Agency, Property transfer	NA	NA	Required	Required
Listed plant survey	During blooming period, June-July. Can be conducted early, should be resurveyed closer to construction to determine if endangered species are found or suitable habitat occurs	U.S. Fish and Wildlife Service (USFWS) ESA consultation	Required	Required	Required	Required
Wetland/Waters Delineation	Ideally conducted in spring, would need to be revisited/verified after 5 years	USACE 404 Permit, DSL Removal/Fill	Required	Required	Required	Required
Stream Functional Assessment	Conducted during wetland/waters delineation	DSL Removal/Fill	NA	NA	Required	Required
Oregon Rapid Wetland Assessment Protocol	Conducted during wetland/waters delineation	DSL Removal/Fill	NA	NA	Required	Required
Cultural Resources Survey and Historical Structures Inventory	Could be conducted early to identify any constraints. Typically would be current for 10 years.	SHPO Section 106 Consultation	Required	Required	Required	Required
Federal Levee Investigation	Desktop review to determine if USACE Section 408 levees could be impacted	USACE Section 408	NA	NA	May be required	May be required

NA = Not Applicable

5.4 Summary of Anticipated Permits and Approvals

It is recommended that permitting be completed for all anticipated work at the same time, as one project. Federal agencies require that any related project be reviewed as a whole. This would also streamline efforts, by reducing duplicative processes. Although work should be permitted as one project, potential anticipated permitting triggers and requirements are separated by reach where differences between requirements are anticipated. This is intended to provide context and background on more time-consuming processes. Table 5-2 summarizes anticipated permit requirements by reach.

Table 5-2. Regulatory Authority and Anticipated Permit

Regulatory Agency	Permit, Approval, or Review	Review and Permit Issuance Timeline	Reach 1	Reach 2	Reach 3	Reach 4
Federal						
USACE	Section 404 of the Clean Water Act (CWA). This is expected to be required for all reaches, and the likely trigger for other federal permitting, including National Environmental Policy Act (NEPA) and ESA consultation	120 days for Nationwide Permit (NWP); 6 months to 1 year for individual. Permit is typically valid for 5 years.	May fall under NWP 3 – Maintenance, or NWP 43 – Stormwater Management Facilities	May fall under NWP 3 – Maintenance, or NWP 43 – Stormwater Management Facilities	Individual 404 permit expected to be required	May fall under NWP 43 – Stormwater Management Facilities
Lead federal agency to be determined. Could be USACE or possibly FEMA	NEPA Compliance (to be conducted by lead federal agency)	Varies, a Categorical Exclusion may be expedited, if an Environmental Assessment is required, a lengthier evaluation and public comment would be required.	NEPA compliance is expected to be triggered by USACE permitting for all work in all reaches.			
National Historic Preservation Office/State Historic Preservation Office (SHPO)	Finding of Effect pursuant Section 106 of the National Historic Preservation Act	30 days from submittal of finding from USACE to SHPO. Does not expire unless project impacts change.	Dependent on findings in cultural/historical review; required for 404 permit.			
U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS)	ESA Section 7 Consultation (to be conducted by lead federal agency); Magnuson-Stevens Act compliance for work in Essential Fish Habitat (reviewed by NMFS in conjunction with ESA compliance)	NA if Letter of No Effect issued; up to 1 year if formal consultation and a Biological Opinion (BO) is required. BOs do not expire but would need to be revised if permitted incidental take of listed species is exceeded, if new species are listed, or if the project changes.	ESA consultation is expected to be required for work in all reaches, due to potential effects on listed fish. Work may be covered under programmatic (SLOPES), with more extensive work in Reaches 3 and 4 more likely to require formal consultation, including evaluating potential impacts to fish from increased exposure to contaminated soils, and potential entrapment or temperature effects from the stormwater detention pond.			
USFWS	Migratory Bird Treaty Act (MBTA)	No specified review timeline	May be required if vegetation is removed. Restrictions on timing of vegetation removal would apply.			
USFWS	Bald and Golden Eagle Protection Act	None if no species found	Not expected. Surveys would confirm presence of eagles nesting in vicinity before project implementation.			
State of Oregon						

Regulatory Agency	Permit, Approval, or Review	Review and Permit Issuance Timeline	Reach 1	Reach 2	Reach 3	Reach 4
Oregon Department of State Lands (DSL)	Individual Removal-Fill Permit	Not required if <50 cubic yards removal/fill; if needed,120 days	Not expected	Not expected	Would be required for fill of existing channel	Not expected
ODFW	Oregon State Fish Passage Application and Authorization	Dependent on proposed in-water work design if project triggers State Fish Passage Board review or can be reviewed by Fish Passage Biologist; 60-90 days review	Expected to be required at all reaches. One permit is needed per crossing/in-water work location to ensure new structure meets state fish passage standards.			
ODFW	Scientific Taking Permit for Fish, Scientific Taking Permit for Wildlife	Typically under 60 days	Required for fish salvage. One permit per season can cover multiple water bodies.			
Department of Environmental Quality (DEQ)	Section 401 of the CWA (33 *United States Code* § 1341) Water Quality Certification.	Up to 1 year	NA	NA	Required if Individual 404 Permit is needed.	Required if Individual 404 Permit is needed.
Department of Environmental Quality (DEQ)	1200-C Permit	Review and issuance timeline varies and is based on proposed	Not needed for disturbance <1 acre	Not needed for disturbance <1 acre	Expected to be required due to excavation of new channel	Required for excavation of stormwater detention pond.
ODOT	Coordination with ODOT will be required to determine any additional approvals or documentation.				NA	NA
Local						
Polk County	Land Use Permit	Review and issuance timeline varies and is based on proposed impacts	NA	NA	Required	Required
Polk County	Floodplain Zone Permit	Review and issuance timeline varies and is based on proposed impacts	Expected to be required for all reaches.			

6. Floodplain Management

6.1 Current Status

The current (effective) FEMA Flood Insurance Study (FIS) (FEMA, 2006) and FIRM are based on a 1D HEC-RAS effective model developed in 1980 and a Floodplain Management Study conducted by the U.S. Department of Agriculture SCS (USDA, 1985). There is no documentation of the flows attributed to the NF tributary included in the FIS. Additionally, significant development has occurred within the Project area since the creation of the effective model. This development has likely increased surface runoff reaching NF Ash Creek as well as shortening the time to concentration for parts of the watershed. As described in Section 1.1, the NF Tributary was rerouted in the early 1980s by a landowner; the tributary now discharges into NF Ash Creek approximately 1 mile upstream of its historic confluence. Finally, the detailed study for the effective model begins downstream of Uglow Avenue and of Industrial Site, which is a significant source of flooding within the Project area. Therefore, the effective hydrologic and hydraulic FEMA models, FIS, and FIRM do not reflect current conditions in terms of channel routing, terrain, flows, floodplain extents, or WSEs.

6.2 Floodplain Management Pathways

There are two primary approaches for floodplain management and permitting for the projects identified in this Study.

6.2.1 Proposed Conditions CLOMR and Post-Construction LOMR

A CLOMR would be submitted for the preferred project alternatives described in this feasibility study. The CLOMR process allows the floodplain manager (the City) to negotiate conditional approval of planned work within the FEMA floodplain. The CLOMR process can be initiated once the 90% design submittals are complete. CLOMR approval typically takes a minimum of 6 months. Fees are generally required for this permitting. After construction is completed, a Letter of Map Revision (LOMR) would be submitted based on the previously approved CLOMR and post-construction as-builts. The approval process typically takes a minimum of 6 months and updated flood maps are not formally adopted until the LOMR is approved. Fees are generally required for this permitting.

Depending on construction completion schedule, it might be necessary to submit multiple post-construction LOMRs. This would occur if there were significant delays between construction stages.

6.2.2 Existing Conditions LOMC, Proposed Conditions CLOMR, and Post-Construction LOMR

A Letter of Map Change (LOMC) or new study would update the FIRM to reflect existing conditions; this process is used when flood maps do not reflect current existing conditions. The 2D HEC-RAS existing conditions model developed as part of this feasibility study could be used as the basis for a LOMC application; once submitted, review by and coordination with FEMA typically requires a minimum of 6 months to finalize. Fees may be required for this permitting; however, it is possible they would be waived for the City. Alternately, it may be possible to use the current 2D model as the basis for a new study; contacting Oregon Emergency Management and FEMA staff to discuss this option is recommended. Additionally, depending on schedule, this LOMC or new study could, once approved, be used as a basis for changes to the Godsey Road Bridge replacement CLOMR.

Following LOMC approval or approval of a new study, a CLOMR would be submitted for the preferred project alternatives described in this feasibility study. The CLOMR process allows the floodplain manager (the City) to negotiate conditional approval of planned work within the FEMA floodplain. The CLOMR process can be initiated once the 90% design submittals are complete. CLOMR approval typically takes a minimum of 6 months. Fees are generally required for this permitting.

After construction is completed, a LOMR would be submitted based on the previously approved CLOMR and post-construction as-builts. The approval process typically takes a minimum of 6 months and updated flood maps are not formally adopted until the LOMR is approved. Fees are generally required for this permitting.

Depending on construction completion schedule, it might be necessary to submit multiple post-construction LOMRs. This would occur if there were significant delays between construction stages.

6.3 Approach Options

Without an Existing Conditions LOMC or new study to correct the existing conditions flood mapping, the FIRM will remain unchanged until the LOMR is approved. Should the City elect to continue development of the projects with the intent to construct in the near future, forgoing a LOMC or new study reflecting existing conditions may be a feasible approach. However, if the City does not expect to pursue design and construction of these projects in the near future, obtaining a LOMC or new study would update the flood maps to current conditions and give residents within the floodplain access to the NFIP.

7. Conclusion and Recommended Next Steps

Flooding on NF Ash Creek through Dallas is widespread, complex, and costly to address. The feasibility study is intended to be a benchmark document for future structure replacement projects and flood mitigation projects. The hydrologic and hydraulic model tools should be updated when new data becomes available and projects in the floodplain are being evaluated.

7.1 Summary of Projects and Estimated Costs

As discussed in Section 4, costs developed for the proposed NF Ash Creek flood mitigation projects are Class 5 estimates as defined by the Association for the AACE International and adopted by the American National Standards Institute. A Class 5 estimate is expected to be within +100% or −50% of the actual construction cost and corresponds to 2% level of engineering design. The final cost of the projects will depend on actual labor and materials costs, actual site conditions, productivity, competitive market conditions, bid dates, seasonal fluctuations, final project scope, final project schedule, and other variables. As a result, the final project costs will vary from the estimates presented in this report. Refer to Appendix D for the full OPCC.

Additionally, an allowance for fees associated with administration, engineering, and permitting was calculated for each project. Given the potential difficulty and complexity associated with designing and permitting the proposed projects in Reaches 3 and 4, the allowance was increased to 45% of the construction cost. The projects in Reaches 1 and 2 were priced with a 30% allowance. Costs were rounded to the nearest $1,000. Refer to Table 7-1 for a summary of the construction and total costs.

Table 7-1. Cost Estimate Summary

	Alternative	Construction Cost	Allowance for Administration, Engineering, and Permitting	Total Cost
Reach 1	Alternative 1: Kings Valley Highway Bridge Replacement	$9,340,000	$2,802,000	$12,142,000
	Alternative 2: Kings Valley Highway Auxiliary Culvert	$7,923,000	$2,377,000	$10,300,000
Reach 2	Culvert Replacement	$1,687,000	$506,000	$2,193,000
Reach 3	Alternative 1: Daylight in Place	$22,977,000	$6,893,000	$29,870,000
	Alternative 2: Daylight to the South	$30,146,000	$9,044,000	$39,190,000
Reach 4	Alternative 1: Channel Widening and Structure Replacement	$62,604,000	$18,781,000	$81,385,000
	Alternative 2: Stormwater Detention Pond	$29,467,000	$8,840,000	$38,307,000

The costs associated with implementation of the 100-year flood event comprehensive solution are significant and unlikely to be implemented by the City without cost sharing and/or grant funding.

7.2 Overarching Next Steps

7.2.1 Floodplain Management

The City should update the FIRM to reflect existing conditions; this process is used when flood maps do not reflect current existing conditions. Given that the City does not plan to implement any projects that could be used as a pathway for correcting the existing conditions through a CLOMR/LOMR process within the next couple years, the City should correct the FIRM through a LOMC application or new study using the 2D HEC-RAS existing conditions model developed as part of this feasibility study. An updated FIRM will allow property owners newly identified as within the 100-year floodplain to access flood insurance through the NFIP, property owners identified as not within the floodplain to drop their NFIP flood insurance and will provide current flood mapping for areas planned for development. Additionally, a current FIRM is required to access FEMA grant funding.

7.2.2 Study to Mitigate More Frequent Flooding

Costs associated with implementation of the 100-year event comprehensive solution for NF Ash Creek are significant and will require cost sharing and/or grant funding for full implementation. However, the existing conditions results show that bankfull capacity occurs at the 2-year event. It is recommended that the City evaluate opportunities to reduce flooding for more frequent events (2-year to 25-year flows) with a focus on lower cost options. While identified projects would likely have no benefit or decreased benefit if the projects to correct 100-year event flooding are implemented, these projects could provide significant relief from more frequent flooding ahead of implementation of the comprehensive solution.

7.2.3 Explore Cost Sharing and Grant Funding Opportunities

Identification of cost sharing and/or grant funding opportunities will be necessary to progress implementation of the comprehensive solution. Additionally, efforts to identify potential funding mechanisms could be expanded to cover any projects identified to mitigate more frequent flooding events (2-year to 25-year flows).

7.2.4 Emergency Response Planning Support

The calibrated existing conditions hydraulic model developed for this Project documents and quantifies flooding within the City for which only visual observation was previously available. Until the comprehensive solution can be implemented, the City will continue to be at risk of flooding. This updated existing conditions information, especially flood mapping, should be packaged and presented to local emergency services to support their emergency planning.

Visual observations combined with experiences at other industrial sites also suggest that the existing CMP culverts at the Industrial Site are likely in poor condition and at risk of failure. CMP design life is roughly 25-years and should have a minimum cover of about 4 feet to prevent surface loading damage by heavy industrial equipment. Based on historic aerial imagery of the Industrial site, the culverts have been in-place for well over 25-years. These images also show that the western section of the culvert failed between 20 to 30 years ago and was replaced. Visual inspection in the middle, open area between the culvert sections shows that the CMPs have less than 4 feet of cover. Therefore, any modeling and documentation conducted to support emergency planning should include failure of both culvert segments.

7.3 Next Steps by Reach

7.3.1 Reach 1: Upper North Fork Ash Creek

Reach 1 is located directly outside the City UGB. King's Valley Highway and Bridge are ODOT infrastructure; given the significant costs associated with the two identified alternatives, it is recommended that the City wait for ODOT to replace the bridge, which is listed as scour critical on the ODOT bridge inventory. It is recommended that the City coordinate with ODOT to discuss replacement plans and achieve flood mitigation in this area. Since the bridge is located outside the UGB, this coordination might need to occur in partnership with Polk County.

7.3.2 Reach 2: Kings Valley Tributary

While King's Valley Highway is an ODOT facility, flooding at this tributary is within the City UGB. The flooding at this location is also hydraulically independent from the other projects. The City could move forward with this project if desired; next steps would include preliminary design, permitting, and coordination with ODOT.

7.3.3 Reach 3: Middle North Fork Ash Creek

The cost associated with both Reach 3 alternatives, daylighting the creek in place and daylighting the creek to the south, are significant and unlikely to be implemented by the City without cost sharing and/or grant funding. Implementation of either alternative is also intertwined with efforts to rezone and redevelop the Industrial Site. The City or a representative will need to actively track and review development plans for the site to confirm that work related to NF Ash Creek will include mitigation of the 100-year flood event. The City will also need to time replacement of the Main Street and Uglow Avenue bridges to occur in conjunction with improvements to the Industrial Site.

7.3.4 Reach 4: Lower North Fork Ash Creek

Similar to Reach 3, the cost associated with the Reach 4 Stormwater Detention Pond project is significant and unlikely to be implemented by the City without cost sharing and/or grant funding. However, Reach 4 is the section of NF As Creek most likely to benefit from a study to mitigate flooding between 2- and 25-year events.

8. References

Brunner, Gary W. 2016a. *HEC-RAS River Analysis System 2D modeling user's manual.* Davis: US Army Corps of Engineers—Hydrologic Engineering Center.

Brunner, Gary W. 2016b. *HEC-RAS River Analysis System, 2D hydraulic reference manual, Version 5.0.* Davis: US Army Corps of Engineers—Hydrologic Engineering Center.

Casulli. 2008. A high-resolution wetting and drying algorithm for free-surface hydrodynamics. Int. J. Numer. Meth. Fluids. 2008.

Chow, V. T. 1959. *Open Channel Hydraulics*. McGraw-Hill Book Company, NY.

CH2M HILL, Inc. (CH2M). 2016. *Stormwater Master Plan*. City of Dallas.

Dewitz, J. 2021. *National Land Cover Database (NLCD) 2019 Products [Land Cover Conterminous United States].* U.S. Geological Survey. https://doi.org/10.5066/P9KZCM54.

Donigian, Jr., A.S. 2000. HSPF Training Workshop Handbook and CD. Lecture #19. Calibration and Verification Issues. EPA Headquarters, Washington Information Center. Presented and prepared for U.S. EPA, Office of Water, Office of Science and Technology, Washington, D.C. January 10–14.

Federal Emergency Management Agency (FEMA). 2006. Flood Insurance Study for Polk County, Oregon and Incorporated Areas. December.

Keller Associates, Inc, 2020. Godsey Road Improvements Final Design Submittal. City of Dallas, Oregon. Keller Associates Inc. Salem, Oregon.

Oregon Department of Transportation (ODOT) 2021. Geographic Information Services Unit, Oregon Department of Transportation. Bridge Section. Salem, OR.

Scharffenberg, W.A. and Fleming, M.J. 2010. Hydrologic Modeling System HEC-HMS: User's Manual. U.S. Army Corps of Engineers, Hydrologic Engineering Center.

Streamline Engineering. 2002. *Ash Creek Flood Study*. November.

Thomas, Huw & Nisbet, T. (2007). An Assessment of the Impact of Floodplain Woodland on Flood Flows. Water and Environment Journal. 21. 114 - 126. 10.1111/j.1747-6593.2006.00056.x.

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA, NRCS). 1972. Time of concentration. National Engineering Handbook, Park 630, Chapter 16. Washington DC.

U.S. Department of Agriculture (USDA). 1985. Floodplain Management Study, Ash Creek, Polk County Oregon. December.

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA, NRCS). 2021. *Soil Survey Geographic (SSURGO) Database*. https://sdmdataaccess.sc.egov.usda.gov. Accessed September 7, 2021.

Watershed Sciences. 2009. LiDAR Remote Sensing Data Collection Department of Geology and Mineral Industries Willamette Valley Phase I, Oregon. December 21.

Yin, Li, Urich. 2017. *SimCLIM Data Manual 4.x.* CLIMsystems.

Yochum, Steven E (Yochum). 2018. "Flow Resistance Coefficient Selection in Natural Channels: A Spreadsheet Tool." U.S. Forest Service, National Stream & Aquatic Ecology Center. Technical Summary TS-103.2. February.

Appendix A
Field Photo Log

<u>Photo Log</u>

Section 1: High Flow Storm Event (1/3/2022) 2

Section 2: Field Investigation Photos (9/27/2021 – 10/6/2021) 18

Section 3: Flow and Stage Gage Installation (11/30/2021 and 12/1/2021) 37

Photo Log

Number	1
Creator	C. Massie
Location	Downstream of Godsey Rd
Direction	Looking Downstream
Description:	Ditch running into NF Ash Creek during high flow event (1/3/22)

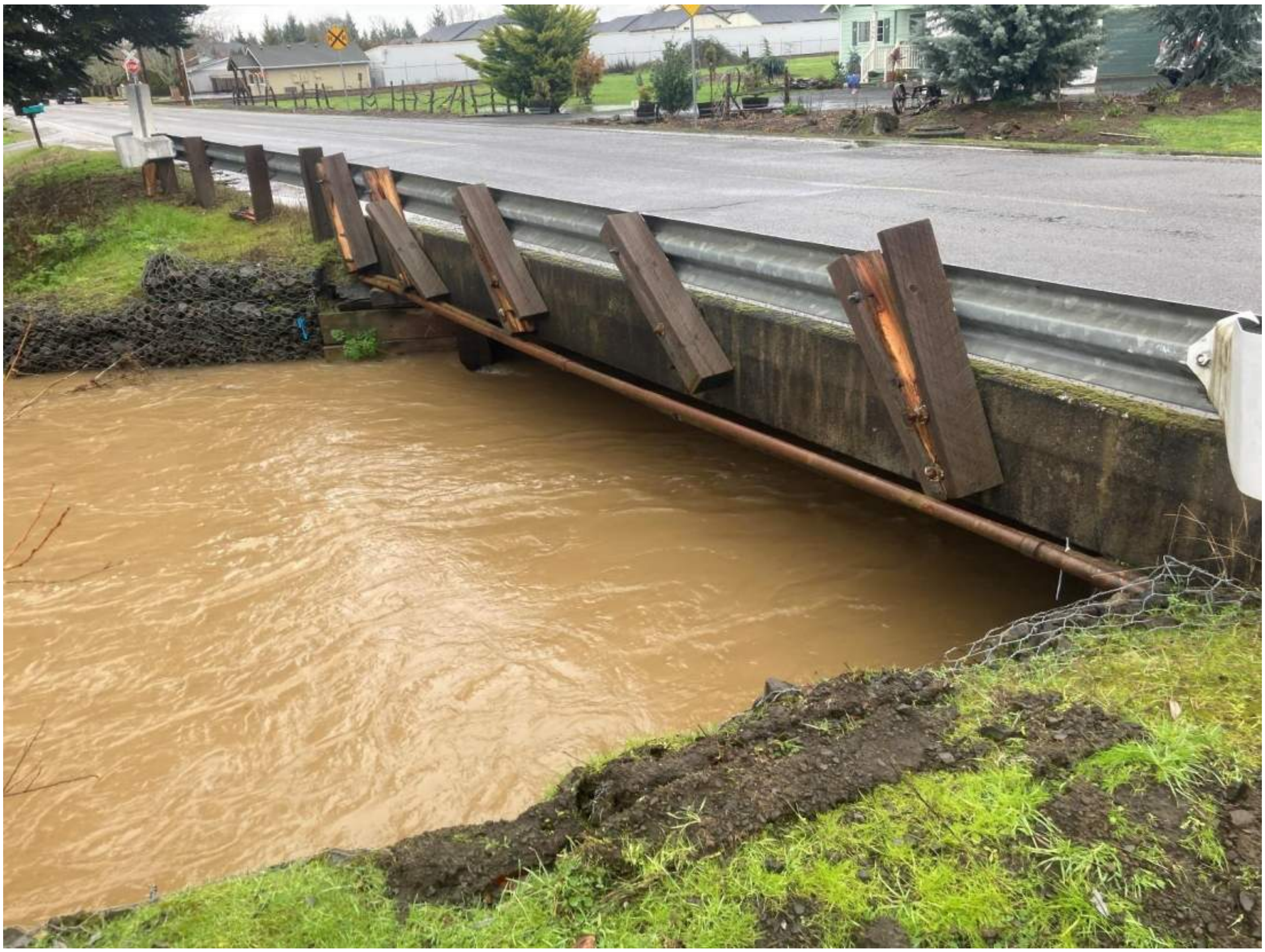
Number	2
Creator	C. Massie
Location	Upstream of Kings Valley Highway Bridge
Direction	Looking at right bank (oriented downstream)
Description:	Bridge almost at capacity during high flow event (1/3/22)

Number	3
Creator	C. Massie
Location	Downstream of Kings Valley Highway Bridge
Direction	Looking at right bank (oriented downstream)
Description:	Bridge and ditch almost at capacity during high flow event (1/3/22)

Number 4
Creator C. Massie
Location Downstream of Godsey Rd Bridge
Direction Looking at right bank (oriented downstream)
Description: Bridge during high flow event (1/3/22)

Number	5
Creator	C. Massie
Location	Upstream of Godsey Rd Bridge
Direction	Looking upstream
Description:	Bridge during high flow event (1/3/22)

Number	6
Creator	C. Massie
Location	Upstream of Godsey Rd Bridge
Direction	Looking at left bank (oriented downstream)
Description:	Bridge during high flow event (1/3/22)



Number 7
Creator C. Massie
Location Upstream end of Holman Culvert
Direction Looking downstream
Description: Bridge during high flow event (1/3/22)

Number	8
Creator	C. Massie
Location	Downstream end of Holman Culvert
Direction	Looking at left bank (oriented downstream)
Description:	Bridge during high flow event (1/3/22)

Number	9
Creator	C. Massie
Location	Downstream of Main St Bridge – Timber Bridge
Direction	Looking downstream
Description:	Abandoned timber bridge during high flow event (1/3/22)

Number	10
Creator	C. Massie
Location	Upstream of Main St Bridge
Direction	Looking downstream
Description:	Bridge during high flow event (1/3/22)

Number	11
Creator	C. Massie
Location	Upstream of Monmouth Cutoff Rd Bridge
Direction	Facing right bank (oriented downstream)
Description:	Bridge during high flow event (1/3/22)

Number	12
Creator	C. Massie
Location	Downstream of Monmouth Cutoff Rd Bridge
Direction	Facing upstream
Description:	Bridge during high flow event (1/3/22)

Number	13
Creator	C. Massie
Location	Downstream of Uglow Ave
Direction	Looking at right bank (oriented downstream)
Description:	Bridge during high flow event (1/3/22)

Number	14
Creator	C. Massie
Location	Upstream of Uglow Ave
Direction	Looking at right bank (oriented downstream)
Description:	Bridge during high flow event (1/3/22)

Number	15
Creator	C. Massie
Location	Downstream of Monmouth Cutoff Road Culverts (NF Tributary)
Direction	Facing left bank (oriented downstream)
Description:	Culverts over capacity during high flow event (1/3/22)

Number	16
Creator	C. Massie
Location	Upstream of Monmouth Cutoff Road Culverts (NF Tributary)
Direction	Facing downstream
Description:	Culverts over capacity during high flow event (1/3/22). Debris racking

Number 17
Creator R. Zabrowski
Location NFAC Directly upstream of Kings Valley Highway bridge
Direction Looking Downstream
Description:

Number	18
Creator	R. Zabrowski
Location	Beneath Kings Valley Highway bridge
Direction	Looking downstream
Description:	

Number	19
Creator	R. Zabrowski
Location	NFAC trib downstream of Kings Valley Highway
Direction	Looking downstream
Description:	

Number	20
Creator	R. Zabrowski
Location	Daylighted section on Industrial Site
Direction	Looking downstream
Description:	

Number	21
Creator	R. Zabrowski
Location	SE Uglow Ave culvert crossing
Direction	Looking upstream
Description:	

Number	22
Creator	R. Zabrowski
Location	Gabion basket failure just downstream of SE Monmouth Cutoff Rd bridge
Direction	Looking at left bank
Description:	

Number 23
Creator R. Zabrowski
Location SE Holman Ave culvert crossing
Direction Looking downstream
Description:

Number 24
Creator R. Zabrowski
Location Downstream of SE Holman Ave where NF Tributary enters from south
Direction Looking downstream
Description:

Number 25
Creator R. Zabrowski
Location Downstream of SE Holman Ave where NF Tributary enters from south
Direction Looking upstream (south) at the NF Tributary channel
Description:

Number	26
Creator	R. Zabrowski
Location	NF Tributary at SE Holman Ave crossing
Direction	Looking upstream at the SE Holman Ave culvert crossing
Description:	Historic NF Tributary channel to the east

Number	27
Creator	R. Zabrowski
Location	NF Tributary upstream of SE Monmouth Cutoff Rd crossing
Direction	Looking downstream
Description:	Significant scour evidence just downstream of concrete flume

Number 28
Creator R. Zabrowski
Location NF Tributary double box culvert at SE Monmouth Cut Off Rd crossing
Direction Looking downstream
Description:

Number	29
Creator	J. Laundry
Location	Downstream end of Main Street Culvert
Direction	Looking at right bank
Description:	Stormwater outfall with undermined gabion

Number	30
Creator	J. Laundry
Location	About 75 yards from the creek, entering from the timber lay down area
Direction	Facing right bank (oriented downstream)
Description:	Difficult to access creek due to thick blackberries

Number 31
Creator J. Laundry
Location Diversion dam
Direction Standing on right bank looking at left bank
Description: Higher flows than a few days later (just after storm event)

Number 32
Creator J. Laundry
Location Godsey Road Bridge
Direction Looking upstream
Description:

Number 33

Creator T. Bedford

Location Directly downstream of Mid-Columbia Bus Company bridge.

Direction Looking Upstream

Description:

Number	34
Creator	T. Bedford
Location	Timber bridge
Direction	Looking downstream
Description:	

Number 35

Creator T. Bedford

Location Inlet to Weyerhaeuser Culvert.

Direction Looking downstream

Description:

Number	36
Creator	J. Laundry
Location	Godsey Rd Flow Gage
Direction	Looking at left bank (oriented downstream)
Description:	Meter installed US of the bridge on the submerged concrete weir that is located approximately 15 to 20 ft US of the bridge.

Number	37
Creator	J. Laundry
Location	Monmouth Cutoff Rd Level Gage (NF Tributary)
Direction	Facing downstream
Description:	Meter installed on the upstream end of the right culvert

Number	38
Creator	J. Laundry
Location	Holman Ave Flow Gage
Direction	Facing downstream
Description:	Meter installed on the upstream end of culvert, approximately 10 ft into the culvert. Command module installed on rock gabion

Number	39
Creator	J. Laundry
Location	Main St Level Gage
Direction	Facing downstream
Description:	Mounted on the upstream end of the culvert on a pole projecting off of the concrete at the top of the culvert

Appendix B
ADS Final Flow Monitoring Report on NF Ash Creek

Ash Creek, OR

Final Report Submitted to **Ash Creek, OR**
July 15, 2022

ADS ENVIRONMENTAL SERVICES

4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
www.adsenv.com

July 15, 2022

Meabon Burns, PE
Jacobs Engineering
2020 SW 4th Ave, Suite 300
Portland, OR 97201

SUBJECT: Ash Creek Temporary Flow Monitoring Report

Dear Meabon Burns,

ADS is pleased to submit this temporary flow monitoring report for Ash Creek, OR. The metering was conducted at six (6) locations. The study was conducted during the period of Thursday, 02 December 2021 to Monday, 02 May 2022.

The report contains depth, velocity, and quantity hydrographs as well as daily long tables for the metering period. All data can easily be exported from the PRISM data hosting website.

In addition, we would be happy to further explain any details about the report that may seem unclear. Should you have any questions or comments, you may contact the Project Manager, Shawn Hoglan at 206-571-0130.

It has been our pleasure to be of service to you in the performance of this project. Thank you for choosing ADS products and services to meet your flow monitoring needs.

Sincerely,
ADS ENVIRONMENTAL SERVICES

Tony Locke
Data Analyst III, ADS LLC Huntsville, AL

AshCreek, OR

Prepared For:

Meabon Burns, PE
Ash Creek
2020 SW 4th Ave, Suite 300
Portland, OR 97201

Prepared By:

ADS, LLC
4455 S. 134th Place
Tukwila, WA 98168

NFAC_FM01

Site Commentary

SITE INFORMATION

Pipe	SemiElliptical (80 in H x 80 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Thursday, 02 December 2021 to Monday, 02 May 2022**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	5.86	2.79	9.400
Minimum	2.13	1.39	0.713
Maximum	36.09	6.30	178.100
Min Time	02/18/2022 3:20:00 PM	02/26/2022 8:15:00 AM	02/20/2022 12:15:00 AM
Max Time	01/03/2022 10:20:00 AM	01/03/2022 8:10:00 AM	01/03/2022 8:10:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the five minutes average.

DATA UPTIME

Data uptime observed during **Thursday, 02 December 2021 to Monday, 02 May 2022** is provided in the following table:

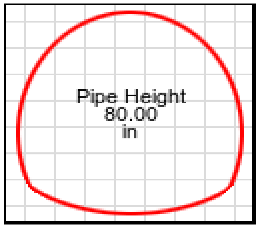
Percent Uptime	
DFINAL (in)	100
VFINAL (ft/s)	100
QFINAL (MGD - Total MG)	100

Hydrograph Report

NFAC_FM01

Flow Monitor

NFAC_FM01

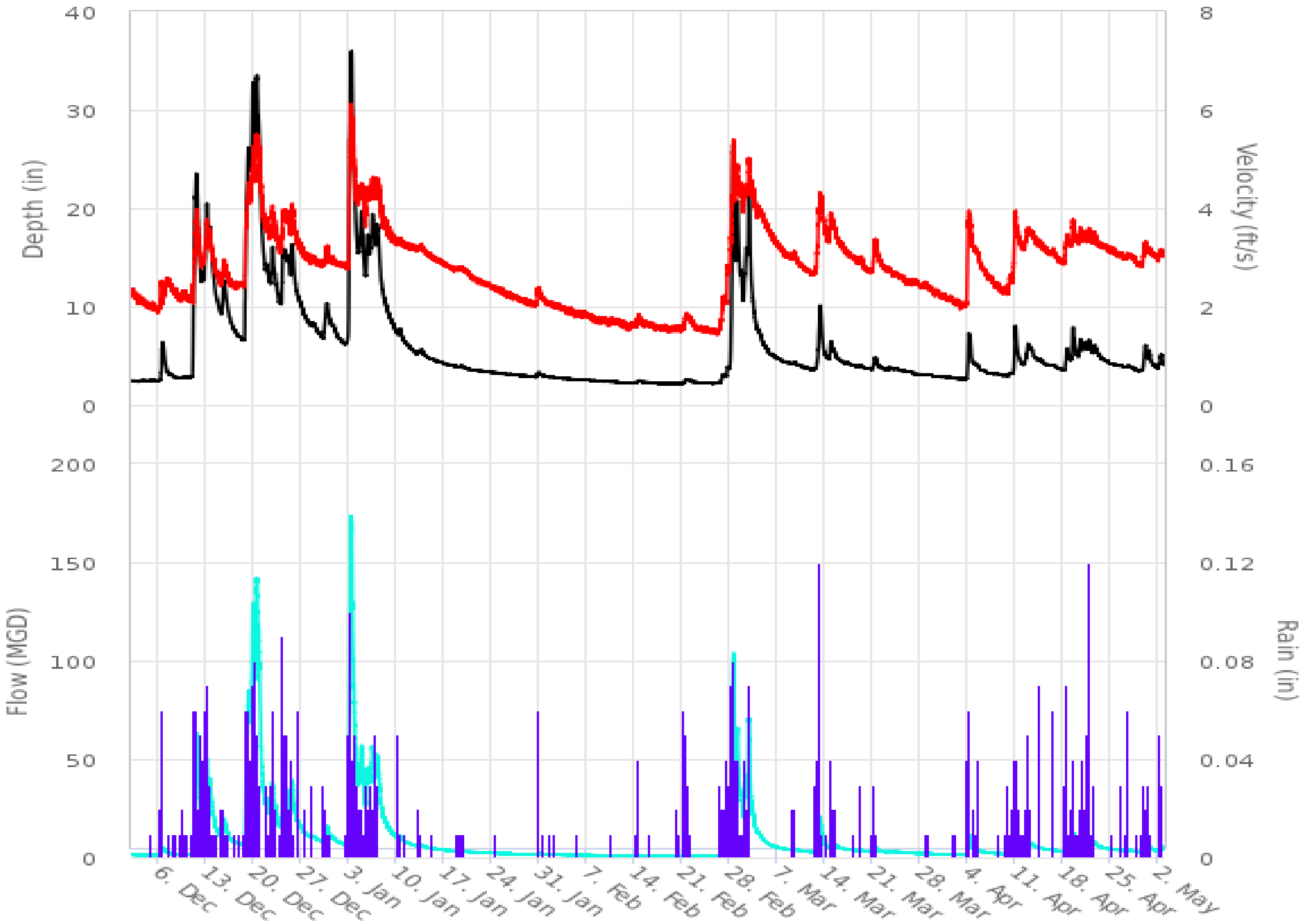


Report Period

12/02/2021
To
05/02/2022

Legend

- DFINAL
- VFINAL
- QFINAL
- RAIN FINAL



4455 S. 134th Place
Tukwila, WA 98168

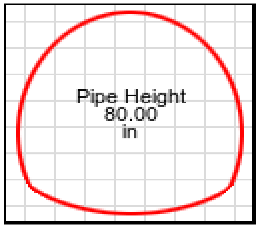
206-762-5070
www.adsenv.com

Scattergraph Report

NFAC_FM01

Flow Monitor

NFAC_FM01

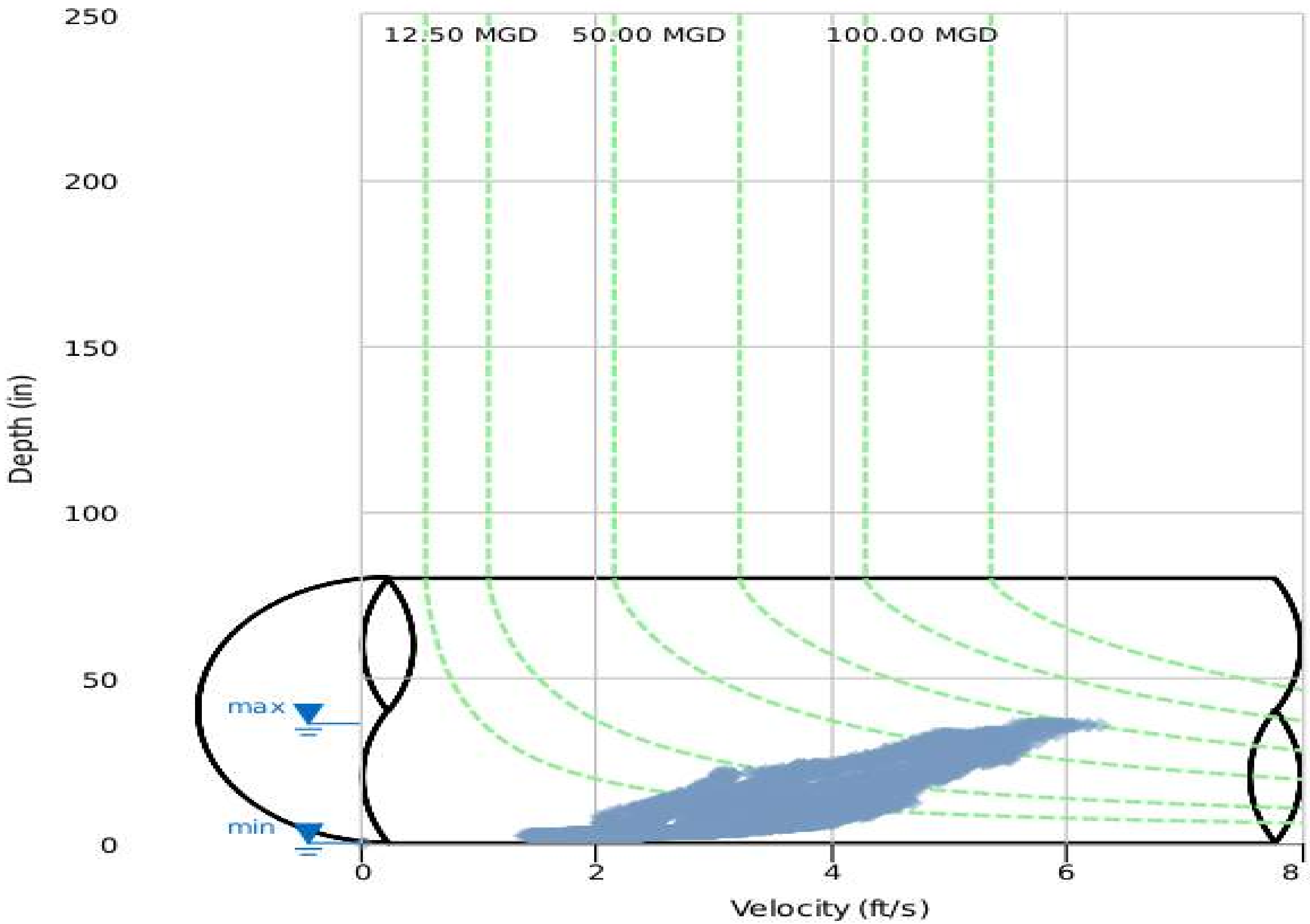


Report Period

12/02/2021
To
05/02/2022

Legend

DFINAL - VFINAL
Iso-Q™
Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
www.adsenv.com

Daily Tabular Report

12/02/2021 00:00 - 05/02/2022 23:55

NFAC_FM01Pipe: SemiElliptical (80 in H x 80 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
12/02/2021	22:40	2.40	02:25	2.48	2.45	23:40	2.05	02:45	2.40	2.24	22:55	1.202	02:45	1.449	1.338	1.338	-
12/03/2021	01:40	2.33	15:15	2.51	2.45	22:15	2.00	04:20	2.27	2.12	01:30	1.130	04:20	1.337	1.261	1.261	-
12/04/2021	05:30	2.41	01:30	2.52	2.47	12:10	1.92	03:45	2.16	2.03	06:10	1.146	01:30	1.323	1.221	1.221	0.08
12/05/2021	22:10	2.44	04:55	2.53	2.49	22:35	1.82	07:25	2.13	1.98	22:35	1.093	03:25	1.316	1.205	1.205	-
12/06/2021	00:05	2.44	15:15	6.42	4.15	00:10	1.86	12:00	2.58	2.17	00:10	1.110	15:15	5.455	2.985	2.985	0.60
12/07/2021	23:00	3.03	00:00	4.55	3.42	23:45	2.29	12:35	2.62	2.48	23:45	1.872	00:05	3.545	2.433	2.433	0.01
12/08/2021	23:35	2.75	00:20	3.04	2.85	15:50	2.12	00:20	2.46	2.29	23:45	1.516	00:20	2.015	1.704	1.704	0.04
12/09/2021	11:35	2.72	22:50	2.93	2.80	08:30	2.06	20:20	2.38	2.21	08:30	1.448	23:10	1.821	1.609	1.609	0.12
12/10/2021	15:55	2.79	23:50	2.93	2.84	10:00	2.06	00:00	2.33	2.17	16:15	1.508	00:00	1.770	1.615	1.615	0.02
12/11/2021	00:00	2.92	14:20	23.56	16.73	03:35	2.03	15:45	4.06	3.16	00:15	1.623	14:25	64.370	35.893	35.893	2.00
12/12/2021	08:35	12.49	22:35	16.16	13.82	08:50	2.73	22:15	3.39	3.02	08:50	18.040	22:15	32.100	23.163	23.163	0.75
12/13/2021	23:55	14.19	03:55	20.51	17.32	23:45	2.99	03:55	3.82	3.39	23:45	23.810	03:55	51.040	35.992	35.992	0.64
12/14/2021	23:45	9.76	00:00	14.17	11.47	17:00	2.46	01:20	3.13	2.76	23:50	11.500	00:05	24.090	16.211	16.211	0.03
12/15/2021	06:20	9.20	16:55	12.71	10.79	03:55	2.38	19:05	3.02	2.68	06:35	10.110	16:15	20.050	14.465	14.465	0.33
12/16/2021	23:50	7.90	00:00	11.05	9.11	19:45	2.37	00:10	2.81	2.54	23:40	8.092	00:10	15.410	10.645	10.645	0.01
12/17/2021	21:10	6.88	00:00	7.89	7.31	09:45	2.31	01:25	2.55	2.44	18:10	6.557	01:30	8.441	7.354	7.354	0.05
12/18/2021	13:55	6.54	23:55	20.66	9.10	06:15	2.35	23:55	3.83	2.67	14:40	6.058	23:55	51.660	13.151	13.151	0.92
12/19/2021	00:00	20.81	22:45	32.81	25.91	00:20	3.75	23:40	5.24	4.41	00:20	51.960	23:20	130.400	82.697	82.697	2.14
12/20/2021	23:55	23.74	12:10	33.59	29.74	04:45	4.48	11:45	5.68	5.13	23:55	79.050	11:45	146.400	115.161	115.161	1.50
12/21/2021	19:15	13.66	00:00	23.67	16.42	19:35	3.51	00:30	4.84	3.98	19:35	26.480	00:05	77.590	39.810	39.810	0.16
12/22/2021	13:05	12.25	19:30	16.10	13.73	08:30	3.28	19:20	4.09	3.63	13:10	21.360	19:20	38.600	27.572	27.572	0.54
12/23/2021	23:20	10.30	00:00	14.12	11.83	20:05	3.05	04:35	3.83	3.39	23:15	15.300	00:15	29.540	20.829	20.829	0.07
12/24/2021	00:25	10.23	13:45	15.81	14.17	01:40	2.98	14:15	4.07	3.71	01:40	14.840	14:15	37.430	29.853	29.853	0.93
12/25/2021	10:55	13.14	17:25	16.34	14.79	10:30	3.37	17:05	4.13	3.78	10:30	24.130	17:05	39.870	31.824	31.824	0.38
12/26/2021	23:45	10.17	00:05	13.51	11.40	22:40	3.10	00:10	3.80	3.34	23:50	15.330	00:10	27.710	19.384	19.384	0.37
12/27/2021	22:55	8.55	00:00	10.18	9.26	20:35	2.92	00:45	3.34	3.08	23:20	11.190	00:45	16.250	13.140	13.140	0.22
12/28/2021	23:55	8.03	00:00	8.56	8.26	10:00	2.79	04:30	3.14	2.96	10:00	9.801	00:05	11.590	10.673	10.673	0.10
12/29/2021	23:10	6.97	00:15	8.09	7.48	10:10	2.79	02:25	3.03	2.90	23:10	7.872	00:35	10.410	9.035	9.035	-
12/30/2021	06:15	6.77	19:20	10.35	8.38	02:20	2.77	21:50	3.32	2.98	02:20	7.566	19:25	16.310	11.158	11.158	0.22
12/31/2021	23:55	7.63	00:00	9.61	8.37	15:20	2.80	01:00	3.15	2.95	23:50	9.290	00:00	14.050	10.861	10.861	0.02
01/01/2022	23:00	6.50	00:30	7.65	6.94	05:05	2.79	02:35	2.97	2.87	23:50	7.113	00:00	9.463	8.012	8.012	-
01/02/2022	11:30	6.16	23:55	9.04	6.45	23:05	2.72	06:55	2.93	2.84	13:20	6.496	23:55	11.820	7.109	7.109	0.24
01/03/2022	00:00	9.22	10:20	36.09	26.98	00:05	2.95	08:10	6.30	5.13	00:00	12.500	08:10	178.100	106.140	106.140	2.41
01/04/2022	10:10	15.41	21:35	19.72	17.30	10:40	3.91	22:00	4.58	4.32	10:45	34.970	21:35	57.370	45.523	45.523	0.54
01/05/2022	12:00	13.07	00:00	18.56	15.38	11:35	3.56	00:50	4.53	4.15	11:35	25.150	00:00	51.440	37.185	37.185	0.47
01/06/2022	02:20	15.28	12:15	19.46	17.14	04:25	4.08	12:55	4.72	4.39	02:15	36.260	12:55	57.810	45.660	45.660	0.59
01/07/2022	23:55	11.69	03:50	18.42	15.38	23:30	3.64	05:30	4.76	4.23	23:30	21.830	04:20	53.490	38.173	38.173	0.17
01/08/2022	23:50	9.02	00:00	11.73	10.22	21:25	3.34	00:30	3.96	3.64	23:30	14.020	00:00	23.690	17.948	17.948	-
01/09/2022	23:55	7.50	00:10	9.09	8.26	21:05	3.21	00:15	3.66	3.40	21:05	10.280	00:15	15.110	12.278	12.278	-
01/10/2022	23:55	6.69	12:05	7.80	7.31	13:05	3.19	19:10	3.47	3.31	23:55	8.564	12:15	11.290	9.980	9.980	0.11
01/11/2022	23:45	5.83	00:05	6.72	6.25	15:15	3.15	02:55	3.36	3.25	23:35	6.842	00:10	8.741	7.767	7.767	0.02
01/12/2022	23:50	5.20	00:55	5.88	5.54	22:55	3.08	03:30	3.30	3.20	22:55	5.696	00:55	7.066	6.415	6.415	-
01/13/2022	02:20	5.14	17:45	5.62	5.39	01:50	3.08	18:15	3.31	3.20	01:50	5.565	18:15	6.700	6.148	6.148	0.14
01/14/2022	20:55	4.68	00:00	5.28	4.93	23:05	2.98	02:15	3.25	3.10	23:05	4.699	00:35	5.941	5.215	5.215	-
01/15/2022	22:45	4.41	01:20	4.74	4.60	22:45	2.89	00:55	3.10	2.99	22:45	4.112	02:25	4.847	4.546	4.546	0.01
01/16/2022	22:40	4.23	01:50	4.48	4.35	20:25	2.83	01:25	3.00	2.91	22:45	3.826	01:50	4.322	4.072	4.072	-
01/17/2022	23:05	4.01	00:05	4.27	4.12	20:15	2.75	01:40	2.92	2.84	23:40	3.421	00:35	3.912	3.657	3.657	-
01/18/2022	23:55	3.87	03:05	4.08	3.97	10:20	2.69	01:15	2.83	2.77	14:10	3.208	01:30	3.586	3.382	3.382	0.01
01/19/2022	22:50	3.78	12:35	4.03	3.89	11:40	2.69	12:40	2.84	2.77	22:45	3.078	12:40	3.529	3.278	3.278	0.13
01/20/2022	23:55	3.52	00:05	3.83	3.68	20:45	2.55	02:40	2.79	2.69	23:50	2.656	00:05	3.196	2.937	2.937	-
01/21/2022	22:55	3.48	09:30	3.61	3.55	23:50	2.44	01:10	2.66	2.57	23:50	2.461	00:45	2.753	2.657	2.657	-
01/22/2022	22:55	3.36	00:20	3.53	3.44	23:45	2.38	02:15	2.59	2.50	23:45	2.277	00:20	2.637	2.469	2.469	-
01/23/2022	23:55	3.29	05:45	3.42	3.37	20:45	2.35	09:40	2.52	2.44	23:45	2.189	01:00	2.434	2.335	2.335	-
01/24/2022	21:45	3.23	00:45	3.33	3.28	19:05	2.27	01:10	2.45	2.38	19:10	2.082	01:10	2.296	2.183	2.183	0.01
01/25/2022	11:30	3.16	00:00	3.25	3.20	22:05	2.19	01:30	2.42	2.32	22:05	1.927	00:50	2.160	2.050	2.050	-
01/26/2022	12:05	3.09	00:00	3.18	3.12	07:20	2.14	00:20	2.34	2.25	07:20	1.825	00:20	2.055	1.922	1.922	-
01/27/2022	06:50	3.01	01:20	3.13	3.05	07:45	2.10	00:00	2.27	2.18	04:30	1.723	00:00	1.912	1.798	1.798	-
01/28/2022	12:45	2.94	00:00	3.04	2.99	11:05	2.05	00:25	2.21	2.13	13:20	1.624	00:25	1.798	1.703	1.703	-
01/29/2022	11:45	2.88	00:10	2.99	2.92	17:55	1.96	02:35	2.17	2.07	22:55	1.514	00:10	1.728	1.606	1.606	-
01/30/2022	12:10	2.82	23:35	3.34	2.97	02:10	1.98	22:00	2.41	2.13	13:05	1.467	23:25	2.253	1.703	1.703	0.28
01/31/2022	22:55	2.91	00:15	3.34	3.04	22:15	2.05	00:00	2.41	2.19	23:20	1.597	00:15	2.269	1.803	1.803	0.01
02/01/2022	13:45	2.82	00:25	2.94	2.86	11:20	1.98	00:40	2.15	2.06	11:20	1.464	00:40	1.666	1.548	1.548	0.01
02/02/2022	15:45	2.73	02:50	2.85	2.78	04:15	1.93	07:05	2.10	2.02	22:20	1.363	03:00	1.550	1.451	1.451	0.02
02/03/2022	12:30	2.67	01:55	2.76	2.70	23:25	1.87	01:10	2.05	1.97	15:35	1.284	02:00	1.434	1.360	1.360	-
02/04/2022	19:25	2.61	02:10	2.71	2.65	18:35	1.79	09:30	2.03	1.92	18:35	1.185	02:05	1.373	1.283	1.283	-
02/05/2022	06:50	2.54	00:10	2.63	2.58	06:15	1.76	00:35	1.96	1.87	06:45	1.110	00:35	1.296	1.203	1.203	0.01
02/06/2022	15:05	2.52	08:05	2.59	2.56	10:20	1.73	15:10	1.94	1.84	10:20	1.090	20:00	1.235	1.173	1.173	-
02/07/2022	14:45	2.45	00:05	2.59	2.51	23:20	1.65	00:05	1.90	1.80	23:20	1.004	00:05	1.228	1.114	1.114	-
02/08/2022	13:55	2.39	01:25	2.50	2.44	18:50	1.63	01:15	1.88	1.74	18:50	0.948	01:15	1.146	1.030	1.030	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
02/09/2022	13:55	2.36	01:10	2.45	2.40	03:25	1.62	23:10	1.83	1.72	03:25	0.934	23:10	1.059	0.992	0.992	-
02/10/2022	12:35	2.34	09:45	2.41	2.38	04:05	1.56	18:45	1.80	1.69	05:10	0.895	18:45	1.036	0.966	0.966	0.01
02/11/2022	20:00	2.28	04:15	2.38	2.33	22:35	1.58	13:10	1.79	1.70	22:35	0.851	09:25	1.008	0.939	0.939	-
02/12/2022	13:50	2.23	03:30	2.31	2.27	19:35	1.49	10:35	1.73	1.64	19:35	0.774	10:35	0.939	0.868	0.868	-
02/13/2022	14:05	2.21	08:00	2.29	2.25	02:35	1.48	23:00	1.71	1.61	02:35	0.784	20:35	0.893	0.844	0.844	-
02/14/2022	00:15	2.23	17:25	2.49	2.36	00:00	1.53	17:40	1.88	1.70	00:00	0.796	17:40	1.138	0.963	0.963	0.12
02/15/2022	12:45	2.29	00:00	2.44	2.33	03:55	1.56	09:30	1.79	1.66	18:50	0.853	00:10	1.034	0.918	0.918	-
02/16/2022	19:45	2.20	01:05	2.31	2.26	23:35	1.52	13:25	1.73	1.62	23:35	0.791	02:10	0.924	0.857	0.857	0.01
02/17/2022	16:30	2.15	04:05	2.25	2.21	02:20	1.46	13:00	1.67	1.58	21:35	0.751	02:00	0.859	0.803	0.803	-
02/18/2022	15:20	2.13	00:00	2.21	2.18	06:35	1.48	12:40	1.65	1.56	22:55	0.737	17:10	0.831	0.781	0.781	-
02/19/2022	17:00	2.14	04:25	2.22	2.18	02:55	1.46	13:05	1.63	1.54	22:50	0.725	19:05	0.814	0.769	0.769	-
02/20/2022	00:10	2.13	08:50	2.22	2.18	18:50	1.45	13:30	1.65	1.56	00:15	0.713	09:10	0.830	0.779	0.779	0.03
02/21/2022	00:05	2.16	15:35	2.59	2.39	04:50	1.48	17:05	1.89	1.70	01:00	0.738	16:20	1.217	0.984	0.984	0.38
02/22/2022	22:50	2.32	03:45	2.55	2.42	21:40	1.55	00:15	1.83	1.69	21:40	0.857	04:30	1.151	0.993	0.993	0.01
02/23/2022	14:15	2.20	01:50	2.34	2.27	07:05	1.47	01:40	1.63	1.55	15:35	0.774	01:40	0.902	0.825	0.825	-
02/24/2022	13:50	2.21	01:15	2.29	2.26	02:30	1.46	11:55	1.61	1.53	07:20	0.770	00:05	0.850	0.808	0.808	-
02/25/2022	13:05	2.16	03:25	2.29	2.23	05:00	1.44	00:15	1.62	1.51	13:50	0.719	00:15	0.855	0.782	0.782	-
02/26/2022	08:15	2.21	23:10	2.93	2.36	06:55	1.39	23:05	2.06	1.60	06:55	0.722	23:05	1.594	0.917	0.917	0.47
02/27/2022	12:45	2.90	19:10	3.91	3.28	12:40	1.99	18:50	2.87	2.37	12:40	1.530	19:15	3.392	2.234	2.234	0.43
02/28/2022	00:00	3.63	14:00	26.90	15.32	00:00	2.71	15:05	5.46	4.21	00:00	2.904	13:55	104.900	44.945	44.945	2.21
03/01/2022	23:50	11.07	04:10	20.79	15.37	23:30	3.86	02:50	4.97	4.44	23:50	21.400	04:00	66.910	40.247	40.247	0.41
03/02/2022	01:20	10.58	20:50	21.44	15.37	01:25	3.82	20:40	5.09	4.43	01:25	19.850	20:40	72.240	40.496	40.496	1.22
03/03/2022	23:50	7.94	00:00	18.40	11.08	23:50	3.78	00:20	4.72	4.27	23:50	12.830	00:00	53.220	24.255	24.255	-
03/04/2022	23:15	6.26	00:00	7.95	7.16	19:15	3.66	03:25	4.11	3.91	23:40	8.954	00:35	13.660	11.431	11.431	-
03/05/2022	23:30	5.17	00:40	6.29	5.70	21:50	3.41	02:20	3.92	3.64	23:40	6.176	00:40	9.375	7.621	7.621	-
03/06/2022	23:30	4.73	00:00	5.21	5.00	21:10	3.20	02:05	3.57	3.38	21:35	5.167	00:40	6.475	5.821	5.821	-
03/07/2022	20:45	4.34	01:55	4.78	4.59	21:00	3.05	00:05	3.34	3.19	21:00	4.281	02:25	5.333	4.838	4.838	-
03/08/2022	19:55	4.15	04:25	4.43	4.32	23:10	2.94	03:15	3.15	3.05	23:30	3.852	03:20	4.479	4.220	4.220	-
03/09/2022	23:35	4.07	11:40	4.41	4.23	20:25	2.91	14:15	3.14	3.02	23:35	3.686	11:40	4.469	4.048	4.048	0.11
03/10/2022	23:45	3.77	00:00	4.10	3.95	23:35	2.72	00:30	2.96	2.84	23:35	3.089	00:05	3.743	3.453	3.453	-
03/11/2022	23:45	3.57	03:55	3.84	3.75	23:40	2.61	00:05	2.81	2.74	23:40	2.727	05:35	3.234	3.073	3.073	-
03/12/2022	02:00	3.55	23:55	4.73	3.79	13:35	2.61	23:55	3.32	2.78	02:00	2.733	23:55	5.243	3.192	3.192	0.41
03/13/2022	00:00	4.77	08:30	10.18	7.33	00:05	3.28	07:55	4.39	3.93	00:05	5.253	08:20	21.090	12.290	12.290	0.77
03/14/2022	15:25	4.61	22:25	6.50	5.16	10:40	3.24	21:45	3.99	3.51	15:25	4.964	22:15	10.040	6.388	6.388	0.36
03/15/2022	23:45	4.66	00:00	6.22	5.34	22:10	3.29	00:25	3.88	3.58	23:15	5.176	00:25	9.148	6.814	6.814	0.10
03/16/2022	22:45	4.21	00:20	4.72	4.46	22:15	3.08	00:30	3.40	3.25	22:40	4.146	00:30	5.351	4.724	4.724	-
03/17/2022	22:55	4.05	05:40	4.35	4.22	19:05	2.97	00:05	3.20	3.08	22:55	3.744	02:15	4.387	4.112	4.112	-
03/18/2022	21:30	3.84	00:10	4.10	3.98	22:30	2.83	03:25	3.08	2.97	22:30	3.298	00:00	3.909	3.631	3.631	0.02
03/19/2022	21:55	3.70	08:20	4.08	3.89	20:40	2.72	06:40	3.03	2.89	23:35	3.004	08:30	3.845	3.420	3.420	0.12
03/20/2022	23:10	3.60	08:25	3.77	3.69	22:40	2.65	02:05	2.81	2.74	22:40	2.821	02:05	3.126	3.002	3.002	0.02
03/21/2022	01:25	3.62	10:10	4.82	4.25	00:10	2.69	11:45	3.40	3.10	01:30	2.894	11:45	5.517	4.230	4.230	0.39
03/22/2022	21:50	3.52	00:15	3.95	3.74	22:15	2.69	01:00	3.01	2.85	22:15	2.819	01:00	3.608	3.184	3.184	-
03/23/2022	05:00	3.53	10:55	3.87	3.67	20:55	2.64	06:40	2.83	2.74	08:10	2.780	11:00	3.277	2.982	2.982	-
03/24/2022	23:30	3.52	09:30	3.72	3.64	00:35	2.57	01:30	2.73	2.65	22:30	2.642	07:15	2.966	2.848	2.848	-
03/25/2022	22:15	3.39	07:10	3.55	3.48	23:05	2.42	00:40	2.66	2.57	23:05	2.362	03:20	2.725	2.581	2.581	-
03/26/2022	21:20	3.30	01:30	3.43	3.38	19:35	2.40	06:20	2.58	2.49	23:45	2.255	06:55	2.502	2.395	2.395	-
03/27/2022	19:55	3.09	00:00	3.22	3.13	19:25	2.39	05:00	2.64	2.50	19:25	2.038	05:00	2.257	2.135	2.135	-
03/28/2022	12:35	3.08	00:25	3.12	3.10	03:35	2.33	19:05	2.52	2.44	03:35	1.973	19:20	2.121	2.062	2.062	0.04
03/29/2022	22:50	2.91	01:10	3.12	3.04	22:35	2.26	00:35	2.46	2.38	23:35	1.745	01:15	2.097	1.952	1.952	0.01
03/30/2022	20:35	2.86	14:45	2.93	2.89	23:50	2.15	16:40	2.38	2.28	23:50	1.613	15:50	1.828	1.737	1.737	-
03/31/2022	19:25	2.80	00:25	2.87	2.85	23:50	2.09	08:40	2.29	2.20	23:50	1.541	08:40	1.717	1.640	1.640	-
04/01/2022	23:45	2.71	00:10	2.84	2.79	23:45	2.02	11:10	2.25	2.15	23:45	1.397	14:10	1.653	1.554	1.554	0.05
04/02/2022	22:15	2.64	01:00	2.73	2.69	22:15	1.88	10:40	2.21	2.08	22:15	1.250	10:40	1.517	1.425	1.425	0.01
04/03/2022	01:25	2.65	23:55	3.39	2.70	05:00	1.94	23:55	2.85	2.08	05:00	1.295	23:55	2.754	1.439	1.439	0.27
04/04/2022	00:00	3.44	04:55	7.35	5.42	00:00	2.90	04:45	4.06	3.50	00:00	2.866	04:45	12.030	7.033	7.033	0.87
04/05/2022	22:35	3.52	00:05	4.30	3.96	23:45	2.76	03:50	3.26	3.05	23:45	2.836	00:15	4.422	3.720	3.720	0.11
04/06/2022	23:50	3.23	00:05	3.55	3.45	21:10	2.58	01:00	2.86	2.73	23:25	2.339	01:00	2.932	2.702	2.702	-
04/07/2022	21:45	3.15	01:20	3.24	3.20	22:10	2.38	10:35	2.66	2.56	22:10	2.071	01:20	2.372	2.261	2.261	-
04/08/2022	23:00	3.01	05:00	3.19	3.13	18:45	2.26	13:40	2.52	2.41	23:45	1.853	07:25	2.202	2.064	2.064	0.01
04/09/2022	21:30	2.92	13:15	3.05	3.00	19:15	2.20	14:55	2.44	2.32	19:15	1.724	14:55	1.998	1.867	1.867	0.13
04/10/2022	00:00	2.98	23:55	6.99	3.50	01:20	2.27	23:40	3.75	2.69	01:20	1.868	23:55	10.530	2.866	2.866	0.85
04/11/2022	23:20	4.24	01:20	8.06	5.58	21:50	3.15	02:15	4.02	3.49	23:55	4.229	02:15	13.610	7.311	7.311	0.20
04/12/2022	04:35	4.10	22:15	6.26	4.74	07:00	3.12	22:25	3.66	3.32	04:55	4.019	22:25	8.633	5.354	5.354	0.36
04/13/2022	23:55	4.80	00:40	6.18	5.47	23:05	3.29	02:15	3.68	3.46	23:05	5.361	00:40	8.348	6.821	6.821	0.12
04/14/2022	23:55	4.42	00:30	4.81	4.62	21:35	3.10	00:00	3.44	3.30	23:45	4.585	00:00	5.577	5.045	5.045	0.19
04/15/2022	20:50	3.99	00:00	4.43	4.17	23:50	3.01	04:00	3.32	3.17	23:50	3.727	00:00	4.699	4.159	4.159	-
04/16/2022	23:45	3.91	14:25	4.09	4.01	22:05	2.97	14:20	3.20	3.09	22:05	3.600	14:20	4.071	3.825	3.825	0.18
04/17/2022	22:30	3.54	00:00	3.94	3.71	20:40	2.84	01:20	3.08	2.96	21:05	2.972	00:15	3.695	3.271	3.271	-
04/18/2022	00:00	3.54	16:15	5.77	4.47	04:05	2.81	17:05	3.49	3.17	04:05	2.908	16:20	7.311	4.742	4.742	0.56
04/19/2022	05:40	4.55	12:55	7.92	5.78	03:20	3.20	12:35	3.82	3.42	05:40	4.781	12:40	12.750	7.448	7.448	0.49
04/20/2022	08:15	4.86	14:15	6.71	5.62	09:40	3.22	14:20	3.66	3.39	08:20	5.383	14:20	9.671	6.974	6.974	0.39
04/21/2022	14:55	5.62	21:30	6.64	6.12	12:35	3.25	21:20	3.66	3.43	13:35	6.821	21:20	9.495	7.959	7.959	0.39
04/22/2022	11:45	5.23	00:00	6.37	5.73	13:10	3.22	00:30	3.59	3.39	12:05	5.980	00:05	8.775	7.150	7.150	0.12

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
04/23/2022	23:40	4.59	00:05	5.52	4.98	19:15	3.14	01:15	3.39	3.26	23:45	4.844	00:00	6.670	5.582	5.582	-
04/24/2022	22:45	4.16	00:45	4.64	4.45	22:25	3.06	00:30	3.31	3.19	22:25	4.015	00:30	5.042	4.607	4.607	-
04/25/2022	21:55	4.00	04:25	4.23	4.14	22:00	2.96	04:20	3.27	3.12	22:00	3.655	04:20	4.371	4.049	4.049	0.01
04/26/2022	23:55	3.85	02:10	4.03	3.97	21:10	2.92	14:45	3.14	3.05	23:40	3.452	01:10	3.869	3.729	3.729	0.04
04/27/2022	00:55	3.83	13:55	3.97	3.89	09:20	2.92	13:45	3.11	3.02	02:30	3.407	13:45	3.774	3.567	3.567	0.17
04/28/2022	23:30	3.49	00:50	3.93	3.71	19:00	2.85	01:05	3.09	2.97	23:35	2.876	01:05	3.690	3.283	3.283	0.01
04/29/2022	01:25	3.47	23:55	4.85	3.63	01:30	2.78	23:10	3.14	2.90	08:25	2.788	23:55	5.138	3.111	3.111	0.39
04/30/2022	23:50	4.55	04:40	6.08	5.18	23:40	3.04	04:05	3.36	3.17	23:45	4.565	04:05	7.652	5.774	5.774	0.24
05/01/2022	23:55	3.75	00:00	4.55	4.05	23:20	2.92	01:00	3.16	3.04	23:20	3.279	00:10	4.656	3.828	3.828	-
05/02/2022	00:45	3.70	12:15	5.13	4.43	00:50	2.87	11:30	3.20	3.08	00:50	3.162	12:30	5.664	4.445	4.430	0.34

12/02/2021 00:00 - 05/02/2022 23:55

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	RAIN FINAL (in)
Total			1428.793	31.58
Average	5.86	2.79	9.400	

DallasAsh.Jacobs.TFM.OR21		Site Name
Flow Monitoring Site Report	ADS ENVIRONMENTAL SERVICES	NFAC_FM01

Site Address /Location:	1667 SE Holman Ave, Dallas, OR			Monitor Series	Location Type
				TRITON+	Temporary
Site Access Details:	Park in lot / Walk	Latitude:	44.912797	Pipe Size (H x W)	Pipe Shape
		Longitude:	-123.305446	80.00 X 234.00	Non-Standard

Manhole #	System Characteristics
N/A	Storm Drain
Access	Traffic
Drive	None

Installation Information

Installation Date:	Installation Type:
Wednesday, December 1, 2021	Doppler Special Installation
Monitoring Location (Sensors):	Monitor Location:
Downstream 5-10 FT	Culvert
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4)	0 - 5 psi

Installation Confirmation:

Time	
12:05:00 AM	
Depth of Flow (Wet DOF) (in)	
2.38	
CS5 Physical Offset (in)	Measurement Confidence (in)
	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
2.54	0
Silt (in)	Silt Type
0	

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
N/A	Common Trench
Manhole Material:	Manhole Condition:
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
Manhole Cover	Manhole Frame
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
Corrugated Metal Pipe	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Manhole Pick / Vent Hole

Additional Site Info. / Comments:

ADS Project Name:	DallasAsh.Jacobs.TFM.OR21B
ADS Project Number:	22724.11.325

NFAC_FM02

Site Commentary

SITE INFORMATION

Pipe	Rectangle (96 in H x 179 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Thursday, 02 December 2021 to Monday, 02 May 2022**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions			
Item	**DFINAL (in)**	**VFINAL (ft/s)**	**QFINAL (MGD - Total MG)**
Average	9.03	1.76	8.481
Minimum	2.94	0.77	0.496
Maximum	52.51	5.54	184.900
Min Time	02/25/2022 10:10:00 AM	12/05/2021 6:20:00 AM	2/25/2022 8:50:00 AM
Max Time	01/03/2022 7:25:00 AM	01/03/2022 9:40:00 AM	01/03/2022 8:05:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the five minutes average.

DATA UPTIME

Data uptime observed during **Thursday, 02 December 2021 to Monday, 02 May 2022** is provided in the following table:

Percent Uptime	
DFINAL (in)	100
VFINAL (ft/s)	100
QFINAL (MGD - Total MG)	100

Hydrograph Report

NFAC_FM02

Flow Monitor

NFAC_FM02

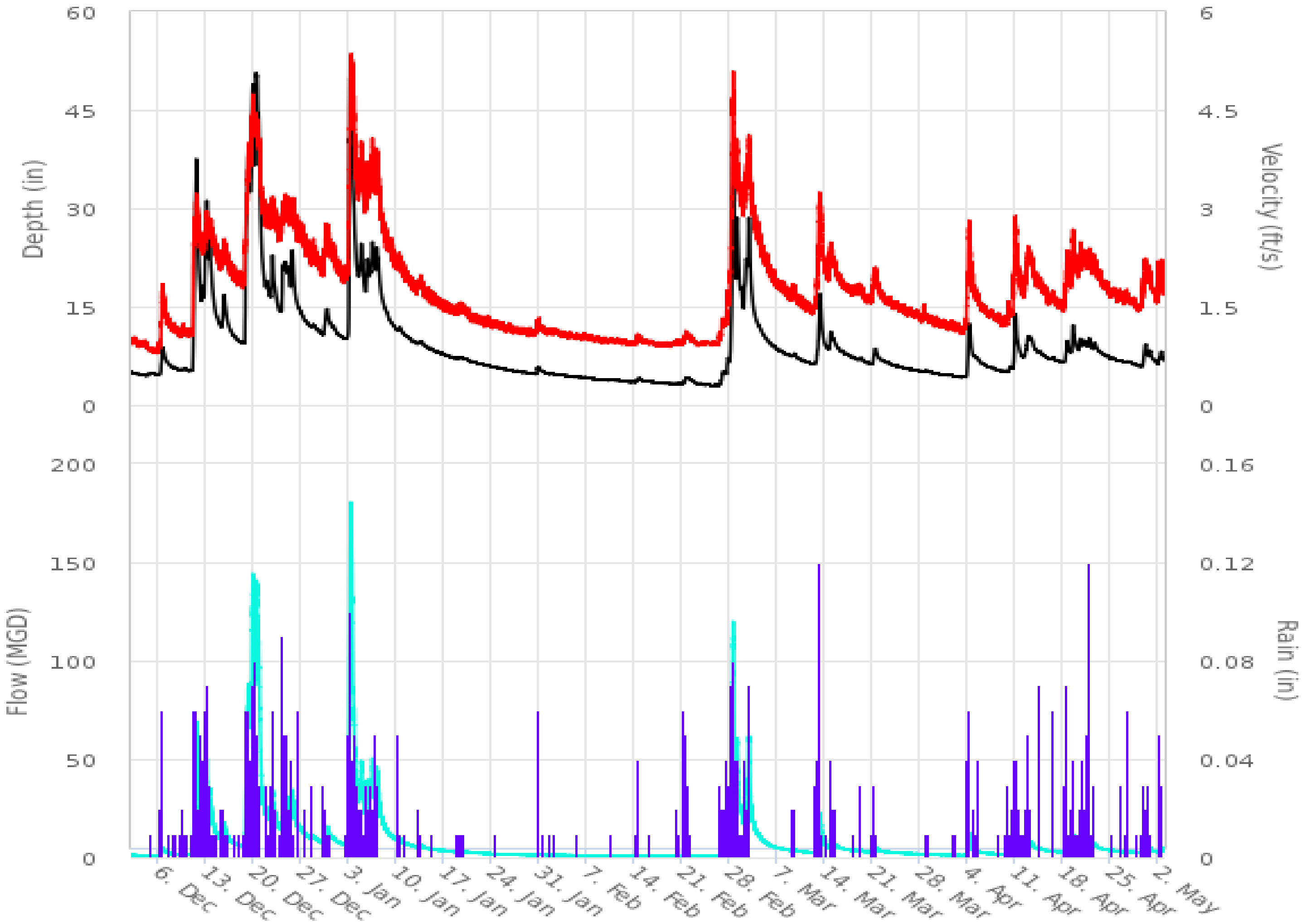
Pipe Height
96.00
in

Report Period

12/02/2021
To
05/02/2022

Legend

DFINAL
VFINAL
QFINAL
RAIN FINAL



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
www.adsenv.com

Scattergraph Report

NFAC_FM02

Flow Monitor

NFAC_FM02

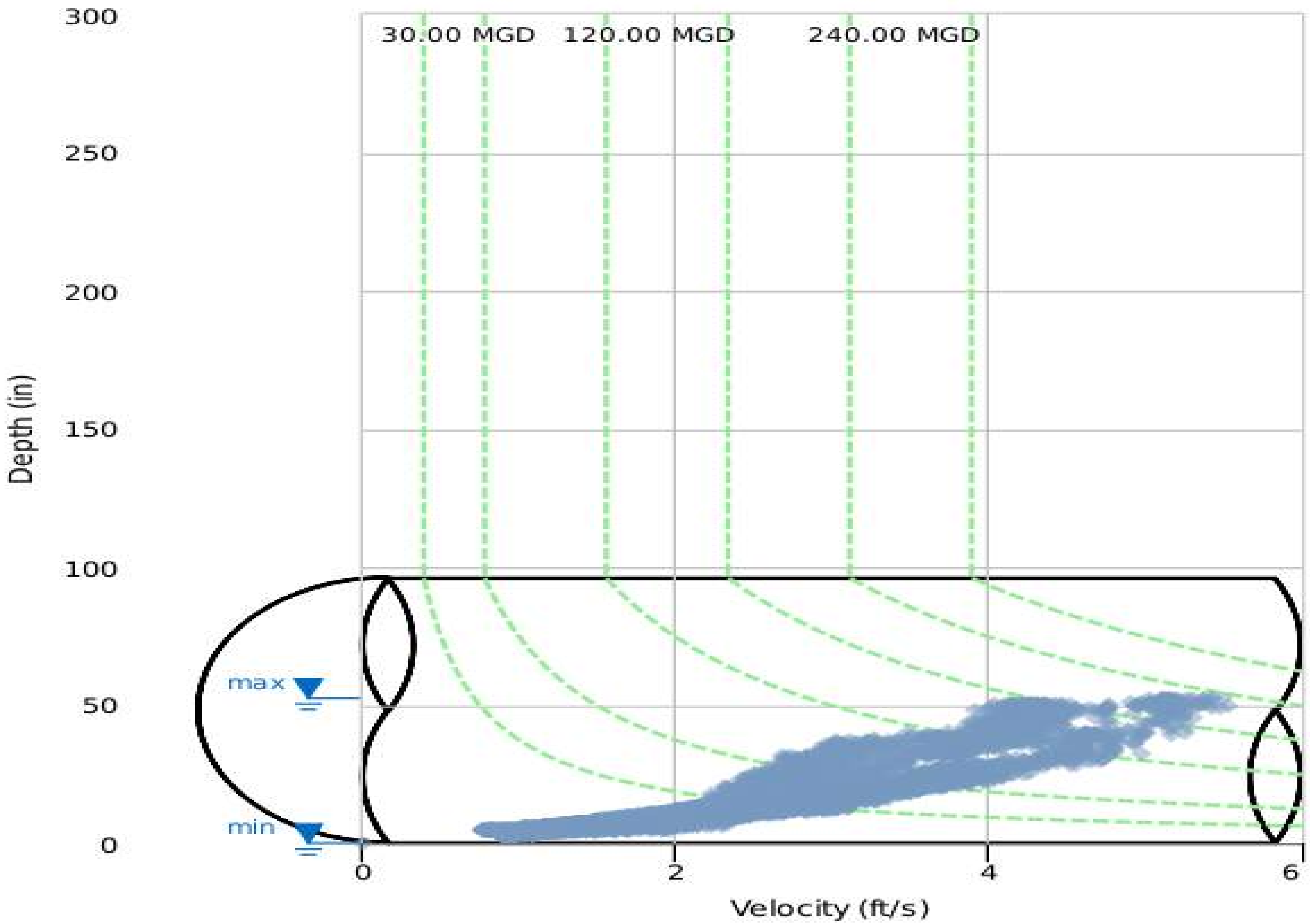
Pipe Height
96.00
in

Report Period

12/02/2021
To
05/02/2022

Legend

DFINAL - VFINAL
Iso-Q™
Min-Max Depth



4455 S. 134th Place
Tukwila, WA 98168

206-762-5070
www.adsenv.com

Daily Tabular Report
12/02/2021 00:00 - 05/02/2022 23:55
NFAC_FM02Pipe: Rectangle (96 in H x 179 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
12/02/2021	23:55	4.70	00:00	4.99	4.85	07:15	0.89	00:05	1.06	0.97	23:35	1.005	00:05	1.275	1.117	1.117	-
12/03/2021	23:40	4.56	00:00	4.70	4.64	01:00	0.86	01:10	1.03	0.93	22:05	0.914	01:10	1.117	1.004	1.004	-
12/04/2021	06:40	4.44	21:50	4.84	4.64	20:55	0.80	02:20	1.01	0.89	06:10	0.886	02:20	1.054	0.954	0.954	0.08
12/05/2021	23:25	4.61	01:20	4.83	4.73	06:20	0.77	00:55	0.88	0.83	23:25	0.829	01:00	1.003	0.916	0.916	-
12/06/2021	01:30	4.60	16:10	8.79	6.51	00:10	0.78	15:35	1.89	1.30	00:10	0.827	16:05	5.222	2.577	2.577	0.60
12/07/2021	23:50	5.90	00:00	7.35	6.41	23:15	1.11	02:00	1.54	1.29	23:15	1.716	00:10	3.235	2.259	2.259	0.01
12/08/2021	23:25	5.42	00:00	5.90	5.63	22:00	1.04	07:35	1.36	1.15	23:10	1.427	07:35	1.989	1.652	1.652	0.04
12/09/2021	12:30	5.27	19:25	5.60	5.41	05:00	1.01	16:45	1.29	1.11	05:00	1.349	17:10	1.783	1.497	1.497	0.12
12/10/2021	14:40	5.20	00:00	5.54	5.31	08:55	1.02	17:50	1.29	1.10	12:25	1.317	00:50	1.668	1.442	1.442	0.02
12/11/2021	00:00	5.31	14:45	37.66	23.71	00:00	1.06	14:00	3.32	2.56	00:00	1.390	14:45	72.410	34.627	34.627	2.00
12/12/2021	08:25	15.84	22:30	23.22	18.24	12:35	2.24	19:00	2.81	2.50	07:15	15.440	22:20	31.020	20.159	20.159	0.75
12/13/2021	23:55	17.69	03:35	31.15	23.58	21:40	2.38	02:40	3.05	2.69	23:50	18.920	03:30	50.810	31.448	31.448	0.64
12/14/2021	23:55	12.42	00:00	17.65	14.29	19:10	2.08	03:05	2.71	2.37	23:15	9.680	00:30	19.570	13.452	13.452	0.03
12/15/2021	06:30	11.89	16:30	16.79	13.81	01:20	2.00	22:30	2.67	2.29	05:55	8.712	16:25	18.390	12.426	12.426	0.33
12/16/2021	23:55	10.69	00:00	14.08	11.92	23:45	1.84	01:00	2.45	2.13	23:45	6.813	00:00	13.350	9.258	9.258	0.01
12/17/2021	21:45	9.74	00:00	10.69	10.14	16:45	1.75	00:25	2.19	1.95	21:35	5.772	00:25	8.046	6.670	6.670	0.05
12/18/2021	14:30	9.39	23:55	28.89	12.61	10:30	1.70	23:40	3.23	2.11	10:30	5.258	23:40	48.650	11.797	11.797	0.92
12/19/2021	00:00	29.04	21:55	48.92	37.40	00:05	2.94	22:00	4.77	3.83	00:05	45.720	22:00	148.100	85.367	85.367	2.14
12/20/2021	23:55	32.08	09:30	50.67	43.55	23:05	3.51	07:40	4.55	4.14	23:50	62.720	11:45	144.700	111.272	111.272	1.50
12/21/2021	19:15	17.95	00:00	31.94	21.54	19:00	2.64	00:00	3.79	3.05	19:00	20.710	00:00	66.730	31.698	31.698	0.16
12/22/2021	13:25	16.36	19:25	22.85	18.46	04:10	2.61	16:40	3.32	2.90	12:35	18.100	20:00	35.730	23.824	23.824	0.54
12/23/2021	23:50	14.24	00:00	19.00	16.05	14:00	2.43	01:05	3.15	2.75	23:50	13.690	00:05	26.670	18.490	18.490	0.07
12/24/2021	01:50	14.18	17:15	21.85	19.58	01:45	2.42	14:35	3.28	2.91	01:45	13.490	17:20	34.040	26.160	26.160	0.93
12/25/2021	11:10	17.98	17:10	23.60	20.60	10:00	2.67	03:50	3.28	2.93	10:00	21.550	18:05	35.440	28.004	28.004	0.38
12/26/2021	23:55	14.09	00:00	18.55	15.59	20:10	2.41	00:25	3.10	2.72	20:10	13.850	00:25	24.960	17.433	17.433	0.37
12/27/2021	23:55	12.43	00:00	14.08	13.14	17:20	2.23	05:00	2.85	2.51	22:50	10.600	01:15	15.520	12.548	12.548	0.22
12/28/2021	11:55	11.92	00:15	12.44	12.13	11:55	2.05	19:45	2.56	2.33	11:55	8.898	00:00	11.450	10.336	10.336	0.10
12/29/2021	23:50	10.92	00:00	11.99	11.42	23:05	1.93	02:55	2.45	2.18	23:05	7.392	00:40	10.550	8.854	8.854	-
12/30/2021	06:35	10.73	19:55	14.64	12.43	07:00	1.90	17:50	2.95	2.35	07:00	7.061	17:50	16.600	11.045	11.045	0.22
12/31/2021	23:55	11.53	00:00	13.64	12.30	23:10	2.14	02:45	2.79	2.36	23:10	8.929	01:00	13.880	10.708	10.708	0.02
01/01/2022	23:55	10.40	00:00	11.53	10.83	22:55	1.89	00:35	2.33	2.09	23:20	6.714	00:35	9.536	7.881	7.881	-
01/02/2022	13:10	10.08	23:55	12.02	10.29	08:15	1.82	23:55	2.43	2.02	08:15	6.242	23:55	10.670	7.064	7.064	0.24
01/03/2022	00:00	12.17	07:25	52.51	36.87	00:00	2.39	09:40	5.54	4.45	00:00	10.670	08:05	184.900	101.447	101.447	2.41
01/04/2022	11:30	19.57	20:45	24.64	21.69	10:50	3.04	20:20	4.15	3.56	10:50	26.990	20:20	50.630	36.782	36.782	0.54
01/05/2022	12:05	17.31	00:00	23.01	19.76	07:50	2.87	20:05	3.85	3.31	11:35	21.310	00:05	41.500	30.032	30.032	0.47
01/06/2022	02:00	19.62	11:50	24.86	21.75	01:30	3.06	12:05	4.24	3.53	01:30	27.350	12:05	52.540	36.593	36.593	0.59
01/07/2022	23:55	16.04	03:15	24.02	19.98	23:55	2.62	02:15	4.04	3.28	23:55	17.420	03:15	47.230	30.585	30.585	0.17
01/08/2022	23:55	13.07	00:00	16.03	14.44	18:35	2.28	00:40	2.89	2.57	23:15	11.470	00:40	19.010	14.754	14.754	-
01/09/2022	23:55	11.59	00:00	13.07	12.30	19:50	2.03	07:00	2.66	2.29	22:55	8.585	07:00	12.450	10.401	10.401	-
01/10/2022	23:55	10.97	11:55	11.87	11.44	23:30	1.91	07:50	2.34	2.14	23:30	7.359	12:10	10.020	8.739	8.739	0.11
01/11/2022	23:50	10.11	00:00	10.97	10.52	20:10	1.80	05:00	2.26	1.97	20:10	6.245	05:00	8.377	7.124	7.124	0.02
01/12/2022	23:40	9.37	00:00	10.11	9.71	20:55	1.66	02:20	2.02	1.84	23:45	5.049	02:20	6.787	5.900	5.900	-
01/13/2022	23:55	9.28	17:05	9.68	9.51	01:35	1.65	13:40	2.04	1.83	01:35	4.996	13:40	6.429	5.691	5.691	0.14
01/14/2022	23:50	8.58	00:00	9.28	8.89	20:40	1.53	00:15	1.85	1.69	20:55	4.145	00:15	5.537	4.767	4.767	-
01/15/2022	23:45	8.11	00:00	8.58	8.34	22:55	1.48	03:30	1.79	1.61	22:55	3.649	03:30	4.713	4.131	4.131	0.01
01/16/2022	23:40	7.73	00:00	8.11	7.92	21:15	1.41	00:45	1.68	1.55	21:30	3.267	00:45	4.118	3.689	3.689	-
01/17/2022	23:20	7.35	00:00	7.73	7.53	16:45	1.36	01:50	1.66	1.49	23:00	2.941	01:50	3.779	3.299	3.299	-
01/18/2022	15:30	7.14	00:00	7.35	7.21	18:30	1.34	14:25	1.58	1.44	18:30	2.742	05:50	3.282	2.987	2.987	0.01
01/19/2022	05:30	7.08	13:35	7.30	7.17	05:30	1.35	08:40	1.64	1.47	05:30	2.728	14:00	3.419	3.016	3.016	0.13
01/20/2022	23:50	6.63	00:00	7.08	6.89	21:50	1.24	00:15	1.59	1.41	23:55	2.284	00:15	3.199	2.719	2.719	-
01/21/2022	23:50	6.34	00:00	6.62	6.49	22:45	1.23	15:40	1.45	1.32	22:45	2.108	00:30	2.596	2.342	2.342	-
01/22/2022	23:55	6.10	00:00	6.34	6.25	23:25	1.17	04:15	1.39	1.29	23:25	1.900	04:15	2.364	2.155	2.155	-
01/23/2022	23:55	5.84	00:00	6.09	5.97	06:20	1.17	11:30	1.38	1.27	23:45	1.804	11:30	2.168	1.981	1.981	-
01/24/2022	23:50	5.68	00:00	5.84	5.75	08:35	1.15	07:20	1.33	1.22	22:50	1.676	07:20	1.980	1.813	1.813	0.01
01/25/2022	23:25	5.46	00:00	5.68	5.55	09:15	1.11	00:20	1.32	1.20	22:50	1.534	00:20	1.917	1.683	1.683	-
01/26/2022	13:00	5.28	00:00	5.46	5.35	23:20	1.07	14:05	1.27	1.17	23:20	1.404	01:40	1.701	1.554	1.554	-
01/27/2022	23:45	5.11	00:00	5.28	5.17	09:15	1.06	08:10	1.23	1.14	09:15	1.341	00:00	1.580	1.440	1.440	-
01/28/2022	12:25	4.96	00:00	5.11	5.02	20:55	1.05	03:30	1.20	1.13	20:55	1.272	00:50	1.482	1.363	1.363	-
01/29/2022	13:05	4.82	00:00	4.96	4.87	05:25	1.03	01:05	1.20	1.11	05:25	1.195	01:05	1.417	1.283	1.283	-
01/30/2022	11:45	4.74	23:30	5.74	5.01	00:35	1.03	18:25	1.34	1.15	07:35	1.159	23:10	1.955	1.403	1.403	0.28
01/31/2022	23:55	4.88	00:00	5.74	5.17	21:45	1.07	01:25	1.39	1.17	22:50	1.259	01:25	2.023	1.489	1.489	0.01
02/01/2022	12:20	4.72	00:00	4.88	4.78	06:30	1.05	13:15	1.21	1.12	12:00	1.176	02:40	1.350	1.265	1.265	0.01
02/02/2022	23:05	4.63	00:00	4.75	4.68	00:40	1.04	06:00	1.18	1.12	23:35	1.132	01:20	1.293	1.215	1.215	0.02
02/03/2022	23:05	4.47	00:00	4.63	4.55	01:20	1.02	01:55	1.16	1.08	21:30	1.045	01:55	1.234	1.132	1.132	-
02/04/2022	22:20	4.34	00:00	4.47	4.41	05:35	0.98	13:20	1.12	1.07	05:35	0.981	18:20	1.120	1.065	1.065	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
02/05/2022	07:15	4.21	00:00	4.34	4.28	06:00	0.97	16:10	1.10	1.05	07:25	0.930	16:10	1.054	1.002	1.002	0.01
02/06/2022	01:35	4.17	00:00	4.24	4.20	07:05	0.98	15:20	1.11	1.04	07:50	0.909	17:20	1.030	0.969	0.969	-
02/07/2022	23:55	3.99	00:00	4.17	4.09	09:25	0.97	13:00	1.09	1.03	23:15	0.839	00:05	0.990	0.918	0.918	-
02/08/2022	23:00	3.89	00:00	3.99	3.94	22:25	0.94	14:30	1.07	1.00	22:25	0.786	10:35	0.898	0.848	0.848	-
02/09/2022	06:15	3.81	00:00	3.91	3.86	05:05	0.93	12:10	1.04	0.99	05:05	0.762	12:10	0.857	0.813	0.813	-
02/10/2022	06:10	3.72	19:20	3.87	3.82	01:05	0.92	10:15	1.04	0.98	06:20	0.735	15:30	0.840	0.793	0.793	0.01
02/11/2022	23:10	3.69	00:00	3.82	3.77	01:25	0.93	01:00	1.03	0.98	23:05	0.724	01:00	0.827	0.776	0.776	-
02/12/2022	23:40	3.55	00:00	3.68	3.62	11:40	0.90	12:40	1.02	0.96	23:00	0.668	12:40	0.763	0.714	0.714	-
02/13/2022	14:40	3.51	18:55	3.56	3.54	00:25	0.89	04:40	0.98	0.94	08:20	0.643	04:40	0.707	0.679	0.679	-
02/14/2022	03:45	3.49	18:20	4.09	3.79	00:25	0.89	11:40	1.11	1.00	03:35	0.639	18:15	0.954	0.802	0.802	0.12
02/15/2022	21:45	3.62	00:00	3.91	3.69	10:15	0.92	00:40	1.04	0.97	19:10	0.695	00:40	0.861	0.744	0.744	-
02/16/2022	23:50	3.44	00:00	3.61	3.53	22:10	0.89	15:00	1.00	0.95	22:10	0.623	03:50	0.725	0.683	0.683	0.01
02/17/2022	07:10	3.36	00:00	3.44	3.39	07:00	0.88	09:45	0.96	0.93	07:00	0.589	00:20	0.656	0.625	0.625	-
02/18/2022	14:30	3.29	00:00	3.37	3.32	00:25	0.88	15:30	0.96	0.92	09:10	0.571	17:35	0.636	0.604	0.604	-
02/19/2022	07:50	3.21	00:00	3.29	3.25	01:40	0.87	11:10	0.97	0.92	08:05	0.545	19:25	0.618	0.586	0.586	-
02/20/2022	00:00	3.22	11:15	3.29	3.26	01:40	0.90	09:50	1.04	0.94	01:40	0.568	09:50	0.665	0.599	0.599	0.03
02/21/2022	01:00	3.24	16:55	4.19	3.74	00:40	0.91	18:50	1.16	1.01	00:40	0.575	18:50	1.053	0.797	0.797	0.38
02/22/2022	23:55	3.42	00:00	4.03	3.74	22:40	0.92	05:25	1.11	1.00	23:15	0.635	05:25	0.952	0.785	0.785	0.01
02/23/2022	13:45	3.19	00:00	3.42	3.25	09:00	0.87	00:15	0.97	0.93	09:05	0.548	00:15	0.658	0.594	0.594	-
02/24/2022	09:45	3.04	00:00	3.21	3.08	06:45	0.90	02:30	0.99	0.95	06:45	0.519	00:05	0.594	0.557	0.557	-
02/25/2022	10:10	2.94	00:00	3.10	3.01	08:50	0.89	12:15	0.97	0.94	08:50	0.496	00:00	0.561	0.532	0.532	-
02/26/2022	07:45	2.94	23:10	4.69	3.33	09:30	0.90	21:35	1.40	1.02	08:15	0.498	23:25	1.426	0.694	0.694	0.47
02/27/2022	00:00	4.69	19:30	7.14	5.56	00:40	1.15	15:55	1.84	1.41	00:40	1.276	19:25	3.529	2.054	2.054	0.43
02/28/2022	00:05	6.51	12:35	40.02	21.91	00:30	1.53	13:30	5.26	3.42	00:30	2.747	13:30	124.500	44.820	44.820	2.21
03/01/2022	23:55	15.14	03:40	28.59	20.65	22:00	2.90	02:40	4.22	3.40	23:25	18.110	03:25	61.750	33.662	33.662	0.41
03/02/2022	01:40	14.70	20:25	28.57	21.11	01:20	2.81	21:05	4.20	3.45	01:20	16.540	21:05	63.010	35.189	35.189	1.22
03/03/2022	23:55	12.82	00:00	24.31	16.12	21:55	2.55	00:00	3.75	3.00	23:35	12.400	00:00	45.220	20.745	20.745	-
03/04/2022	23:50	10.72	00:00	12.81	11.73	21:35	2.16	06:55	2.91	2.48	21:35	8.199	00:10	13.590	10.549	10.549	-
03/05/2022	23:50	9.37	00:00	10.71	10.01	19:25	1.92	01:05	2.42	2.16	21:55	5.970	01:05	8.883	7.273	7.273	-
03/06/2022	23:55	8.55	00:00	9.37	8.96	22:25	1.75	04:15	2.16	1.93	22:25	4.697	00:15	6.419	5.508	5.508	-
03/07/2022	23:45	7.92	00:00	8.55	8.25	22:10	1.64	00:55	1.96	1.82	22:10	3.946	00:55	5.161	4.581	4.581	-
03/08/2022	23:55	7.44	00:00	7.92	7.69	20:45	1.56	02:55	1.97	1.71	23:55	3.425	02:55	4.600	3.894	3.894	-
03/09/2022	23:50	7.19	14:10	7.86	7.54	23:40	1.52	08:30	1.89	1.68	23:40	3.137	14:55	4.407	3.712	3.712	0.11
03/10/2022	23:10	6.69	00:00	7.19	6.92	21:30	1.44	00:00	1.70	1.57	21:30	2.683	00:00	3.493	3.055	3.055	-
03/11/2022	23:35	6.35	00:00	6.69	6.54	21:35	1.37	11:05	1.62	1.49	21:35	2.366	11:05	2.918	2.672	2.672	-
03/12/2022	05:50	6.29	23:55	8.46	6.64	03:45	1.33	23:15	2.29	1.57	03:45	2.258	23:15	5.902	2.934	2.934	0.41
03/13/2022	00:00	8.48	08:00	16.98	12.20	00:00	1.97	06:55	3.30	2.61	00:00	5.178	08:20	23.100	12.221	12.221	0.77
03/14/2022	15:45	8.45	21:55	11.16	9.23	13:40	1.86	23:20	2.54	2.11	13:40	4.906	22:15	9.789	6.354	6.354	0.36
03/15/2022	23:45	8.65	00:00	10.71	9.58	21:20	1.88	00:40	2.48	2.13	21:20	5.194	00:40	8.979	6.726	6.726	0.10
03/16/2022	23:50	7.86	00:00	8.64	8.23	22:35	1.72	05:45	2.09	1.88	22:35	4.050	05:45	5.432	4.721	4.721	-
03/17/2022	23:50	7.36	00:00	7.86	7.62	23:45	1.65	11:15	1.91	1.78	23:45	3.530	00:15	4.379	3.987	3.987	-
03/18/2022	23:25	6.91	00:00	7.37	7.13	00:45	1.62	12:40	1.89	1.75	20:10	3.170	12:40	3.816	3.558	3.558	0.02
03/19/2022	23:30	6.52	08:05	7.20	6.90	23:50	1.56	04:10	1.91	1.73	23:50	2.780	07:25	3.844	3.354	3.354	0.12
03/20/2022	23:20	6.32	00:00	6.51	6.41	21:25	1.50	18:20	1.72	1.60	21:25	2.562	18:20	2.955	2.784	2.784	0.02
03/21/2022	00:00	6.32	11:20	8.56	7.61	00:05	1.54	09:55	2.13	1.89	00:05	2.630	11:35	5.649	4.285	4.285	0.39
03/22/2022	23:10	6.54	00:00	7.19	6.81	20:20	1.53	00:40	1.83	1.68	23:05	2.756	00:40	3.733	3.195	3.195	-
03/23/2022	23:50	6.03	00:00	6.54	6.32	22:40	1.43	16:15	1.68	1.58	22:40	2.291	01:20	2.933	2.692	2.692	-
03/24/2022	23:35	5.80	00:00	6.03	5.94	20:10	1.41	09:45	1.61	1.52	23:15	2.125	09:45	2.523	2.356	2.356	-
03/25/2022	23:05	5.51	00:00	5.80	5.68	18:00	1.36	05:20	1.55	1.47	22:10	1.908	00:20	2.302	2.131	2.131	-
03/26/2022	21:45	5.37	00:00	5.51	5.46	05:30	1.33	11:35	1.51	1.42	20:40	1.797	11:35	2.081	1.951	1.951	-
03/27/2022	23:50	5.18	00:00	5.38	5.31	06:10	1.30	06:40	1.48	1.39	23:25	1.653	06:40	1.972	1.832	1.832	-
03/28/2022	11:50	5.10	20:35	5.25	5.16	03:25	1.24	16:15	1.59	1.35	06:55	1.552	16:15	1.993	1.697	1.697	0.04
03/29/2022	23:35	4.83	00:00	5.20	5.02	23:55	1.22	00:50	1.39	1.31	23:55	1.388	00:50	1.756	1.585	1.585	0.01
03/30/2022	23:45	4.65	00:00	4.83	4.77	08:00	1.15	10:10	1.40	1.26	22:55	1.272	10:10	1.564	1.416	1.416	-
03/31/2022	23:35	4.55	00:00	4.65	4.61	03:00	1.14	10:20	1.31	1.23	23:25	1.208	10:20	1.410	1.314	1.314	-
04/01/2022	23:30	4.42	00:00	4.55	4.51	06:55	1.11	21:20	1.35	1.22	06:55	1.150	17:20	1.374	1.257	1.257	0.05
04/02/2022	22:45	4.25	00:00	4.42	4.36	03:40	1.09	15:00	1.27	1.18	20:50	1.046	15:00	1.249	1.163	1.163	0.01
04/03/2022	00:00	4.25	23:55	5.71	4.35	05:25	1.06	23:50	2.04	1.24	05:25	1.009	23:50	2.940	1.226	1.226	0.27
04/04/2022	00:00	5.78	06:40	12.40	9.33	22:25	1.64	06:25	2.84	2.13	00:00	2.822	06:25	12.910	6.817	6.817	0.87
04/05/2022	23:40	6.43	00:00	7.50	6.99	22:00	1.44	01:05	1.89	1.63	23:55	2.513	01:05	4.112	3.234	3.234	0.11
04/06/2022	23:55	5.84	00:00	6.41	6.15	22:10	1.32	10:50	1.55	1.46	22:10	2.018	00:10	2.664	2.386	2.386	-
04/07/2022	23:50	5.46	00:00	5.84	5.69	23:45	1.29	10:40	1.47	1.39	23:45	1.777	00:25	2.193	2.024	2.024	-
04/08/2022	23:25	5.18	00:00	5.46	5.34	23:50	1.20	13:45	1.44	1.32	23:50	1.521	13:45	1.904	1.747	1.747	0.01
04/09/2022	22:10	5.00	00:00	5.18	5.13	02:50	1.18	23:55	1.51	1.29	21:10	1.429	23:55	1.881	1.608	1.608	0.13
04/10/2022	00:00	5.14	23:55	11.59	6.17	02:45	1.28	23:55	2.61	1.58	01:15	1.666	23:55	10.840	2.794	2.794	0.85
04/11/2022	23:50	7.51	02:15	13.84	9.76	23:40	1.64	02:20	2.94	2.17	23:40	3.614	02:20	15.800	7.441	7.441	0.20
04/12/2022	04:20	7.34	22:50	10.43	8.28	06:05	1.61	22:55	2.49	1.93	06:05	3.442	22:55	8.854	5.035	5.035	0.36
04/13/2022	23:55	8.49	00:50	10.52	9.66	23:20	1.85	01:05	2.44	2.15	23:20	4.905	01:05	8.782	6.903	6.903	0.12
04/14/2022	23:55	7.74	00:00	8.48	8.10	20:50	1.70	13:25	2.10	1.85	23:45	3.979	04:50	5.252	4.555	4.555	0.19
04/15/2022	23:25	7.10	00:00	7.73	7.37	21:00	1.47	10:50	1.86	1.70	21:00	2.999	00:00	4.212	3.640	3.640	-
04/16/2022	23:30	6.85	15:10	7.25	7.08	21:15	1.50	12:25	1.78	1.63	23:35	2.901	15:35	3.682	3.277	3.277	0.18
04/17/2022	22:05	6.52	00:00	6.85	6.67	23:15	1.41	00:35	1.64	1.54	23:15	2.514	00:35	3.138	2.847	2.847	-
04/18/2022	01:40	6.51	16:45	9.81	7.80	04:00	1.41	16:15	2.46	1.82	04:05	2.513	16:15	7.887	4.387	4.387	0.56

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
04/19/2022	05:55	7.96	13:00	12.19	9.54	05:15	1.75	13:55	2.73	2.17	05:15	4.224	12:50	12.010	6.974	6.974	0.49
04/20/2022	08:15	8.32	14:50	10.12	9.08	05:05	1.92	15:25	2.58	2.17	06:30	4.983	15:25	8.740	6.341	6.341	0.39
04/21/2022	14:45	8.92	21:45	10.20	9.49	15:25	2.02	01:45	2.48	2.22	15:25	5.720	21:30	8.442	6.916	6.916	0.39
04/22/2022	12:05	8.52	00:00	9.86	9.10	12:00	1.96	00:45	2.37	2.15	12:00	5.184	00:45	7.639	6.285	6.285	0.12
04/23/2022	23:40	7.66	00:00	8.77	8.13	21:25	1.77	01:30	2.14	1.95	23:15	4.006	01:30	5.764	4.820	4.820	-
04/24/2022	23:10	7.11	00:00	7.67	7.46	22:15	1.60	00:05	1.95	1.80	23:50	3.237	00:05	4.410	3.921	3.921	-
04/25/2022	23:45	6.77	04:35	7.15	7.03	22:35	1.54	14:40	1.83	1.71	22:35	2.919	05:10	3.692	3.413	3.413	0.01
04/26/2022	23:50	6.48	10:20	6.85	6.71	23:35	1.50	09:40	1.87	1.65	23:35	2.661	09:40	3.506	3.065	3.065	0.04
04/27/2022	01:00	6.46	14:10	6.67	6.52	04:50	1.50	10:45	1.83	1.62	04:50	2.641	10:45	3.241	2.881	2.881	0.17
04/28/2022	23:55	5.98	00:10	6.52	6.28	22:20	1.42	00:10	1.67	1.56	22:20	2.240	00:10	2.967	2.628	2.628	0.01
04/29/2022	15:30	5.91	23:55	7.65	6.13	01:55	1.39	23:55	2.10	1.57	01:55	2.176	23:55	4.732	2.576	2.576	0.39
04/30/2022	18:05	7.52	05:05	9.26	8.17	00:15	1.82	05:00	2.27	2.01	18:10	4.014	05:00	6.775	5.016	5.016	0.24
05/01/2022	23:40	6.33	00:00	7.67	6.84	20:05	1.53	00:05	1.92	1.71	23:15	2.664	00:05	4.330	3.293	3.293	-
05/02/2022	00:40	6.31	12:30	8.14	7.26	00:10	1.55	07:45	2.34	1.86	00:35	2.631	14:20	5.597	3.910	3.897	0.34

12/02/2021 00:00 - 05/02/2022 23:55

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	RAIN FINAL (in)
Total			1289.070	31.58
Average	9.03	1.76	8.481	

DallasAsh.Jacobs.TFM.OR21	ADS ENVIRONMENTAL SERVICES	Site Name
Flow Monitoring Site Report		**NFAC_FM02**

Site Address /Location:	1469 SE Godsey Rd , Dallas, OR			Monitor Series	Location Type
				TRITON+	Temporary
Site Access Details:	Park in lot / Walk	Latitude:	44.914687	Pipe Size (H x W)	Pipe Shape
		Longitude:	-123.295028	96.00 X 179.00	Non-Standard

Manhole #	System Characteristics
N/A	Creek
Access	Traffic
Drive	None

Installation Information	
Installation Date:	Installation Type:
Wednesday, December 1, 2021	Doppler Special Installation
Monitoring Location (Sensors):	Monitor Location:
Upstream 5-10 FT	Culvert
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4)	0 - 5 psi
Installation Confirmation:	
Time	
12:45:00 PM	
Depth of Flow (Wet DOF) (in)	
2.50	
CS5 Physical Offset (in)	Measurement Confidence (in)
	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
2.77	0
Silt (in)	Silt Type
0	

Manhole / Pipe Information:	
Manhole Depth (Approx. FT):	Manhole Configuration
N/A	N/A
Manhole Material:	Manhole Condition:
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
Manhole Cover	Manhole Frame
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
	Good
Communication Information:	
Communication Type	Antenna Location
Wireless	Grass (buried)

Additional Site Info. / Comments:

Sensor mounted to concrete weir, depth taken from invert at sensor.

ADS Project Name:	DallasAsh.Jacobs.TFM.OR21B
ADS Project Number:	22724.11.325

NFAC_LVL01

Site Commentary

SITE INFORMATION

Pipe	Round (86 in H)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Thursday, 02 December 2021 to Monday, 02 May 2022**, along with observed minimum and maximum data, are provided in the following table.

Data are not available from January 25th to February 3rd due to a low monitor battery. The battery was replaced on February 3rd due to resolve the problem.

Observed Flow Conditions	
Item	**DFINAL (in)**
Average	38.42
Minimum	32.8
Maximum	74.63
Min Time	02/25/2022 5:00:00 AM
Max Time	01/03/2022 10:05:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the five minutes average.

DATA UPTIME

Data uptime observed during **Thursday, 02 December 2021 to Monday, 02 May 2022** is provided in the following table:

Percent Uptime	
DFINAL (in)	93.579

Hydrograph Report

NFAC_LVL01

Flow Monitor

NFAC_LVL01

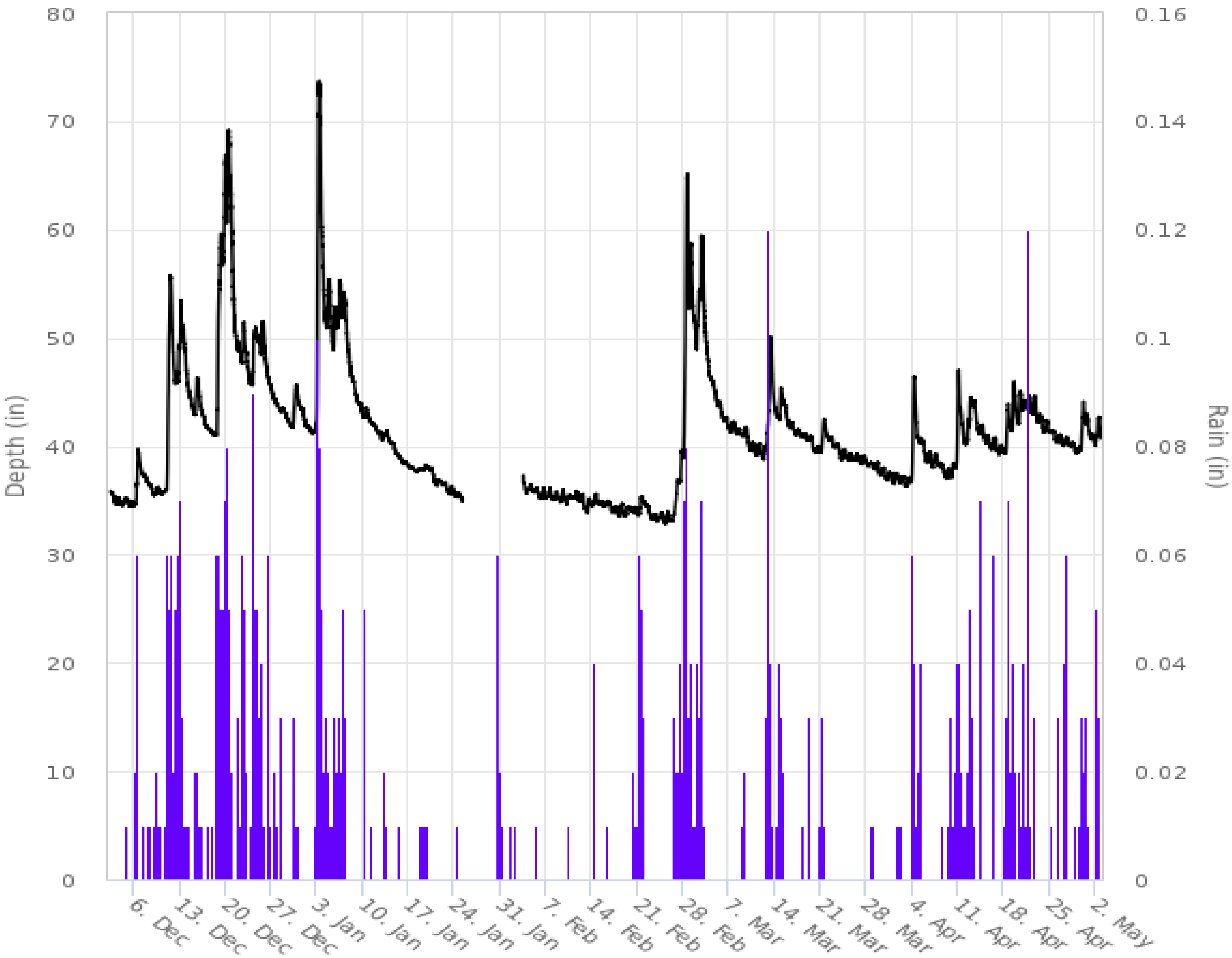
Pipe Height
86.00
in

Report Period

12/02/2021
To
05/02/2022

Legend

DFINAL
RAIN FINAL



Daily Tabular Report

12/02/2021 00:00 - 05/02/2022 23:55
NFAC_LVL01Pipe: Round (86 in H), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
12/02/2021	23:40	34.94	11:25	35.89	35.50	-	-	-	-	-	-	-	-	-	-	-	-
12/03/2021	06:55	34.58	14:45	35.26	34.87	-	-	-	-	-	-	-	-	-	-	-	-
12/04/2021	04:55	34.41	19:40	35.22	34.94	-	-	-	-	-	-	-	-	-	-	-	0.08
12/05/2021	05:35	34.40	00:00	35.05	34.70	-	-	-	-	-	-	-	-	-	-	-	-
12/06/2021	00:00	34.51	14:30	39.80	37.15	-	-	-	-	-	-	-	-	-	-	-	0.60
12/07/2021	21:50	36.74	00:00	38.24	37.36	-	-	-	-	-	-	-	-	-	-	-	0.01
12/08/2021	22:45	35.55	00:25	36.78	36.25	-	-	-	-	-	-	-	-	-	-	-	0.04
12/09/2021	00:45	35.39	15:05	36.25	35.78	-	-	-	-	-	-	-	-	-	-	-	0.12
12/10/2021	07:10	35.48	23:55	36.01	35.79	-	-	-	-	-	-	-	-	-	-	-	0.02
12/11/2021	00:00	35.95	14:05	56.06	49.18	-	-	-	-	-	-	-	-	-	-	-	2.00
12/12/2021	08:35	45.71	22:05	49.50	47.03	-	-	-	-	-	-	-	-	-	-	-	0.75
12/13/2021	23:45	46.96	04:15	53.73	50.18	-	-	-	-	-	-	-	-	-	-	-	0.64
12/14/2021	23:55	43.29	00:20	47.08	44.83	-	-	-	-	-	-	-	-	-	-	-	0.03
12/15/2021	06:10	42.86	15:50	46.44	44.42	-	-	-	-	-	-	-	-	-	-	-	0.33
12/16/2021	23:25	41.91	00:25	44.67	43.01	-	-	-	-	-	-	-	-	-	-	-	0.01
12/17/2021	19:30	41.20	00:10	41.98	41.54	-	-	-	-	-	-	-	-	-	-	-	0.05
12/18/2021	07:45	40.92	23:55	54.18	43.29	-	-	-	-	-	-	-	-	-	-	-	0.92
12/19/2021	00:10	53.97	22:30	67.89	59.11	-	-	-	-	-	-	-	-	-	-	-	2.14
12/20/2021	23:55	57.56	13:20	69.82	64.32	-	-	-	-	-	-	-	-	-	-	-	1.50
12/21/2021	18:45	48.74	00:10	58.44	51.43	-	-	-	-	-	-	-	-	-	-	-	0.16
12/22/2021	12:35	47.51	19:45	51.60	49.10	-	-	-	-	-	-	-	-	-	-	-	0.54
12/23/2021	23:40	45.56	00:10	49.45	47.17	-	-	-	-	-	-	-	-	-	-	-	0.07
12/24/2021	01:25	45.55	13:50	51.16	49.33	-	-	-	-	-	-	-	-	-	-	-	0.93
12/25/2021	11:00	47.95	16:45	51.64	49.83	-	-	-	-	-	-	-	-	-	-	-	0.38
12/26/2021	23:55	45.26	00:15	48.66	46.50	-	-	-	-	-	-	-	-	-	-	-	0.37
12/27/2021	22:30	43.65	00:50	45.44	44.33	-	-	-	-	-	-	-	-	-	-	-	0.22
12/28/2021	23:55	43.05	00:35	43.75	43.39	-	-	-	-	-	-	-	-	-	-	-	0.10
12/29/2021	23:55	41.85	00:20	43.30	42.51	-	-	-	-	-	-	-	-	-	-	-	-
12/30/2021	06:05	41.67	19:45	45.73	43.61	-	-	-	-	-	-	-	-	-	-	-	0.22
12/31/2021	23:45	42.58	00:00	44.88	43.66	-	-	-	-	-	-	-	-	-	-	-	0.02
01/01/2022	23:15	41.34	00:00	42.71	41.87	-	-	-	-	-	-	-	-	-	-	-	-
01/02/2022	05:10	41.17	23:55	44.42	41.61	-	-	-	-	-	-	-	-	-	-	-	0.24
01/03/2022	00:00	44.60	10:05	74.63	62.90	-	-	-	-	-	-	-	-	-	-	-	2.41
01/04/2022	12:15	50.83	21:45	55.58	52.83	-	-	-	-	-	-	-	-	-	-	-	0.54
01/05/2022	12:45	48.71	00:00	54.03	50.96	-	-	-	-	-	-	-	-	-	-	-	0.47
01/06/2022	02:15	50.76	12:50	55.47	52.89	-	-	-	-	-	-	-	-	-	-	-	0.59
01/07/2022	23:50	47.35	04:10	54.59	51.09	-	-	-	-	-	-	-	-	-	-	-	0.17
01/08/2022	23:25	44.50	00:25	47.53	45.97	-	-	-	-	-	-	-	-	-	-	-	-
01/09/2022	23:35	42.89	00:40	44.61	43.82	-	-	-	-	-	-	-	-	-	-	-	-
01/10/2022	23:40	42.47	12:40	43.60	42.95	-	-	-	-	-	-	-	-	-	-	-	0.11
01/11/2022	23:45	41.60	00:00	42.51	42.10	-	-	-	-	-	-	-	-	-	-	-	0.02
01/12/2022	21:45	40.48	00:00	41.70	41.17	-	-	-	-	-	-	-	-	-	-	-	-
01/13/2022	01:55	40.59	16:15	41.51	41.04	-	-	-	-	-	-	-	-	-	-	-	0.14
01/14/2022	23:40	39.38	00:10	40.70	40.14	-	-	-	-	-	-	-	-	-	-	-	-
01/15/2022	23:55	38.57	03:55	39.45	39.05	-	-	-	-	-	-	-	-	-	-	-	0.01
01/16/2022	23:35	38.20	00:05	38.76	38.45	-	-	-	-	-	-	-	-	-	-	-	-
01/17/2022	22:40	37.68	00:00	38.22	37.99	-	-	-	-	-	-	-	-	-	-	-	-
01/18/2022	08:10	37.65	14:55	37.99	37.79	-	-	-	-	-	-	-	-	-	-	-	0.01
01/19/2022	08:05	37.74	14:15	38.33	38.01	-	-	-	-	-	-	-	-	-	-	-	0.13
01/20/2022	23:00	36.69	12:00	38.07	37.65	-	-	-	-	-	-	-	-	-	-	-	-
01/21/2022	07:35	36.32	14:25	36.98	36.68	-	-	-	-	-	-	-	-	-	-	-	-
01/22/2022	23:10	35.81	14:55	36.70	36.42	-	-	-	-	-	-	-	-	-	-	-	-
01/23/2022	23:40	35.48	15:10	36.33	35.86	-	-	-	-	-	-	-	-	-	-	-	-
01/24/2022	23:55	35.21	00:15	35.70	35.49	-	-	-	-	-	-	-	-	-	-	-	0.01
01/25/2022	06:20	34.81	06:40	35.38	35.08	-	-	-	-	-	-	-	-	-	-	-	-
01/26/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/27/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/28/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/29/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/30/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.28
01/31/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
02/01/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
02/02/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
02/03/2022	23:25	35.70	12:55	37.32	36.22	-	-	-	-	-	-	-	-	-	-	-	-
02/04/2022	01:05	35.66	14:55	36.52	36.04	-	-	-	-	-	-	-	-	-	-	-	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
02/05/2022	23:50	35.25	16:15	36.21	35.88	-	-	-	-	-	-	-	-	-	-	-	0.01
02/06/2022	07:35	35.12	15:25	36.27	35.51	-	-	-	-	-	-	-	-	-	-	-	-
02/07/2022	23:50	35.16	14:45	36.19	35.57	-	-	-	-	-	-	-	-	-	-	-	-
02/08/2022	03:50	35.00	15:30	35.83	35.33	-	-	-	-	-	-	-	-	-	-	-	-
02/09/2022	04:50	34.80	14:15	36.01	35.34	-	-	-	-	-	-	-	-	-	-	-	-
02/10/2022	04:45	34.54	16:05	35.51	35.19	-	-	-	-	-	-	-	-	-	-	-	0.01
02/11/2022	23:50	34.99	18:35	36.30	35.42	-	-	-	-	-	-	-	-	-	-	-	-
02/12/2022	23:20	34.22	15:45	35.66	35.00	-	-	-	-	-	-	-	-	-	-	-	-
02/13/2022	07:25	33.85	14:20	35.22	34.54	-	-	-	-	-	-	-	-	-	-	-	-
02/14/2022	01:25	34.39	16:05	35.62	34.97	-	-	-	-	-	-	-	-	-	-	-	0.12
02/15/2022	22:35	34.39	14:35	34.97	34.73	-	-	-	-	-	-	-	-	-	-	-	-
02/16/2022	23:55	34.04	11:25	35.04	34.65	-	-	-	-	-	-	-	-	-	-	-	0.01
02/17/2022	23:30	33.71	15:45	34.50	34.13	-	-	-	-	-	-	-	-	-	-	-	-
02/18/2022	06:00	33.47	15:45	34.85	33.99	-	-	-	-	-	-	-	-	-	-	-	-
02/19/2022	03:35	33.49	14:40	34.49	34.01	-	-	-	-	-	-	-	-	-	-	-	-
02/20/2022	23:45	33.66	13:25	34.41	34.06	-	-	-	-	-	-	-	-	-	-	-	0.03
02/21/2022	03:20	33.57	15:15	35.43	34.56	-	-	-	-	-	-	-	-	-	-	-	0.38
02/22/2022	23:40	33.46	00:30	34.98	34.39	-	-	-	-	-	-	-	-	-	-	-	0.01
02/23/2022	23:50	33.00	15:40	33.76	33.41	-	-	-	-	-	-	-	-	-	-	-	-
02/24/2022	00:55	33.03	16:00	33.87	33.47	-	-	-	-	-	-	-	-	-	-	-	-
02/25/2022	05:00	32.80	14:55	34.04	33.33	-	-	-	-	-	-	-	-	-	-	-	-
02/26/2022	06:35	33.04	23:55	36.18	33.93	-	-	-	-	-	-	-	-	-	-	-	0.47
02/27/2022	00:00	36.20	17:55	39.63	37.62	-	-	-	-	-	-	-	-	-	-	-	0.43
02/28/2022	00:05	39.03	13:45	65.84	53.03	-	-	-	-	-	-	-	-	-	-	-	2.21
03/01/2022	23:45	49.26	03:10	59.21	53.56	-	-	-	-	-	-	-	-	-	-	-	0.41
03/02/2022	02:05	48.80	19:55	59.65	53.69	-	-	-	-	-	-	-	-	-	-	-	1.22
03/03/2022	23:55	46.69	00:05	56.24	49.98	-	-	-	-	-	-	-	-	-	-	-	-
03/04/2022	23:55	44.48	00:20	46.76	45.80	-	-	-	-	-	-	-	-	-	-	-	-
03/05/2022	23:30	42.74	00:20	44.59	43.74	-	-	-	-	-	-	-	-	-	-	-	-
03/06/2022	23:40	41.61	00:00	42.80	42.37	-	-	-	-	-	-	-	-	-	-	-	-
03/07/2022	06:25	41.25	16:35	42.36	41.68	-	-	-	-	-	-	-	-	-	-	-	-
03/08/2022	23:25	41.01	12:20	41.69	41.30	-	-	-	-	-	-	-	-	-	-	-	-
03/09/2022	23:45	40.02	14:10	41.81	41.05	-	-	-	-	-	-	-	-	-	-	-	0.11
03/10/2022	23:50	39.44	14:15	40.45	39.94	-	-	-	-	-	-	-	-	-	-	-	-
03/11/2022	06:25	39.07	16:50	40.34	39.59	-	-	-	-	-	-	-	-	-	-	-	-
03/12/2022	07:10	38.77	23:50	42.29	39.83	-	-	-	-	-	-	-	-	-	-	-	0.41
03/13/2022	00:10	42.36	09:25	50.56	46.31	-	-	-	-	-	-	-	-	-	-	-	0.77
03/14/2022	17:10	42.39	22:40	45.42	43.29	-	-	-	-	-	-	-	-	-	-	-	0.36
03/15/2022	23:10	42.27	00:00	45.28	43.77	-	-	-	-	-	-	-	-	-	-	-	0.10
03/16/2022	23:55	41.27	00:00	42.41	41.92	-	-	-	-	-	-	-	-	-	-	-	-
03/17/2022	04:55	40.96	14:20	41.57	41.25	-	-	-	-	-	-	-	-	-	-	-	-
03/18/2022	22:35	40.51	13:35	41.22	40.90	-	-	-	-	-	-	-	-	-	-	-	0.02
03/19/2022	23:45	39.54	10:55	41.01	40.49	-	-	-	-	-	-	-	-	-	-	-	0.12
03/20/2022	07:20	39.40	14:30	39.95	39.66	-	-	-	-	-	-	-	-	-	-	-	0.02
03/21/2022	02:00	39.51	12:45	42.56	41.27	-	-	-	-	-	-	-	-	-	-	-	0.39
03/22/2022	23:50	39.99	00:00	41.05	40.61	-	-	-	-	-	-	-	-	-	-	-	-
03/23/2022	23:50	39.09	11:35	40.25	39.89	-	-	-	-	-	-	-	-	-	-	-	-
03/24/2022	04:45	38.66	16:25	39.79	39.16	-	-	-	-	-	-	-	-	-	-	-	-
03/25/2022	07:15	38.64	13:50	39.44	38.96	-	-	-	-	-	-	-	-	-	-	-	-
03/26/2022	00:05	38.69	12:35	39.33	38.93	-	-	-	-	-	-	-	-	-	-	-	-
03/27/2022	07:05	38.31	13:10	39.20	38.71	-	-	-	-	-	-	-	-	-	-	-	-
03/28/2022	05:05	38.13	16:15	38.53	38.36	-	-	-	-	-	-	-	-	-	-	-	0.04
03/29/2022	23:50	37.45	11:30	38.67	38.08	-	-	-	-	-	-	-	-	-	-	-	0.01
03/30/2022	23:40	36.98	15:00	38.08	37.58	-	-	-	-	-	-	-	-	-	-	-	-
03/31/2022	23:55	36.80	14:35	37.73	37.20	-	-	-	-	-	-	-	-	-	-	-	-
04/01/2022	05:30	36.46	15:40	37.56	37.00	-	-	-	-	-	-	-	-	-	-	-	0.05
04/02/2022	23:25	36.25	13:10	37.33	36.85	-	-	-	-	-	-	-	-	-	-	-	0.01
04/03/2022	01:00	36.23	23:55	37.87	36.74	-	-	-	-	-	-	-	-	-	-	-	0.27
04/04/2022	00:00	37.99	07:30	46.48	42.98	-	-	-	-	-	-	-	-	-	-	-	0.87
04/05/2022	23:55	39.04	00:45	40.86	40.21	-	-	-	-	-	-	-	-	-	-	-	0.11
04/06/2022	23:45	38.33	17:05	39.57	38.93	-	-	-	-	-	-	-	-	-	-	-	-
04/07/2022	06:20	38.00	15:30	39.41	38.60	-	-	-	-	-	-	-	-	-	-	-	-
04/08/2022	23:15	37.33	14:15	38.44	38.04	-	-	-	-	-	-	-	-	-	-	-	0.01
04/09/2022	05:35	36.95	14:55	38.01	37.40	-	-	-	-	-	-	-	-	-	-	-	0.13
04/10/2022	00:00	37.08	23:55	43.70	38.53	-	-	-	-	-	-	-	-	-	-	-	0.85
04/11/2022	23:45	40.44	03:20	47.16	43.35	-	-	-	-	-	-	-	-	-	-	-	0.20
04/12/2022	03:30	40.11	22:30	44.57	41.57	-	-	-	-	-	-	-	-	-	-	-	0.36
04/13/2022	23:40	41.78	00:00	44.32	43.53	-	-	-	-	-	-	-	-	-	-	-	0.12
04/14/2022	23:35	40.79	16:35	42.02	41.43	-	-	-	-	-	-	-	-	-	-	-	0.19
04/15/2022	23:25	39.80	14:15	41.13	40.51	-	-	-	-	-	-	-	-	-	-	-	-
04/16/2022	05:00	39.65	14:25	40.87	40.09	-	-	-	-	-	-	-	-	-	-	-	0.18
04/17/2022	06:25	39.15	13:50	40.08	39.63	-	-	-	-	-	-	-	-	-	-	-	-
04/18/2022	04:10	39.34	16:50	43.92	41.23	-	-	-	-	-	-	-	-	-	-	-	0.56

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
04/19/2022	06:15	41.37	13:30	46.01	43.34	-	-	-	-	-	-	-	-	-	-	-	0.49
04/20/2022	09:30	42.04	14:55	45.20	43.29	-	-	-	-	-	-	-	-	-	-	-	0.39
04/21/2022	19:35	43.25	21:40	44.71	44.00	-	-	-	-	-	-	-	-	-	-	-	0.39
04/22/2022	13:05	42.93	17:40	44.72	43.66	-	-	-	-	-	-	-	-	-	-	-	0.12
04/23/2022	23:55	41.63	00:00	43.08	42.45	-	-	-	-	-	-	-	-	-	-	-	-
04/24/2022	05:20	41.23	13:40	42.53	41.71	-	-	-	-	-	-	-	-	-	-	-	-
04/25/2022	23:55	40.50	14:10	41.56	41.18	-	-	-	-	-	-	-	-	-	-	-	0.01
04/26/2022	23:25	40.12	15:00	41.14	40.53	-	-	-	-	-	-	-	-	-	-	-	0.04
04/27/2022	04:50	39.97	14:30	40.89	40.34	-	-	-	-	-	-	-	-	-	-	-	0.17
04/28/2022	23:55	39.36	13:30	40.41	40.04	-	-	-	-	-	-	-	-	-	-	-	0.01
04/29/2022	04:30	39.33	23:55	41.67	39.78	-	-	-	-	-	-	-	-	-	-	-	0.39
04/30/2022	23:55	41.72	05:20	44.15	42.70	-	-	-	-	-	-	-	-	-	-	-	0.24
05/01/2022	23:35	40.14	00:00	41.71	40.84	-	-	-	-	-	-	-	-	-	-	-	-
05/02/2022	02:20	39.96	14:00	42.80	41.35	-	-	-	-	-	-	-	-	-	-	-	0.34

12/02/2021 00:00 - 05/02/2022 23:55

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	RAIN FINAL (in)
Total				31.58
Average	41.07			

DallasAsh.Jacobs.TFM.OR21	ADS ENVIRONMENTAL SERVICES	Site Name
Flow Monitoring Site Report		**NFAC_LVL01**

Site Address / Location:	1570 Main St , Dallas, OR			Monitor Series: ECHO	Location Type: Temporary
Site Access Details:	Park in lot / Walk	Latitude:	44.91375	Pipe Size (H x W): 76.00 X 130.00	Pipe Shape: Non-Standard
		Longitude:	-123.316903		

Manhole #	System Characteristics
N/A	Creek
Access	**Traffic**
Drive	None

Installation Information

Installation Date:	Installation Type:
Wednesday, December 1, 2021	Doppler Special Installation
Monitoring Location (Sensors):	**Monitor Location:**
Upstream 5-10 FT	Culvert
Sensors / Devices:	**Pressure Sensor Range (psi)**
Peak Combo (CS4)	0 - 5 psi

Installation Confirmation:

Time	
12:45:00 PM	
Depth of Flow (Wet DOF) (in)	
2.50	
CS5 Physical Offset (in)	**Measurement Confidence (in)**
	0.25"
Peak Velocity (fps)	**Velocity Sensor Offset (in)**
2.77	0
Silt (in)	**Silt Type**
0	

Manhole / Pipe Information:

Manhole Depth (Approx. FT):	Manhole Configuration
N/A	N/A
Manhole Material:	**Manhole Condition:**
Manhole Opening Diameter (in)	**Manhole Diameter (Approx.):**
Manhole Cover	**Manhole Frame**
Active Connections	**Air Quality:**
No	Normal
Pipe Material	**Pipe Condition:**
	Good

Communication Information:

Communication Type	Antenna Location
Wireless	Grass (buried)

Additional Site Info. / Comments:

Sensor mounted to concrete weir, depth taken from invert at sensor.

ADS Project Name:	DallasAsh.Jacobs.TFM.OR21B
ADS Project Number:	22724.11.325

NFAC_LVL02

Site Commentary

SITE INFORMATION

Pipe	SemiElliptical (77 in H x 77 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Thursday, 02 December 2021 to Monday, 02 May 2022**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions	
Item	**DFINAL (in)**
Average	21.36
Minimum	16.38
Maximum	46.46
Min Time	12/5/2021 6:00:00 AM
Max Time	01/03/2022 9:10:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the five minutes average.

DATA UPTIME

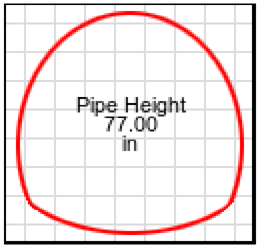
Data uptime observed during **Thursday, 02 December 2021 to Monday, 02 May 2022** is provided in the following table:

Percent Uptime	
DFINAL (in)	99.973

Hydrograph Report
NFAC_LVL02

Flow Monitor

NFAC_LVL02

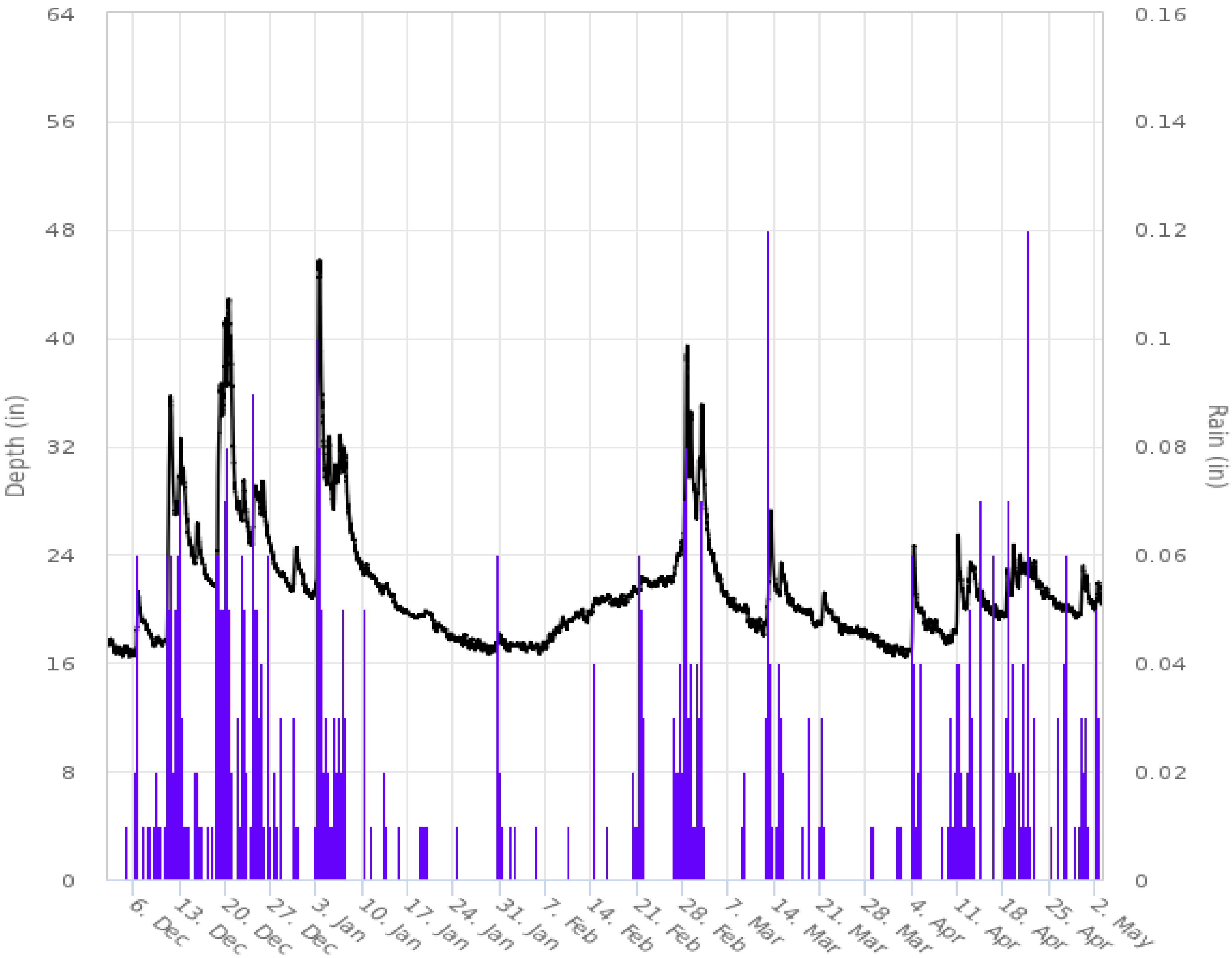


Report Period

12/02/2021
To
05/02/2022

Legend

DFINAL
RAIN FINAL



Daily Tabular Report

12/02/2021 00:00 - 05/02/2022 23:55
NFAC_LVL02Pipe: SemiElliptical (77 in H x 77 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
12/02/2021	23:50	17.00	11:05	17.82	17.48	-	-	-	-	-	-	-	-	-	-	-	-
12/03/2021	22:30	16.57	15:20	17.25	16.89	-	-	-	-	-	-	-	-	-	-	-	-
12/04/2021	05:40	16.40	19:45	17.28	16.98	-	-	-	-	-	-	-	-	-	-	-	0.08
12/05/2021	06:00	16.38	12:40	17.05	16.71	-	-	-	-	-	-	-	-	-	-	-	-
12/06/2021	00:35	16.54	14:40	21.31	18.92	-	-	-	-	-	-	-	-	-	-	-	0.60
12/07/2021	20:50	18.44	00:00	19.80	19.05	-	-	-	-	-	-	-	-	-	-	-	0.01
12/08/2021	23:10	17.27	00:45	18.54	18.00	-	-	-	-	-	-	-	-	-	-	-	0.04
12/09/2021	01:20	17.16	15:30	17.96	17.56	-	-	-	-	-	-	-	-	-	-	-	0.12
12/10/2021	06:30	17.20	23:55	17.79	17.58	-	-	-	-	-	-	-	-	-	-	-	0.02
12/11/2021	00:15	17.73	14:25	35.85	29.76	-	-	-	-	-	-	-	-	-	-	-	2.00
12/12/2021	09:10	26.87	22:30	29.96	27.99	-	-	-	-	-	-	-	-	-	-	-	0.75
12/13/2021	23:45	26.97	02:40	32.78	29.72	-	-	-	-	-	-	-	-	-	-	-	0.64
12/14/2021	23:55	23.75	00:05	27.03	25.08	-	-	-	-	-	-	-	-	-	-	-	0.03
12/15/2021	08:05	23.25	16:55	26.38	24.66	-	-	-	-	-	-	-	-	-	-	-	0.33
12/16/2021	23:10	22.42	00:00	24.80	23.43	-	-	-	-	-	-	-	-	-	-	-	0.01
12/17/2021	20:25	21.76	00:00	22.45	22.08	-	-	-	-	-	-	-	-	-	-	-	0.05
12/18/2021	08:45	21.62	23:45	32.69	23.62	-	-	-	-	-	-	-	-	-	-	-	0.92
12/19/2021	00:00	32.70	23:30	42.18	36.26	-	-	-	-	-	-	-	-	-	-	-	2.14
12/20/2021	23:55	34.68	10:55	43.64	39.41	-	-	-	-	-	-	-	-	-	-	-	1.50
12/21/2021	18:55	27.24	00:00	35.04	29.38	-	-	-	-	-	-	-	-	-	-	-	0.16
12/22/2021	13:00	26.38	19:05	29.55	27.54	-	-	-	-	-	-	-	-	-	-	-	0.54
12/23/2021	20:40	24.65	00:00	27.94	25.97	-	-	-	-	-	-	-	-	-	-	-	0.07
12/24/2021	02:00	24.61	13:35	29.16	27.76	-	-	-	-	-	-	-	-	-	-	-	0.93
12/25/2021	10:50	26.81	16:50	29.52	28.18	-	-	-	-	-	-	-	-	-	-	-	0.38
12/26/2021	23:55	24.35	00:00	27.16	25.41	-	-	-	-	-	-	-	-	-	-	-	0.37
12/27/2021	23:05	22.68	00:15	24.52	23.41	-	-	-	-	-	-	-	-	-	-	-	0.22
12/28/2021	10:55	22.33	00:40	22.82	22.56	-	-	-	-	-	-	-	-	-	-	-	0.10
12/29/2021	23:15	21.33	00:05	22.39	21.85	-	-	-	-	-	-	-	-	-	-	-	-
12/30/2021	03:50	21.24	19:10	24.60	22.83	-	-	-	-	-	-	-	-	-	-	-	0.22
12/31/2021	23:50	21.80	00:00	23.88	22.79	-	-	-	-	-	-	-	-	-	-	-	0.02
01/01/2022	23:25	20.88	00:00	21.90	21.28	-	-	-	-	-	-	-	-	-	-	-	-
01/02/2022	02:40	20.73	23:55	23.59	21.27	-	-	-	-	-	-	-	-	-	-	-	0.24
01/03/2022	00:00	23.73	09:10	46.46	37.94	-	-	-	-	-	-	-	-	-	-	-	2.41
01/04/2022	12:00	28.96	20:05	32.93	30.66	-	-	-	-	-	-	-	-	-	-	-	0.54
01/05/2022	11:45	27.27	00:00	31.46	29.07	-	-	-	-	-	-	-	-	-	-	-	0.47
01/06/2022	02:00	29.18	12:15	32.91	30.80	-	-	-	-	-	-	-	-	-	-	-	0.59
01/07/2022	23:55	26.40	04:00	31.99	29.36	-	-	-	-	-	-	-	-	-	-	-	0.17
01/08/2022	23:10	23.94	00:00	26.47	25.17	-	-	-	-	-	-	-	-	-	-	-	-
01/09/2022	23:15	22.64	00:20	24.09	23.43	-	-	-	-	-	-	-	-	-	-	-	-
01/10/2022	05:10	22.42	12:55	23.38	22.81	-	-	-	-	-	-	-	-	-	-	-	0.11
01/11/2022	23:50	22.05	00:15	22.56	22.32	-	-	-	-	-	-	-	-	-	-	-	0.02
01/12/2022	22:30	21.02	00:20	22.14	21.61	-	-	-	-	-	-	-	-	-	-	-	-
01/13/2022	01:10	21.16	16:00	21.90	21.54	-	-	-	-	-	-	-	-	-	-	-	0.14
01/14/2022	23:40	20.16	00:00	21.29	20.86	-	-	-	-	-	-	-	-	-	-	-	-
01/15/2022	23:45	19.85	01:15	20.30	20.07	-	-	-	-	-	-	-	-	-	-	-	0.01
01/16/2022	07:05	19.62	13:10	19.96	19.77	-	-	-	-	-	-	-	-	-	-	-	-
01/17/2022	23:00	19.27	00:00	19.69	19.49	-	-	-	-	-	-	-	-	-	-	-	-
01/18/2022	05:30	19.26	14:40	19.63	19.42	-	-	-	-	-	-	-	-	-	-	-	0.01
01/19/2022	05:50	19.41	13:20	19.91	19.63	-	-	-	-	-	-	-	-	-	-	-	0.13
01/20/2022	23:55	18.50	00:55	19.71	19.35	-	-	-	-	-	-	-	-	-	-	-	-
01/21/2022	07:55	18.26	14:55	18.97	18.62	-	-	-	-	-	-	-	-	-	-	-	-
01/22/2022	23:10	17.83	00:10	18.66	18.34	-	-	-	-	-	-	-	-	-	-	-	-
01/23/2022	06:20	17.63	11:45	18.21	17.90	-	-	-	-	-	-	-	-	-	-	-	-
01/24/2022	23:45	17.51	14:55	17.96	17.73	-	-	-	-	-	-	-	-	-	-	-	0.01
01/25/2022	07:45	17.22	16:50	18.15	17.62	-	-	-	-	-	-	-	-	-	-	-	-
01/26/2022	06:20	17.02	16:40	17.88	17.37	-	-	-	-	-	-	-	-	-	-	-	-
01/27/2022	03:40	16.89	16:40	17.79	17.34	-	-	-	-	-	-	-	-	-	-	-	-
01/28/2022	07:30	16.80	11:55	17.49	17.13	-	-	-	-	-	-	-	-	-	-	-	-
01/29/2022	06:30	16.55	15:55	17.34	16.94	-	-	-	-	-	-	-	-	-	-	-	-
01/30/2022	00:00	16.78	17:25	18.30	17.43	-	-	-	-	-	-	-	-	-	-	-	0.28
01/31/2022	23:10	16.88	00:00	18.03	17.50	-	-	-	-	-	-	-	-	-	-	-	0.01
02/01/2022	06:00	16.81	12:40	17.55	17.20	-	-	-	-	-	-	-	-	-	-	-	0.01
02/02/2022	05:55	17.20	16:15	17.52	17.33	-	-	-	-	-	-	-	-	-	-	-	0.02
02/03/2022	23:20	16.81	11:00	17.57	17.17	-	-	-	-	-	-	-	-	-	-	-	-
02/04/2022	00:45	16.77	15:20	17.60	17.18	-	-	-	-	-	-	-	-	-	-	-	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
02/05/2022	23:45	16.68	14:25	17.45	17.14	-	-	-	-	-	-	-	-	-	-	-	0.01
02/06/2022	01:55	16.59	14:45	17.65	17.15	-	-	-	-	-	-	-	-	-	-	-	-
02/07/2022	00:30	16.99	15:05	18.23	17.71	-	-	-	-	-	-	-	-	-	-	-	-
02/08/2022	00:05	17.72	17:00	18.67	18.29	-	-	-	-	-	-	-	-	-	-	-	-
02/09/2022	00:50	18.22	15:15	19.45	18.86	-	-	-	-	-	-	-	-	-	-	-	-
02/10/2022	05:25	18.38	16:20	19.23	18.98	-	-	-	-	-	-	-	-	-	-	-	0.01
02/11/2022	00:00	19.12	15:30	19.83	19.43	-	-	-	-	-	-	-	-	-	-	-	-
02/12/2022	23:10	19.10	14:40	20.05	19.62	-	-	-	-	-	-	-	-	-	-	-	-
02/13/2022	06:15	18.92	16:10	19.91	19.48	-	-	-	-	-	-	-	-	-	-	-	-
02/14/2022	00:10	19.53	14:10	20.84	20.39	-	-	-	-	-	-	-	-	-	-	-	0.12
02/15/2022	01:25	20.30	14:35	20.90	20.67	-	-	-	-	-	-	-	-	-	-	-	-
02/16/2022	23:15	20.31	10:50	21.07	20.77	-	-	-	-	-	-	-	-	-	-	-	0.01
02/17/2022	23:25	20.14	14:00	20.76	20.47	-	-	-	-	-	-	-	-	-	-	-	-
02/18/2022	04:10	20.14	16:20	21.08	20.55	-	-	-	-	-	-	-	-	-	-	-	-
02/19/2022	02:55	20.22	15:45	21.04	20.70	-	-	-	-	-	-	-	-	-	-	-	-
02/20/2022	00:20	20.89	11:40	21.66	21.31	-	-	-	-	-	-	-	-	-	-	-	0.03
02/21/2022	02:45	21.04	16:30	22.39	21.82	-	-	-	-	-	-	-	-	-	-	-	0.38
02/22/2022	23:05	21.58	03:20	22.26	21.98	-	-	-	-	-	-	-	-	-	-	-	0.01
02/23/2022	02:40	21.51	16:50	22.09	21.77	-	-	-	-	-	-	-	-	-	-	-	-
02/24/2022	00:30	21.64	16:30	22.40	22.08	-	-	-	-	-	-	-	-	-	-	-	-
02/25/2022	05:55	21.59	17:15	22.40	22.02	-	-	-	-	-	-	-	-	-	-	-	-
02/26/2022	05:10	21.77	23:55	23.69	22.52	-	-	-	-	-	-	-	-	-	-	-	0.47
02/27/2022	00:00	23.72	17:40	25.06	24.26	-	-	-	-	-	-	-	-	-	-	-	0.43
02/28/2022	00:00	24.57	13:50	39.80	31.94	-	-	-	-	-	-	-	-	-	-	-	2.21
03/01/2022	23:45	26.80	04:10	34.79	30.38	-	-	-	-	-	-	-	-	-	-	-	0.41
03/02/2022	01:30	26.55	20:30	35.30	30.47	-	-	-	-	-	-	-	-	-	-	-	1.22
03/03/2022	23:40	24.54	00:00	32.61	27.34	-	-	-	-	-	-	-	-	-	-	-	-
03/04/2022	23:15	22.71	00:00	24.61	23.80	-	-	-	-	-	-	-	-	-	-	-	-
03/05/2022	22:40	21.31	00:00	22.95	22.13	-	-	-	-	-	-	-	-	-	-	-	-
03/06/2022	22:05	20.42	00:20	21.36	21.00	-	-	-	-	-	-	-	-	-	-	-	-
03/07/2022	23:25	19.87	13:55	20.89	20.40	-	-	-	-	-	-	-	-	-	-	-	-
03/08/2022	02:45	19.76	14:55	20.31	20.02	-	-	-	-	-	-	-	-	-	-	-	-
03/09/2022	23:55	18.94	13:30	20.39	19.83	-	-	-	-	-	-	-	-	-	-	-	0.11
03/10/2022	06:25	18.53	11:10	19.27	18.93	-	-	-	-	-	-	-	-	-	-	-	-
03/11/2022	06:20	18.23	15:30	19.34	18.71	-	-	-	-	-	-	-	-	-	-	-	-
03/12/2022	06:40	17.99	23:55	20.93	18.94	-	-	-	-	-	-	-	-	-	-	-	0.41
03/13/2022	00:05	20.95	09:25	27.32	24.20	-	-	-	-	-	-	-	-	-	-	-	0.77
03/14/2022	17:10	20.90	23:20	23.44	21.66	-	-	-	-	-	-	-	-	-	-	-	0.36
03/15/2022	22:55	20.76	00:00	23.30	22.04	-	-	-	-	-	-	-	-	-	-	-	0.10
03/16/2022	22:45	19.99	00:05	21.04	20.50	-	-	-	-	-	-	-	-	-	-	-	-
03/17/2022	05:25	19.75	14:00	20.31	20.02	-	-	-	-	-	-	-	-	-	-	-	-
03/18/2022	20:45	19.49	00:20	19.99	19.78	-	-	-	-	-	-	-	-	-	-	-	0.02
03/19/2022	22:25	18.72	10:40	20.02	19.48	-	-	-	-	-	-	-	-	-	-	-	0.12
03/20/2022	06:55	18.57	14:50	19.09	18.87	-	-	-	-	-	-	-	-	-	-	-	0.02
03/21/2022	01:55	18.74	12:35	21.22	20.19	-	-	-	-	-	-	-	-	-	-	-	0.39
03/22/2022	20:05	19.22	00:30	20.05	19.69	-	-	-	-	-	-	-	-	-	-	-	-
03/23/2022	23:40	18.43	12:35	19.40	19.08	-	-	-	-	-	-	-	-	-	-	-	-
03/24/2022	05:25	18.02	16:45	18.95	18.47	-	-	-	-	-	-	-	-	-	-	-	-
03/25/2022	22:30	18.12	14:40	18.70	18.36	-	-	-	-	-	-	-	-	-	-	-	-
03/26/2022	22:50	18.09	15:55	18.71	18.37	-	-	-	-	-	-	-	-	-	-	-	-
03/27/2022	06:55	17.87	15:25	18.64	18.20	-	-	-	-	-	-	-	-	-	-	-	-
03/28/2022	04:40	17.71	18:25	18.20	17.99	-	-	-	-	-	-	-	-	-	-	-	0.04
03/29/2022	23:55	17.09	15:35	18.12	17.71	-	-	-	-	-	-	-	-	-	-	-	0.01
03/30/2022	23:50	16.75	13:05	17.67	17.31	-	-	-	-	-	-	-	-	-	-	-	-
03/31/2022	23:50	16.65	10:20	17.46	17.04	-	-	-	-	-	-	-	-	-	-	-	-
04/01/2022	04:25	16.45	13:10	17.39	16.93	-	-	-	-	-	-	-	-	-	-	-	0.05
04/02/2022	22:15	16.38	13:40	17.26	16.84	-	-	-	-	-	-	-	-	-	-	-	0.01
04/03/2022	00:20	16.40	23:55	18.62	16.88	-	-	-	-	-	-	-	-	-	-	-	0.27
04/04/2022	00:00	18.69	06:25	24.72	21.90	-	-	-	-	-	-	-	-	-	-	-	0.87
04/05/2022	23:20	18.68	11:50	20.18	19.63	-	-	-	-	-	-	-	-	-	-	-	0.11
04/06/2022	23:50	18.29	13:45	19.32	18.81	-	-	-	-	-	-	-	-	-	-	-	-
04/07/2022	02:05	18.14	14:30	19.35	18.64	-	-	-	-	-	-	-	-	-	-	-	-
04/08/2022	23:45	17.61	10:40	18.48	18.12	-	-	-	-	-	-	-	-	-	-	-	0.01
04/09/2022	05:15	17.30	11:30	18.05	17.67	-	-	-	-	-	-	-	-	-	-	-	0.13
04/10/2022	00:00	17.68	23:55	24.07	18.78	-	-	-	-	-	-	-	-	-	-	-	0.85
04/11/2022	22:55	20.14	01:50	25.49	22.40	-	-	-	-	-	-	-	-	-	-	-	0.20
04/12/2022	04:40	19.90	21:55	23.55	21.20	-	-	-	-	-	-	-	-	-	-	-	0.36
04/13/2022	23:35	21.04	00:30	23.34	22.52	-	-	-	-	-	-	-	-	-	-	-	0.12
04/14/2022	23:50	20.30	16:30	21.36	20.89	-	-	-	-	-	-	-	-	-	-	-	0.19
04/15/2022	22:00	19.62	14:00	20.68	20.16	-	-	-	-	-	-	-	-	-	-	-	-
04/16/2022	03:45	19.48	14:20	20.40	19.90	-	-	-	-	-	-	-	-	-	-	-	0.18
04/17/2022	05:40	19.12	10:40	19.86	19.55	-	-	-	-	-	-	-	-	-	-	-	-
04/18/2022	03:50	19.32	16:05	23.00	20.94	-	-	-	-	-	-	-	-	-	-	-	0.56

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
04/19/2022	05:45	20.91	13:10	24.74	22.59	-	-	-	-	-	-	-	-	-	-	-	0.49
04/20/2022	06:25	21.49	14:55	24.05	22.58	-	-	-	-	-	-	-	-	-	-	-	0.39
04/21/2022	15:05	22.37	20:40	23.76	23.14	-	-	-	-	-	-	-	-	-	-	-	0.39
04/22/2022	23:45	22.12	16:50	23.61	22.74	-	-	-	-	-	-	-	-	-	-	-	0.12
04/23/2022	23:55	20.97	00:05	22.17	21.67	-	-	-	-	-	-	-	-	-	-	-	-
04/24/2022	05:10	20.71	11:25	21.65	21.11	-	-	-	-	-	-	-	-	-	-	-	-
04/25/2022	23:25	20.09	09:50	20.95	20.70	-	-	-	-	-	-	-	-	-	-	-	0.01
04/26/2022	23:15	19.81	12:50	20.54	20.20	-	-	-	-	-	-	-	-	-	-	-	0.04
04/27/2022	00:20	19.78	13:25	20.49	20.08	-	-	-	-	-	-	-	-	-	-	-	0.17
04/28/2022	23:05	19.32	10:05	20.20	19.80	-	-	-	-	-	-	-	-	-	-	-	0.01
04/29/2022	03:25	19.23	23:55	21.76	19.77	-	-	-	-	-	-	-	-	-	-	-	0.39
04/30/2022	23:55	20.95	04:00	23.21	21.98	-	-	-	-	-	-	-	-	-	-	-	0.24
05/01/2022	23:20	19.90	00:55	20.94	20.42	-	-	-	-	-	-	-	-	-	-	-	-
05/02/2022	01:15	19.76	12:05	21.98	20.95	-	-	-	-	-	-	-	-	-	-	-	0.34

12/02/2021 00:00 - 05/02/2022 23:55

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	RAIN FINAL (in)
Total				31.58
Average	21.37			

DallasAsh.Jacobs.TFM.OR21	ADS ENVIRONMENTAL SERVICES	Site Name
Flow Monitoring Site Report		**NFAC_LVL02**

				Monitor Series	Location Type
Site Address /Location:	965 SE Monmouth Cutoff Rd, Dallas, OR			ECHO	Temporary
Site Access Details:	Park in lot / Walk	Latitude:	44.912811	Pipe Size (H x W)	Pipe Shape
		Longitude:	-123.309267	77.00 X 77.00	Non-Standard

Manhole #	System Characteristics
N/A	Creek
Access	Traffic
Drive	None


Echo level sensor mounted upstream side of culvert


Level measurement taken from middle of culvert


Sensor Location

Installation Information	
Installation Date:	Installation Type:
Wednesday, December 1, 2021	Doppler Special Installation
Monitoring Location (Sensors):	Monitor Location:
Upstream 5-10 FT	Culvert
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4)	0 - 5 psi
Installation Confirmation:	
Time	
9:40:00 PM	
Depth of Flow (Wet DOF) (in)	
17.88	
CS5 Physical Offset (in)	Measurement Confidence (in)
	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
N/A	0
Silt (in)	Silt Type
0	

Manhole / Pipe Information:	
Manhole Depth (Approx. FT):	Manhole Configuration
N/A	N/A
Manhole Material:	Manhole Condition:
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
Manhole Cover	Manhole Frame
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
	Good
Communication Information:	
Communication Type	Antenna Location
Wireless	Grass (buried)

Additional Site Info. / Comments:

Depth taken from invert at center of culvert marked with cable tie.

ADS Project Name:	DallasAsh.Jacobs.TFM.OR21B
ADS Project Number:	22724.11.325

NFAC_LVL03

Site Commentary

SITE INFORMATION

Pipe	Round (86 in H)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Thursday, 02 December 2021 to Monday, 02 May 2022**, along with observed minimum and maximum data, are provided in the following table.

Observed Flow Conditions	
Item	**DFINAL (in)**
Average	13.83
Minimum	5.79
Maximum	54.90
Min Time	02/25/2022 6:25:00 AM
Max Time	01/03/2022 5:55:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the five minutes average.

DATA UPTIME

Data uptime observed during **Thursday, 02 December 2021 to Monday, 02 May 2022** is provided in the following table:

Percent Uptime	
DFINAL (in)	99.973

Hydrograph Report
NFAC_LVL03

Flow Monitor

NFAC_LVL03

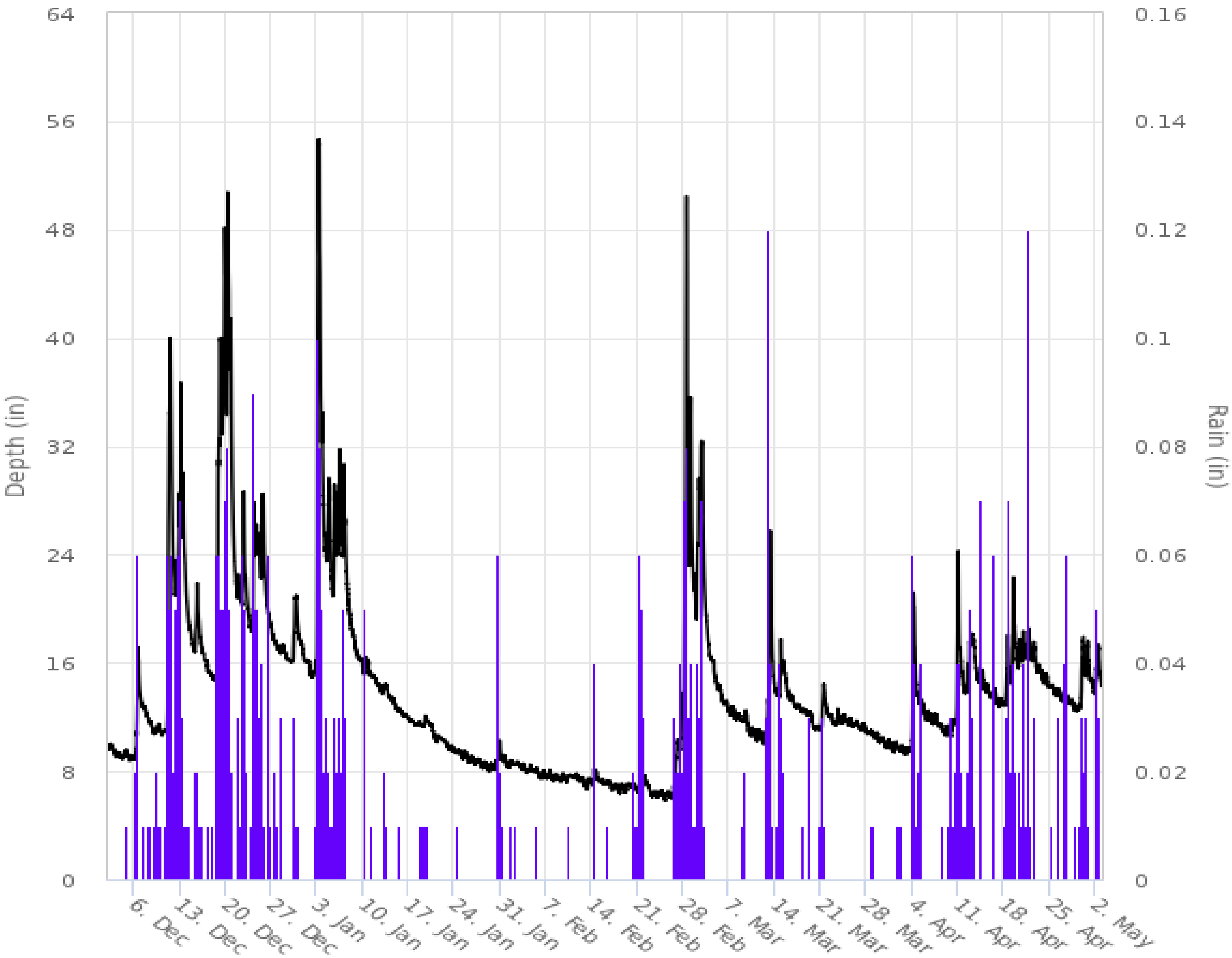
Pipe Height
86.00
in

Report Period

12/02/2021
To
05/02/2022

Legend

DFINAL
RAIN FINAL



Daily Tabular Report

12/02/2021 00:00 - 05/02/2022 23:55
NFAC_LVL03Pipe: Round (86 in H), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
12/02/2021	23:35	9.36	10:40	10.06	9.76	-	-	-	-	-	-	-	-	-	-	-	-
12/03/2021	22:35	8.98	13:10	9.50	9.21	-	-	-	-	-	-	-	-	-	-	-	-
12/04/2021	05:35	8.89	20:35	9.61	9.24	-	-	-	-	-	-	-	-	-	-	-	0.08
12/05/2021	07:45	8.76	00:05	9.33	8.97	-	-	-	-	-	-	-	-	-	-	-	-
12/06/2021	00:05	8.90	15:20	17.20	12.52	-	-	-	-	-	-	-	-	-	-	-	0.60
12/07/2021	23:30	12.06	00:00	13.66	12.73	-	-	-	-	-	-	-	-	-	-	-	0.01
12/08/2021	23:15	10.81	00:05	12.08	11.51	-	-	-	-	-	-	-	-	-	-	-	0.04
12/09/2021	03:10	10.72	18:05	11.51	11.04	-	-	-	-	-	-	-	-	-	-	-	0.12
12/10/2021	07:00	10.61	23:45	11.11	10.95	-	-	-	-	-	-	-	-	-	-	-	0.02
12/11/2021	00:10	11.09	13:05	40.00	28.88	-	-	-	-	-	-	-	-	-	-	-	2.00
12/12/2021	07:15	20.97	21:45	28.54	23.19	-	-	-	-	-	-	-	-	-	-	-	0.75
12/13/2021	23:55	21.07	02:55	36.95	26.83	-	-	-	-	-	-	-	-	-	-	-	0.64
12/14/2021	23:55	17.17	00:00	21.09	18.75	-	-	-	-	-	-	-	-	-	-	-	0.03
12/15/2021	06:40	16.76	15:55	21.92	18.63	-	-	-	-	-	-	-	-	-	-	-	0.33
12/16/2021	23:45	16.12	00:00	18.56	16.95	-	-	-	-	-	-	-	-	-	-	-	0.01
12/17/2021	19:45	14.96	00:00	16.14	15.41	-	-	-	-	-	-	-	-	-	-	-	0.05
12/18/2021	08:15	14.72	23:55	32.50	17.93	-	-	-	-	-	-	-	-	-	-	-	0.92
12/19/2021	00:45	31.94	20:25	48.19	38.36	-	-	-	-	-	-	-	-	-	-	-	2.14
12/20/2021	23:45	29.31	08:05	50.83	40.11	-	-	-	-	-	-	-	-	-	-	-	1.50
12/21/2021	18:45	20.70	00:05	29.16	23.21	-	-	-	-	-	-	-	-	-	-	-	0.16
12/22/2021	12:55	20.15	18:35	28.76	22.43	-	-	-	-	-	-	-	-	-	-	-	0.54
12/23/2021	23:55	18.37	00:10	22.70	20.06	-	-	-	-	-	-	-	-	-	-	-	0.07
12/24/2021	00:10	18.33	06:20	28.03	23.83	-	-	-	-	-	-	-	-	-	-	-	0.93
12/25/2021	11:15	22.17	16:30	28.56	24.89	-	-	-	-	-	-	-	-	-	-	-	0.38
12/26/2021	23:45	18.62	00:05	22.20	19.91	-	-	-	-	-	-	-	-	-	-	-	0.37
12/27/2021	22:45	17.04	00:00	18.71	17.69	-	-	-	-	-	-	-	-	-	-	-	0.22
12/28/2021	10:15	16.68	18:20	17.42	16.98	-	-	-	-	-	-	-	-	-	-	-	0.10
12/29/2021	22:20	16.09	00:10	17.05	16.36	-	-	-	-	-	-	-	-	-	-	-	-
12/30/2021	02:50	16.07	19:00	21.02	18.31	-	-	-	-	-	-	-	-	-	-	-	0.22
12/31/2021	23:50	16.31	00:05	19.14	17.58	-	-	-	-	-	-	-	-	-	-	-	0.02
01/01/2022	22:20	15.06	00:00	16.35	15.93	-	-	-	-	-	-	-	-	-	-	-	-
01/02/2022	06:35	14.90	23:55	17.49	15.45	-	-	-	-	-	-	-	-	-	-	-	0.24
01/03/2022	00:00	17.72	05:55	54.90	38.58	-	-	-	-	-	-	-	-	-	-	-	2.41
01/04/2022	10:35	23.34	19:10	29.82	25.67	-	-	-	-	-	-	-	-	-	-	-	0.54
01/05/2022	10:00	20.81	15:55	32.37	23.83	-	-	-	-	-	-	-	-	-	-	-	0.47
01/06/2022	21:40	23.58	10:30	31.80	25.99	-	-	-	-	-	-	-	-	-	-	-	0.59
01/07/2022	23:50	19.43	02:45	30.83	23.68	-	-	-	-	-	-	-	-	-	-	-	0.17
01/08/2022	23:20	16.76	00:00	19.54	18.03	-	-	-	-	-	-	-	-	-	-	-	-
01/09/2022	23:20	15.48	00:25	16.87	16.32	-	-	-	-	-	-	-	-	-	-	-	-
01/10/2022	05:25	15.09	10:50	16.47	15.78	-	-	-	-	-	-	-	-	-	-	-	0.11
01/11/2022	23:35	14.66	00:10	15.35	15.02	-	-	-	-	-	-	-	-	-	-	-	0.02
01/12/2022	22:20	13.70	01:00	14.75	14.26	-	-	-	-	-	-	-	-	-	-	-	-
01/13/2022	21:30	13.50	10:25	14.47	14.07	-	-	-	-	-	-	-	-	-	-	-	0.14
01/14/2022	23:25	12.69	00:00	13.61	13.24	-	-	-	-	-	-	-	-	-	-	-	-
01/15/2022	23:25	12.20	00:35	12.80	12.49	-	-	-	-	-	-	-	-	-	-	-	0.01
01/16/2022	23:55	11.86	13:25	12.28	12.09	-	-	-	-	-	-	-	-	-	-	-	-
01/17/2022	22:50	11.44	00:00	11.92	11.68	-	-	-	-	-	-	-	-	-	-	-	-
01/18/2022	22:50	11.34	16:10	11.73	11.45	-	-	-	-	-	-	-	-	-	-	-	0.01
01/19/2022	05:50	11.30	13:00	12.10	11.63	-	-	-	-	-	-	-	-	-	-	-	0.13
01/20/2022	23:50	10.45	00:05	11.63	11.23	-	-	-	-	-	-	-	-	-	-	-	-
01/21/2022	08:00	10.12	12:15	10.70	10.43	-	-	-	-	-	-	-	-	-	-	-	-
01/22/2022	23:45	9.76	00:00	10.42	10.18	-	-	-	-	-	-	-	-	-	-	-	-
01/23/2022	23:20	9.41	14:50	9.95	9.68	-	-	-	-	-	-	-	-	-	-	-	-
01/24/2022	23:30	9.18	15:15	9.59	9.42	-	-	-	-	-	-	-	-	-	-	-	0.01
01/25/2022	07:50	8.85	14:55	9.48	9.17	-	-	-	-	-	-	-	-	-	-	-	-
01/26/2022	06:40	8.57	10:05	9.17	8.84	-	-	-	-	-	-	-	-	-	-	-	-
01/27/2022	03:50	8.45	17:35	9.00	8.70	-	-	-	-	-	-	-	-	-	-	-	-
01/28/2022	07:25	8.15	15:20	8.78	8.46	-	-	-	-	-	-	-	-	-	-	-	-
01/29/2022	07:25	7.95	14:40	8.71	8.29	-	-	-	-	-	-	-	-	-	-	-	-
01/30/2022	07:35	8.06	20:55	10.29	8.87	-	-	-	-	-	-	-	-	-	-	-	0.28
01/31/2022	22:55	8.38	00:00	9.64	8.93	-	-	-	-	-	-	-	-	-	-	-	0.01
02/01/2022	05:45	8.19	12:40	8.86	8.52	-	-	-	-	-	-	-	-	-	-	-	0.01
02/02/2022	23:55	8.43	16:10	8.71	8.54	-	-	-	-	-	-	-	-	-	-	-	0.02
02/03/2022	23:40	7.88	13:35	8.61	8.27	-	-	-	-	-	-	-	-	-	-	-	-
02/04/2022	01:30	7.83	14:05	8.48	8.13	-	-	-	-	-	-	-	-	-	-	-	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
02/05/2022	23:10	7.64	15:05	8.29	8.01	-	-	-	-	-	-	-	-	-	-	-	0.01
02/06/2022	07:10	7.41	15:15	8.18	7.70	-	-	-	-	-	-	-	-	-	-	-	-
02/07/2022	23:25	7.41	14:50	8.17	7.67	-	-	-	-	-	-	-	-	-	-	-	-
02/08/2022	03:50	7.27	15:10	7.79	7.52	-	-	-	-	-	-	-	-	-	-	-	-
02/09/2022	07:05	7.20	15:10	8.00	7.53	-	-	-	-	-	-	-	-	-	-	-	-
02/10/2022	04:45	7.18	16:45	7.74	7.53	-	-	-	-	-	-	-	-	-	-	-	0.01
02/11/2022	23:30	7.29	16:40	7.88	7.59	-	-	-	-	-	-	-	-	-	-	-	-
02/12/2022	23:10	6.91	13:15	7.64	7.34	-	-	-	-	-	-	-	-	-	-	-	-
02/13/2022	07:30	6.61	14:50	7.64	7.10	-	-	-	-	-	-	-	-	-	-	-	-
02/14/2022	01:50	6.92	09:10	8.35	7.52	-	-	-	-	-	-	-	-	-	-	-	0.12
02/15/2022	22:40	6.98	16:20	7.42	7.25	-	-	-	-	-	-	-	-	-	-	-	-
02/16/2022	23:15	6.71	11:20	7.39	7.13	-	-	-	-	-	-	-	-	-	-	-	0.01
02/17/2022	23:20	6.52	13:45	7.17	6.82	-	-	-	-	-	-	-	-	-	-	-	-
02/18/2022	05:25	6.34	14:30	7.19	6.70	-	-	-	-	-	-	-	-	-	-	-	-
02/19/2022	03:15	6.40	16:30	7.12	6.79	-	-	-	-	-	-	-	-	-	-	-	-
02/20/2022	23:25	6.47	11:40	7.15	6.80	-	-	-	-	-	-	-	-	-	-	-	0.03
02/21/2022	03:55	6.41	13:25	8.63	7.39	-	-	-	-	-	-	-	-	-	-	-	0.38
02/22/2022	23:45	6.32	00:25	7.68	7.06	-	-	-	-	-	-	-	-	-	-	-	0.01
02/23/2022	23:45	5.99	16:55	6.55	6.27	-	-	-	-	-	-	-	-	-	-	-	-
02/24/2022	00:35	6.00	15:35	6.64	6.32	-	-	-	-	-	-	-	-	-	-	-	-
02/25/2022	06:25	5.79	17:00	6.57	6.15	-	-	-	-	-	-	-	-	-	-	-	-
02/26/2022	06:15	5.96	23:55	9.24	6.95	-	-	-	-	-	-	-	-	-	-	-	0.47
02/27/2022	00:00	9.26	19:00	13.82	10.81	-	-	-	-	-	-	-	-	-	-	-	0.43
02/28/2022	00:50	11.94	11:50	50.62	28.36	-	-	-	-	-	-	-	-	-	-	-	2.21
03/01/2022	23:50	19.46	02:55	35.73	24.93	-	-	-	-	-	-	-	-	-	-	-	0.41
03/02/2022	01:30	19.12	20:15	32.48	26.77	-	-	-	-	-	-	-	-	-	-	-	1.22
03/03/2022	23:55	16.68	00:00	26.07	19.81	-	-	-	-	-	-	-	-	-	-	-	-
03/04/2022	23:50	14.64	00:20	16.69	15.90	-	-	-	-	-	-	-	-	-	-	-	-
03/05/2022	23:45	13.22	00:00	14.68	14.05	-	-	-	-	-	-	-	-	-	-	-	-
03/06/2022	23:50	12.37	14:20	13.27	12.95	-	-	-	-	-	-	-	-	-	-	-	-
03/07/2022	23:55	11.87	11:45	12.84	12.34	-	-	-	-	-	-	-	-	-	-	-	-
03/08/2022	23:50	11.73	11:45	12.34	11.94	-	-	-	-	-	-	-	-	-	-	-	-
03/09/2022	23:45	10.94	12:35	12.51	11.79	-	-	-	-	-	-	-	-	-	-	-	0.11
03/10/2022	23:35	10.50	12:25	11.29	10.89	-	-	-	-	-	-	-	-	-	-	-	-
03/11/2022	23:40	10.21	12:30	11.18	10.60	-	-	-	-	-	-	-	-	-	-	-	-
03/12/2022	06:35	9.98	22:45	13.36	10.92	-	-	-	-	-	-	-	-	-	-	-	0.41
03/13/2022	00:25	12.89	08:15	25.83	17.67	-	-	-	-	-	-	-	-	-	-	-	0.77
03/14/2022	16:50	13.44	22:05	17.79	14.39	-	-	-	-	-	-	-	-	-	-	-	0.36
03/15/2022	22:50	13.88	00:00	16.49	15.28	-	-	-	-	-	-	-	-	-	-	-	0.10
03/16/2022	22:50	12.88	00:00	13.92	13.38	-	-	-	-	-	-	-	-	-	-	-	-
03/17/2022	22:30	12.56	13:00	12.97	12.76	-	-	-	-	-	-	-	-	-	-	-	-
03/18/2022	21:25	12.12	13:05	12.64	12.41	-	-	-	-	-	-	-	-	-	-	-	0.02
03/19/2022	23:40	11.16	10:05	12.43	11.94	-	-	-	-	-	-	-	-	-	-	-	0.12
03/20/2022	05:25	10.99	12:45	11.38	11.21	-	-	-	-	-	-	-	-	-	-	-	0.02
03/21/2022	00:05	11.02	10:40	14.50	12.93	-	-	-	-	-	-	-	-	-	-	-	0.39
03/22/2022	22:30	11.59	00:15	12.52	12.03	-	-	-	-	-	-	-	-	-	-	-	-
03/23/2022	03:10	11.37	14:20	12.67	11.79	-	-	-	-	-	-	-	-	-	-	-	-
03/24/2022	04:35	11.47	12:10	12.24	11.81	-	-	-	-	-	-	-	-	-	-	-	-
03/25/2022	22:10	11.26	12:40	12.04	11.58	-	-	-	-	-	-	-	-	-	-	-	-
03/26/2022	22:20	11.16	10:15	11.80	11.45	-	-	-	-	-	-	-	-	-	-	-	-
03/27/2022	23:00	10.79	12:40	11.62	11.20	-	-	-	-	-	-	-	-	-	-	-	-
03/28/2022	23:55	10.55	17:20	11.09	10.87	-	-	-	-	-	-	-	-	-	-	-	0.04
03/29/2022	23:50	10.08	14:00	10.98	10.58	-	-	-	-	-	-	-	-	-	-	-	0.01
03/30/2022	23:55	9.66	14:10	10.55	10.18	-	-	-	-	-	-	-	-	-	-	-	-
03/31/2022	23:35	9.57	12:55	10.44	9.96	-	-	-	-	-	-	-	-	-	-	-	-
04/01/2022	05:25	9.29	13:00	10.26	9.74	-	-	-	-	-	-	-	-	-	-	-	0.05
04/02/2022	23:10	9.16	11:20	10.05	9.59	-	-	-	-	-	-	-	-	-	-	-	0.01
04/03/2022	00:55	9.19	23:55	11.95	9.66	-	-	-	-	-	-	-	-	-	-	-	0.27
04/04/2022	00:00	12.04	05:05	21.23	16.47	-	-	-	-	-	-	-	-	-	-	-	0.87
04/05/2022	23:40	12.01	00:15	13.62	12.89	-	-	-	-	-	-	-	-	-	-	-	0.11
04/06/2022	23:30	11.57	11:45	12.64	12.02	-	-	-	-	-	-	-	-	-	-	-	-
04/07/2022	06:10	11.41	12:00	12.43	11.78	-	-	-	-	-	-	-	-	-	-	-	-
04/08/2022	22:55	10.73	11:10	11.61	11.19	-	-	-	-	-	-	-	-	-	-	-	0.01
04/09/2022	21:40	10.50	12:05	11.39	10.85	-	-	-	-	-	-	-	-	-	-	-	0.13
04/10/2022	00:10	10.95	23:55	22.71	12.70	-	-	-	-	-	-	-	-	-	-	-	0.85
04/11/2022	23:10	13.87	01:25	24.31	17.15	-	-	-	-	-	-	-	-	-	-	-	0.20
04/12/2022	05:00	13.66	23:10	17.80	15.14	-	-	-	-	-	-	-	-	-	-	-	0.36
04/13/2022	23:55	14.99	04:35	18.22	16.90	-	-	-	-	-	-	-	-	-	-	-	0.12
04/14/2022	23:40	14.18	14:25	15.57	14.87	-	-	-	-	-	-	-	-	-	-	-	0.19
04/15/2022	22:50	13.44	11:25	14.56	14.00	-	-	-	-	-	-	-	-	-	-	-	-
04/16/2022	23:40	13.02	14:15	14.24	13.58	-	-	-	-	-	-	-	-	-	-	-	0.18
04/17/2022	05:00	12.67	10:30	13.46	13.07	-	-	-	-	-	-	-	-	-	-	-	-
04/18/2022	03:20	12.72	16:20	18.08	14.65	-	-	-	-	-	-	-	-	-	-	-	0.56

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
04/19/2022	05:30	14.43	12:30	22.35	17.26	-	-	-	-	-	-	-	-	-	-	-	0.49
04/20/2022	06:55	15.46	13:25	17.79	16.58	-	-	-	-	-	-	-	-	-	-	-	0.39
04/21/2022	15:00	16.22	21:20	18.54	17.26	-	-	-	-	-	-	-	-	-	-	-	0.39
04/22/2022	23:50	15.74	15:45	17.58	16.66	-	-	-	-	-	-	-	-	-	-	-	0.12
04/23/2022	22:55	14.72	10:35	15.94	15.38	-	-	-	-	-	-	-	-	-	-	-	-
04/24/2022	22:30	14.19	12:40	15.31	14.71	-	-	-	-	-	-	-	-	-	-	-	-
04/25/2022	23:20	13.57	11:20	14.46	14.14	-	-	-	-	-	-	-	-	-	-	-	0.01
04/26/2022	21:10	13.17	09:45	14.27	13.61	-	-	-	-	-	-	-	-	-	-	-	0.04
04/27/2022	23:10	13.00	13:30	13.82	13.31	-	-	-	-	-	-	-	-	-	-	-	0.17
04/28/2022	23:20	12.42	10:10	13.45	12.91	-	-	-	-	-	-	-	-	-	-	-	0.01
04/29/2022	04:45	12.37	23:55	16.23	13.04	-	-	-	-	-	-	-	-	-	-	-	0.39
04/30/2022	12:35	14.95	04:50	18.00	16.33	-	-	-	-	-	-	-	-	-	-	-	0.24
05/01/2022	22:20	13.65	00:00	16.11	14.59	-	-	-	-	-	-	-	-	-	-	-	-
05/02/2022	00:05	13.66	11:15	17.43	15.35	-	-	-	-	-	-	-	-	-	-	-	0.34

12/02/2021 00:00 - 05/02/2022 23:55

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	RAIN FINAL (in)
Total				31.58
Average	13.84			

DallasAsh.Jacobs.TFM.OR21	ADS ENVIRONMENTAL SERVICES	Site Name
Flow Monitoring Site Report		**NFAC_LVL03**

Site Address /Location:	965 SE Monmouth Cutoff Rd, Dallas, OR			Monitor Series: ECHO	Location Type: Temporary
Site Access Details:	Park in lot / Walk	Latitude:	44.911469	Pipe Size (H x W): 86.00 X 86.00	Pipe Shape: Non-Standard
		Longitude:	-123.301931		

Manhole #	System Characteristics
N/A	Creek
Access	Traffic
Drive	None

Installation Information	
Installation Date:	Installation Type:
Wednesday, December 1, 2021	Doppler Special Installation
Monitoring Location (Sensors):	Monitor Location:
Upstream 5-10 FT	Culvert
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4)	0 - 5 psi
Installation Confirmation:	
Time	
12:05:00 PM	
Depth of Flow (Wet DOF) (in)	
10.25	
CS5 Physical Offset (in)	Measurement Confidence (in)
	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
N/A	0
Silt (in)	Silt Type
0	

Manhole / Pipe Information:	
Manhole Depth (Approx. FT):	Manhole Configuration
N/A	N/A
Manhole Material:	Manhole Condition:
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
Manhole Cover	Manhole Frame
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
	Good
Communication Information:	
Communication Type	Antenna Location
Wireless	Grass (buried)

Additional Site Info. / Comments:

Sensor mounted to concrete weir, depth taken from invert at sensor.

ADS Project Name:	DallasAsh.Jacobs.TFM.OR21B
ADS Project Number:	22724.11.325

NFAC_LVL04

Site Commentary

SITE INFORMATION

Pipe	Rectangle (74 in H x 130 in W)
Silt	0.00 (in)

OBSERVATIONS

Average flow depth, velocity, and quantity data observed during **Thursday, 02 December 2021 to Monday, 02 May 2022**, along with observed minimum and maximum data, are provided in the following table.

Data from December 23rd 2021 to January 5th 2022 were flagged as unreliable. An ADS field crew discovered the monitor had fallen into the flow and was lost during a site visit on January 5th. A new monitor was installed to resolve the problem. Data from January 22nd to February 3rd were flagged as unreliable. An ADS field crew adjusted the monitor during a site visit on February 3rd to resolve the problem.

Observed Flow Conditions	
Item	**DFINAL (in)**
Average	8.80
Minimum	0.99
Maximum	82.90
Min Time	02/25/2022 6:40:00 AM
Max Time	12/20/2021 9:55:00 AM

Based upon the quality and consistency of the observed flow depth and velocity data, the Continuity equation was used to calculate flow rate and quantities during the monitoring period.

Values in the Observed Flow Conditions and data on the graphical reports are based on the five minutes average.

DATA UPTIME

Data uptime observed during **Thursday, 02 December 2021 to Monday, 02 May 2022** is provided in the following table:

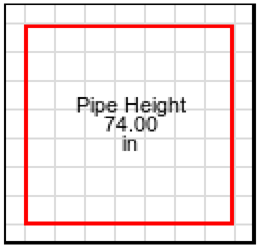
Percent Uptime	
DFINAL (in)	83.902

Hydrograph Report

NFAC_LVL04

Flow Monitor

NFAC_LVL04

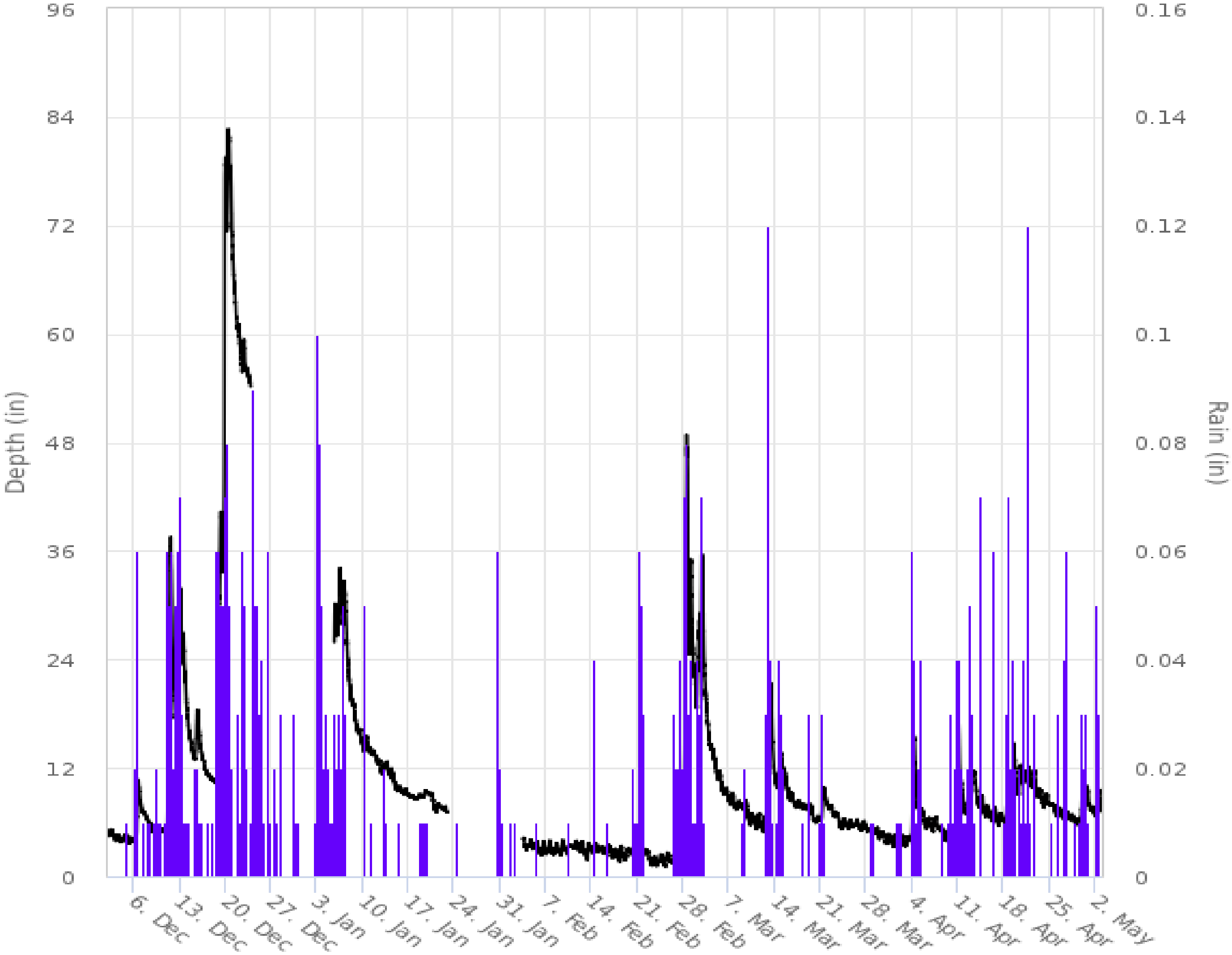


Report Period

12/02/2021
To
05/02/2022

Legend

DFINAL
RAIN FINAL



Daily Tabular Report

12/02/2021 00:00 - 05/02/2022 23:55
NFAC_LVL04Pipe: Rectangle (74 in H x 130 in W), Silt0.00 in

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
12/02/2021	23:40	4.33	13:05	5.21	4.78	-	-	-	-	-	-	-	-	-	-	-	-
12/03/2021	22:50	3.70	13:50	4.62	4.15	-	-	-	-	-	-	-	-	-	-	-	-
12/04/2021	06:10	3.79	19:35	4.58	4.28	-	-	-	-	-	-	-	-	-	-	-	0.08
12/05/2021	07:45	3.59	12:40	4.35	3.95	-	-	-	-	-	-	-	-	-	-	-	-
12/06/2021	01:50	3.78	16:20	10.73	6.89	-	-	-	-	-	-	-	-	-	-	-	0.60
12/07/2021	23:45	6.29	00:05	8.32	7.09	-	-	-	-	-	-	-	-	-	-	-	0.01
12/08/2021	22:50	4.83	00:15	6.32	5.70	-	-	-	-	-	-	-	-	-	-	-	0.04
12/09/2021	02:50	4.68	14:45	5.49	5.11	-	-	-	-	-	-	-	-	-	-	-	0.12
12/10/2021	07:40	4.84	23:50	5.34	5.16	-	-	-	-	-	-	-	-	-	-	-	0.02
12/11/2021	00:40	5.26	15:00	38.18	24.63	-	-	-	-	-	-	-	-	-	-	-	2.00
12/12/2021	08:50	17.31	23:05	25.03	19.85	-	-	-	-	-	-	-	-	-	-	-	0.75
12/13/2021	23:45	19.37	03:30	32.25	24.97	-	-	-	-	-	-	-	-	-	-	-	0.64
12/14/2021	23:45	13.44	00:00	19.39	15.86	-	-	-	-	-	-	-	-	-	-	-	0.03
12/15/2021	07:10	12.69	16:05	18.66	15.17	-	-	-	-	-	-	-	-	-	-	-	0.33
12/16/2021	23:55	11.62	00:00	15.50	13.16	-	-	-	-	-	-	-	-	-	-	-	0.01
12/17/2021	18:35	10.61	00:05	11.68	11.08	-	-	-	-	-	-	-	-	-	-	-	0.05
12/18/2021	11:35	10.34	23:55	30.47	13.67	-	-	-	-	-	-	-	-	-	-	-	0.92
12/19/2021	00:55	30.25	22:50	79.72	43.45	-	-	-	-	-	-	-	-	-	-	-	2.14
12/20/2021	23:55	70.67	09:55	82.90	77.10	-	-	-	-	-	-	-	-	-	-	-	1.50
12/21/2021	21:05	60.39	00:00	71.00	64.05	-	-	-	-	-	-	-	-	-	-	-	0.16
12/22/2021	12:45	55.68	00:10	60.83	58.02	-	-	-	-	-	-	-	-	-	-	-	0.54
12/23/2021	19:55	54.03	00:10	56.65	55.53	-	-	-	-	-	-	-	-	-	-	-	0.07
12/24/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.93
12/25/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.38
12/26/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.37
12/27/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22
12/28/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.10
12/29/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12/30/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.22
12/31/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
01/01/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/02/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.24
01/03/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.41
01/04/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.54
01/05/2022	15:20	25.80	18:45	30.78	28.72	-	-	-	-	-	-	-	-	-	-	-	0.47
01/06/2022	01:30	26.43	11:45	34.37	29.68	-	-	-	-	-	-	-	-	-	-	-	0.59
01/07/2022	23:55	20.88	03:10	32.93	26.80	-	-	-	-	-	-	-	-	-	-	-	0.17
01/08/2022	23:40	16.63	00:15	21.24	18.88	-	-	-	-	-	-	-	-	-	-	-	-
01/09/2022	23:30	14.18	01:00	16.96	15.76	-	-	-	-	-	-	-	-	-	-	-	-
01/10/2022	05:15	13.64	11:30	15.82	14.50	-	-	-	-	-	-	-	-	-	-	-	0.11
01/11/2022	23:15	13.11	00:10	14.19	13.64	-	-	-	-	-	-	-	-	-	-	-	0.02
01/12/2022	22:00	10.99	00:55	13.32	12.40	-	-	-	-	-	-	-	-	-	-	-	-
01/13/2022	20:50	11.13	17:40	13.13	12.13	-	-	-	-	-	-	-	-	-	-	-	0.14
01/14/2022	23:15	9.69	10:10	12.33	11.00	-	-	-	-	-	-	-	-	-	-	-	-
01/15/2022	07:50	9.14	01:20	10.27	9.67	-	-	-	-	-	-	-	-	-	-	-	0.01
01/16/2022	22:45	8.82	15:25	9.89	9.25	-	-	-	-	-	-	-	-	-	-	-	-
01/17/2022	23:20	8.42	04:55	9.32	8.81	-	-	-	-	-	-	-	-	-	-	-	-
01/18/2022	06:40	8.38	14:10	9.14	8.73	-	-	-	-	-	-	-	-	-	-	-	0.01
01/19/2022	06:20	8.67	13:10	9.54	9.10	-	-	-	-	-	-	-	-	-	-	-	0.13
01/20/2022	23:20	7.27	02:05	9.33	8.73	-	-	-	-	-	-	-	-	-	-	-	-
01/21/2022	06:40	7.00	15:25	8.18	7.59	-	-	-	-	-	-	-	-	-	-	-	-
01/22/2022	19:05	7.01	14:40	7.79	7.46	-	-	-	-	-	-	-	-	-	-	-	-
01/23/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/24/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
01/25/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/26/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/27/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/28/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/29/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
01/30/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.28
01/31/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
02/01/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.01
02/02/2022	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.02
02/03/2022	23:30	2.94	14:15	4.31	3.62	-	-	-	-	-	-	-	-	-	-	-	-
02/04/2022	01:55	2.82	14:00	4.14	3.47	-	-	-	-	-	-	-	-	-	-	-	-

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
02/05/2022	23:45	2.80	14:45	3.89	3.43	-	-	-	-	-	-	-	-	-	-	-	0.01
02/06/2022	06:35	2.19	14:35	3.92	2.88	-	-	-	-	-	-	-	-	-	-	-	-
02/07/2022	01:35	2.39	14:40	4.02	3.07	-	-	-	-	-	-	-	-	-	-	-	-
02/08/2022	03:15	2.29	13:50	3.67	2.94	-	-	-	-	-	-	-	-	-	-	-	-
02/09/2022	06:40	2.26	13:55	4.07	3.09	-	-	-	-	-	-	-	-	-	-	-	-
02/10/2022	04:45	2.41	16:20	3.51	3.14	-	-	-	-	-	-	-	-	-	-	-	0.01
02/11/2022	23:50	2.96	16:40	3.98	3.42	-	-	-	-	-	-	-	-	-	-	-	-
02/12/2022	23:15	2.42	14:45	3.90	3.13	-	-	-	-	-	-	-	-	-	-	-	-
02/13/2022	06:05	1.78	13:50	3.78	2.83	-	-	-	-	-	-	-	-	-	-	-	-
02/14/2022	01:50	2.48	14:25	3.73	3.16	-	-	-	-	-	-	-	-	-	-	-	0.12
02/15/2022	22:30	2.45	15:10	3.32	2.95	-	-	-	-	-	-	-	-	-	-	-	-
02/16/2022	23:55	2.15	11:35	3.58	3.03	-	-	-	-	-	-	-	-	-	-	-	0.01
02/17/2022	04:35	1.96	14:30	3.07	2.50	-	-	-	-	-	-	-	-	-	-	-	-
02/18/2022	06:35	1.56	13:30	3.41	2.42	-	-	-	-	-	-	-	-	-	-	-	-
02/19/2022	03:00	1.70	15:50	3.16	2.54	-	-	-	-	-	-	-	-	-	-	-	-
02/20/2022	23:15	1.98	12:35	3.26	2.60	-	-	-	-	-	-	-	-	-	-	-	0.03
02/21/2022	03:10	1.96	13:30	3.64	2.80	-	-	-	-	-	-	-	-	-	-	-	0.38
02/22/2022	23:25	1.57	00:00	3.03	2.47	-	-	-	-	-	-	-	-	-	-	-	0.01
02/23/2022	23:50	1.09	13:05	2.26	1.62	-	-	-	-	-	-	-	-	-	-	-	-
02/24/2022	00:40	1.17	14:45	2.53	1.89	-	-	-	-	-	-	-	-	-	-	-	-
02/25/2022	06:40	0.99	13:45	2.71	1.78	-	-	-	-	-	-	-	-	-	-	-	-
02/26/2022	07:00	1.39	23:30	4.29	2.43	-	-	-	-	-	-	-	-	-	-	-	0.47
02/27/2022	00:00	4.23	20:05	8.20	5.91	-	-	-	-	-	-	-	-	-	-	-	0.43
02/28/2022	00:05	7.44	11:55	49.71	27.18	-	-	-	-	-	-	-	-	-	-	-	2.21
03/01/2022	23:45	18.99	02:35	35.59	26.14	-	-	-	-	-	-	-	-	-	-	-	0.41
03/02/2022	02:15	18.06	20:20	36.04	26.62	-	-	-	-	-	-	-	-	-	-	-	1.22
03/03/2022	23:30	14.91	00:45	30.57	20.06	-	-	-	-	-	-	-	-	-	-	-	-
03/04/2022	23:20	11.87	00:20	15.00	13.67	-	-	-	-	-	-	-	-	-	-	-	-
03/05/2022	23:35	9.57	00:20	11.92	11.01	-	-	-	-	-	-	-	-	-	-	-	-
03/06/2022	22:45	8.35	14:10	9.88	9.26	-	-	-	-	-	-	-	-	-	-	-	-
03/07/2022	23:00	7.35	12:55	9.27	8.32	-	-	-	-	-	-	-	-	-	-	-	-
03/08/2022	03:10	7.30	12:55	8.38	7.81	-	-	-	-	-	-	-	-	-	-	-	-
03/09/2022	23:40	6.28	13:25	8.49	7.54	-	-	-	-	-	-	-	-	-	-	-	0.11
03/10/2022	06:05	5.55	13:25	7.01	6.30	-	-	-	-	-	-	-	-	-	-	-	-
03/11/2022	05:35	5.07	15:10	7.00	5.99	-	-	-	-	-	-	-	-	-	-	-	-
03/12/2022	06:10	4.83	23:55	9.02	6.35	-	-	-	-	-	-	-	-	-	-	-	0.41
03/13/2022	00:05	8.97	09:05	21.71	14.87	-	-	-	-	-	-	-	-	-	-	-	0.77
03/14/2022	17:20	9.38	22:50	13.79	10.60	-	-	-	-	-	-	-	-	-	-	-	0.36
03/15/2022	23:00	9.30	00:20	13.60	11.32	-	-	-	-	-	-	-	-	-	-	-	0.10
03/16/2022	22:55	7.92	00:05	9.76	8.81	-	-	-	-	-	-	-	-	-	-	-	-
03/17/2022	07:05	7.51	13:50	8.43	8.01	-	-	-	-	-	-	-	-	-	-	-	-
03/18/2022	20:50	7.21	15:05	8.01	7.68	-	-	-	-	-	-	-	-	-	-	-	0.02
03/19/2022	22:30	6.07	10:55	8.10	7.23	-	-	-	-	-	-	-	-	-	-	-	0.12
03/20/2022	05:25	5.78	14:25	6.69	6.33	-	-	-	-	-	-	-	-	-	-	-	0.02
03/21/2022	02:20	6.15	13:05	9.88	8.28	-	-	-	-	-	-	-	-	-	-	-	0.39
03/22/2022	23:55	6.76	00:05	8.13	7.56	-	-	-	-	-	-	-	-	-	-	-	-
03/23/2022	23:25	5.48	10:20	7.18	6.63	-	-	-	-	-	-	-	-	-	-	-	-
03/24/2022	04:10	5.13	14:50	6.51	5.84	-	-	-	-	-	-	-	-	-	-	-	-
03/25/2022	06:30	5.17	14:55	6.38	5.71	-	-	-	-	-	-	-	-	-	-	-	-
03/26/2022	23:40	5.45	14:50	6.32	5.82	-	-	-	-	-	-	-	-	-	-	-	-
03/27/2022	06:20	5.00	14:25	6.15	5.56	-	-	-	-	-	-	-	-	-	-	-	-
03/28/2022	23:55	4.48	00:45	5.43	5.17	-	-	-	-	-	-	-	-	-	-	-	0.04
03/29/2022	23:50	4.17	16:20	5.47	4.90	-	-	-	-	-	-	-	-	-	-	-	0.01
03/30/2022	23:55	3.56	13:20	5.12	4.46	-	-	-	-	-	-	-	-	-	-	-	-
03/31/2022	04:10	3.49	11:25	4.82	4.14	-	-	-	-	-	-	-	-	-	-	-	-
04/01/2022	04:35	3.14	12:15	4.77	4.04	-	-	-	-	-	-	-	-	-	-	-	0.05
04/02/2022	23:10	3.25	10:00	4.58	3.97	-	-	-	-	-	-	-	-	-	-	-	0.01
04/03/2022	00:45	3.32	23:55	5.72	4.04	-	-	-	-	-	-	-	-	-	-	-	0.27
04/04/2022	00:00	5.75	06:40	15.62	10.73	-	-	-	-	-	-	-	-	-	-	-	0.87
04/05/2022	22:35	5.68	00:05	7.62	6.89	-	-	-	-	-	-	-	-	-	-	-	0.11
04/06/2022	05:00	5.18	13:35	6.61	5.87	-	-	-	-	-	-	-	-	-	-	-	-
04/07/2022	05:40	4.87	15:30	6.67	5.76	-	-	-	-	-	-	-	-	-	-	-	-
04/08/2022	23:15	4.23	13:10	5.52	5.06	-	-	-	-	-	-	-	-	-	-	-	0.01
04/09/2022	05:50	3.85	12:15	5.22	4.48	-	-	-	-	-	-	-	-	-	-	-	0.13
04/10/2022	00:00	4.40	23:55	14.00	5.80	-	-	-	-	-	-	-	-	-	-	-	0.85
04/11/2022	23:05	7.15	02:25	17.02	10.98	-	-	-	-	-	-	-	-	-	-	-	0.20
04/12/2022	05:40	6.76	21:55	11.77	8.58	-	-	-	-	-	-	-	-	-	-	-	0.36
04/13/2022	23:55	8.43	00:50	12.00	10.71	-	-	-	-	-	-	-	-	-	-	-	0.12
04/14/2022	23:40	6.97	17:10	8.96	8.14	-	-	-	-	-	-	-	-	-	-	-	0.19
04/15/2022	21:35	6.42	12:25	7.90	7.14	-	-	-	-	-	-	-	-	-	-	-	-
04/16/2022	03:55	5.97	15:25	7.75	6.81	-	-	-	-	-	-	-	-	-	-	-	0.18
04/17/2022	05:15	5.50	14:00	6.98	6.33	-	-	-	-	-	-	-	-	-	-	-	-
04/18/2022	03:30	5.95	16:40	11.48	8.13	-	-	-	-	-	-	-	-	-	-	-	0.56

	DFINAL (in)					VFINAL (ft/s)					QFINAL (MGD - Total MG)						RAIN FINAL (in)
Date	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Time	Min	Time	Max	Avg	Total	Total
04/19/2022	05:55	8.04	13:20	14.83	10.71	-	-	-	-	-	-	-	-	-	-	-	0.49
04/20/2022	08:20	8.91	15:05	12.56	10.42	-	-	-	-	-	-	-	-	-	-	-	0.39
04/21/2022	15:10	10.26	21:40	12.29	11.21	-	-	-	-	-	-	-	-	-	-	-	0.39
04/22/2022	23:55	9.38	16:55	11.94	10.52	-	-	-	-	-	-	-	-	-	-	-	0.12
04/23/2022	23:40	7.88	13:40	9.86	9.10	-	-	-	-	-	-	-	-	-	-	-	-
04/24/2022	03:40	7.51	15:05	9.22	8.32	-	-	-	-	-	-	-	-	-	-	-	-
04/25/2022	23:20	6.80	10:20	8.13	7.73	-	-	-	-	-	-	-	-	-	-	-	0.01
04/26/2022	23:50	6.37	12:45	7.67	7.04	-	-	-	-	-	-	-	-	-	-	-	0.04
04/27/2022	04:05	6.39	14:05	7.27	6.78	-	-	-	-	-	-	-	-	-	-	-	0.17
04/28/2022	21:25	5.87	09:50	6.95	6.47	-	-	-	-	-	-	-	-	-	-	-	0.01
04/29/2022	03:30	5.64	23:55	8.76	6.40	-	-	-	-	-	-	-	-	-	-	-	0.39
04/30/2022	23:55	8.36	04:55	11.15	9.51	-	-	-	-	-	-	-	-	-	-	-	0.24
05/01/2022	23:50	6.68	00:00	8.32	7.48	-	-	-	-	-	-	-	-	-	-	-	-
05/02/2022	01:15	6.62	13:00	9.67	8.08	-	-	-	-	-	-	-	-	-	-	-	0.34

12/02/2021 00:00 - 05/02/2022 23:55

	DFINAL (in)	VFINAL (ft/s)	QFINAL (MGD - Total MG)	RAIN FINAL (in)
Total				31.58
Average	10.49			

DallasAsh.Jacobs.TFM.OR21	ADS ENVIRONMENTAL SERVICES	Site Name
Flow Monitoring Site Report		**NFAC_LVL04**

Site Address /Location:	12555 SE Monmouth Cutoff Rd, Dallas, OR			Monitor Series	Location Type
				ECHO	Temporary
Site Access Details:	Access through property	Latitude:	44.9105	Pipe Size (H x W)	Pipe Shape
		Longitude:	-123.287208	76.00 X 130.00	Non-Standard

Manhole #	System Characteristics
N/A	Creek
Access	Traffic
Drive	None

Installation Information	
Installation Date:	Installation Type:
Wednesday, December 1, 2021	Level Only
Monitoring Location (Sensors):	Monitor Location:
Upstream 5-10 FT	Culvert
Sensors / Devices:	Pressure Sensor Range (psi)
Peak Combo (CS4)	0 - 5 psi
Installation Confirmation:	
Time	
11:05:00 PM	
Depth of Flow (Wet DOF) (in)	
5.25	
CS5 Physical Offset (in)	Measurement Confidence (in)
	0.25"
Peak Velocity (fps)	Velocity Sensor Offset (in)
N/A	0
Silt (in)	Silt Type
0	

Manhole / Pipe Information:	
Manhole Depth (Approx. FT):	Manhole Configuration
N/A	N/A
Manhole Material:	Manhole Condition:
Manhole Opening Diameter (in)	Manhole Diameter (Approx.):
Manhole Cover	Manhole Frame
Active Connections	Air Quality:
No	Normal
Pipe Material	Pipe Condition:
	Good
Communication Information:	
Communication Type	Antenna Location
Wireless	Grass (buried)

Additional Site Info. / Comments:

Depth taken from invert at weir on downstream side.

ADS Project Name:	DallasAsh.Jacobs.TFM.OR21B
ADS Project Number:	22724.11.325

Appendix C
U.S. Forest Service Flow Resistance Coefficient Computation Tool

Stream Channel Flow Resistance Coefficient Computation Tool (version 1.1, 2-2018)

Stream Name:	NF Ash Creek (RM 8.5)		**Reach:**	Reference Reach #1
Stream Slope, *S* (ft/ft):	0.00500		**Date:**	12/8/2022
			Practitioner:	T. Bedford
Reach D_{50}, D_{84} (mm):	17.2	42.1	**Step D_{84} (mm)[(a)]:**	28.6666667
Hydraulic Radius, *R* (ft):	5.78			
Mean Flow Depth, *d* (ft)[(b)]:	4.91			
Bedform Variation, σ_z (ft)[(c)]:				
Median Thalweg Depth, h_m (ft)[(c)]:				
Large Wood in Steps? (y/n)[(c)]:	Y			

Notes:
(a) Required for Lee and Ferguson (2002) method, for step-pool streams (S>0.027)
(b) Mean flow depth = hydraulic depth; Required for Bathurst (1985), Rickenmann and Recking (2011), and Aberle and Smart (2003) methods
(c) Longitudinally; Provide for S>~0.03 ft/ft (see sheet "S>0.03, Sigma z")

1 **Consult Tabular Guidance** → 2 **Consult Photographic** → 3 **Apply a Quantitative Prediction Method**

Flow resistance in stream channels is due to roughness induced by bed and bank grain material, bedforms (such as dunes and step pools), planform, vegetation, large instream wood, and other obstructions. Flow resistance coefficient estimation (Manning's *n* , Darcy-Weisbach *f*) is approximate, requiring redundancy (steps 1 through 3) for confidence in the implimented values. Dependence on quantitative methods alone is not recommended since utilized reaches in the derivisions were intentionally selected to have little influence from sinuosity, instream large wood, streambank vegetation, bank irregularities, obstructions, etc.; these types of flow resistance are not lumped into the quantitative estimates. Also, flow resistance coefficients should be computed at the flow magnitude of interest for the objectives of the analysis, specifically at high, bankfull, or low flow.

1 Tabular Guidance

Sources: Brunner (2016): pp 3-14
Arcement and Schneider (1989): p 4
Aldridge and Garrett (1973): p 24

Note: Key references are provided in the spreadsheet package zip file or are available for download through the links provided in the references of the supporting technical summary report (TS-103).

2 Photographic Guidance

Sources: USGS (online photo guidance)
Yochum et al. (2014): high gradient
Hicks and Mason (1991)
Aldridge and Garrett (1973)
Barnes (1967)

	n	*f*	Use in Average? Enter "y"
Tabular Estimate:		----	
Estimate from Photographic Guidance:	0.055	0.197	y

Instructions: (See technical summary report, TS-103, for more detailed instructions and references.)

(1) Grey cells indicate fields that should be populated. Results are provided in the salmon colored cells.
(2) Enter background information (cells D4, D5, I4 to I6), sediment size data (cells D8, E8, H8), and hydraulic information (cells D9 to D13). R is often approximated as the average depth for steams with a width/depth ratio > ~20.
(3) Consult tabular guidance and enter the best estimate in the grey box (cell I43; do not use in average if not confident of estimate). Tabular values are typically substantially underestimated for channels > ~3% slope.
(4) Consult photographic guidance and enter an estimate in the grey box (cell I44).
(5) Applicable quantitative procedures will be automatically compute (per provided Applicable Range).
(6) Implement Arcement and Schneider (1989) procedure, if desired (cells T20 to Y20).

U.S. Forest Service
National Stream and Aquatic Ecology Center
Tool developed by: Steven E. Yochum, PhD, PE, Hydrologist
Tool reviewed by: Julian A. Scott, Hydrolgist

Stream Name: NF Ash Creek (RM 8.5)
Slope, *S* (ft/ft): 0.00500

Reach: Reference Reach #1
Date: 12/8/2022
Practitioner: T. Bedford

D_{50}, D_{84}, $D_{84,\ step}$ (m):	0.02	0.04	0.03
R (ft, m):	5.78	1.76	
d (ft^2, m^2):	4.91	1.50	
σ_z (ft, m):	----	----	
h_m (ft, m):	----	----	

Overall Average n:	0.043
f:	0.131
Quantitative Average n (1):	0.033
f (1):	0.070
Arcement and Schneider (1989) n:	0.062
f:	0.250

3 Quantitative Prediction

Quasi-Quantitative:

	n_b (2)	n_1	n_2	n_3	n_4	m	Estimate	Use in Average? Enter "y"
Arcement and Schneider (1989) $n = (n_b + n_1 + n_2 + n_3 + n_4)m$	0.015	0.006	0.003	0.018	0.02	1	0.062	y
	Base	Degree of Irrigularity	Variation in X-S	Effect of Obstruction	Amount of Vegetation	Degree of Meandering		

Fully Quantitative:

Method [Fit]	Relative Submergenc	Estimate n	Estimate f	# Data Points	Applicable Range Slope (ft/ft)	Applicable Range Relative Sub. (3)	Use in Average ? Enter
Yochum et al. (2012) [R^2 = 0.78; f: R^2 = 0.82]	----	----	----	78	0.02 to 0.20	h_m/σ_z = 0.25 to 12	n
Rickenmann and Recking (2011)	35.55	0.030	0.059	2890	0.00004 to 0.03	d/D_{84} = 0.18 to ~100	y
Aberle and Smart (2003); in flume	----	----	----	94	0.02 to 0.10	d/σ_z = 1.2 to 12	n
Lee and Ferguson (2002)(4) [RMS error = 19%]	61.46	----	----	81	0.027 to 0.184	R/D_{84} (step) = 0.1 to 1.4	n
Bathurst (1985) [RMS error = ~34%]	35.55	----	----	44	0.00429 to 0.0373	d/D_{84} = 0.71 to 11.4	n
Jarrett (1984) [ave. std. error = 28%]	n/a	0.039	0.101	75	0.002 to 0.039	n/a	y
Griffiths (1981); rigid bed [R^2=0.59]	102.4	0.025	0.040	84	0.000085 to 0.011	R/D_{50} = 1.8 to 181	n
Hey (1979); a = 12.72	41.8	----	----	30	0.00049 to ~0.01	R/D_{84} = 0.8 to 25	n
Limerinos (1970) [R^2=0.77]	41.8	0.028	0.052	50	0.00038 to 0.039	R/D_{84} = 1.1 to 69	y

Notes:
(1) Quantitative average excludes the Arcement and Schneider (1989) method.
(2) In some situations it can be approprate to assume that the quantitative average n is n_b., though this may result in overestimated flow resistance.
(3) Relative submergence is computed using either *R* (hydraulic radius) or d (mean depth) and the D_{50} (median bed material size) or D_{84} (84% of bed material smaller); or computed using either h_m (median thalweg depth) or *d* and σ_z (standard deviation of residuals of a thalweg longitudinal profile regression). For σ_z computation, see "S>0.03, Sigma z" tab of this spreadsheet.
(4) This method can substantially underestimate flow resistance in steeper streams (slope>0.03) where large wood is

Stream Channel Flow Resistance Coefficient Computation Tool (version 1.1, 2-2018)

Stream Name:	NF Ash Creek (RM 6.5)		**Reach:**	Reference Reach #2
Stream Slope, *S* (ft/ft):	0.00500		**Date:**	12/8/2022
			Practitioner:	T. Bedford
Reach D_{50}, D_{84} (mm):	55.3	108.9	**Step D_{84} (mm)[(a)]:**	92.1666667
Hydraulic Radius, *R* (ft):	4.78			
Mean Flow Depth, *d* (ft)[(b)]:	4.32			
Bedform Variation, σ_z (ft)[(c)]:				
Median Thalweg Depth, h_m (ft)[(c)]:	6.12			
Large Wood in Steps? (y/n)[(c)]:	Y			

Notes:
(a) Required for Lee and Ferguson (2002) method, for step-pool streams (S>0.027)
(b) Mean flow depth = hydraulic depth; Required for Bathurst (1985), Rickenmann and Recking (2011), and Aberle and Smart (2003) methods
(c) Longitudinally; Provide for S>~0.03 ft/ft (see sheet "S>0.03, Sigma z")

1 **Consult Tabular Guidance** → 2 **Consult Photographic** → 3 **Apply a Quantitative Prediction Method**

Flow resistance in stream channels is due to roughness induced by bed and bank grain material, bedforms (such as dunes and step pools), planform, vegetation, large instream wood, and other obstructions. Flow resistance coefficient estimation (Manning's *n* , Darcy-Weisbach *f*) is approximate, requiring redundancy (steps 1 through 3) for confidence in the implimented values. Dependence on quantitative methods alone is not recommended since utilized reaches in the derivisions were intentionally selected to have little influence from sinuosity, instream large wood, streambank vegetation, bank irregularities, obstructions, etc.; these types of flow resistance are not lumped into the quantitative estimates. Also, flow resistance coefficients should be computed at the flow magnitude of interest for the objectives of the analysis, specifically at high, bankfull, or low flow.

1 Tabular Guidance

Sources: Brunner (2016): pp 3-14
Arcement and Schneider (1989): p 4
Aldridge and Garrett (1973): p 24

Note: Key references are provided in the spreadsheet package zip file or are available for download through the links provided in the references of the supporting technical summary report (TS-103).

2 Photographic Guidance

Sources: USGS (online photo guidance)
Yochum et al. (2014): high gradient
Hicks and Mason (1991)
Aldridge and Garrett (1973)
Barnes (1967)

	n	*f*	Use in Average? Enter "y"
Tabular Estimate:		----	
Estimate from Photographic Guidance:	0.060	0.249	y

Instructions: (See technical summary report, TS-103, for more detailed instructions and references.)

(1) Grey cells indicate fields that should be populated. Results are provided in the salmon colored cells.
(2) Enter background information (cells D4, D5, I4 to I6), sediment size data (cells D8, E8, H8), and hydraulic information (cells D9 to D13). R is often approximated as the average depth for steams with a width/depth ratio > ~20.
(3) Consult tabular guidance and enter the best estimate in the grey box (cell I43; do not use in average if not confident of estimate). Tabular values are typically substantially underestimated for channels > ~3% slope.
(4) Consult photographic guidance and enter an estimate in the grey box (cell I44).
(5) Applicable quantitative procedures will be automatically compute (per provided Applicable Range).
(6) Implement Arcement and Schneider (1989) procedure, if desired (cells T20 to Y20).

U.S. Forest Service
National Stream and Aquatic Ecology Center
Tool developed by: Steven E. Yochum, PhD, PE, Hydrologist
Tool reviewed by: Julian A. Scott, Hydrolgist

Stream Name: NF Ash Creek (RM 6.5)
Slope, *S* (ft/ft): 0.00500

Reach: Reference Reach #2
Date: 12/8/2022
Practitioner: T. Bedford

D_{50}, D_{84}, $D_{84,\ step}$ (m):	0.06	0.11	0.09
R (ft, m):	4.78	1.46	
d (ft^2, m^2):	4.32	1.32	
σ_z (ft, m):	----	----	
h_m (ft, m):	6.12	1.87	

Overall Average *n* :	0.045
***f* :**	0.148
Quantitative Average *n* (1):	0.036
***f* (1):**	0.093
Arcement and Schneider (1989) *n* :	0.062
***f* :**	0.266

3 Quantitative Prediction

Quasi-Quantitative:

	n_b (2)	n_1	n_2	n_3	n_4	m	**Estimate**	**Use in Average? Enter "y"**
Arcement and Schneider (1989) $n = (n_b + n_1 + n_2 + n_3 + n_4)m$	0.015	0.006	0.003	0.018	0.02	1	0.062	y
	Base	Degree of Irrigularity	Variation in X-S	Effect of Obstruction	Amount of Vegetation	Degree of Meandering		

Fully Quantitative:

Method [Fit]	**Relative Submergenc**	**Estimate *n***	**Estimate *f***	**# Data Points**	**Applicable Range Slope (ft/ft)**	**Applicable Range Relative Sub.(3)**	**Use in Average ? Enter**
Yochum et al. (2012) [R^2 = 0.78; *f* : R^2 = 0.82]	----	----	----	78	0.02 to 0.20	h_m/σ_z = 0.25 to 12	n
Rickenmann and Recking (2011)	12.09	0.035	0.085	2890	0.00004 to 0.03	d/D_{84} = 0.18 to ~100	y
Aberle and Smart (2003); in flume	----	----	----	94	0.02 to 0.10	d/σ_z = 1.2 to 12	n
Lee and Ferguson (2002)(4) [RMS error = 19%]	15.81	----	----	81	0.027 to 0.184	R/D_{84} (step) = 0.1 to 1.4	n
Bathurst (1985) [RMS error = ~34%]	12.09	----	----	44	0.00429 to 0.0373	d/D_{84} = 0.71 to 11.4	n
Jarrett (1984) [ave. std. error = 28%]	n/a	0.041	0.114	75	0.002 to 0.039	n/a	y
Griffiths (1981); rigid bed [R^2=0.59]	26.3	0.035	0.086	84	0.000085 to 0.011	R/D_{50} = 1.8 to 181	n
Hey (1979); a = 12.72	13.4	0.035	0.085	30	0.00049 to ~0.01	R/D_{84} = 0.8 to 25	y
Limerinos (1970) [R^2=0.77]	13.4	0.035	0.086	50	0.00038 to 0.039	R/D_{84} = 1.1 to 69	y

Notes:
(1) Quantitative average excludes the Arcement and Schneider (1989) method.
(2) In some situations it can be appropraite to assume that the quantitative average n is n_b., though this may result in overestimated flow resistance.
(3) Relative submergence is computed using either *R* (hydraulic radius) or d (mean depth) and the D_{50} (median bed material size) or D_{84} (84% of bed material smaller); or computed using either h_m (median thalweg depth) or *d* and σ_z (standard deviation of residuals of a thalweg longitudinal profile regression). For σ_z computation, see "S>0.03, Sigma z" tab of this spreadsheet.
(4) This method can substantially underestimate flow resistance in steeper streams (slope>0.03) where large wood is

This spreadsheet has been reviewed for accuracy. However, the ultimate responsibility for flow resistance estimates remains with the user.
U.S. Forest Service
National Stream and Aquatic Ecology Center

Stream Channel Flow Resistance Coefficient Computation Tool (version 1.1, 2-2018)

Stream Name:	NF Ash Creek (RM 5.8)		**Reach:**	Reference Reach #3
Stream Slope, *S* (ft/ft):	0.00900		**Date:**	12/8/2022
			Practitioner:	T. Bedford
Reach D_{50}, D_{84} (mm):	17.4	47.1	**Step D_{84} (mm)[(a)]:**	29
Hydraulic Radius, *R* (ft):	6.00			
Mean Flow Depth, *d* (ft)[(b)]:	4.50			
Bedform Variation, σ_z (ft)[(c)]:	0.17			
Median Thalweg Depth, h_m (ft)[(c)]:	3.00			
Large Wood in Steps? (y/n)[(c)]:	Y			

Notes:
(a) Required for Lee and Ferguson (2002) method, for step-pool streams (S>0.027)
(b) Mean flow depth = hydraulic depth; Required for Bathurst (1985), Rickenmann and Recking (2011), and Aberle and Smart (2003) methods
(c) Longitudinally; Provide for S>~0.03 ft/ft (see sheet "S>0.03, Sigma z")

1 **Consult Tabular Guidance** → 2 **Consult Photographic** → 3 **Apply a Quantitative Prediction Method**

Flow resistance in stream channels is due to roughness induced by bed and bank grain material, bedforms (such as dunes and step pools), planform, vegetation, large instream wood, and other obstructions. Flow resistance coefficient estimation (Manning's *n* , Darcy-Weisbach *f*) is approximate, requiring redundancy (steps 1 through 3) for confidence in the implimented values. Dependence on quantitative methods alone is not recommended since utilized reaches in the derivisions were intentionally selected to have little influence from sinuosity, instream large wood, streambank vegetation, bank irregularities, obstructions, etc.; these types of flow resistance are not lumped into the quantitative estimates. Also, flow resistance coefficients should be computed at the flow magnitude of interest for the objectives of the analysis, specifically at high, bankfull, or low flow.

1 Tabular Guidance

Sources: Brunner (2016): pp 3-14
Arcement and Schneider (1989): p 4
Aldridge and Garrett (1973): p 24

Note: Key references are provided in the spreadsheet package zip file or are available for download through the links provided in the references of the supporting technical summary report (TS-103).

2 Photographic Guidance

Sources: USGS (online photo guidance)
Yochum et al. (2014): high gradient
Hicks and Mason (1991)
Aldridge and Garrett (1973)
Barnes (1967)

	n	*f*	Use in Average? Enter "y"
Tabular Estimate:		----	
Estimate from Photographic Guidance:		----	n

Instructions: (See technical summary report, TS-103, for more detailed instructions and references.)

(1) Grey cells indicate fields that should be populated. Results are provided in the salmon colored cells.
(2) Enter background information (cells D4, D5, I4 to I6), sediment size data (cells D8, E8, H8), and hydraulic information (cells D9 to D13). R is often approximated as the average depth for steams with a width/depth ratio > ~20.
(3) Consult tabular guidance and enter the best estimate in the grey box (cell I43; do not use in average if not confident of estimate). Tabular values are typically substantially underestimated for channels > ~3% slope.
(4) Consult photographic guidance and enter an estimate in the grey box (cell I44).
(5) Applicable quantitative procedures will be automatically compute (per provided Applicable Range).
(6) Implement Arcement and Schneider (1989) procedure, if desired (cells T20 to Y20).

U.S. Forest Service
National Stream and Aquatic Ecology Center
Tool developed by: Steven E. Yochum, PhD, PE, Hydrologist
Tool reviewed by: Julian A. Scott, Hydrolgist

Stream Channel Flow Resistance Coefficient Computation Tool (version 1.1, 2-2018)

Stream Name: NF Ash Creek (RM 5.8)
Slope, *S* (ft/ft): 0.00900

Reach: Reference Reach #3
Date: 12/8/2022
Practitioner: T. Bedford

D_{50}, D_{84}, $D_{84,\ step}$ (m):	0.02	0.05	0.03
R (ft, m):	6.00	1.83	
d (ft^2, m^2):	4.50	1.37	
σ_z (ft, m):	0.17	0.05	
h_m (ft, m):	3.00	0.91	

Overall Average *n* :	0.039
***f* :**	0.111
Quantitative Average *n* (1):	0.033
***f* (1):**	0.077
Arcement and Schneider (1989) *n* :	0.062
***f* :**	0.247

3 Quantitative Prediction

Quasi-Quantitative:

	n_b (2)	n_1	n_2	n_3	n_4	m	Estimate	Use in Average? Enter "y"
Arcement and Schneider (1989) $n = (n_b + n_1 + n_2 + n_3 + n_4)m$	0.015	0.006	0.003	0.018	0.02	1	0.062	y
	Base	Degree of Irrigularity	Variation in X-S	Effect of Obstruction	Amount of Vegetation	Degree of Meandering		

Fully Quantitative:

Method [Fit]	Relative Submergenc	Estimate *n*	Estimate *f*	# Data Points	Applicable Range Slope (ft/ft)	Applicable Range Relative Sub.(3)	Use in Average ? Enter
Yochum et al. (2012) [R^2 = 0.78; f : R^2 = 0.82]	17.9	----	----	78	0.02 to 0.20	h_m/σ_z = 0.25 to 12	n
Rickenmann and Recking (2011)	29.12	0.031	0.062	2890	0.00004 to 0.03	d/D_{84} = 0.18 to ~100	y
Aberle and Smart (2003); in flume	26.8	----	----	94	0.02 to 0.10	d/σ_z = 1.2 to 12	n
Lee and Ferguson (2002)(4) [RMS error = 19%]	63.06	----	----	81	0.027 to 0.184	R/D_{84} (step) = 0.1 to 1.4	n
Bathurst (1985) [RMS error = ~34%]	29.12	----	----	44	0.00429 to 0.0373	d/D_{84} = 0.71 to 11.4	n
Jarrett (1984) [ave. std. error = 28%]	n/a	0.049	0.153	75	0.002 to 0.039	n/a	y
Griffiths (1981); rigid bed [R^2=0.59]	105.1	0.025	0.039	84	0.000085 to 0.011	R/D_{50} = 1.8 to 181	y
Hey (1979); a = 12.72	38.8	----	----	30	0.00049 to ~0.01	R/D_{84} = 0.8 to 25	n
Limerinos (1970) [R^2=0.77]	38.8	0.029	0.053	50	0.00038 to 0.039	R/D_{84} = 1.1 to 69	y

Notes:
(1) Quantitative average excludes the Arcement and Schneider (1989) method.
(2) In some situations it can be approprate to assume that the quantitative average n is n_b., though this may result in overestimated flow resistance.
(3) Relative submergence is computed using either *R* (hydraulic radius) or d (mean depth) and the D_{50} (median bed material size) or D_{84} (84% of bed material smaller); or computed using either h_m (median thalweg depth) or *d* and σ_z (standard deviation of residuals of a thalweg longitudinal profile regression). For σ_z computation, see "S>0.03, Sigma z" tab of this spreadsheet.
(4) This method can substantially underestimate flow resistance in steeper streams (slope>0.03) where large wood is

This spreadsheet has been reviewed for accuracy. However, the ultimate responsibility for flow resistance estimates remains with the user.
U.S. Forest Service
National Stream and Aquatic Ecology Center

Appendix D
Cost Estimate

North Ash Creek Realignment
Rev. #2

Dallas, Oregon

Class 5

Prepared:
June 8, 2023

Contents

Basis of Estimate 1

1. Project Information 1

2. Purpose of Estimate 1

3. General Project Description 1

4. Overall Costs 2

5. General Qualifications 2

6. Estimate Basis 3

7. Taxes 6

8. Cost Resources 6

9. Constructability Or Phase Comments 7

10. Project Allowances 7

11. Major Assumptions 7

12. General Exclusions: 7

Project Cost Estimate 1

Jacobs

Basis of Estimate

Jacobs

Basis of Estimate

1. Project Information

Client/Owner:	City of Dallas, Oregon
Project Manager:	Meabon Burns
Design Manager:	Jordan Laundry
Architect:	
Project Description:	Provide Flood Mitigation Alternatives for 4 Reaches of North Ash Creek
Location:	Dallas, Oregon
Estimate Date:	Rev #2 6-8-23
Design Level:	Budget Feasibility
Estimate Classification	Class 5
Estimate Number:	D3540100
Contracting Method:	Design, Bid, Build
Project Size:	Provide Flood Mitigation Alternatives for 4 Reaches of North Ash Creek
Construction Budget:	See Section 4
Construction Start:	TBD
Construction Duration:	TBD

2. Purpose of Estimate

The purpose of this Estimate of Construction Cost is to establish an Engineer's opinion of probable construction cost at the 2% level of design development.

3. General Project Description

This project is a feasibility study for flood mitigation projects on North Fork Ash Creek.

4. Overall Costs

Reach 1 Alt 1: Kings Valley Highway Bridge Replacement

Low Range (-50%)	Estimated Costs [a]	High Range (+50%)
$4,670,000	**$9,340,000**	$14,010,000

Reach 1 Alt 2: Kings Highway Auxiliary Culvert

Low Range (-50%)	Estimated Costs [a]	High Range (+50%)
$3,962,000	**$7,923,000**	$11,885,000

Reach 2

Low Range (-50%)	Estimated Costs [a]	High Range (+50%)
$844,000	**$1,687,000**	$2,531,000

Reach 3 Alt 1: Daylight in Place

Low Range (-50%)	Estimated Costs [a]	High Range (+50%)
$11,489,000	**$22,977,000**	$34,466,000

Reach 3 Alt 2: Daylight to the South

Low Range (-50%)	Estimated Costs [a]	High Range (+50%)
$15,073,000	**$30,146,000**	$45,219,000

Reach 4 Alt 1; Channel Widening and Structure Replacement

Low Range (-50%)	Estimated Costs [a]	High Range (+50%)
$31,302,000	**$62,604,000**	$93,906,000

Reach 4 Alt 2: Stormwater Detention Pond

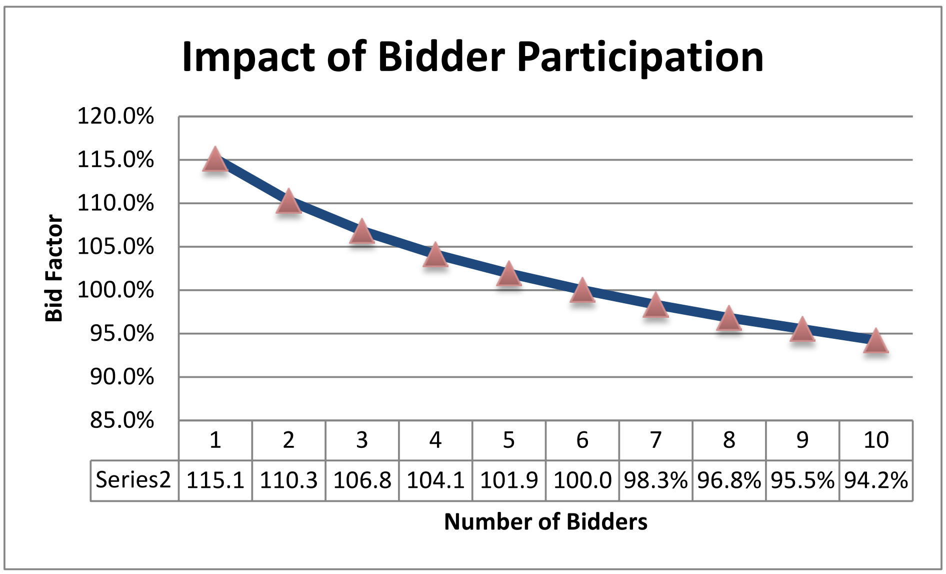
Low Range (-50%)	Estimated Costs [a]	High Range (+50%)
$14,734,000	**$29,467,000**	$44,201,000

5. General Qualifications

A. We recommend the Owner and/or designated representatives review the estimate in detail for items that may not be consistent with the program's intent.

B. The final costs of the project will depend on actual labor and material costs, competitive market conditions, actual project costs, implementation schedule and other variable factors. As a result, the final project costs will vary from the estimate presented herein.

C. This estimate is based upon a competitive bid contracting method with five to seven responsible bidders (see chart below for modifications due to number of responsible bidders). Any single source specification selection will have an increased impact on the overall cost.



No. Bidders	Bid Factor
1	115.1%
2	110.3%
3	106.8%
4	104.1%
5	101.9%
6	100.0%
7	98.3%
8	96.8%
9	95.5%
10	94.2%

Data Source: PACES 2007, Mark-ups Screen, Prime and Subcontractor Profit Calculation Factors

D. The estimate does not include impacts due to contracting methods other than "open" competitive procurement. Pricing is not valid for negotiated contracts.

E. Pricing is not valid for HUB Zone and "set-aside" contract award.

6. Estimate Basis

A. Basis

- Take Off: NFAC Alternates Cost Estimate v2

B. Format

- This estimate is presented in CSI Masterformat 2004.
- The following Work Breakdown Structure (WBS) has been utilized to further segregate cost:

- Area
- Bid Item
- Work Package
- Trade Package
- Work Activity
- Unit Price

C. Labor Rates

Labor rates are based on local prevailing wages and are fully burdened to include both direct and indirect subcontract mark-ups. Labor Rates include base, fringes, payroll taxes and insurance, small tools, consumables, field supervision and field overhead as well as subcontractor overhead and profit.

The estimate has been adjusted for local area labor rates, based upon 2023 RS Means National Average labor rates for the state of Oregon. Labor unit prices reflect a burdened rate, including workers compensation, unemployment taxes, Fringe Benefits, and medical insurance.

D. Material Pricing

Materials pricing is based upon the national average as determined by RS Means or other data sources. Quotes on certain items may have been obtained and included in this estimate. Many quotes given for engineering estimates are budgetary and may not reflect actual contractor pricing.

E. Subcontracted Costs

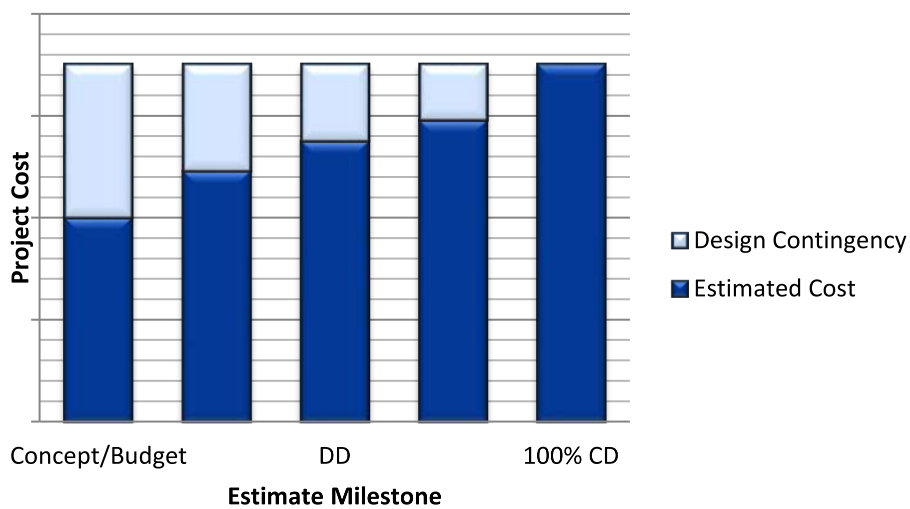
It is assumed that General Contractors will subcontract a portion of the work. Items listed in the cost estimate as subcontractor includes all anticipated markups that a general contractor would receive.

F. Construction Equipment Cost

Equipment items listed in this cost estimate are for the construction equipment necessary for the installation of the work. Equipment rates in this estimate are assumed to be 100% of 2023 Blue Book value. This is to account for contractor owned equipment or discounted rental equipment.

G. Design Contingency

Design Contingency is considered to be owned by the project. At each milestone estimate, contingency (based on the level of design detail available) is applied against the total estimated construction cost, including General Conditions (when applicable). This risk-based contingency is intended to cover the cost associated with the further refinement of the design and details that are not completed on the plans. The design contingency is a function of the level of design at the time of the cost estimate development. As the design details increase at each milestone estimate, the contingency decreases until, at 100% design completion, the contingency is generally 0%. The following graph is a theoretical representation of this process.



Design Contingency is not intended to cover owner changes, nor does it address unforeseeable events such as labor strikes, natural disasters, or extraordinary economic events.

A Design Contingency of 25% is included.

H. Market Adjustment Factor or Contingency

A market adjustment factor or contingency has been added to the estimate, to account for the lack of potential bidders in a geographical area, based upon the amount of current workload by the general contractors or subcontractors.

A Market Adjustment Factor is not included.

I. Construction Contingency

Construction Contingency is a typical consideration on any Guaranteed Maximum Price (GMP) contract. It is often owned by the project but controlled by the owner. Meaning, the owner has approval rights as to whether this contingency fund is utilized. Its purpose is to cover purchasing gaps and omissions in the GMP bidding process and to cover unforeseen costs due to weather or scheduling conflicts. Typically, as part of a GMP, the unspent portion of the construction contingency is returned to the owner when the project is closed out.

A Construction Contingency is not included.

J. Owner's Contingency

Owner's Contingency is a recommended amount to cover the costs associated with unforeseen conditions during the construction phase such as unknown site conditions, schedule delays and trade coordination issues that may lead to change orders. This contingency is not meant for scope enhancements or for additions to the project. The suggested percentage for Owner's Contingency is based on Industry standards for the type and location of the project.

Owner's Contingency is not included in this estimate.

K. Escalation

The pricing presented herein is based on current market costs. An escalation rate is applied at the summary level of the estimate for costs associated with the following:

- Yearly merit raises for open shop contractors.
- Yearly renegotiation of union agreements.
- Material price increases (typically assessed quarterly).

Escalation is not intended to cover increases due to fluctuations in market conditions such as over saturation of projects during the anticipated bidding phase or temporary reductions in availability of manpower for selected labor pools.

7. Taxes

The Oregon Corporate Activity Tax is included.

8. Cost Resources

The following is a list of the various cost resources used in the development of the cost estimate:

- R.S. Means
- Jacobs Historical Data
- Vendor Quotes on Equipment and Materials where appropriate
- Estimator Judgment

9. Constructability Or Phase Comments

A Constructability Study was not conducted by Estimating.

10. Project Allowances

01 - Allowances

Allowances are an allotted sum of money included for a particular system or scope of work for which sufficient detail is not available to determine a definitive cost. Allowances include project direct costs - including labor, material, equipment, and any subcontractor costs.

1. Please refer to the Estimate Detail for each Alternate to review the Allowances.

11. Major Assumptions

01 – General Requirements

1. All material and debris is non-hazardous material.
2. All excavation can be achieved without blasting.
3. A dumpsite for excavated material can be found within 10 miles of the site.
4. Soil caps will not be needed in the lumberyard laydown area.
5. The new channel construction is to be constructed in a manner to eliminate water diversion.
6. Existing 84" culverts to be removed have 1.5 foot of cover.
7. Reach 1 and 2 are based on constructing a temporary bypass for traffic during the construction phase. A temporary culvert will be constructed to accommodate the bypass.
8. A dump site for dirt and debris is available within 20 miles of the site.

12. General Exclusions:

- Professional fees, inspections and/or third-party testing
- Owner furnished items.
- Hazardous waste removal and disposal
- Unforeseen sub-surface or existing conditions
- State/Local license, fees and/or permits.
- Rock excavation
- Temporary utility consumption charges (gas, power & water)
- Owner's contingency

13. Disclaimer

The opinions of cost (estimates) shown, and any resulting conclusions on project financial or economic feasibility or funding requirements, have been prepared for guidance in project evaluation and implementation from the information available at the time the opinion was prepared. The final costs of the project and resulting feasibility will depend on actual labor and material costs, competitive market conditions, actual site conditions, final project scope, implementation schedule, continuity of personnel and engineering, and other variable factors. The recent increases or decreases in material pricing may have a significant impact which is not predictable and careful review or consideration must be used in evaluation of material prices. As a result, the final project costs will vary from the opinions of cost presented herein. Because of these factors, project feasibility, benefit/cost ratios, risks, and funding needs must be carefully reviewed prior to making specific financial decisions or establishing project budgets to help ensure proper project evaluation and adequate funding.

While overall construction costs may vary relative to general economic conditions, price fluctuations within the industry are dependent upon many factors. Individual price variations may, in fact, be opposite to overall economic trends.

Estimate Summary

BID FORM SUMMARY

Project type: Channelization	Project Name: D3540100 North Ash Creek Reach 1 Alt 1 Kings Valle	Estimator: John DeWolf ement Re
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Description	Takeoff Quantity	Grand Total Price	Grand Total with Markups
01.0		***Reach 1 Alternate 1***			
	01.0	**Build Detour**	***1.00*** **LS**	**2,869,327.14 /LS**	**2,869,327**
	02.0	**Demo Existing Bridge and Paving**	***1.00*** **LS**	**139,474.77 /LS**	**139,475**
	03.0	**New Kings Highway Bridge**	***1.00*** **LS**	**5,986,242.47 /LS**	**5,986,242**
	04.0	**Site Improvements**	**1.00 LS**	**162,959.31 /LS**	**162,959**
	05.0	**Traffic Control**	***1.00*** **LS**	**128,177.50 /LS**	**128,178**
		01.0 Reach 1 Alternate 1	***1.00 LS***	***9,286,181.19 /LS***	***9,286,181***

Estimate Totals

Description	Amount	Totals		Rate	Cost / Unit	% of Total	
Labor	2,502,119		hrs			26.79%	
Material	930,182					9.96%	
Subcontract	2,847,756					30.49%	
Equipment	2,896,228		hrs			31.01%	
Other	109,896					1.18%	
Subtotal Escalation	**9,286,181**	**9,286,181**				**99.42%**	**99.42%**
Corporate Activity Tax	53,860			0.580 %		0.58%	
Total Construction Cost	**53,860**	**9,340,041**				**0.58%**	**100.00%**
Total		***9,340,041***					

BID FORM SUMMARY

Project type: Channelization | Project Name: D3540100 North Ash Creek Reach 1 Alt 2 Kings ValleEstimator: John DeWolfnstallation
Job Size: | Project Number: D3540100 | Rev/Date: Rev #1 5-22-23
Duration: | Design Stage: 2% | Estimate Class: 5

Area	Bid Item	Description	Takeoff Quantity	Grand Total Price	Grand Total with Markups
01.0		***Reach 1 Alternate 2***			
	01.1	**Build Detour**	**1.00 LS**	**2,813,394.56 /LS**	**2,813,395**
	02.1	**Demo Existing Bridge and Paving**	***1.00*** **LS**	**142,885.27 /LS**	**142,885**
	03.1	**Box Culverts**	***1.00*** **LS**	**3,789,961.51 /LS**	**3,789,962**
	03.2	**2'x4' Pre-Cast Box Culverts**	***1.00*** **LS**	**581,110.34 /LS**	**581,110**
	04.1	**Site Imrpovements**	**1.00 LS**	**162,959.32 /LS**	**162,959**
	04.2	**Trench Paving**	**1.00 LS**	**123,922.13 /LS**	**123,922**
	05.1	**Traffic Control**	***1.00*** **LS**	**115,620.16 /LS**	**115,620**
	05.2	**Traffic Control**	***1.00*** **LS**	**147,236.10 /LS**	**147,236**
		01.0 Reach 1 Alternate 2	***1.00 LS***	***7,877,089.39 /LS***	***7,877,089***

Estimate Totals

Description	Amount	Totals		Rate	Cost / Unit	% of Total	
Labor	2,744,062		hrs			34.64%	
Material	1,307,517					16.50%	
Subcontract	579,245					7.31%	
Equipment	3,133,772		hrs			39.55%	
Other	112,493					1.42%	
Subtotal Escalation	**7,877,089**	**7,877,089**				**99.42%**	**99.42%**
Corporate Activity Tax	45,687			0.580 %		0.58%	
Total Construction Cost	**45,687**	**7,922,776**				**0.58%**	**100.00%**
Total		***7,922,776***					

BID FORM SUMMARY

Project type: Channelization | Project Name: D3540100 North Ash Creek Reach 2 Cemetery Culver | Estimator: John DeWolf5-22-23
Job Size: | Project Number: D3540100 | Rev/Date: Rev #1 5-22-23
Duration: | Design Stage: 2% | Estimate Class: 5

Area	Bid Item	Description	Takeoff Quantity	Grand Total Price	Grand Total with Markups
01.0		***Reach 2 Cemetery Culverts***			
	01.2	**Demo Existing Culverts**	*1.00* **LS**	**824,985.87 /LS**	**824,986**
	03.2	**2'x4' Pre-Cast Box Culverts**	**139.00 LF**	**4,180.65 /LF**	**581,110**
	04.2	**Trench Paving**	**1.00 LS**	**123,922.13 /LS**	**123,922**
	05.2	**Traffic Control**	*1.00* **LS**	**147,236.10 /LS**	**147,236**
		01.0 Reach 2 Cemetery Culverts	***1.00 LS***	***1,677,254.43 /LS***	***1,677,254***

Estimate Totals

Description	Amount	Totals		Rate	Cost / Unit	% of Total	
Labor	412,225		hrs			24.44%	
Material	477,679					28.32%	
Subcontract	317,421					18.82%	
Equipment	464,319		hrs			27.52%	
Other	5,611					0.33%	
Subtotal Escalation	**1,677,255**	**1,677,255**				**99.42%**	**99.42%**
Corporate Activity Tax	9,728			0.580 %		0.58%	
Total Construction Cost	**9,728**	**1,686,983**				**0.58%**	**100.00%**
Total		***1,686,983***					

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Fork Ash Creek Reach 3 Alt 1 Daylig	Estimator: John DeWolf3
Job Size:	Project Number: D3540100	Rev/Date: Rev #2 6-8-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Description	Takeoff Quantity	Grand Total Price	Grand Total with Markups
01.0		***Replace Main Street Bridge***			
	01.0	**Demo Main Street Bridge**	***1.00*** **LS**	**73,020.73 /LS**	**73,021**
	02.0	**New Main St. Bridge**	***1.00*** **LS**	**5,115,996.03 /LS**	**5,115,996**
	03.0	**Bypass Pumping**	***1.00*** **LS**	**2,665,536.20 /LS**	**2,665,536**
	04.0	**Fish Screen**	***1.00*** **LS**	**3,612.57 /LS**	**3,613**
	05.0	**Fish Salvage**	***1.00*** **LS**	**41,242.95 /LS**	**41,243**
	08.0	**Traffic Control**	**90.00 DY**	**3,055.09 /DY**	**274,958**
		01.0 Replace Main Street Bridge	***1.00 LS***	***8,174,366.44 /LS***	***8,174,366***
02.0		***Daylight Channel In Place***			
	01.1	**Demo Asphalt**	***106,700.00*** **SF**	**8.25 /SF**	**879,837**
	02.1	**Remove Existing 84" Culverts**	**2,210.00 LF**	**647.67 /LF**	**1,431,344**
	03.1	**Demo Timber Bridge**	***1.00*** **EA**	**106,160.93 /EA**	**106,161**
	04.1	**Creek Channel Excavation**	**17,100.00 CY**	**38.85 /CY**	**664,381**
	05.1	**Bed Material**	**410.00 CY**	**195.17 /CY**	**80,018**
	06.1	**Bank Stabilization**	***45,600.00*** **SF**	**7.99 /SF**	**364,335**
	07.1	**Offhaul Material**	**17,100.00 CY**	**76.51 /CY**	**1,308,388**
	08.1	**Pumping For Water Diversion**	***1.00*** **LS**	**1,199,603.45 /LS**	**1,199,603**
	09.1	**Diversion Piping 12"**	**2,200.00 LF**	**133.08 /LF**	**292,765**
	10.1	**Fish Screen**	**1.00 EA**	**3,612.56 /EA**	**3,613**
	11.1	**Cofferdam**	**2.00 EA**	**454,461.16 /EA**	**908,922**
	12.1	**Fish Salvage**	***40.00*** **DY**	**4,124.29 /DY**	**164,972**
		02.0 Daylight Channel In Place	***1.00 LS***	***7,404,339.21 /LS***	***7,404,339***
03.0		***Replace Uglow Bridge***			
	01.2	**Demo Arch Culvert at Uglow Bridge**	***1.00*** **LS**	**100,478.58 /LS**	**100,479**
	02.2	**New Uglow Bridge**	***1.00*** **LS**	**6,153,252.50 /LS**	**6,153,253**
	03.2	**Bypass Pumping**	***1.00*** **LS**	**306,801.71 /LS**	**306,802**
	04.2	**Diversion Piping 12"**	**200.00 LF**	**239.14 /LF**	**47,827**
	05.2	**Fish Screen**	**1.00 EA**	**3,612.57 /EA**	**3,613**
	06.2	**Cofferdam**	***1.00*** **LS**	**469,870.95 /LS**	**469,871**
	07.2	**Fish Salvage**	***10.00*** **DY**	**4,124.30 /DY**	**41,243**
	08.2	**Traffic Control**	***1.00*** **LS**	**274,957.97 /LS**	**274,958**
		03.0 Replace Uglow Bridge	***1.00 LS***	***7,398,044.31 /LS***	***7,398,044***

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Fork Ash Creek Reach 3 Alt 1 Daylig	Estimator: John DeWolf3
Job Size:	Project Number: D3540100	Rev/Date: Rev #2 6-8-23
Duration:	Design Stage: 2%	Estimate Class: 5

Estimate Totals

Description	Amount	Totals		Rate	Cost / Unit	% of Total	
Labor	3,637,269		hrs			15.83%	
Material	3,176,295					13.82%	
Subcontract	11,438,634					49.78%	
Equipment	3,838,181		hrs			16.70%	
Other	886,370					3.86%	
Total Construction Cost	**22,976,749**	**22,976,749**				**100.00%**	**100.00%**
Total		***22,976,749***					

BID FORM SUMMARY

Project type: | Project Name: D3540100 North Ash Creek Reach 3 Alt 2 Daylight to | Estimator: John DeWolf
Job Size: | Project Number: D3540100 | Rev/Date: Rev #2 6-8-23
Duration: | Design Stage: 2% | Estimate Class: 5

Area	Bid Item	Description	Takeoff Quantity	Grand Total Price	Grand Total with Markups
01.0		*Replace and Remove Main Street Bridge*			
	01.0	Demo Main Street Bridge	1.00 LS	73,007.54 /LS	73,008
	02.0	New Main St. Bridge	1.00 LS	10,003,947.55 /LS	10,003,948
	03.0	Extend 12" Storm Drain	300.00 LF	446.43 /LF	133,930
	04.0	Traffic Control	180.00 DY	3,054.47 /DY	549,804
		01.0 Replace and Remove Main Street Bridge	*1.00 LS*	*10,760,689.12 /LS*	*10,760,689*
02.0		*Daylight Channel to the South (from Main St. to Uglow)*			
	01.1	Demo Asphalt	1,200.00 SF	8.91 /SF	10,687
	02.1	Remove Existing 84" Culverts	2,210.00 LF	638.70 /LF	1,411,522
	03.1	Demo Timber Bridge	1.00 EA	106,141.76 /EA	106,142
	04.1	Creek Channel Excavation	54,657.00 CY	16.49 /CY	901,038
	05.1	Bed Material	406.00 CY	195.13 /CY	79,223
	06.1	Bank Stabilization	52,544.00 SF	4.78 /SF	251,043
	07.1	Offhaul Material	54,657.00 CY	76.50 /CY	4,181,266
	08.1	Cofferdam	1.00 LS	783,608.02 /LS	783,608
	09.1	Fill Existing Channel	1.00 LS	1,125,375.93 /LS	1,125,376
		02.0 Daylight Channel to the South (from Main St. to Uglow)	*1.00 LS*	*8,849,904.65 /LS*	*8,849,905*
03.0		*Replace and Remove Uglow Bridge*			
	01.2	Grout Fill Arch Culvert at Uglow Bridge	1.00 LS	78,596.18 /LS	78,596
	02.2	New Uglow Bridge	1.00 LS	6,638,765.06 /LS	6,638,765
	03.2	Traffic Control	1.00 LS	549,804.35 /LS	549,804
		03.0 Replace and Remove Uglow Bridge	*1.00 LS*	*7,267,165.59 /LS*	*7,267,166*
04.0		*Excavating Floodplain*			
	01.3	Demo, Clear and Grub	1.00 LS	501,055.38 /LS	501,055
	02.3	Site Earthwork, Grading and Offhaul	1.00 LS	2,030,689.14 /LS	2,030,689
	03.3	Vegetation Restoration	12,440.00 SY	38.75 /SY	482,046
	04.3	Paving	277.78 SY	196.76 /SY	54,655
	05.3	Site Grading	1.00 LS	199,342.68 /LS	199,343
		04.0 Excavating Floodplain	*1.00 LS*	*3,267,788.70 /LS*	*3,267,789*

BID FORM SUMMARY

Project type: | Project Name: D3540100 North Ash Creek Reach 3 Alt 2 Daylight to | Estimator: John DeWolf
Job Size: | Project Number: D3540100 | Rev/Date: Rev #2 6-8-23
Duration: | Design Stage: 2% | Estimate Class: 5

Estimate Totals

Description	Amount	Totals		Rate	Cost / Unit	% of Total	
Labor	3,973,140		hrs			13.18%	
Material	3,377,210					11.20%	
Subcontract	16,948,367					56.22%	
Equipment	3,787,027		hrs			12.56%	
Other	2,059,804					6.83%	
Total Construction Cost	**30,145,548**	**30,145,548**				**100.00%**	**100.00%**
Total		***30,145,548***					

BID FORM SUMMARY

Project type: | Project Name: D3540100 North Ash Creek Reach 4 Alt 1 Channel W | Estimator: John DeWolf
Job Size: | Project Number: D3540100 | Rev/Date: Rev #1 5-22-23
Duration: | Design Stage: 2% | Estimate Class: 5

Area	Bid Item	Description	Takeoff Quantity	Grand Total Price	Grand Total with Markups
01.0		***Monmouth Cutoff and Holman Bridge***			
	01.0	Demo Monmouth Cutoff Bridge	*1.00* LS	787,419.99 /LS	787,420
	02.0	New Bridge	*1.00* LS	14,051,262.33 /LS	14,051,262
	03.0	Bypass Pumping and Channelization	*1.00* LS	2,947,531.32 /LS	2,947,531
	04.0	Fish Screen	*1.00* LS	3,672.82 /LS	3,673
	05.0	Fish Salvage	*1.00* LS	5,429.59 /LS	5,430
	06.0	Bank Stabilization	1.00 LS	99,148.61 /LS	99,149
	07.0	Traffic Control	*1.00* LS	542,267.45 /LS	542,267
	08.0	12" Outfall Line	100.00 LF	881.27 /LF	88,127
		01.0 Monmouth Cutoff and Holman Bridge	***1.00 LS***	***18,524,859.31 /LS***	***18,524,859***
02.0		***Holman Ave Bridge***			
	01.1	Demolition of Holman Bridge	*1.00* LS	421,832.14 /LS	421,832
	02.1	Clear Channel	*1.00* LS	89,275.94 /LS	89,276
	03.1	Bypass and Channeliztion	*1.00* LS	2,960,073.60 /LS	2,960,074
	04.1	Fish Screen	*1.00* LS	3,672.82 /LS	3,673
	05.1	Fish Salvage	*1.00* LS	5,429.59 /LS	5,430
	06.1	Bank Stabilization	1,520.00 SY	65.23 /SY	99,149
	07.1	Traffic Control	*1.00* LS	542,267.45 /LS	542,267
		02.0 Holman Ave Bridge	***1.00 LS***	***4,121,700.16 /LS***	***4,121,700***
03.0		***Monmouth Cutoff Culverts***			
	01.2	Demo Culverts	*1.00* LS	86,214.12 /LS	86,214
	02.2	2 Ea. 4' x8' x40 Box Culverts	806.67 CY	5,028.49 /CY	4,056,320
	03.2	Earthwork for Channel	1.00 LS	3,417,641.72 /LS	3,417,642
	04.2	Fish Screen	1.00 EA	3,672.82 /EA	3,673
	05.2	Fish Salvage	*1.00* LS	5,429.58 /LS	5,430
	06.2	Bank Stabilization	3,450.00 SY	34.41 /SY	118,722
	07.2	Traffic Control	*1.00* LS	542,267.44 /LS	542,267
		03.0 Monmouth Cutoff Culverts	***2.00 LS***	***4,115,134.04 /LS***	***8,230,268***
04.0		***Godsey Rd. Bridge***			
	01.3	Demo Godsey Bridge	*1.00* LS	298,797.79 /LS	298,798
	02.3	New Godsey Rd. Bridge	*1.00* LS	15,420,043.73 /LS	15,420,044
	03.3	Channel Earthwork	*1.00* LS	4,147,045.57 /LS	4,147,046
	04.3	Fish Screen	*1.00* LF	3,672.80 /LF	3,673
	05.3	Fish Salvage	*1.00* LS	5,429.61 /LS	5,430
	06.3	Bank Stabilization	1.00 LS	161,309.22 /LS	161,309
	07.3	Traffic Control	*1.00* LS	542,267.44 /LS	542,267
	08.3	12" Outfall Line	50.00 LF	980.44 /LF	49,022

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 4 Alt 1 Channel W	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Description	Takeoff Quantity	Grand Total Price	Grand Total with Markups
		04.0 Godsey Rd. Bridge	***1.00 LS***	***20,627,588.28 /LS***	***20,627,588***
05.0		***Diversion Structure and Bridge***			
	01.4	**Demo Diversion Structure**	**1.00 LS**	**92,803.06 /LS**	**92,803**
	02.4	**New Diversion Structure and Bridge**	**1.00 LS**	**6,501,897.82 /LS**	**6,501,898**
	03.4	**Channel Earthwork**	**1.00 LS**	**3,484,012.11 /LS**	**3,484,012**
	04.4	**Fish Screen**	**1.00 LS**	**3,672.81 /LS**	**3,673**
	05.4	**Fish Salvage**	**1.00 LS**	**5,429.60 /LS**	**5,430**
	06.4	**Bank Stabilization**	**1.00 LS**	**108,668.06 /LS**	**108,668**
	07.4	**Traffic Control**	**1.00 LS**	**542,267.45 /LS**	**542,267**
		05.0 Diversion Structure and Bridge	***1.00 LS***	***10,738,750.91 /LS***	***10,738,751***

Estimate Totals

Description	Amount	Totals	Rate	Cost / Unit	% of Total	
Labor	8,808,252		hrs		14.07%	
Material	4,634,753				7.40%	
Subcontract	36,593,806				58.45%	
Equipment	10,657,648		hrs		17.02%	
Other	1,548,708				2.47%	
Subtotal Escalation	**62,243,167**	**62,243,167**			**99.42%**	**99.42%**
CAT Tax	361,010		0.580 %		0.58%	
Total Construction Cost	**361,010**	**62,604,177**			**0.58%**	**100.00%**
Total		***62,604,177***				

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Wat	Estimator: John DeWolf1 5-22-23
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Description	Takeoff Quantity	Grand Total Price	Grand Total with Markups
01.0		***Monmouth Cutoff Culverts***			
	01.2	**Demo Culverts**	*1.00* **LS**	**84,583.09 /LS**	**84,583**
	02.2	**2 Ea. 4' x8' x40 Box Culverts**	**806.67 CY**	**4,944.29 /CY**	**3,988,397**
	03.2	**Earthwork for Channel**	**1.00 LS**	**3,469,803.65 /LS**	**3,469,804**
	04.2	**Fish Screen**	**1.00 EA**	**3,546.60 /EA**	**3,547**
	05.2	**Fish Salvage**	*1.00* **LS**	**8,079.51 /LS**	**8,080**
	06.2	**Bank Stabilization**	**3,450.00 SY**	**33.86 /SY**	**116,806**
	07.2	**Traffic Control and SWPPP**	*1.00* **LS**	**741,132.16 /LS**	**741,132**
		01.0 Monmouth Cutoff Culverts	***1.00 LS***	***8,412,348.77 /LS***	***8,412,349***
02.0		***Godsey Rd. Bridge***			
	01.3	**Demo Godsey Bridge**	*1.00* **LS**	**292,953.53 /LS**	**292,954**
	02.3	**New Godsey Rd. Bridge**	*1.00* **LS**	**9,316,914.10 /LS**	**9,316,914**
	03.3	**Channel Earthwork**	*1.00* **LS**	**4,198,400.33 /LS**	**4,198,400**
	04.3	**Fish Screen**	*1.00* **LF**	**3,546.60 /LF**	**3,547**
	05.3	**Fish Salvage**	*1.00* **LS**	**5,386.34 /LS**	**5,386**
	06.3	**Bank Stabilization**	*1.00* **LS**	**158,189.68 /LS**	**158,190**
	07.3	**Traffic Control and SWPPP**	*1.00* **LS**	**541,634.95 /LS**	**541,635**
	08.3	**12" Outfall Line**	**50.00 LF**	**962.94 /LF**	**48,147**
		02.0 Godsey Rd. Bridge	***1.00 LS***	***14,565,172.42 /LS***	***14,565,172***
03.0		***Driveway Culvert***			
	01.4	**New 36" RCP Culvert**	**40.00 LF**	**942.80 /LF**	**37,712**
	02.4	**Paving at Culvert**	**44.44 SY**	**192.49 /SY**	**8,555**
		03.0 Driveway Culvert	***1.00 LS***	***46,266.93 /LS***	***46,267***
04.0		***Detention Pond***			
	01.5	**Detention Pond**	**1.00 LS**	**4,670,839.20 /LS**	**4,670,839**
		04.0 Detention Pond	***1.00 LS***	***4,670,839.20 /LS***	***4,670,839***
05.0		***Inlet Coveyance Channel***			
	01.6	**Channel Earthwork**	**1.00 LS**	**1,078,862.30 /LS**	**1,078,862**
		05.0 Inlet Coveyance Channel	***1.00 LS***	***1,078,862.30 /LS***	***1,078,862***
06.0		***Outlet Conveyance Channel***			
	01.7	**Overflow Wier**	**1.00 LS**	**523,646.13 /LS**	**523,646**
		06.0 Outlet Conveyance Channel	***1.00 LS***	***523,646.13 /LS***	***523,646***

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Wate	Estimator: John DeWolf1 5-22-23
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Estimate Totals

Description	Amount	Totals		Rate		Cost / Unit	% of Total	
Labor	5,366,618		hrs				18.21%	
Material	2,795,772						9.49%	
Subcontract	10,983,992						37.28%	
Equipment	6,831,761		hrs				23.18%	
Other	3,318,993						11.26%	
Subtotal Escalation	**29,297,136**	**29,297,136**					**99.42%**	**99.42%**
Corporate Activity Tax	169,923			0.580	%		0.58%	
Total Construction Cost	**169,923**	**29,467,059**					**0.58%**	**100.00%**
Total		***29,467,059***						

Estimate Detail

BID FORM SUMMARY

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 1 Alt 1 Kings Valley Highway Bridge Replacement Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0						Reach 1 Alternate 1											
	01.0					Build Detour											
		31.0				Earthwork											
			31.19			Dewatering and Bypass Pumping											
				31.19.06.0003		Bypass Pumping											
					31.19.06.00	Site Preparation, Bypass Pumping, 12" to 24" Pipe											
						Generator, Weekly	52.00 wk		-	26,000	-	78,000	-	2,000.00 /wk	104,000	4,589.67 /wk	238,663
						Bypass Pumping, Pumps and Piping, Mob	3.00 ea	24	1,988	-	4,500	1,054	-	2,514.04 /ea	7,542	5,769.30 /ea	17,308
						Bypass Pumping, Set-up Pumps	3.00 ea	48	3,977	1,500	-	1,054	-	2,176.86 /ea	6,531	4,995.52 /ea	14,987
						Bypass Pumping, Install Suction Piping	3.00 ea	24	1,988	450	-	527	-	988.43 /ea	2,965	2,268.28 /ea	6,805
						Bypass Pumping, System Operation	52.00 WK	2,080	158,226	208,000	-	260,000	-	12,042.80 /WK	626,226	27,636.23 /WK	1,437,084
						31.19.06.00 Site Preparation, Bypass Pumping, 12" to 24" Pipe	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,977.80 /WK	1,714,846
						31.19.06.0003 Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,977.80 /WK	1,714,846
						31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,977.80 /WK	1,714,846
			31.23			Earthworks, Imported Fill											
				31.20.05.0001		Build Temporary Bypass											
					31.20.05.00	Earthworks, Temporary											
						Test pits, loader-backhoe, heavy soil	10.00 ea	240	15,059	-	-	4,016	-	1,907.46 /ea	19,075	4,377.30 /ea	43,773
						Clearing, heavy overgrowth of weeds and shrubs	1.00 acre	12	803	-	-	770	-	1,573.57 /acre	1,574	3,611.09 /acre	3,611
						Strip and Haul Topsoil, Excavator, Small Crew	400.00 cy	24	1,616	-	-	1,331	-	7.37 /cy	2,947	16.91 /cy	6,763
						Rough Site Grading, Small Crew	2,222.00 sy	40	2,647	-	-	2,780	-	2.44 /sy	5,427	5.60 /sy	12,454
						Survey: Pre-Excavation	1.00 LS	40		-	7,500	-	-	7,500.00 /LS	7,500	17,211.25 /LS	17,211
						Import Site Fill - Medium Crew, per cy	2,500.00 CY	125	8,390	70,000	-	8,691	-	34.83 /CY	87,081	79.93 /CY	199,837
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 950	400.00 cy	2	151	-	-	290	-	1.10 /cy	440	2.53 /cy	1,010
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	400.00 cy	21	1,431	-	-	1,721	-	7.88 /cy	3,152	18.08 /cy	7,233
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	400.00 cy		-	6,000	-	-	6,000	30.00 /cy	12,000	68.85 /cy	27,538
						31.20.05.00 Earthworks, Temporary	2,500.00 CY	504	30,098	76,000	7,500	19,597	6,000	55.68 /CY	139,195	127.77 /CY	319,430
						31.20.05.0001 Build Temporary Bypass	2,500.00 CY	504	30,098	76,000	7,500	19,597	6,000	55.68 /CY	139,195	127.77 /CY	319,430
				31.20.05.0002		Remove Temp Bypass											
					02.01.01.00	General Site Demolition											
						Storm Sewer Pipe Demolition and Loading, 10' Deep	260.00 lf	73	5,569	-	-	3,878	-	36.33 /lf	9,447	83.38 /lf	21,679
						02.01.01.00 General Site Demolition	*1.00* LS	73	5,569			3,878		9,447.04 /LS	9,447	21,679.38 /LS	21,679
					31.20.05.00	Earthworks, Temporary											
						Rough Site Grading, Small Crew	2,222.00 sy	40	2,647	-	-	2,780	-	2.44 /sy	5,427	5.60 /sy	12,454
						Survey: Pre-Excavation	1.00 ls	40		-	7,500	-	-	7,500.00 /ls	7,500	17,211.27 /ls	17,211
						Mass Excavation, Cut To Stockpile, Excavator, Medium Crew	2,500.00 CY	114	7,582	-	-	10,541	-	7.25 /CY	18,123	16.64 /CY	41,589
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 950	2,500.00 cy	13	942	-	-	1,809	-	1.10 /cy	2,752	2.53 /cy	6,315
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	2,500.00 cy	131	8,944	-	-	10,755	-	7.88 /cy	19,699	18.08 /cy	45,205
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	2,500.00 cy		-	37,500	-	-	37,500	30.00 /cy	75,000	68.85 /cy	172,113
						31.20.05.00 Earthworks, Temporary	2,500.00 CY	338	20,115	37,500	7,500	25,886	37,500	51.40 /CY	128,500	117.95 /CY	294,887
						31.20.05.0002 Remove Temp Bypass	2,500.00 CY	410	25,683	37,500	7,500	29,764	37,500	55.18 /CY	137,947	126.63 /CY	316,566
						31.23 Earthworks, Imported Fill	*2,500.00* CY	914	55,781	113,500	15,000	49,361	43,500	110.86 /CY	277,143	254.40 /CY	635,997
						31.0 Earthwork	1.00 LS	3,090	221,961	349,450	19,500	389,995	43,500	1,024,406.38 /LS	1,024,406	2,350,842.59 /LS	2,350,843
		32.0				Exterior Improvements											
			32.12			Paving											
				32.40.02.0003		Pave Temp Bypass											
					32.40.02.00	Site Improvements, Paving, Bituminous Asphalt											
						Bituminous Pavement Subgrade Prep	1,230.00 SY	11		-	1,845	-	-	1.50 /SY	1,845	3.44 /SY	4,234
						Bituminous Pavement Import Aggregate Base	621.00 tn	8		-	19,251	-	-	31.00 /tn	19,251	71.14 /tn	44,178
						Bituminous Asphalt (sy - 6")	1,230.00 sy	66		-	49,200	-	-	40.00 /sy	49,200	91.79 /sy	112,906
						Pavement Marking, 4" Pavement striping	2,000.00 lf	4		-	3,000	-	-	1.50 /lf	3,000	3.44 /lf	6,885
						Jersey Barriers (Rent and Install)	1,000.00 lf		6,000	-	-	44,000	-	50.00 /lf	50,000	114.74 /lf	114,742
						Jersey Barriers (Removal)	1,000.00 lf		6,000	-	-	-	-	6.00 /lf	6,000	13.77 /lf	13,769
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	1,230.00 SY	90	12,000		73,296	44,000		105.12 /SY	129,296	241.23 /SY	296,713
						32.40.02.0003 Pave Temp Bypass	1,230.00 SY	90	12,000		73,296	44,000		105.12 /SY	129,296	241.23 /SY	296,713
						32.12 Paving	1,230.00 SY	90	12,000		73,296	44,000		105.12 /SY	129,296	241.23 /SY	296,713
						32.0 Exterior Improvements	*1.00* LS	90	12,000		73,296	44,000		129,296.00 /LS	129,296	296,712.85 /LS	296,713
		33.0				Utilities											
			33.12			Buried Process Pipe, Corrugated Metal											
				33.00.16.0004		Temp Culvert											
					33.00.16.36	Buried Pipe, CMP, 36"											
						Traffic Control, Labor per Day	4.00 day	64	3,733	-	-	-	-	933.15 /day	3,733	2,141.43 /day	8,566
						Dedicated Fire / Safety Monitor	16.00 hr	16	933	-	-	-	-	58.32 /hr	933	133.84 /hr	2,141
						Excav. pipe trench, w/ trench box, for > 30" pipe	326.95 CY	64	4,398	-	-	6,597	-	33.63 /CY	10,995	77.17 /CY	25,232
						Backfill / Compact @ pipe zone, for 30" & larger pipe	150.29 cy	112	7,351	-	-	8,607	-	106.18 /cy	15,958	243.67 /cy	36,622
						Backfill / Compact above pipe zone, for 30" & larger pipe	113.69 cy	80	6,030	-	-	8,879	-	131.13 /cy	14,908	300.93 /cy	34,212
						Pipe zone material	150.29 cy		-	4,208	-	-	-	28.00 /cy	4,208	64.26 /cy	9,657
						Pipe bedding material	28.57 cy		-	800	-	-	-	28.00 /cy	800	64.26 /cy	1,836
						Imported backfill material	113.69 cy		-	3,183	-	-	-	28.00 /cy	3,183	64.26 /cy	7,305
						Haul spoils, offsite, 10 - 20 miles	292.55 cy		-	-	4,388	-	-	15.00 /cy	4,388	34.42 /cy	10,070
						Dump fees, trench spoils	292.55 ls		-	-	-	-	4,388	15.00 /ls	4,388	34.42 /ls	10,070
						Piping, storm drain, CMP, plain, 20' lengths, 36" dia, 12 ga	260.00 LF	224	14,102	13,000	-	2,074	-	112.22 /LF	29,176	257.52 /LF	66,954
						Piping, storm drain, CMP, plain, end section, 36" dia	3.00 ea	8	529	720	-	544	-	597.73 /ea	1,793	1,371.69 /ea	4,115
						CMP Drainage Culvert, 2 Piece Elbow, 36" Diameter	1.00 ea	6	484	310	-	273	-	1,067.46 /ea	1,067	2,449.62 /ea	2,450
						CMP Drainage Culvert, Tee or Lateral, 36" Diameter	1.00 ea	6	484	350	-	273	-	1,107.46 /ea	1,107	2,541.46 /ea	2,541
						33.00.16.36 Buried Pipe, CMP, 36"	260.00 LF	580	38,044	22,571	4,388	27,248	4,388	371.69 /LF	96,640	852.97 /LF	221,772
						33.00.16.0004 Temp Culvert	260.00 LF	580	38,044	22,571	4,388	27,248	4,388	371.69 /LF	96,640	852.97 /LF	221,772
						33.12 Buried Process Pipe, Corrugated Metal	260.00 LF	580	38,044	22,571	4,388	27,248	4,388	371.69 /LF	96,640	852.97 /LF	221,772
						33.0 Utilities	260.00 LF	580	38,044	22,571	4,388	27,248	4,388	371.69 /LF	96,640	852.97 /LF	221,772
						01.0 Build Detour	*1.00* LS	3,760	272,005	372,021	97,184	461,243	47,888	1,250,341.92 /LS	1,250,342	2,869,327.14 /LS	2,869,327
	02.0					Demo Existing Bridge and Paving											

BID FORM SUMMARY

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 1 Alt 1 Kings Valley Highway Bridge Replacement Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
		02.0				Existing Conditions											
			02.40			Demolition											
				02.01.01.0005		Demo Existing Bridge											
					02.01.01.00	General Site Demolition											
						Saw Cutting, Ashpalt, 6" Depth	100.00 lf	2		-	200	-	-	2.00 /lf	200	4.59 /lf	459
						Asphalt Milling, 6" Depth	613.00 sy	6		-	3,678	-	-	6.00 /sy	3,678	13.77 /sy	8,440
						Asphalt Demolition and Loading	201.00 cy	8	506	-	-	379	-	4.40 /cy	885	10.11 /cy	2,031
						Haul Site Demolition Spoils, 17 yd capacity, 20 miles RT, priced per cy	204.00 cy	11	730	-	-	878	-	7.88 /cy	1,607	18.08 /cy	3,689
						Dump Charges for Site Demolition Spoils, 17 yd end-dump, priced per cy	204.00 cy		-	3,060	-	-	-	15.00 /cy	3,060	34.42 /cy	7,022
						Selective demolition, cutout, concrete, elevated slab, bar reinforced, over 6 C.F., excludes loading and disposal	140.00 cf	112	6,589	-	-	929	-	53.70 /cf	7,519	123.24 /cf	17,254
						Selective demolition, cutout, concrete, slab on grade, bar reinforced, to 6" thick, 8-16 S.F., excludes loading and disposal	140.00 sf	37	2,196	-	-	310	-	17.90 /sf	2,506	41.08 /sf	5,751
						Selective demolition, cutout, concrete, walls, bar reinforced, 6-12 C.F., excludes loading and disposal	910.00 cf	520	30,594	-	-	4,314	-	38.36 /cf	34,908	88.03 /cf	80,107
						Selective demolition, rubbish handling, dumpster, 40 c.y., 13 ton capacity, weekly rental, includes one dump per week, cost added to demolition cost.	2.00 week		-	1,550	-	-	-	775.00 /week	1,550	1,778.50 /week	3,557
						Selective demolition, rubbish handling, 51' to 100' haul, load, haul, dump and return, hand carried, cost to be added to demolition cost.	41.48 cy	40	2,346	-	-	-	-	56.55 /cy	2,346	129.78 /cy	5,384
						Selective demolition, rubbish handling, loading & trucking, chute loaded, including 2 mile haul, cost to be added to demolition cost.	41.48 cy	29	1,811	-	-	707	-	60.72 /cy	2,519	139.35 /cy	5,780
						02.01.01.00 General Site Demolition	1.00 LS	765	44,773	4,610	3,878	7,517		60,777.72 /LS	60,778	139,474.77 /LS	139,475
						02.01.01.0005 Demo Existing Bridge	1.00 LS	765	44,773	4,610	3,878	7,517		60,777.72 /LS	60,778	139,474.77 /LS	139,475
						02.40 Demolition	1.00 LS	765	44,773	4,610	3,878	7,517		60,777.72 /LS	60,778	139,474.77 /LS	139,475
						02.0 Existing Conditions	1.00 LS	765	44,773	4,610	3,878	7,517		60,777.72 /LS	60,778	139,474.77 /LS	139,475
						02.0 Demo Existing Bridge and Paving	1.00 LS	765	44,773	4,610	3,878	7,517		60,777.72 /LS	60,778	139,474.77 /LS	139,475
	03.0					New Kings Highway Bridge											
		03.0				Concrete Work											
			03.10			Cast-In-Place Concrete Work											
				03.00.99.0006		New Kings Highway Bridge											
					03.00.99.00	Concrete, Other											
						Division 03 Allowance New Bridge	1,050.00 SF		-	-	1,050,000	-		1,000.00 /SF	1,050,000	2,294.83 /SF	2,409,576
						03.00.99.00 Concrete, Other	1,050.00 SF				1,050,000			1,000.00 /SF	1,050,000	2,294.83 /SF	2,409,576
						03.00.99.0006 New Kings Highway Bridge	1,050.00 SF				1,050,000			1,000.00 /SF	1,050,000	2,294.83 /SF	2,409,576
						03.10 Cast-In-Place Concrete Work	1.00 CY				1,050,000			1,050,000.00 /CY	1,050,000	2,409,575.69 /CY	2,409,576
						03.0 Concrete Work	1.00 CY				1,050,000			1,050,000.00 /CY	1,050,000	2,409,575.69 /CY	2,409,576
		31.0				Earthwork											
			31.25			Earthworks, Structural											
				31.25.01.0007		Excavation and Structural Backfill											
					31.25.01.00	Earthworks, Structural, Excavation											
						Dewatering Minor, Generator and Pumps, Mob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,442.26 /ea	6,885
						Dewatering Minor, Set-up Generator and Install Pumps	4.00 ea	32	2,008	-	-	535	-	635.82 /ea	2,543	1,459.10 /ea	5,836
						Dewatering Minor, Sump Rock, delivered	10.00 cy		-	200	-	-	-	20.00 /cy	200	45.90 /cy	459
						Dewatering Minor, Large Generator and 2 Pumps, Rental, Monthly	24.00 mo		-	-	-	669,331	-	27,888.80 /mo	669,331	64,000.16 /mo	1,536,004
						Dewatering Minor, Generator and Pumps, Operation - Labor to maintain / check pumps/ fuel and lube	24.00 mo	12,672	741,760	-	-	70,224	-	33,832.66 /mo	811,984	77,640.33 /mo	1,863,368
						Dewatering Minor, Remove Generator and Pumps	4.00 ea	32	2,008	-	-	402	-	602.57 /ea	2,410	1,382.80 /ea	5,531
						Dewatering Minor, Generator and Pumps, Demob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,442.26 /ea	6,885
						Shoring, sheet pile, subcontracted	1,000.00 sf	130		-	40,000	-	-	40.00 /sf	40,000	91.79 /sf	91,793
						Structural Excavation, Excavator and Trucks, Medium Crew, 15' depth	800.00 CY	46	3,033	-	-	4,220	-	9.07 /CY	7,253	20.81 /CY	16,645
						Grade for slabs / Scarify and Recompact, Dozer and Traxcavator or Loader, Small Crew	120.00 sy	6	390	-	-	398	-	6.56 /sy	787	15.06 /sy	1,807
						Structural Backfill, Dozer and Traxcavator or Loader, Medium Crew	411.00 cy	30	2,041	-	-	2,041	-	9.93 /cy	4,082	22.79 /cy	9,367
						Load Excess for Hauling, Rubber Tire Loader, Cat 950	388.00 cy	2	146	-	-	281	-	1.10 /cy	427	2.53 /cy	980
						Haul / Remove Excess, 17 yd capacity, 20 miles RT	388.00 cy	20	1,388	-	3,880	1,669	-	17.88 /cy	6,937	41.03 /cy	15,920
						Dump Charges for For Excess, 17 yd tandem, per cy	388.00 cy		-	5,820	-	-	-	15.00 /cy	5,820	34.42 /cy	13,356
						Over excavate and replace with suitable, Excavators and Trucks, Medium Crew	80.00 cy	4	283	-	-	515	-	9.98 /cy	798	22.90 /cy	1,832
						31.25.01.00 Earthworks, Structural, Excavation	800.00 CY	13,005	753,056	6,020	49,880	749,618		1,948.22 /CY	1,558,573	4,470.83 /CY	3,576,667
						31.25.01.0007 Excavation and Structural Backfill	800.00 CY	13,005	753,056	6,020	49,880	749,618		1,948.22 /CY	1,558,573	4,470.83 /CY	3,576,667
						31.25 Earthworks, Structural	800.00 CY	13,005	753,056	6,020	49,880	749,618		1,948.22 /CY	1,558,573	4,470.83 /CY	3,576,667
						31.0 Earthwork	1.00 LS	13,005	753,056	6,020	49,880	749,618		1,558,573.21 /LS	1,558,573	3,576,666.78 /LS	3,576,667
						03.0 New Kings Highway Bridge	1.00 LS	13,005	753,056	6,020	1,099,880	749,618		2,608,573.21 /LS	2,608,573	5,986,242.47 /LS	5,986,242
	04.0					Site Improvements											
		32.0				Exterior Improvements											
			32.12			Paving											
				32.40.02.0008		Excavation and Structural Backfill											
					32.40.02.00	Site Improvements, Paving, Bituminous Asphalt											
						Rough Site Grading, Small Crew	320.00 SY	6	381	-	-	400	-	2.44 /SY	782	5.60 /SY	1,794
						Fog seal, seal coating, coal tar pitch emulsion, 2 coat, under 1000 S.Y.	333.33 sy	8	451	667	-	-	-	3.35 /sy	1,118	7.69 /sy	2,565
						Fog seal, sealcoating, prepare and clean surface for sealcoating	333.33 sy	1	57	-	-	13	-	0.21 /sy	70	0.48 /sy	160
						Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 9" deep	333.33 sy	2	155	2,650	-	167	-	8.92 /sy	2,972	20.46 /sy	6,820
						Plant-mix asphalt paving, for highways and large paved areas, pavement replacement over trench, 6" thick, no hauling included	333.33 sy	170	11,330	13,333	-	1,051	-	77.14 /sy	25,714	177.03 /sy	59,010
						Painted pavement markings, thermoplastic, white or yellow, 4" wide, less than 6000 L.F.	300.00 lf	1	48	276	-	32	-	1.19 /lf	356	2.72 /lf	817
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	320.00 SY	187	12,422	16,926		1,664		96.91 /SY	31,011	222.39 /SY	71,166
						32.40.02.0008 Excavation and Structural Backfill	320.00 SY	187	12,422	16,926		1,664		96.91 /SY	31,011	222.39 /SY	71,166
						32.12 Paving	320.00 SY	187	12,422	16,926		1,664		96.91 /SY	31,011	222.39 /SY	71,166
			32.50			Site, Improvements											
				32.50.06.0009		Site Improvement Allowances											
					32.50.06.00	Site Improvements, Other Improvements											
						Division 01 Allowance SWPPP	1.00 LS		-	-	20,000	-		20,000.00 /LS	20,000	45,896.69 /LS	45,897

BID FORM SUMMARY

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 1 Alt 1 Kings Valley Highway Bridge Replacement Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					32.50.06.00	Site Improvements, Other Improvements											
						Division 32 Allowance Landscape	1.00 ls		-	-	20,000	-		20,000.00 /ls	20,000	45,896.67 /ls	45,897
						32.50.06.00 Site Improvements, Other Improvements	1.00 LS				40,000			40,000.00 /LS	40,000	91,793.36 /LS	91,793
						32.50.06.0009 Site Improvement Allowances	1.00 LS				40,000			40,000.00 /LS	40,000	91,793.36 /LS	91,793
						32.50 Site, Improvements	1.00 LS				40,000			40,000.00 /LS	40,000	91,793.36 /LS	91,793
						32.0 Exterior Improvements	1.00 LS	187	12,422	16,926	40,000	1,664		71,011.38 /LS	71,011	162,959.31 /LS	162,959
						04.0 Site Improvements	1.00 LS	187	12,422	16,926	40,000	1,664		71,011.38 /LS	71,011	162,959.31 /LS	162,959
	05.0					Traffic Control											
		31.0				Earthwork											
			31.10			Temporary Works											
				31.10.07.0010		Traffic Control											
					31.10.07.00	Temporary Works, Traffic Control											
						Flagger	30.00 day	240	5,472	-	-	-	-	182.40 /day	5,472	418.58 /day	12,557
						Traffic Cones 36"	750.00 day		-	5,760	-	5,760	-	15.36 /day	11,520	35.25 /day	26,436
						Rd Closed Local Traffic Only (sign only), 60x30	365.00 ea		-	-	-	263	-	0.72 /ea	263	1.65 /ea	603
						Traffic Control, Equipment Rental, Monthly	12.00 mo		-	-	-	36,000	-	3,000.00 /mo	36,000	6,884.50 /mo	82,614
						Traffic control devices, traffic chanizing pvmt mkers, layout only	2.00 ea	40	2,600	-	-	-	-	1,300.00 /ea	2,600	2,983.28 /ea	5,967
						31.10.07.00 Temporary Works, Traffic Control	1.00 LS	280	8,072	5,760		42,023		55,854.80 /LS	55,855	128,177.50 /LS	128,178
						31.10.07.0010 Traffic Control	1.00 LS	280	8,072	5,760		42,023		55,854.80 /LS	55,855	128,177.50 /LS	128,178
						31.10 Temporary Works	1.00 LS	280	8,072	5,760		42,023		55,854.80 /LS	55,855	128,177.50 /LS	128,178
						31.0 Earthwork	1.00 LS	280	8,072	5,760		42,023		55,854.80 /LS	55,855	128,177.50 /LS	128,178
						05.0 Traffic Control	1.00 LS	280	8,072	5,760		42,023		55,854.80 /LS	55,855	128,177.50 /LS	128,178
						01.0 Reach 1 Alternate 1	**1.00 LS**	17,998	1,090,327	405,337	1,240,942	1,262,064	47,888	**4,046,559.03 /LS**	4,046,559	**9,286,181.19 /LS**	9,286,181

BID FORM SUMMARY

Project type: Channelization	Project Name: D3540100 North Ash Creek Reach 1 Alt 1 Kings Valley Highway Bridge Replacement Rev #1 5-22-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Estimate Totals

Description	Amount	Totals	Rate	Cost / Unit	% of Total	
Labor	1,090,327		hrs		11.67%	
Material	405,337				4.34%	
Subcontract	1,240,942				13.29%	
Equipment	1,262,064		hrs		13.51%	
Other	47,888				0.51%	
Subtotal Raw Costs	**4,046,558**	**4,046,558**			**43.32%**	**43.32%**
Material Sales & Use Tax - %						
Construction Equip Tax - %						
Total Taxes		**4,046,558**				**43.32%**
Location Adj. Factor						
Productivity Adjustment						
Subtotal Adj. Factors		**4,046,558**				**43.32%**
Existing Conditions I,OH&P	15,194		25.000 %		0.16%	
Concrete Work I,OH&P	262,500		25.000 %		2.81%	
Masonry Work I,OH&P			25.000 %			
Metals Work I,OH&P			25.000 %			
Architectural (Div 6-12)I,OH&P			25.000 %			
Special Construction I,OH&P			25.000 %			
Conveying Equipment I,OH&P			25.000 %			
Mechanical Work I,OH&P			25.000 %			
Electrical Work I,OH&P			25.000 %			
Site/Civil I,OH&P	709,785		25.000 %		7.60%	
Buried Piping I,OH&P	24,160		25.000 %		0.26%	
Tank Construction I,OH&P			25.000 %			
Process Piping I,OH&P			25.000 %			
Instruments & Controls I,OH&P			25.000 %			
Material Handling I,OH&P			25.000 %			
Process Equipment I,OH&P			25.000 %			
Subtotal Subcontractor I,OH&P	**1,011,639**	**5,058,197**			**10.83%**	**54.16%**
Contractor Contingency						
Subtotal Contingency		**5,058,197**				**54.16%**
Total Cost To Prime Contractor		**5,058,197**				**54.16%**
General Conditions	505,820		10.000 %		5.42%	
Mobilization/Demobilization	252,910		5.000 %		2.71%	
Subtotal Indirect Costs	**758,730**	**5,816,927**			**8.12%**	**62.28%**
Prime Contractor Home OfficeOH	581,693		10.000 %		6.23%	
Prime Contractor Profit	872,539		15.000 %		9.34%	
Bonds & Insurance	157,784		2.170 %		1.69%	
Subtotal OH&P	**1,612,016**	**7,428,943**			**17.26%**	**79.54%**
Contractor MU on Mech OFCI						
Contractor MU on Elec OFCI						
Total MU on OFCI Equip		**7,428,943**				**79.54%**
Design Contingency	1,857,236		25.000 %		19.88%	
Subtotal Contingency	**1,857,236**	**9,286,179**			**19.88%**	**99.42%**
Escalation						
Subtotal Escalation		**9,286,179**				**99.42%**
Corporate Activity Tax	53,860		0.580 %		0.58%	
Total Prime Contractor Costs	**53,860**	**9,340,039**			**0.58%**	**100.00%**
Total Construction Cost		**9,340,039**				**100.00%**
Total		***9,340,039***				

BID FORM SUMMARY

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 1 Alt 2 Kings Valley Highway Aux. Culvert Installation Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Crew	Labor Productivity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0						**Reach 1 Alternate 2**													
	01.1					**Build Detour**													
		31.0				**Earthwork**													
			31.19			**Dewatering and Bypass Pumping**													
				31.19.06.0003		**Bypass Pumping**													
					31.19.06.00	**Site Preparation, Bypass Pumping, 12" to 24" Pipe**													
						Generator, Weekly	52.00 wk				-	26,000	-	78,000	-	2,000.00 /wk	104,000	4,589.67 /wk	238,663
						Bypass Pumping, Pumps and Piping, Mob	3.00 ea	Pipe 71	8.000 mh / ea	24	1,988	-	4,500	1,054	-	2,514.04 /ea	7,542	5,769.30 /ea	17,308
						Bypass Pumping, Set-up Pumps	3.00 ea	Pipe 71	4.000 ch / ea	48	3,977	1,500	-	1,054	-	2,176.86 /ea	6,531	4,995.52 /ea	14,987
						Bypass Pumping, Install Suction Piping	3.00 ea	Pipe 71	2.000 ch / ea	24	1,988	450	-	527	-	988.43 /ea	2,965	2,268.29 /ea	6,805
						Bypass Pumping, System Operation	52.00 WK	Pipe 72	40.000 mh / WK	2,080	158,226	208,000	-	260,000	-	12,042.80 /WK	626,226	27,636.23 /WK	1,437,084
						31.19.06.00 Site Preparation, Bypass Pumping, 12" to 24" Pipe	**52.00 WK**			2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,977.81 /WK	1,714,846
						31.19.06.0003 Bypass Pumping	**52.00 WK**			2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,977.81 /WK	1,714,846
						31.19 Dewatering and Bypass Pumping	**52.00 WK**			2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,977.81 /WK	1,714,846
			31.23			**Earthworks, Imported Fill**													
				31.20.05.0001		**Build Temporary Bypass**													
					31.20.05.00	**Earthworks, Temporary**													
						Test pits, loader-backhoe, heavy soil	10.00 ea	Earth 60	6.000 ch / ea	240	15,059	-	-	4,016	-	1,907.46 /ea	19,075	4,377.30 /ea	43,773
						Clearing, heavy overgrowth of weeds and shrubs	1.00 acre	EarthWor k0100	2.000 ch / acre	12	803	-	-	770	-	1,573.57 /acre	1,574	3,611.08 /acre	3,611
						Strip and Haul Topsoil, Excavator, Small Crew	400.00 cy	EarthWor k0200	150.000 cy / ch	24	1,616	-	-	1,331	-	7.37 /cy	2,947	16.91 /cy	6,763
						Rough Site Grading, Small Crew	2,222.00 sy	EarthWor k0455	225.000 sy / ch	40	2,647	-	-	2,780	-	2.44 /sy	5,427	5.60 /sy	12,454
						Survey: Pre-Excavation	1.00 LS		40.000 mh / LS	40		-	7,500	-	-	7,500.00 /LS	7,500	17,211.25 /LS	17,211
						Import Site Fill - Medium Crew, per cy	2,500.00 CY	EarthWor k0720	140.000 CY / ch	125	8,390	37,500	-	8,691	-	21.83 /CY	54,581	50.10 /CY	125,255
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 950	400.00 cy	EarthWor k0840	200.000 cy / ch	2	151	-	-	290	-	1.10 /cy	440	2.53 /cy	1,010
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	400.00 cy	Demo 42b	19.040 cy / ch	21	1,431	-	-	1,721	-	7.88 /cy	3,152	18.08 /cy	7,233
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	400.00 cy				-	6,000	-	-	6,000	30.00 /cy	12,000	68.85 /cy	27,538
						31.20.05.00 Earthworks, Temporary	**2,500.00 CY**			504	30,098	43,500	7,500	19,597	6,000	42.68 /CY	106,695	97.94 /CY	244,848
						31.20.05.0001 Build Temporary Bypass	**2,500.00 CY**			504	30,098	43,500	7,500	19,597	6,000	42.68 /CY	106,695	97.94 /CY	244,848
				31.20.05.0002		**Remove Temp Bypass**													
					02.01.01.00	**General Site Demolition**													
						Storm Sewer Pipe Demolition and Loading, 10' Deep	260.00 lf	Demo 31a	25.000 lf / ch	73	5,569	-	-	3,878	-	36.33 /lf	9,447	83.38 /lf	21,679
						02.01.01.00 General Site Demolition	***1.00*** **LS**			73	5,569			3,878		9,447.04 /LS	9,447	21,679.38 /LS	21,679
					31.20.05.00	**Earthworks, Temporary**													
						Rough Site Grading, Small Crew	2,222.00 sy	EarthWor k0455	225.000 sy / ch	40	2,647	-	-	2,780	-	2.44 /sy	5,427	5.60 /sy	12,454
						Survey: Pre-Excavation	1.00 ls		40.000 mh / ls	40		-	7,500	-	-	7,500.00 /ls	7,500	17,211.26 /ls	17,211
						Mass Excavation, Cut To Stockpile, Excavator, Medium Crew	2,500.00 CY	EarthWor k0210	175.000 CY / ch	114	7,582	-	-	10,541	-	7.25 /CY	18,123	16.64 /CY	41,589
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 950	2,500.00 cy	EarthWor k0840	200.000 cy / ch	13	942	-	-	1,809	-	1.10 /cy	2,752	2.53 /cy	6,315
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	2,500.00 cy	Demo 42b	19.040 cy / ch	131	8,944	-	-	10,755	-	7.88 /cy	19,699	18.08 /cy	45,205
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	2,500.00 cy				-	37,500	-	-	37,500	30.00 /cy	75,000	68.85 /cy	172,113
						31.20.05.00 Earthworks, Temporary	**2,500.00 CY**			338	20,115	37,500	7,500	25,886	37,500	51.40 /CY	128,500	117.95 /CY	294,887
						31.20.05.0002 Remove Temp Bypass	**2,500.00 CY**			410	25,683	37,500	7,500	29,764	37,500	55.18 /CY	137,947	126.63 /CY	316,566
						31.23 Earthworks, Imported Fill	**5,000.00 CY**			914	55,781	81,000	15,000	49,361	43,500	48.93 /CY	244,643	112.28 /CY	561,415
						31.0 Earthwork	**1.00 LS**			3,090	221,961	316,950	19,500	389,995	43,500	991,906.38 /LS	991,906	2,276,260.47 /LS	2,276,260
		32.0				**Exterior Improvements**													
			32.12			**Paving**													
				32.40.02.0003		**Pave Temp Bypass**													
					32.40.02.00	**Site Improvements, Paving, Bituminous Asphalt**													
						Bituminous Pavement Subgrade Prep	1,230.00 SY		0.009 mh / SY	11		-	1,845	-	-	1.50 /SY	1,845	3.44 /SY	4,234
						Bituminous Pavement Import Aggregate Base	621.00 tn		0.013 mh / tn	8		-	19,251	-	-	31.00 /tn	19,251	71.14 /tn	44,178
						Bituminous Asphalt (sy - 6")	1,230.00 sy		0.054 mh / sy	66		-	49,200	-	-	40.00 /sy	49,200	91.79 /sy	112,906
						Pavement Marking, 4" Pavement striping	2,000.00 lf		0.002 mh / lf	4		-	3,000	-	-	1.50 /lf	3,000	3.44 /lf	6,885
						Jersey Barriers (Rent and Install)	1,000.00 lf				6,000	-	-	50,000	-	56.00 /lf	56,000	128.51 /lf	128,511
						Jersey Barriers (Removal)	1,000.00 lf				6,000	-	-	-	-	6.00 /lf	6,000	13.77 /lf	13,769
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	**1,230.00 SY**			90	12,000		73,296	50,000		110.00 /SY	135,296	252.42 /SY	310,482
						32.40.02.0003 Pave Temp Bypass	**1,230.00 SY**			90	12,000		73,296	50,000		110.00 /SY	135,296	252.42 /SY	310,482
						32.12 Paving	**1,230.00 SY**			90	12,000		73,296	50,000		110.00 /SY	135,296	252.42 /SY	310,482
						32.0 Exterior Improvements	**0.00**			90	12,000		73,296	50,000		/LS	135,296	/LS	310,482
		33.0				**Utilities**													
			33.12			**Buried Process Pipe, Corrugated Metal**													
				33.00.16.0004		**Temp Culvert**													
					33.00.16.36	**Buried Pipe, CMP, 36"**													
						Traffic Control, Labor per Day	4.00 day	Gen 15	16.000 mh / day	64	3,733	-	-	-	-	933.15 /day	3,733	2,141.43 /day	8,566
						Dedicated Fire / Safety Monitor	16.00 hr	Safety 01	1.000 mh / hr	16	933	-	-	-	-	58.32 /hr	933	133.84 /hr	2,141
						Excav. pipe trench, w/ trench box, for > 30" pipe	326.95 CY	Pipe 12	0.012 cd / CY	64	4,398	-	-	6,597	-	33.63 /CY	10,995	77.17 /CY	25,232
						Backfill / Compact @ pipe zone, for 30" & larger pipe	150.29 cy	Pipe 15	0.027 cd / cy	112	7,351	-	-	8,607	-	106.18 /cy	15,958	243.67 /cy	36,621
						Backfill / Compact above pipe zone, for 30" & larger pipe	113.69 cy	Pipe 18	0.035 cd / cy	80	6,030	-	-	8,879	-	131.13 /cy	14,908	300.93 /cy	34,212
						Pipe zone material	150.29 cy				-	4,208	-	-	-	28.00 /cy	4,208	64.26 /cy	9,657
						Pipe bedding material	28.57 cy				-	800	-	-	-	28.00 /cy	800	64.26 /cy	1,836
						Imported backfill material	113.69 cy				-	3,183	-	-	-	28.00 /cy	3,183	64.26 /cy	7,305
						Haul spoils, offsite, 10 - 20 miles	292.55 cy				-	-	4,388	-	-	15.00 /cy	4,388	34.42 /cy	10,070
						Dump fees, trench spoils	1.00 ls				-	-	-	-	15	15.00 /ls	15	34.41 /ls	34
						Piping, storm drain, CMP, plain, 20' lengths, 36" dia, 12 ga	260.00 LF	RSMeans B-13	0.015 cd / LF	224	14,102	19,500	-	2,074	-	137.22 /LF	35,676	314.89 /LF	81,871
						Piping, storm drain, CMP, plain, end section, 36" dia	3.00 ea	RSMeans B-13	2.800 mh / ea	8	529	720	-	544	-	597.73 /ea	1,793	1,371.69 /ea	4,115
						CMP Drainage Culvert, 2 Piece Elbow, 36" Diameter	1.00 ea	Pipe 02	1.000 ch / ea	6	484	310	-	273	-	1,067.46 /ea	1,067	2,449.65 /ea	2,450
						CMP Drainage Culvert, Tee or Lateral, 36" Diameter	1.00 ea	Pipe 02	1.000 ch / ea	6	484	350	-	273	-	1,107.46 /ea	1,107	2,541.42 /ea	2,541
						33.00.16.36 Buried Pipe, CMP, 36"	**260.00 LF**			580	38,044	29,071	4,388	27,248	15	379.87 /LF	98,766	871.74 /LF	226,652
						33.00.16.0004 Temp Culvert	**260.00 LF**			580	38,044	29,071	4,388	27,248	15	379.87 /LF	98,766	871.74 /LF	226,652
						33.12 Buried Process Pipe, Corrugated Metal	**260.00 LF**			580	38,044	29,071	4,388	27,248	15	379.87 /LF	98,766	871.74 /LF	226,652
						33.0 Utilities	**260.00 LF**			580	38,044	29,071	4,388	27,248	15	379.87 /LF	98,766	871.74 /LF	226,652
						01.1 Build Detour	**1.00 LS**			3,760	272,005	346,021	97,184	467,243	43,515	1,225,968.67 /LS	1,225,969	2,813,394.56 /LS	2,813,395
	02.1					**Demo Existing Bridge and Paving**													

BID FORM SUMMARY

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 1 Alt 2 Kings Valley Highway Aux. Culvert Installation Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Crew	Labor Productivity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
		02.0				Existing Conditions													
			02.40			Demolition													
				02.01.01.0005		Demo Existing Bridge													
					02.01.01.00	General Site Demolition													
						Saw Cutting, Ashpalt, 6" Depth	100.00 lf		65.000 lf / ch	2		-	200	-	-	2.00 /lf	200	4.59 /lf	459
						Asphalt Milling, 6" Depth	613.00 sy		100.000 sy / ch	6		-	3,065	-	-	5.00 /sy	3,065	11.47 /sy	7,034
						Asphalt Demolition and Loading	201.00 cy	Demo 41a	125.000 cy / ch	8	506	-	-	379	-	4.40 /cy	885	10.11 /cy	2,031
						Haul Site Demolition Spoils, 17 yd capacity, 20 miles RT, priced per cy	204.00 cy	Demo 42b	19.040 cy / ch	11	730	-	-	878	-	7.88 /cy	1,607	18.08 /cy	3,689
						Dump Charges for Site Demolition Spoils, 17 yd end-dump, priced per cy	204.00 cy				-	2,099	-	-	3,060	25.29 /cy	5,159	58.04 /cy	11,839
						Selective demolition, cutout, concrete, elevated slab, bar reinforced, over 6 C.F., excludes loading and disposal	140.00 cf	B9	0.800 mh / cf	112	6,589	-	-	929	-	53.70 /cf	7,519	123.24 /cf	17,254
						Selective demolition, cutout, concrete, slab on grade, bar reinforced, to 6" thick, 8-16 S.F., excludes loading and disposal	140.00 sf	B9	0.267 mh / sf	37	2,196	-	-	310	-	17.90 /sf	2,506	41.08 /sf	5,751
						Selective demolition, cutout, concrete, walls, bar reinforced, 6-12 C.F., excludes loading and disposal	910.00 cf	B9	0.571 mh / cf	520	30,594	-	-	4,314	-	38.36 /cf	34,908	88.03 /cf	80,107
						Selective demolition, rubbish handling, dumpster, 40 c.y., 13 ton capacity, weekly rental, includes one dump per week, cost added to demolition cost.	2.00 week				-	1,550	-	-	-	775.00 /week	1,550	1,778.49 /week	3,557
						Selective demolition, rubbish handling, 51' to 100' haul, load, haul, dump and return, hand carried, cost to be added to demolition cost.	41.48 cy	CLAB2	0.970 mh / cy	40	2,346	-	-	-	-	56.55 /cy	2,346	129.78 /cy	5,384
						Selective demolition, rubbish handling, loading & trucking, chute loaded, including 2 mile haul, cost to be added to demolition cost.	41.48 cy	B16	0.711 mh / cy	29	1,811	-	-	707	-	60.72 /cy	2,519	139.35 /cy	5,780
						02.01.01.00 General Site Demolition	*1.00* LS			765	44,773	3,649	3,265	7,517	3,060	62,263.88 /LS	62,264	142,885.27 /LS	142,885
						02.01.01.0005 Demo Existing Bridge	*1.00* LS			765	44,773	3,649	3,265	7,517	3,060	62,263.88 /LS	62,264	142,885.27 /LS	142,885
						02.40 Demolition	*1.00* LS			765	44,773	3,649	3,265	7,517	3,060	62,263.88 /LS	62,264	142,885.27 /LS	142,885
						02.0 Existing Conditions	*1.00* LS			765	44,773	3,649	3,265	7,517	3,060	62,263.88 /LS	62,264	142,885.27 /LS	142,885
						02.1 Demo Existing Bridge and Paving	*1.00* LS			765	44,773	3,649	3,265	7,517	3,060	62,263.88 /LS	62,264	142,885.27 /LS	142,885
	03.1					Box Culverts													
		03.0				Concrete Work													
			03.10			Cast-In-Place Concrete Work													
				03.10.05.0012		18" Base Slab at Box Culverts													
					03.10.05.18	Cast-In-Place Concrete, Slabs on Grade, 18" thick													
						Fine grade, for slab on grade, by hand	560.00 sf	Conc 02	0.007 mh / sf	4	214	17	-	-	-	0.41 /sf	231	0.95 /sf	529
						Fill, gravel subbase, under building slab on grade	20.74 cy	Conc 02	0.500 mh / cy	10	566	581	-	-	-	55.27 /cy	1,146	126.84 /cy	2,631
						Fill, sand subbase, under building slab on grade	3.46 cy	Conc 02	0.750 mh / cy	3	141	63	-	-	-	59.05 /cy	204	135.52 /cy	469
						Concrete pumping, subcontract, all inclusive price	31.11 cy				-	-	467	-	-	15.00 /cy	467	34.42 /cy	1,071
						Slab on grade edge forms, 12" to 24"	258.00 sf	Conc 01	0.220 mh / sf	57	3,821	258	-	-	-	15.81 /sf	4,079	36.28 /sf	9,360
						Waterstop, PVC, center bulb, 9" wide	140.00 lf	Conc 01	0.080 mh / lf	11	754	420	-	-	-	8.39 /lf	1,174	19.24 /lf	2,694
						Reinforcing in place, A615 Gr 60, priced per lbs.	6,222.22 lb				-	9,333	2,489	-	-	1.90 /lb	11,822	4.36 /lb	27,130
						Concrete, ready mix, 4500 psi	31.11 CY				-	5,600	-	-	-	180.00 /CY	5,600	413.07 /CY	12,851
						Add for concrete waste, 4500 psi	1.56 cy				-	280	-	-	-	180.00 /cy	280	413.08 /cy	643
						Add amount for Fuel Surcharges - per concrete truck load	4.00 load				-	80	-	-	-	20.00 /load	80	45.90 /load	184
						Add amount for Environmental Fee - per concrete truck load	4.00 load				-	32	-	-	-	8.00 /load	32	18.36 /load	73
						Placing concrete, concrete pump	31.11 cy	Conc 02	0.750 mh / cy	23	1,273	-	-	-	-	40.91 /cy	1,273	93.87 /cy	2,920
						Finishing floors, monolithic, trowel finish (hand)	560.00 sf	Conc 03	0.030 mh / sf	17	1,076	11	-	-	-	1.94 /sf	1,087	4.46 /sf	2,495
						Curing, membrane spray	560.00 sf	Conc 02	500.000 sf / mh	1	61	22	-	-	-	0.15 /sf	83	0.34 /sf	192
						Polyethelene vapor barrier, 10 mil thick	5.60 sq	Gen 01	0.220 mh / sq	1	80	59	-	-	-	24.88 /sq	139	57.10 /sq	320
						03.10.05.18 Cast-In-Place Concrete, Slabs on Grade, 18" thick	31.11 CY			127	7,985	16,757	2,956			890.28 /CY	27,698	2,043.05 /CY	63,561
						03.10.05.0012 18" Base Slab at Box Culverts	31.11 CY			127	7,985	16,757	2,956			890.28 /CY	27,698	2,043.05 /CY	63,561
				03.10.06.0013		12" Walls at Box Culvert													
					03.10.06.12	Cast-In-Place Concrete, Straight Walls, 12" thick													
						Concrete pumping, subcontract, all inclusive price	20.74 cy				-	-	311	-	-	15.00 /cy	311	34.42 /cy	714
						Forms in place, structural walls, to 8' high, hand set	1,120.00 sf	Conc 01	0.150 mh / sf	168	11,309	1,120	-	-	-	11.10 /sf	12,429	25.47 /sf	28,522
						Waterstop, PVC, center bulb, 9" wide	140.00 lf	Conc 01	0.080 mh / lf	11	754	420	-	-	-	8.39 /lf	1,174	19.24 /lf	2,694
						Reinforcing in place, A615 Gr 60, priced per lbs.	5,185.19 lb				-	7,778	2,074	-	-	1.90 /lb	9,852	4.36 /lb	22,608
						Concrete, ready mix, 4500 psi	20.74 CY				-	3,733	-	-	-	180.00 /CY	3,733	413.07 /CY	8,567
						Add for concrete waste, 4500 psi	1.04 cy				-	187	-	-	-	180.00 /cy	187	413.07 /cy	428
						Add amount for Fuel Surcharges - per concrete truck load	4.00 load				-	80	-	-	-	20.00 /load	80	45.90 /load	184
						Add amount for Environmental Fee - per concrete truck load	4.00 load				-	32	-	-	-	8.00 /load	32	18.36 /load	73
						Placing concrete, concrete pump, for structural wall to 12" thick	20.74 cy	Conc 02	0.850 mh / cy	18	962	-	-	-	-	46.36 /cy	962	106.39 /cy	2,207
						Patch & plug tieholes	1,120.00 sf	Conc 02	0.015 mh / sf	17	916	22	-	-	-	0.84 /sf	939	1.92 /sf	2,154
						Sack rub	1,120.00 sf	Conc 02	0.040 mh / sf	45	2,443	34	-	-	-	2.21 /sf	2,477	5.08 /sf	5,684
						Curing, membrane spray	1,120.00 sf	Conc 02	500.000 sf / mh	2	122	45	-	-	-	0.15 /sf	167	0.34 /sf	383
						03.10.06.12 Cast-In-Place Concrete, Straight Walls, 12" thick	20.74 CY			261	16,506	13,451	2,385			1,559.32 /CY	32,342	3,578.39 /CY	74,219
						03.10.06.0013 12" Walls at Box Culvert	20.74 CY			261	16,506	13,451	2,385			1,559.32 /CY	32,342	3,578.39 /CY	74,219
				03.10.10.0014		12" Top Slab at Box Culvert													
					03.10.10.12	Cast-In-Place Concrete, Elevated Decks, 12" thick													
						Concrete pumping, subcontract, all inclusive price	20.74 cy				-	-	311	-	-	15.00 /cy	311	34.42 /cy	714
						Forms in place, elevated slab, soffit	560.00 sf	Conc 01	0.200 mh / sf	112	7,539	700	-	-	-	14.71 /sf	8,239	33.76 /sf	18,908
						Forms in place, elevated slab, edge form	172.00 sf	Conc 01	0.250 mh / sf	43	2,895	215	-	-	-	18.08 /sf	3,110	41.49 /sf	7,136
						Slab shoring	2,240.00 cf	Conc 01	0.007 mh / cf	16	1,055	112	-	-	-	0.52 /cf	1,167	1.20 /cf	2,679
						Waterstop, PVC, center bulb, 9" wide	140.00 lf	Conc 01	0.080 mh / lf	11	754	420	-	-	-	8.39 /lf	1,174	19.24 /lf	2,694
						Reinforcing in place, A615 Gr 60, priced per lbs.	4,666.67 lb				-	7,000	1,867	-	-	1.90 /lb	8,867	4.36 /lb	20,348
						Concrete, ready mix, 4500 psi	20.74 CY				-	3,733	-	-	-	180.00 /CY	3,733	413.07 /CY	8,567
						Add for concrete waste, 4500 psi	1.04 cy				-	187	-	-	-	180.00 /cy	187	413.05 /cy	428
						Add amount for Fuel Surcharges - per concrete truck load	4.00 load				-	80	-	-	-	20.00 /load	80	45.90 /load	184
						Add amount for Environmental Fee - per concrete truck load	4.00 load				-	32	-	-	-	8.00 /load	32	18.36 /load	73
						Placing concrete, concrete pump, for elevated slab to 12" thick	20.74 cy	Conc 02	0.500 mh / cy	10	566	-	-	-	-	27.27 /cy	566	62.58 /cy	1,298
						Curing, membrane spray	560.00 sf	Conc 02	500.000 sf / mh	1	61	22	-	-	-	0.15 /sf	83	0.34 /sf	192
						Concrete finishing, floors, manual screed	560.00 sf	C10	0.005 mh / sf	3	179	-	-	-	-	0.32 /sf	179	0.73 /sf	410
						03.10.10.12 Cast-In-Place Concrete, Elevated Decks, 12" thick	20.74 CY			196	13,049	12,501	2,178			1,336.86 /CY	27,728	3,067.87 /CY	63,631
						03.10.10.0014 12" Top Slab at Box Culvert	20.74 CY			196	13,049	12,501	2,178			1,336.86 /CY	27,728	3,067.87 /CY	63,631
						03.10 Cast-In-Place Concrete Work	72.59 CY			584	37,540	42,709	7,519			1,209.03 /CY	87,767	2,774.53 /CY	201,411
						03.0 Concrete Work	72.59 CY			584	37,540	42,709	7,519			1,209.03 /CY	87,767	2,774.53 /CY	201,411
		31.0				Earthwork													
			31.25			Earthworks, Structural													
				31.25.01.0011		Excavation for Box Culverts													
					31.25.01.00	Earthworks, Structural, Excavation													
						Dewatering Minor, Generator and Pumps, Mob	2.00 ea		8.000 mh / ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,442.26 /ea	6,885
						Dewatering Minor, Set-up Generator and Install Pumps	4.00 ea	EarthWor k089001	2.000 ch / ea	32	2,008	-	-	535	-	635.82 /ea	2,543	1,459.10 /ea	5,836
						Dewatering Minor, Sump Rock, delivered	10.00 cy				-	200	-	-	-	20.00 /cy	200	45.90 /cy	459

BID FORM SUMMARY

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 1 Alt 2 Kings Valley Highway Aux. Culvert Installation Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Crew	Labor Productivity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					31.25.01.00	Earthworks, Structural, Excavation													
						Dewatering Minor, Large Generator and 2 Pumps, Rental, Monthly	24.00 mo	EarthWor k089005			-	-	-	669,331	-	27,888.80 /mo	669,331	64,000.16 /mo	1,536,004
						Dewatering Minor, Generator and Pumps, Operation - Labor to maintain / check pumps/ fuel and lube	24.00 mo	EarthWor k089003	176.000 ch / mo	12,672	741,760	-	-	70,224	-	33,832.66 /mo	811,984	77,640.33 /mo	1,863,368
						Dewatering Minor, Remove Generator and Pumps	4.00 ea	EarthWor k089002	2.000 ch / ea	32	2,008	-	-	402	-	602.57 /ea	2,410	1,382.80 /ea	5,531
						Dewatering Minor, Generator and Pumps, Demob	2.00 ea		8.000 mh / ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,442.26 /ea	6,885
						Shoring, sheet pile, subcontracted	1,400.00 sf		0.130 mh / sf	182		-	56,000	-	-	40.00 /sf	56,000	91.79 /sf	128,511
						Structural Excavation, Excavator and Trucks, Small Crew, 6' depth	540.00 CY	EarthWor k0900	125.000 CY / ch	30	2,041	-	-	2,153	-	7.77 /CY	4,194	17.82 /CY	9,624
						Grade for slabs / Scarify and Recompact, Dozer and Traxcavator or Loader, Small Crew	62.00 sy	EarthWor k0903	150.000 sy / ch	3	201	-	-	206	-	6.56 /sy	407	15.06 /sy	934
						Structural Backfill, Dozer and Traxcavator or Loader, Small Crew	354.00 cy	EarthWor k0912	100.000 cy / ch	25	1,724	-	-	1,760	-	9.84 /cy	3,484	22.58 /cy	7,995
						Load Excess for Hauling, Rubber Tire Loader, Cat 950	354.00 cy	EarthWor k0840	200.000 cy / ch	2	133	-	-	256	-	1.10 /cy	390	2.53 /cy	894
						Haul / Remove Excess, 17 yd capacity, 20 miles RT	354.00 cy	Demo 42b	19.040 cy / ch	19	1,266	-	-	1,523	-	7.88 /cy	2,789	18.08 /cy	6,401
						Dump Charges for For Excess, 17 yd tandem, per cy	354.00 cy				-	3,646	-	-	-	10.30 /cy	3,646	23.64 /cy	8,367
						Over excavate and replace with suitable, Excavators and Trucks, Small Crew	52.00 cy	EarthWor k0915	150.000 cy / ch	2	164	-	-	210	-	7.18 /cy	373	16.47 /cy	857
						31.25.01.00 Earthworks, Structural, Excavation	540.00 CY			13,031	751,305	3,846	62,000	746,601		2,895.84 /CY	1,563,752	6,645.46 /CY	3,588,550
						31.25.01.0011 Excavation for Box Culverts	540.00 CY			13,031	751,305	3,846	62,000	746,601		2,895.84 /CY	1,563,752	6,645.46 /CY	3,588,550
						31.25 Earthworks, Structural	540.00 CY			13,031	751,305	3,846	62,000	746,601		2,895.84 /CY	1,563,752	6,645.46 /CY	3,588,550
						31.0 Earthwork	*1.00* LS			13,031	751,305	3,846	62,000	746,601		1,563,751.59 /LS	1,563,752	3,588,550.29 /LS	3,588,550
						03.1 Box Culverts	*1.00* LS			13,615	788,845	46,555	69,519	746,601		1,651,518.82 /LS	1,651,519	3,789,961.51 /LS	3,789,962
	03.2					2'x4' Pre-Cast Box Culverts													
		33.0				Utilities													
			33.08			Buried Process Pipe, RCP													
				33.00.15.0015		2'x4' Pre-Cast Box Culverts 64 Feet Long													
					33.00.15.48	Buried Pipe, RCP Arch, 48"													
						Pipeline Lf per day	***32.00 lf***		***1.000 lf / 0***			-	-	-	-	***/lf***		***/lf***	
						Traffic Control, Labor per Day	4.00 day	Gen 15	16.000 mh / day	64	3,733	-	-	-	-	933.15 /day	3,733	2,141.44 /day	8,566
						Trench Box, 8' x 24' x 10'	0.25 mo				-	-	-	575	-	2,300.00 /mo	575	5,278.08 /mo	1,320
						50 tn Rough Terrain (per day)	2.00 day	Const Equip 05	8.000 ch / day	16	1,266	-	-	3,161	-	2,213.39 /day	4,427	5,079.36 /day	10,159
						Excav. pipe trench, w/ trench box, for > 30" pipe	96.08 CY	Pipe 12	0.021 cd / CY	32	2,200	-	-	3,299	-	57.23 /CY	5,499	131.34 /CY	12,619
						Backfill / Compact @ pipe zone, for 30" & larger pipe	49.70 cy	Pipe 15	0.040 cd / cy	56	3,675	-	-	4,304	-	160.54 /cy	7,979	368.41 /cy	18,310
						Backfill / Compact above pipe zone, for 30" & larger pipe	17.35 cy	Pipe 18	0.115 cd / cy	40	3,016	-	-	4,441	-	429.78 /cy	7,457	986.27 /cy	17,112
						Pipe zone material	49.70 cy				-	1,392	-	-	-	28.00 /cy	1,392	64.26 /cy	3,193
						Pipe bedding material	8.40 cy				-	235	-	-	-	28.00 /cy	235	64.26 /cy	540
						Imported backfill material	17.35 cy				-	486	-	-	-	28.00 /cy	486	64.26 /cy	1,115
						Haul spoils, offsite, 10 - 20 miles	75.00 cy				-	-	1,125	-	-	15.00 /cy	1,125	34.42 /cy	2,582
						Dump fees, trench spoils	75.00 cy				-	-	-	-	1,125	15.00 /cy	1,125	34.42 /cy	2,582
						48" pipe, RCP, Arch Pipe, excav/bkfill not included	64.00 LF	Pipe 01	0.031 cd / LF	112	8,953	32,000	-	7,388	-	755.33 /LF	48,341	1,733.37 /LF	110,935
						48" flared end, RCP, Arched	2.00 ea	Pipe 01	37.040 mh / ea	74	5,922	20,973	-	4,276	-	15,585.55 /ea	31,171	35,766.25 /ea	71,533
						48" trash rack	2.00 ea	Pipe 01	18.520 mh / ea	37	2,961	4,708	-	2,138	-	4,903.37 /ea	9,807	11,252.42 /ea	22,505
						Pipe Marking, Detection Tape	64.00 lf	Pipe 61	0.010 mh / lf	1	52	8	-	-	-	0.94 /lf	60	2.16 /lf	138
						Pipe Marking, Copper Wire	64.00 lf	Pipe 61	0.010 mh / lf	1	52	14	-	-	-	1.03 /lf	66	2.36 /lf	151
						33.00.15.48 Buried Pipe, RCP Arch, 48"	64.00 LF			432	31,829	59,816	1,125	29,581	1,125	1,929.32 /LF	123,477	4,427.47 /LF	283,358
						33.00.15.0015 2'x4' Pre-Cast Box Culverts 64 Feet Long	64.00 LF			432	31,829	59,816	1,125	29,581	1,125	1,929.32 /LF	123,477	4,427.47 /LF	283,358
				33.00.15.0016		2'x4' Pre-Cast Box Culverts 75 Feet Long													
					33.00.15.48	Buried Pipe, RCP Arch, 48"													
						Pipeline Lf per day	***38.00 lf***		***1.000 lf / 0***			-	-	-	-	***/lf***		***/lf***	
						Traffic Control, Labor per Day	4.00 day	Gen 15	16.000 mh / day	64	3,733	-	-	-	-	933.15 /day	3,733	2,141.43 /day	8,566
						Trench Box, 8' x 24' x 10'	0.25 mo				-	-	-	575	-	2,300.00 /mo	575	5,278.16 /mo	1,320
						50 tn Rough Terrain (per day)	2.00 day	Const Equip 05	8.000 ch / day	16	1,266	-	-	3,161	-	2,213.39 /day	4,427	5,079.34 /day	10,159
						Excav. pipe trench, w/ trench box, for > 30" pipe	112.59 CY	Pipe 12	0.018 cd / CY	32	2,199	-	-	3,298	-	48.82 /CY	5,497	112.03 /CY	12,614
						Backfill / Compact @ pipe zone, for 30" & larger pipe	58.25 cy	Pipe 15	0.034 cd / cy	56	3,675	-	-	4,303	-	136.96 /cy	7,978	314.31 /cy	18,308
						Backfill / Compact above pipe zone, for 30" & larger pipe	20.32 cy	Pipe 18	0.098 cd / cy	40	3,015	-	-	4,440	-	366.89 /cy	7,455	841.96 /cy	17,109
						Pipe zone material	58.25 cy				-	1,631	-	-	-	28.00 /cy	1,631	64.26 /cy	3,743
						Pipe bedding material	9.84 cy				-	276	-	-	-	28.00 /cy	276	64.26 /cy	632
						Imported backfill material	20.32 cy				-	569	-	-	-	28.00 /cy	569	64.26 /cy	1,306
						Haul spoils, offsite, 10 - 20 miles	88.00 cy				-	-	1,320	-	-	15.00 /cy	1,320	34.42 /cy	3,029
						Dump fees, trench spoils	88.00 cy				-	-	-	-	1,320	15.00 /cy	1,320	34.42 /cy	3,029
						48" pipe, RCP, Arch Pipe, excav/bkfill not included	75.00 LF	Pipe 01	0.027 cd / LF	112	8,954	37,500	-	7,389	-	717.91 /LF	53,843	1,647.49 /LF	123,562
						48" flared end, RCP, Arched	2.00 ea	Pipe 01	37.040 mh / ea	74	5,922	20,973	-	4,276	-	15,585.55 /ea	31,171	35,766.25 /ea	71,532
						48" trash rack	2.00 ea	Pipe 01	18.520 mh / ea	37	2,961	4,708	-	2,138	-	4,903.37 /ea	9,807	11,252.41 /ea	22,505
						Pipe Marking, Detection Tape	75.00 lf	Pipe 61	0.010 mh / lf	1	61	10	-	-	-	0.94 /lf	71	2.16 /lf	162
						Pipe Marking, Copper Wire	75.00 lf	Pipe 61	0.010 mh / lf	1	61	17	-	-	-	1.03 /lf	77	2.36 /lf	177
						33.00.15.48 Buried Pipe, RCP Arch, 48"	75.00 LF			433	31,846	65,683	1,320	29,580	1,320	1,729.98 /LF	129,749	3,970.03 /LF	297,752
						33.00.15.0016 2'x4' Pre-Cast Box Culverts 75 Feet Long	75.00 LF			433	31,846	65,683	1,320	29,580	1,320	1,729.98 /LF	129,749	3,970.03 /LF	297,752
						33.08 Buried Process Pipe, RCP	139.00 LF			865	63,676	125,499	2,445	59,161	2,445	1,821.77 /LF	253,225	4,180.65 /LF	581,110
						33.0 Utilities	139.00 LF			865	63,676	125,499	2,445	59,161	2,445	1,821.77 /LF	253,225	4,180.65 /LF	581,110
						03.2 2'x4' Pre-Cast Box Culverts	*1.00* LS			865	63,676	125,499	2,445	59,161	2,445	253,225.43 /LS	253,225	581,110.34 /LS	581,110
	04.1					Site Imrpovements													
		32.0				Exterior Improvements													
			32.12			Paving													
				32.40.02.0008		Excavation and Structural Backfill													
					32.40.02.00	Site Improvements, Paving, Bituminous Asphalt													
						Rough Site Grading, Small Crew	320.00 SY	EarthWor k0455	225.000 SY / ch	6	381	-	-	400	-	2.44 /SY	782	5.61 /SY	1,794
						Fog seal, seal coating, coal tar pitch emulsion, 2 coat, under 1000 S.Y.	333.33 sy	B1	0.023 mh / sy	8	451	667	-	-	-	3.35 /sy	1,118	7.69 /sy	2,565
						Fog seal, sealcoating, prepare and clean surface for sealcoating	333.33 sy	A2	0.003 mh / sy	1	57	-	-	13	-	0.21 /sy	70	0.48 /sy	160
						Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 9" deep	333.33 sy	B32	0.007 mh / sy	2	155	2,650	-	167	-	8.92 /sy	2,972	20.46 /sy	6,820
						Plant-mix asphalt paving, for highways and large paved areas, pavement replacement over trench, 6" thick, no hauling included	333.33 sy	B21	0.509 mh / sy	170	11,330	13,333	-	1,051	-	77.14 /sy	25,714	177.03 /sy	59,010
						Painted pavement markings, thermoplastic, white or yellow, 4" wide, less than 6000 L.F.	300.00 lf	B79	0.003 mh / lf	1	48	276	-	32	-	1.19 /lf	356	2.72 /lf	817
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	320.00 SY			187	12,422	16,926		1,664		96.91 /SY	31,011	222.39 /SY	71,166

BID FORM SUMMARY

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 1 Alt 2 Kings Valley Highway Aux. Culvert Installation Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Crew	Labor Productivity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
						32.40.02.0008 Excavation and Structural Backfill	**320.00 SY**			187	12,422	16,926		1,664		**96.91 /SY**	31,011	**222.39 /SY**	71,166
						32.12 Paving	**320.00 SY**			187	12,422	16,926		1,664		**96.91 /SY**	31,011	**222.39 /SY**	71,166
			32.50			**Site, Improvements**													
				32.50.06.0009		**Site Improvement Allowances**													
					32.50.06.00	**Site Improvements, Other Improvements**													
						Division 01 Allowance SWPPP	1.00 LS				-	-	20,000	-		20,000.00 /LS	20,000	45,896.68 /LS	45,897
						Division 32 Allowance Landscape	1.00 ls				-	-	20,000	-		20,000.00 /ls	20,000	45,896.68 /ls	45,897
						32.50.06.00 Site Improvements, Other Improvements	**1.00 LS**						40,000			**40,000.00 /LS**	40,000	**91,793.36 /LS**	91,793
						32.50.06.0009 Site Improvement Allowances	**1.00 LS**						40,000			**40,000.00 /LS**	40,000	**91,793.36 /LS**	91,793
						32.50 Site, Improvements	**1.00 LS**						40,000			**40,000.00 /LS**	40,000	**91,793.36 /LS**	91,793
						32.0 Exterior Improvements	**1.00 LS**			187	12,422	16,926	40,000	1,664		**71,011.38 /LS**	71,011	**162,959.32 /LS**	162,959
						04.1 Site Imrpovements	**1.00 LS**			187	12,422	16,926	40,000	1,664		**71,011.38 /LS**	71,011	**162,959.32 /LS**	162,959
	04.2					**Trench Paving**													
		32.0				**Exterior Improvements**													
			32.12			**Paving**													
				32.40.02.0017		**Trench Paving**													
					32.40.02.00	**Site Improvements, Paving, Bituminous Asphalt**													
						Fog seal, seal coating, coal tar pitch emulsion, 2 coat, under 1000 S.Y.	155.56 SY	B1	0.023 mh / SY	4	210	311	-	-	-	3.35 /SY	522	7.69 /SY	1,197
						Fog seal, sealcoating, prepare and clean surface for sealcoating	155.56 sy	A2	0.003 mh / sy	0	26	-	-	6	-	0.21 /sy	33	0.48 /sy	75
						Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 9" deep	155.56 sy	B32	0.007 mh / sy	1	72	1,237	-	78	-	8.92 /sy	1,387	20.46 /sy	3,183
						Plant-mix asphalt paving, for highways and large paved areas, pavement replacement over trench, 6" thick, no hauling included	155.56 sy	B21	0.509 mh / sy	79	5,287	6,222	-	490	-	77.14 /sy	12,000	177.03 /sy	27,538
						Painted pavement markings, thermoplastic, white or yellow, 4" wide, less than 6000 L.F.	50.00 lf	B79	0.003 mh / lf	0	8	46	-	5	-	1.19 /lf	59	2.72 /lf	136
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	**155.56 SY**			84	5,604	7,816		580		**90.00 /SY**	14,000	**206.54 /SY**	32,129
						32.40.02.0017 Trench Paving	**155.56 SY**			84	5,604	7,816		580		**90.00 /SY**	14,000	**206.54 /SY**	32,129
						32.12 Paving	**155.56 SY**			84	5,604	7,816		580		**90.00 /SY**	14,000	**206.54 /SY**	32,129
			32.50			**Site, Improvements**													
				32.50.06.0009		**Site Improvement Allowances**													
					32.50.06.00	**Site Improvements, Other Improvements**													
						Division 01 Allowance SWPPP	1.00 LS				-	-	20,000	-		20,000.00 /LS	20,000	45,896.67 /LS	45,897
						Division 32 Allowance Landscape	1.00 ls				-	-	20,000	-		20,000.00 /ls	20,000	45,896.68 /ls	45,897
						32.50.06.00 Site Improvements, Other Improvements	**1.00 LS**						40,000			**40,000.00 /LS**	40,000	**91,793.35 /LS**	91,793
						32.50.06.0009 Site Improvement Allowances	**1.00 LS**						40,000			**40,000.00 /LS**	40,000	**91,793.35 /LS**	91,793
						32.50 Site, Improvements	**1.00 LS**						40,000			**40,000.00 /LS**	40,000	**91,793.35 /LS**	91,793
						32.0 Exterior Improvements	**1.00 LS**			84	5,604	7,816	40,000	580		**54,000.48 /LS**	54,000	**123,922.13 /LS**	123,922
						04.2 Trench Paving	**1.00 LS**			84	5,604	7,816	40,000	580		**54,000.48 /LS**	54,000	**123,922.13 /LS**	123,922
	05.1					**Traffic Control**													
		31.0				**Earthwork**													
			31.10			**Temporary Works**													
				31.10.07.0010		**Traffic Control**													
					31.10.07.00	**Temporary Works, Traffic Control**													
						Traffic Cones 36"	750.00 day				-	5,760	-	5,760	-	15.36 /day	11,520	35.25 /day	26,436
						Rd Closed Local Traffic Only (sign only), 60x30	365.00 ea				-	-	-	263	-	0.72 /ea	263	1.65 /ea	603
						Traffic Control, Equipment Rental, Monthly	12.00 mo				-	-	-	36,000	-	3,000.00 /mo	36,000	6,884.50 /mo	82,614
						Traffic control devices, traffic chanizing pvmt mkers, layout only	2.00 ea		20.000 mh / ea	40	2,600	-	-	-	-	1,300.00 /ea	2,600	2,983.28 /ea	5,967
						31.10.07.00 Temporary Works, Traffic Control	***1.00* LS**			40	2,600	5,760		42,023		**50,382.80 /LS**	50,383	**115,620.16 /LS**	115,620
						31.10.07.0010 Traffic Control	***1.00* LS**			40	2,600	5,760		42,023		**50,382.80 /LS**	50,383	**115,620.16 /LS**	115,620
						31.10 Temporary Works	***1.00* LS**			40	2,600	5,760		42,023		**50,382.80 /LS**	50,383	**115,620.16 /LS**	115,620
						31.0 Earthwork	***1.00* LS**			40	2,600	5,760		42,023		**50,382.80 /LS**	50,383	**115,620.16 /LS**	115,620
						05.1 Traffic Control	***1.00* LS**			40	2,600	5,760		42,023		**50,382.80 /LS**	50,383	**115,620.16 /LS**	115,620
	05.2					**Traffic Control**													
		31.0				**Earthwork**													
			31.10			**Temporary Works**													
				31.10.07.0018		**Traffic Control**													
					31.10.07.00	**Temporary Works, Traffic Control**													
						Division 31 Trench Plates 4' x 8'	3.00 EA				-	6,000	-	-		2,000.00 /EA	6,000	4,589.67 /EA	13,769
						Flagger	30.00 day		8.000 hr / day	240	5,472	-	-	-	-	182.40 /day	5,472	418.58 /day	12,557
						Road Work Ahead, 48x48	60.00 day				-	1,066	-	1,066	-	35.52 /day	2,131	81.51 /day	4,891
						Rt/Lt Lane Closed ahead, 48x49	60.00 day				-	1,066	-	1,066	-	35.52 /day	2,131	81.51 /day	4,891
						Rt/Lt Lane Transition / Merge / Turkey track, 48x50	60.00 day				-	1,066	-	1,066	-	35.52 /day	2,131	81.51 /day	4,891
						Flagger Symbol, 48x51	60.00 day				-	720	-	1,066	-	29.76 /day	1,786	68.29 /day	4,098
						Type 3 Barricade	180.00 day				-	3,456	-	3,456	-	38.40 /day	6,912	88.12 /day	15,862
						Traffic Cones 36"	480.00 day				-	3,686	-	3,686	-	15.36 /day	7,373	35.25 /day	16,919
						Radios (Hand Held)	60.00 day				-	480	-	4,608	-	84.80 /day	5,088	194.60 /day	11,676
						Arrow Board	60.00 day				-	-	-	3,960	-	66.00 /day	3,960	151.46 /day	9,088
						Variable Message Board	60.00 day				-	-	-	19,800	-	330.00 /day	19,800	757.30 /day	45,438
						Jersey Barriers (Rent and Install)	60.00 lf				360	-	-	1,016	-	22.93 /lf	1,376	52.62 /lf	3,157
						31.10.07.00 Temporary Works, Traffic Control	***1.00* LS**			240	5,832	17,539		40,789		**64,159.80 /LS**	64,160	**147,236.10 /LS**	147,236
						31.10.07.0018 Traffic Control	***1.00* LS**			240	5,832	17,539		40,789		**64,159.80 /LS**	64,160	**147,236.10 /LS**	147,236
						31.10 Temporary Works	***1.00* LS**			240	5,832	17,539		40,789		**64,159.80 /LS**	64,160	**147,236.10 /LS**	147,236
						31.0 Earthwork	***1.00* LS**			240	5,832	17,539		40,789		**64,159.80 /LS**	64,160	**147,236.10 /LS**	147,236
						05.2 Traffic Control	***1.00* LS**			240	5,832	17,539		40,789		**64,159.80 /LS**	64,160	**147,236.10 /LS**	147,236
						01.0 Reach 1 Alternate 2	***1.00* LS**			19,556	1,195,756	569,765	252,413	1,365,577	49,020	**3,432,531.26 /LS**	3,432,531	**7,877,089.39 /LS**	7,877,089

BID FORM SUMMARY

Project type: Channelization	Project Name: D3540100 North Ash Creek Reach 1 Alt 2 Kings Valley Highway Aux. Culvert Installation Rev #1 5-22-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Estimate Totals

Description	Amount	Totals	Rate	Cost / Unit	% of Total	
Labor	1,195,756		hrs		15.09%	
Material	569,765				7.19%	
Subcontract	252,413				3.19%	
Equipment	1,365,577		hrs		17.24%	
Other	49,020				0.62%	
Subtotal Raw Costs	**3,432,531**	**3,432,531**			**43.32%**	**43.32%**
Material Sales & Use Tax - %						
Construction Equip Tax - %						
Total Taxes		**3,432,531**				**43.32%**
Location Adj. Factor						
Productivity Adjustment						
Subtotal Adj. Factors		**3,432,531**				**43.32%**
Existing Conditions I,OH&P	15,566		25.000 %		0.20%	
Concrete Work I,OH&P	21,942		25.000 %		0.28%	
Masonry Work I,OH&P			25.000 %			
Metals Work I,OH&P			25.000 %			
Architectural (Div 6-12)I,OH&P			25.000 %			
Special Construction I,OH&P			25.000 %			
Conveying Equipment I,OH&P			25.000 %			
Mechanical Work I,OH&P			25.000 %			
Electrical Work I,OH&P			25.000 %			
Site/Civil I,OH&P	732,627		25.000 %		9.25%	
Buried Piping I,OH&P	87,998		25.000 %		1.11%	
Tank Construction I,OH&P			25.000 %			
Process Piping I,OH&P			25.000 %			
Instruments & Controls I,OH&P			25.000 %			
Material Handling I,OH&P			25.000 %			
Process Equipment I,OH&P			25.000 %			
Subtotal Subcontractor I,OH&P	**858,133**	**4,290,664**			**10.83%**	**54.16%**
Contractor Contingency						
Subtotal Contingency		**4,290,664**				**54.16%**
Total Cost To Prime Contractor		**4,290,664**				**54.16%**
General Conditions	429,066		10.000 %		5.42%	
Mobilization/Demobilization	214,533		5.000 %		2.71%	
Subtotal Indirect Costs	**643,599**	**4,934,263**			**8.12%**	**62.28%**
Prime Contractor Home OfficeOH	493,426		10.000 %		6.23%	
Prime Contractor Profit	740,140		15.000 %		9.34%	
Bonds & Insurance	133,842		2.170 %		1.69%	
Subtotal OH&P	**1,367,408**	**6,301,671**			**17.26%**	**79.54%**
Contractor MU on Mech OFCI						
Contractor MU on Elec OFCI						
Total MU on OFCI Equip		**6,301,671**				**79.54%**
Design Contingency	1,575,418		25.000 %		19.88%	
Subtotal Contingency	**1,575,418**	**7,877,089**			**19.88%**	**99.42%**
Escalation						
Subtotal Escalation		**7,877,089**				**99.42%**
Corporate Activity Tax	45,687		0.580 %		0.58%	
Total Prime Contractor Costs	**45,687**	**7,922,776**			**0.58%**	**100.00%**
Total Construction Cost		**7,922,776**				**100.00%**
Total		***7,922,776***				

BID FORM SUMMARY

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 2 Cemetery Culvert Replacements Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0						**Reach 2 Cemetery Culverts**											
	01.2					**Demo Existing Culverts**											
		02.0				**Existing Conditions**											
			02.40			**Demolition**											
				02.01.01.0014		**Demo Culverts**											
					02.01.01.00	**General Site Demolition**											
						Saw Cutting, Ashpalt, 6" Depth	300.00 lf	5		-	600	-	-	2.00 /lf	600	4.59 /lf	1,377
						Asphalt Milling, 6" Depth	155.00 sy	2		-	775	-	-	5.00 /sy	775	11.47 /sy	1,778
						Storm Sewer Pipe Demolition and Loading, 10' Deep	139.00 lf	224	17,135	-	-	11,933	-	209.12 /lf	29,068	479.90 /lf	66,706
						Haul Site Demolition Spoils, 17 yd capacity, 20 miles RT, priced per load	2.00 load	2	122	-	-	146	-	133.96 /load	268	307.41 /load	615
						Dump Charges for Site Demolition Spoils, 17 yd end-dump, priced per load	2.00 load		-	350	-	-	-	175.00 /load	350	401.60 /load	803
						Porta-dam, mob	2.00 ea	48		-	30,000	-	-	15,000.00 /ea	30,000	34,422.51 /ea	68,845
						Porta-dam, installation	2.00 ea	192	15,494	1,000	-	8,744	-	12,619.41 /ea	25,239	28,959.44 /ea	57,919
						Porta-dam, rental	2.00 mo		-	-	30,000	-	-	15,000.00 /mo	30,000	34,422.51 /mo	68,845
						Porta-dam, dewatering operation - labor to maintain / check pumps/ fuel and lube	2.00 mo	352	23,978	-	-	17,600	-	20,789.12 /mo	41,578	47,707.58 /mo	95,415
						Porta-dam, dewatering operation - fuel cost	2.00 mo		-	18,000	-	-	-	9,000.00 /mo	18,000	20,653.51 /mo	41,307
						Porta-dam, removal	2.00 ea	192	15,494	-	-	8,744	-	12,119.41 /ea	24,239	27,812.03 /ea	55,624
						Porta-dam, demob	2.00 ea	48		-	30,000	-	-	15,000.00 /ea	30,000	34,422.51 /ea	68,845
						02.01.01.00 General Site Demolition	***1.00*** **LS**	**1,064**	**72,223**	**19,350**	**91,375**	**47,168**		**230,116.59 /LS**	**230,117**	**528,079.38 /LS**	**528,079**
						02.01.01.0014 Demo Culverts	***1.00*** **LS**	**1,064**	**72,223**	**19,350**	**91,375**	**47,168**		**230,116.59 /LS**	**230,117**	**528,079.38 /LS**	**528,079**
						02.40 Demolition	***1.00*** **LS**	**1,064**	**72,223**	**19,350**	**91,375**	**47,168**		**230,116.59 /LS**	**230,117**	**528,079.38 /LS**	**528,079**
						02.0 Existing Conditions	***1.00*** **LS**	**1,064**	**72,223**	**19,350**	**91,375**	**47,168**		**230,116.59 /LS**	**230,117**	**528,079.38 /LS**	**528,079**
		31.0				**Earthwork**											
			31.19			**Dewatering and Bypass Pumping**											
				31.19.06.0003		**Bypass Pumping**											
					31.19.06.00	**Site Preparation, Bypass Pumping, 12" to 24" Pipe**											
						Generator, Weekly	8.00 wk		-	4,000	-	12,000	-	2,000.00 /wk	16,000	4,589.67 /wk	36,717
						Bypass Pumping, Pumps and Piping, Mob	3.00 ea	24	1,988	-	4,500	1,054	-	2,514.04 /ea	7,542	5,769.30 /ea	17,308
						Bypass Pumping, Set-up Pumps	3.00 ea	48	3,977	1,500	-	1,054	-	2,176.86 /ea	6,531	4,995.52 /ea	14,987
						Bypass Pumping, Install Suction Piping	3.00 ea	24	1,988	450	-	527	-	988.43 /ea	2,965	2,268.28 /ea	6,805
						Bypass Pumping, System Operation	8.00 WK	320	24,342	32,000	-	40,000	-	12,042.80 /WK	96,342	27,636.23 /WK	221,090
						31.19.06.00 Site Preparation, Bypass Pumping, 12" to 24" Pipe	**8.00 WK**	**416**	**32,296**	**37,950**	**4,500**	**54,634**		**16,172.55 /WK**	**129,380**	**37,113.31 /WK**	**296,906**
						31.19.06.0003 Bypass Pumping	**8.00 WK**	**416**	**32,296**	**37,950**	**4,500**	**54,634**		**16,172.55 /WK**	**129,380**	**37,113.31 /WK**	**296,906**
						31.19 Dewatering and Bypass Pumping	**8.00 WK**	**416**	**32,296**	**37,950**	**4,500**	**54,634**		**16,172.55 /WK**	**129,380**	**37,113.31 /WK**	**296,906**
						31.0 Earthwork	***1.00*** **LS**	**416**	**32,296**	**37,950**	**4,500**	**54,634**		**129,380.38 /LS**	**129,380**	**296,906.49 /LS**	**296,906**
						01.2 Demo Existing Culverts	***1.00*** **LS**	**1,480**	**104,520**	**57,300**	**95,875**	**101,802**		**359,496.97 /LS**	**359,497**	**824,985.87 /LS**	**824,986**
	03.2					**2'x4' Pre-Cast Box Culverts**											
		33.0				**Utilities**											
			33.08			**Buried Process Pipe, RCP**											
				33.00.15.0015		**2'x4' Pre-Cast Box Culverts 64 Feet Long**											
					33.00.15.48	**Buried Pipe, RCP Arch, 48"**											
						Pipeline Existing Conditions	***32.00 lf***			-	-	-	-	***/lf***		***/lf***	
						Traffic Control, Labor per Day	4.00 day	64	3,733	-	-	-	-	933.15 /day	3,733	2,141.43 /day	8,566
						Trench Box, 8' x 24' x 10'	0.25 mo		-	-	-	575	-	2,300.00 /mo	575	5,278.08 /mo	1,320
						50 tn Rough Terrain (per day)	2.00 day	16	1,266	-	-	3,161	-	2,213.39 /day	4,427	5,079.36 /day	10,159
						Excav. pipe trench, w/ trench box, for > 30" pipe	96.08 CY	32	2,200	-	-	3,299	-	57.23 /CY	5,499	131.34 /CY	12,619
						Backfill / Compact @ pipe zone, for 30" & larger pipe	49.70 cy	56	3,675	-	-	4,304	-	160.54 /cy	7,979	368.42 /cy	18,310
						Backfill / Compact above pipe zone, for 30" & larger pipe	17.35 cy	40	3,016	-	-	4,441	-	429.78 /cy	7,457	986.27 /cy	17,112
						Pipe zone material	49.70 cy		-	1,392	-	-	-	28.00 /cy	1,392	64.26 /cy	3,193
						Pipe bedding material	8.40 cy		-	235	-	-	-	28.00 /cy	235	64.25 /cy	540
						Imported backfill material	17.35 cy		-	486	-	-	-	28.00 /cy	486	64.26 /cy	1,115
						Haul spoils, offsite, 10 - 20 miles	75.00 cy		-	-	1,125	-	-	15.00 /cy	1,125	34.42 /cy	2,582
						Dump fees, trench spoils	75.00 cy		-	-	-	-	1,125	15.00 /cy	1,125	34.42 /cy	2,582
						48" pipe, RCP, Arch Pipe, excav/bkfill not included	64.00 LF	112	8,953	32,000	-	7,388	-	755.33 /LF	48,341	1,733.37 /LF	110,935
						48" flared end, RCP, Arched	2.00 ea	74	5,922	20,973	-	4,276	-	15,585.55 /ea	31,171	35,766.25 /ea	71,532
						48" trash rack	2.00 ea	37	2,961	4,708	-	2,138	-	4,903.37 /ea	9,807	11,252.41 /ea	22,505
						Pipe Marking, Detection Tape	64.00 lf	1	52	8	-	-	-	0.94 /lf	60	2.16 /lf	138
						Pipe Marking, Copper Wire	64.00 lf	1	52	14	-	-	-	1.03 /lf	66	2.36 /lf	151
						33.00.15.48 Buried Pipe, RCP Arch, 48"	**64.00 LF**	**432**	**31,829**	**59,816**	**1,125**	**29,581**	**1,125**	**1,929.32 /LF**	**123,477**	**4,427.47 /LF**	**283,358**
						33.00.15.0015 2'x4' Pre-Cast Box Culverts 64 Feet Long	**64.00 LF**	**432**	**31,829**	**59,816**	**1,125**	**29,581**	**1,125**	**1,929.32 /LF**	**123,477**	**4,427.47 /LF**	**283,358**
				33.00.15.0016		**2'x4' Pre-Cast Box Culverts 75 Feet Long**											
					33.00.15.48	**Buried Pipe, RCP Arch, 48"**											
						Pipeline Existing Conditions	***38.00 lf***			-	-	-	-	***/lf***		***/lf***	
						Traffic Control, Labor per Day	4.00 day	64	3,733	-	-	-	-	933.15 /day	3,733	2,141.43 /day	8,566
						Trench Box, 8' x 24' x 10'	0.25 mo		-	-	-	575	-	2,300.00 /mo	575	5,278.12 /mo	1,320
						50 tn Rough Terrain (per day)	2.00 day	16	1,266	-	-	3,161	-	2,213.39 /day	4,427	5,079.35 /day	10,159
						Excav. pipe trench, w/ trench box, for > 30" pipe	112.59 CY	32	2,199	-	-	3,298	-	48.82 /CY	5,497	112.03 /CY	12,614
						Backfill / Compact @ pipe zone, for 30" & larger pipe	58.25 cy	56	3,675	-	-	4,303	-	136.96 /cy	7,978	314.31 /cy	18,308
						Backfill / Compact above pipe zone, for 30" & larger pipe	20.32 cy	40	3,015	-	-	4,440	-	366.89 /cy	7,455	841.96 /cy	17,109
						Pipe zone material	58.25 cy		-	1,631	-	-	-	28.00 /cy	1,631	64.26 /cy	3,743
						Pipe bedding material	9.84 cy		-	276	-	-	-	28.00 /cy	276	64.26 /cy	632
						Imported backfill material	20.32 cy		-	569	-	-	-	28.00 /cy	569	64.25 /cy	1,306
						Haul spoils, offsite, 10 - 20 miles	88.00 cy		-	-	1,320	-	-	15.00 /cy	1,320	34.42 /cy	3,029
						Dump fees, trench spoils	88.00 cy		-	-	-	-	1,320	15.00 /cy	1,320	34.42 /cy	3,029
						48" pipe, RCP, Arch Pipe, excav/bkfill not included	75.00 LF	112	8,954	37,500	-	7,389	-	717.91 /LF	53,843	1,647.49 /LF	123,562
						48" flared end, RCP, Arched	2.00 ea	74	5,922	20,973	-	4,276	-	15,585.55 /ea	31,171	35,766.25 /ea	71,533
						48" trash rack	2.00 ea	37	2,961	4,708	-	2,138	-	4,903.37 /ea	9,807	11,252.41 /ea	22,505
						Pipe Marking, Detection Tape	75.00 lf	1	61	10	-	-	-	0.94 /lf	71	2.16 /lf	162
						Pipe Marking, Copper Wire	75.00 lf	1	61	17	-	-	-	1.03 /lf	77	2.36 /lf	177
						33.00.15.48 Buried Pipe, RCP Arch, 48"	**75.00 LF**	**433**	**31,846**	**65,683**	**1,320**	**29,580**	**1,320**	**1,729.98 /LF**	**129,749**	**3,970.03 /LF**	**297,752**

BID FORM SUMMARY

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 2 Cemetery Culvert Replacements Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
						33.00.15.0016 2'x4' Pre-Cast Box Culverts 75 Feet Long	75.00 LF	433	31,846	65,683	1,320	29,580	1,320	1,729.98 /LF	129,749	3,970.03 /LF	297,752
						33.08 Buried Process Pipe, RCP	139.00 LF	865	63,676	125,499	2,445	59,161	2,445	1,821.77 /LF	253,225	4,180.65 /LF	581,110
						33.0 Utilities	139.00 LF	865	63,676	125,499	2,445	59,161	2,445	1,821.77 /LF	253,225	4,180.65 /LF	581,110
						03.2 2'x4' Pre-Cast Box Culverts	139.00 LF	865	63,676	125,499	2,445	59,161	2,445	1,821.77 /LF	253,225	4,180.65 /LF	581,110
	04.2					Trench Paving											
		32.0				Exterior Improvements											
			32.12			Paving											
				32.40.02.0017		Trench Paving											
					32.40.02.00	Site Improvements, Paving, Bituminous Asphalt											
						Fog seal, seal coating, coal tar pitch emulsion, 2 coat, under 1000 S.Y.	155.56 SY	4	210	311	-	-	-	3.35 /SY	522	7.69 /SY	1,197
						Fog seal, sealcoating, prepare and clean surface for sealcoating	155.56 sy	0	26	-	-	6	-	0.21 /sy	33	0.48 /sy	75
						Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 9" deep	155.56 sy	1	72	1,237	-	78	-	8.92 /sy	1,387	20.46 /sy	3,183
						Plant-mix asphalt paving, for highways and large paved areas, pavement replacement over trench, 6" thick, no hauling included	155.56 sy	79	5,287	6,222	-	490	-	77.14 /sy	12,000	177.03 /sy	27,538
						Painted pavement markings, thermoplastic, white or yellow, 4" wide, less than 6000 L.F.	50.00 lf	0	8	46	-	5	-	1.19 /lf	59	2.72 /lf	136
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	155.56 SY	84	5,604	7,816		580		90.00 /SY	14,000	206.54 /SY	32,129
						32.40.02.0017 Trench Paving	155.56 SY	84	5,604	7,816		580		90.00 /SY	14,000	206.54 /SY	32,129
						32.12 Paving	155.56 SY	84	5,604	7,816		580		90.00 /SY	14,000	206.54 /SY	32,129
			32.50			Site, Improvements											
				32.50.06.0009		Site Improvement Allowances											
					32.50.06.00	Site Improvements, Other Improvements											
						Division 01 Allowance SWPPP	1.00 LS		-	-	20,000	-		20,000.00 /LS	20,000	45,896.69 /LS	45,897
						Division 32 Allowance Landscape	1.00 ls		-	-	20,000	-		20,000.00 /ls	20,000	45,896.67 /ls	45,897
						32.50.06.00 Site Improvements, Other Improvements	1.00 LS				40,000			40,000.00 /LS	40,000	91,793.36 /LS	91,793
						32.50.06.0009 Site Improvement Allowances	1.00 LS				40,000			40,000.00 /LS	40,000	91,793.36 /LS	91,793
						32.50 Site, Improvements	1.00 LS				40,000			40,000.00 /LS	40,000	91,793.36 /LS	91,793
						32.0 Exterior Improvements	1.00 LS	84	5,604	7,816	40,000	580		54,000.48 /LS	54,000	123,922.13 /LS	123,922
						04.2 Trench Paving	1.00 LS	84	5,604	7,816	40,000	580		54,000.48 /LS	54,000	123,922.13 /LS	123,922
	05.2					Traffic Control											
		31.0				Earthwork											
			31.10			Temporary Works											
				31.10.07.0018		Traffic Control											
					31.10.07.00	Temporary Works, Traffic Control											
						Division 31 Trench Plates 4' x 8'	3.00 EA		-	6,000	-	-		2,000.00 /EA	6,000	4,589.67 /EA	13,769
						Flagger	30.00 day	240	5,472	-	-	-	-	182.40 /day	5,472	418.58 /day	12,557
						Road Work Ahead, 48x48	60.00 day		-	1,066	-	1,066	-	35.52 /day	2,131	81.51 /day	4,891
						Rt/Lt Lane Closed ahead, 48x49	60.00 day		-	1,066	-	1,066	-	35.52 /day	2,131	81.51 /day	4,891
						Rt/Lt Lane Transition / Merge / Turkey track, 48x50	60.00 day		-	1,066	-	1,066	-	35.52 /day	2,131	81.51 /day	4,891
						Flagger Symbol, 48x51	60.00 day		-	720	-	1,066	-	29.76 /day	1,786	68.29 /day	4,098
						Type 3 Barricade	180.00 day		-	3,456	-	3,456	-	38.40 /day	6,912	88.12 /day	15,862
						Traffic Cones 36"	480.00 day		-	3,686	-	3,686	-	15.36 /day	7,373	35.25 /day	16,919
						Radios (Hand Held)	60.00 day		-	480	-	4,608	-	84.80 /day	5,088	194.60 /day	11,676
						Arrow Board	60.00 day		-	-	-	3,960	-	66.00 /day	3,960	151.46 /day	9,088
						Variable Message Board	60.00 day		-	-	-	19,800	-	330.00 /day	19,800	757.30 /day	45,438
						Jersey Barriers (Rent and Install)	60.00 lf		360	-	-	1,016	-	22.93 /lf	1,376	52.62 /lf	3,157
						31.10.07.00 Temporary Works, Traffic Control	*1.00* LS	240	5,832	17,539		40,789		64,159.80 /LS	64,160	147,236.10 /LS	147,236
						31.10.07.0018 Traffic Control	*1.00* LS	240	5,832	17,539		40,789		64,159.80 /LS	64,160	147,236.10 /LS	147,236
						31.10 Temporary Works	*1.00* LS	240	5,832	17,539		40,789		64,159.80 /LS	64,160	147,236.10 /LS	147,236
						31.0 Earthwork	*1.00* LS	240	5,832	17,539		40,789		64,159.80 /LS	64,160	147,236.10 /LS	147,236
						05.2 Traffic Control	*1.00* LS	240	5,832	17,539		40,789		64,159.80 /LS	64,160	147,236.10 /LS	147,236
						01.0 Reach 2 Cemetery Culverts	*1.00* LS	2,669	179,632	208,154	138,320	202,332	2,445	730,882.68 /LS	730,883	1,677,254.43 /LS	1,677,254

BID FORM SUMMARY

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 2 Cemetery Culvert Replacements Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Estimate Totals

Description	Amount	Totals	Rate	Cost / Unit	% of Total	
Labor	179,632		hrs		10.65%	
Material	208,154				12.34%	
Subcontract	138,320				8.20%	
Equipment	202,332		hrs		11.99%	
Other	2,445				0.14%	
Subtotal Raw Costs	**730,883**	**730,883**			**43.32%**	**43.32%**
Material Sales & Use Tax - %						
Construction Equip Tax - %						
Total Taxes		**730,883**				**43.32%**
Location Adj. Factor						
Productivity Adjustment						
Subtotal Adj. Factors		**730,883**				**43.32%**
Existing Conditions I,OH&P	57,529		25.000 %		3.41%	
Concrete Work I,OH&P			25.000 %			
Masonry Work I,OH&P			25.000 %			
Metals Work I,OH&P			25.000 %			
Architectural (Div 6-12)I,OH&P			25.000 %			
Special Construction I,OH&P			25.000 %			
Conveying Equipment I,OH&P			25.000 %			
Mechanical Work I,OH&P			25.000 %			
Electrical Work I,OH&P			25.000 %			
Site/Civil I,OH&P	61,885		25.000 %		3.67%	
Buried Piping I,OH&P	63,306		25.000 %		3.75%	
Tank Construction I,OH&P			25.000 %			
Process Piping I,OH&P			25.000 %			
Instruments & Controls I,OH&P			25.000 %			
Material Handling I,OH&P			25.000 %			
Process Equipment I,OH&P			25.000 %			
Subtotal Subcontractor I,OH&P	**182,720**	**913,603**			**10.83%**	**54.16%**
Contractor Contingency						
Subtotal Contingency		**913,603**				**54.16%**
Total Cost To Prime Contractor		**913,603**				**54.16%**
General Conditions	91,360		10.000 %		5.42%	
Mobilization/Demobilization	45,680		5.000 %		2.71%	
Subtotal Indirect Costs	**137,040**	**1,050,643**			**8.12%**	**62.28%**
Prime Contractor Home OfficeOH	105,064		10.000 %		6.23%	
Prime Contractor Profit	157,597		15.000 %		9.34%	
Bonds & Insurance	28,499		2.170 %		1.69%	
Subtotal OH&P	**291,160**	**1,341,803**			**17.26%**	**79.54%**
Contractor MU on Mech OFCI						
Contractor MU on Elec OFCI						
Total MU on OFCI Equip		**1,341,803**				**79.54%**
Design Contingency	335,451		25.000 %		19.88%	
Subtotal Contingency	**335,451**	**1,677,254**			**19.88%**	**99.42%**
Escalation						
Subtotal Escalation		**1,677,254**				**99.42%**
Corporate Activity Tax	9,728		0.580 %		0.58%	
Total Prime Contractor Costs	**9,728**	**1,686,982**			**0.58%**	**100.00%**
Total Construction Cost		**1,686,982**				**100.00%**
Total		***1,686,982***				

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Fork Ash Creek Reach 3 Alt 1 Daylight in Place Rev #2 6-8-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #2 6-8-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0						Replace Main Street Bridge											
	01.0					Demo Main Street Bridge											
		02.0				Existing Conditions											
			02.40			Demolition											
				02.01.01.0001		Demo Existing Bridge											
					02.01.01.00	General Site Demolition											
						Bridge demolition, pedestrian, precast, 40'x13' long	520.00 SF	280	17,627	-	-	14,306	-	61.41 /SF	31,932	140.42 /SF	73,021
						02.01.01.00 General Site Demolition	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,020.73 /LS	73,021
						02.01.01.0001 Demo Existing Bridge	520.00 SF	280	17,627			14,306		61.41 /SF	31,932	140.42 /SF	73,021
						02.40 Demolition	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,020.73 /LS	73,021
						02.0 Existing Conditions	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,020.73 /LS	73,021
						01.0 Demo Main Street Bridge	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,020.73 /LS	73,021
	02.0					New Main St. Bridge											
		03.0				Concrete Work											
			03.10			Cast-In-Place Concrete Work											
				03.00.99.0002		New Main St. Bridge											
					03.00.99.00	Concrete, Other											
						Division 03 Allowance New Bridge	2,200.00 SF		-	-	1,650,000	-		750.00 /SF	1,650,000	1,715.04 /SF	3,773,097
						03.00.99.00 Concrete, Other	2,200.00 SF				1,650,000			750.00 /SF	1,650,000	1,715.04 /SF	3,773,097
						03.00.99.0002 New Main St. Bridge	2,200.00 SF				1,650,000			750.00 /SF	1,650,000	1,715.04 /SF	3,773,097
						03.10 Cast-In-Place Concrete Work	1.00 LS				1,650,000			1,650,000.00 /LS	1,650,000	3,773,097.44 /LS	3,773,097
						03.0 Concrete Work	1.00 LS				1,650,000			1,650,000.00 /LS	1,650,000	3,773,097.44 /LS	3,773,097
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.07.1001		Structrual Excavation and Backfill											
					31.20.07.00	Earthworks, Sitework, Cut/Fill											
						Dewatering Minor, Generator and Pumps, Mob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,430.08 /ea	6,860
						Dewatering Minor, Set-up Generator and Install Pumps	4.00 ea	32	2,008	-	-	535	-	635.82 /ea	2,543	1,453.95 /ea	5,816
						Dewatering Minor, Sump Rock, delivered	10.00 cy		-	200	-	-	-	20.00 /cy	200	45.74 /cy	457
						Dewatering Minor, Large Generator and 2 Pumps, Rental, Monthly	6.00 mo		-	-	-	167,333	-	27,888.80 /mo	167,333	63,774.03 /mo	382,644
						Dewatering Minor, Generator and Pumps, Operation - Labor to maintain / check pumps/ fuel and lube	6.00 mo	3,168	185,440	-	-	17,556	-	33,832.66 /mo	202,996	77,366.01 /mo	464,196
						Dewatering Minor, Remove Generator and Pumps	4.00 ea	32	2,008	-	-	402	-	602.57 /ea	2,410	1,377.91 /ea	5,512
						Dewatering Minor, Generator and Pumps, Demob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,430.10 /ea	6,860
						Shoring, sheet pile, subcontracted	1,650.00 sf	215		-	66,000	-	-	40.00 /sf	66,000	91.47 /sf	150,924
						Structural Excavation, Excavator and Trucks, Medium Crew, 15' depth	672.00 CY	38	2,547	-	-	3,545	-	9.07 /CY	6,093	20.73 /CY	13,932
						Grade for slabs / Scarify and Recompact, Dozer and Traxcavator or Loader, Small Crew	245.00 sy	11	795	-	-	812	-	6.56 /sy	1,607	15.00 /sy	3,676
						Structural Backfill, Dozer and Traxcavator or Loader, Medium Crew	183.00 cy	13	909	-	-	909	-	9.93 /cy	1,817	22.71 /cy	4,156
						Load Excess for Hauling, Rubber Tire Loader, Cat 950	489.00 cy	2	184	-	-	354	-	1.10 /cy	538	2.52 /cy	1,231
						Haul / Remove Excess, 17 yd capacity, 20 miles RT	489.00 cy	26	1,749	-	-	2,104	-	7.88 /cy	3,853	18.02 /cy	8,811
						Dump Charges for For Excess, 17 yd tandem, per cy	489.00 cy		-	7,335	-	-	7,335	30.00 /cy	14,670	68.69 /cy	33,589
						Over excavate and replace with suitable, Excavators and Trucks, Medium Crew	163.00 cy	9	577	-	-	1,050	-	9.98 /cy	1,626	22.82 /cy	3,719
						Import Aggregate Base (for overexcavated area) - under slab, Dozer and Traxcavator or Loader, Small Crew	330.00 tn	31	2,142	-	-	2,188	-	13.12 /tn	4,330	30.01 /tn	9,902
						Backfill (for overexcavated area), Dozer and Traxcavator or Loader, Small Crew	188.00 cy	13	915	-	-	935	-	9.84 /cy	1,850	22.50 /cy	4,231
						31.20.07.00 Earthworks, Sitework, Cut/Fill	672.00 CY	3,622	199,275	7,535	72,000	197,723	7,335	720.04 /CY	483,868	1,646.60 /CY	1,106,516
						31.20.07.1001 Structrual Excavation and Backfill	672.00 CY	3,622	199,275	7,535	72,000	197,723	7,335	720.04 /CY	483,868	1,646.60 /CY	1,106,516
				31.20.09.1002		Grading for Street											
					31.20.09.00	Earthworks, Sitework, Site Import											
						Rough Site Grading, Small Crew	605.00 sy	11	721	-	-	757	-	2.44 /sy	1,478	5.59 /sy	3,379
						Import Site Fill - Small Crew, per cy	358.00 CY	21	1,402	10,024	-	1,114	-	35.03 /CY	12,540	80.10 /CY	28,675
						31.20.09.00 Earthworks, Sitework, Site Import	358.00 CY	32	2,122	10,024		1,871		39.15 /CY	14,017	89.54 /CY	32,054
						31.20.09.1002 Grading for Street	358.00 CY	32	2,122	10,024		1,871		39.15 /CY	14,017	89.54 /CY	32,054
						31.20 Earthworks, Site	1,030.00 CY	3,654	201,398	17,559	72,000	199,594	7,335	483.38 /CY	497,885	1,105.41 /CY	1,138,570
						31.0 Earthwork	1.00 LS	3,654	201,398	17,559	72,000	199,594	7,335	497,885.32 /LS	497,885	1,138,569.69 /LS	1,138,570
		32.0				Exterior Improvements											
			32.12			Paving											
				32.40.02.1003		Paving at Main Street Bridge											
					32.40.02.00	Site Improvements, Paving, Bituminous Asphalt											
						Fog seal, seal coating, coal tar pitch emulsion, 2 coat, under 1000 S.Y.	604.44 SY	14	818	1,209	-	-	-	3.35 /SY	2,026	7.67 /SY	4,634
						Fog seal, sealcoating, prepare and clean surface for sealcoating	604.44 sy	2	103	-	-	24	-	0.21 /sy	127	0.48 /sy	290
						Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 9" deep	604.44 sy	4	281	4,805	-	303	-	8.92 /sy	5,389	20.39 /sy	12,324
						Plant-mix asphalt paving, for highways and large paved areas, pavement replacement over trench, 6" thick, no hauling included	604.44 sy	308	20,545	24,178	-	1,906	-	77.14 /sy	46,629	176.41 /sy	106,627
						Painted pavement markings, thermoplastic, white or yellow, 6" wide, less than 6000 L.F.	110.00 lf	0	19	152	-	13	-	1.67 /lf	183	3.81 /lf	419
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	604.44 SY	327	21,765	30,344		2,245		89.92 /SY	54,354	205.63 /SY	124,294
						32.40.02.1003 Paving at Main Street Bridge	604.44 SY	327	21,765	30,344		2,245		89.92 /SY	54,354	205.63 /SY	124,294
						32.12 Paving	604.44 SY	327	21,765	30,344		2,245		89.92 /SY	54,354	205.63 /SY	124,294
			32.50			Site, Improvements											
				32.50.06.0009		Site Improvement Allowances											
					32.50.06.00	Site Improvements, Other Improvements											
						Division 01 Allowance SWPPP	1.00 LS		-	-	20,000	-		20,000.00 /LS	20,000	45,734.52 /LS	45,735
						Division 32 Allowance Landscape	1.00 ls		-	-	15,000	-		15,000.00 /ls	15,000	34,300.88 /ls	34,301
						32.50.06.00 Site Improvements, Other Improvements	1.00 LS				35,000			35,000.00 /LS	35,000	80,035.40 /LS	80,035
						32.50.06.0009 Site Improvement Allowances	1.00 LS				35,000			35,000.00 /LS	35,000	80,035.40 /LS	80,035
						32.50 Site, Improvements	1.00 LS				35,000			35,000.00 /LS	35,000	80,035.40 /LS	80,035
						32.0 Exterior Improvements	1.00 LS	327	21,765	30,344	35,000	2,245		89,354.35 /LS	89,354	204,328.90 /LS	204,329
						02.0 New Main St. Bridge	1.00 LS	3,981	223,163	47,903	1,757,000	201,839	7,335	2,237,239.67 /LS	2,237,240	5,115,996.03 /LS	5,115,996
	03.0					Bypass Pumping											
		03.0				Concrete Work											

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
			31.19			Dewatering and Bypass Pumping											
				31.19.06.0003		Bypass Pumping											
					31.19.06.00	Site Preparation, Bypass Pumping, 12" to 24" Pipe											
						Generator, Weekly	52.00 wk		-	26,000	-	78,000	-	2,000.00 /wk	104,000	4,573.45 /wk	237,819
						Bypass Pumping, Pumps and Piping, Mob	3.00 ea	24	1,988	-	4,500	1,054	-	2,514.04 /ea	7,542	5,748.92 /ea	17,247
						Bypass Pumping, Set-up Pumps	3.00 ea	48	3,977	1,500	-	1,054	-	2,176.86 /ea	6,531	4,977.87 /ea	14,934
						Bypass Pumping, Install Suction Piping	3.00 ea	24	1,988	450	-	527	-	988.43 /ea	2,965	2,260.27 /ea	6,781
						Bypass Pumping, System Operation	52.00 WK	2,080	158,226	208,000	-	260,000	-	12,042.80 /WK	626,226	27,538.58 /WK	1,432,006
						31.19.06.00 Site Preparation, Bypass Pumping, 12" to 24" Pipe	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,861.29 /WK	1,708,787
						31.19.06.0003 Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,861.29 /WK	1,708,787
						31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,861.29 /WK	1,708,787
						03.0 Concrete Work	1.00 LS	2,176	166,179	235,950	4,500	340,634		747,263.58 /LS	747,264	1,708,786.86 /LS	1,708,787
		31.0				Earthwork											
			31.30			Site Specialties											
				31.30.01.0006		Cofferdam											
					31.30.01.00	Site Specialties, Port-A-Dams											
						Porta-dam, mob	2.00 EA	48		-	30,000	-	-	15,000.00 /EA	30,000	34,300.88 /EA	68,602
						Porta-dam, installation	2.00 ea	192	15,494	1,000	-	8,744	-	12,619.41 /ea	25,239	28,857.13 /ea	57,714
						Porta-dam, rental	12.00 mo		-	-	180,000	-	-	15,000.00 /mo	180,000	34,300.89 /mo	411,611
						Porta-dam, dewatering operation - fuel cost	12.00 mo		-	108,000	-	-	-	9,000.00 /mo	108,000	20,580.53 /mo	246,966
						Porta-dam, removal	2.00 ea	192	15,494	-	-	8,744	-	12,119.41 /ea	24,239	27,713.76 /ea	55,428
						Porta-dam, demob	2.00 ea	48		-	30,000	-	-	15,000.00 /ea	30,000	34,300.88 /ea	68,602
						31.30.01.00 Site Specialties, Port-A-Dams	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	454,461.14 /EA	908,922
						31.30.01.0006 Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	454,461.14 /EA	908,922
						31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	908,922.27 /LS	908,922
						31.0 Earthwork	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	908,922.27 /LS	908,922
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.09.0004		Diversion Piping 12"											
					33.00.09.12	Buried Pipe, HDPE, 12"											
						Pipeline LF per day	*200.00 lf*			-	-	-	-	/lf		/lf	
						25 tn Rough Terrain (per day)	1.00 day	8	633	-	-	1,182	-	1,814.58 /day	1,815	4,149.45 /day	4,149
						12" HDPE pipe, excav/backfill not included	200.00 LF	48	3,874	4,000	-	2,186	-	50.30 /LF	10,060	115.02 /LF	23,004
						12" HDPE tee	3.00 ea	15	1,204	880	-	680	-	921.39 /ea	2,764	2,106.97 /ea	6,321
						12" HDPE reducer	3.00 ea	11	874	880	-	493	-	749.07 /ea	2,247	1,712.92 /ea	5,139
						12" HDPE cap	1.00 ea	1	107	247	-	61	-	414.42 /ea	414	947.67 /ea	948
						12" HDPE flange	3.00 ea	8	672		-	137	-	269.49 /ea	808	616.23 /ea	1,849
						Field weld fusion joints, Subcontracted (S), 12"	20.00 ea		-	-	2,172	-	-	108.60 /ea	2,172	248.34 /ea	4,967
						12" Bolt & Gasket Kits, CS, 150#	3.00 ea	7	575	60	-	-	-	211.51 /ea	635	483.66 /ea	1,451
						33.00.09.12 Buried Pipe, HDPE, 12"	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
						33.00.09.0004 Diversion Piping 12"	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
						33.07 Buried Process Pipe, HDPE	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
						33.0 Utilities	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
						03.0 Bypass Pumping	1.00 LS	2,755	205,107	351,017	246,672	362,861		1,165,656.29 /LS	1,165,656	2,665,536.20 /LS	2,665,536
	04.0					Fish Screen											
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.50.0005		Fish Screen											
					33.00.50.00	Buried Pipe, Other											
						Basket-strainer, flanged, SS screen, 12"	1.00 EA	1	80	1,500	-	-	-	1,579.80 /EA	1,580	3,612.57 /EA	3,613
						33.00.50.00 Buried Pipe, Other	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.57 /LF	3,613
						33.00.50.0005 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,612.57 /EA	3,613
						33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.57 /LF	3,613
						33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.57 /LF	3,613
						04.0 Fish Screen	1.00 LS	1	80	1,500				1,579.80 /LS	1,580	3,612.57 /LS	3,613
	05.0					Fish Salvage											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0007		Fish Salvage											
					01.01.06.01	GC Labor											
						Environmental Manager	0.50 MO	87	6,500	250	-	-	-	13,499.76 /MO	6,750	27,495.32 /MO	13,748
						Environmental Engineer	1.00 MO	173	13,000	500	-	-	-	13,499.75 /MO	13,500	27,495.29 /MO	27,495
						01.01.06.01 GC Labor	1.50 MO	260	19,500	750				13,499.75 /MO	20,250	27,495.30 /MO	41,243
						01.01.06.0007 Fish Salvage	32.00 DY	260	19,500	750				632.80 /DY	20,250	1,288.84 /DY	41,243
						01.01 Construction Operations	1.00 LS	260	19,500	750				20,249.63 /LS	20,250	41,242.95 /LS	41,243
						01.0 General Requirements	1.00 LS	260	19,500	750				20,249.63 /LS	20,250	41,242.95 /LS	41,243
						05.0 Fish Salvage	1.00 LS	260	19,500	750				20,249.63 /LS	20,250	41,242.95 /LS	41,243
	08.0					Traffic Control											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0008		Traffic Control Allowance											
					01.01.06.02	GC Temporary Facilities & Services											
						Division 01 Allowance Traffic Control	90.00 DY		-	-	135,000	-		1,500.00 /DY	135,000	3,055.09 /DY	274,958
						01.01.06.02 GC Temporary Facilities & Services	90.00 DY				135,000			1,500.00 /DY	135,000	3,055.09 /DY	274,958
						01.01.06.0008 Traffic Control Allowance	90.00 DY				135,000			1,500.00 /DY	135,000	3,055.09 /DY	274,958
						01.01 Construction Operations	1.00 LS				135,000			135,000.00 /LS	135,000	274,957.96 /LS	274,958
						01.0 General Requirements	1.00 LS				135,000			135,000.00 /LS	135,000	274,957.96 /LS	274,958
						08.0 Traffic Control	90.00 DY				135,000			1,500.00 /DY	135,000	3,055.09 /DY	274,958
						01.0 Replace Main Street Bridge	**1.00 LS**	7,277	465,476	401,169	2,138,672	579,006	7,335	**3,591,657.83 /LS**	3,591,658	**8,174,366.44 /LS**	8,174,366
02.0						**Daylight Channel In Place**											
	01.1					Demo Asphalt											

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Fork Ash Creek Reach 3 Alt 1 Daylight in Place Rev #2 6-8-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #2 6-8-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
		02.0				Existing Conditions											
			02.40			Demolition											
				02.01.01.0010		Demo Asphalt											
					02.01.01.00	General Site Demolition											
						Temporary Fencing, chain link, rented up to 12 months, 6' high, 11 ga, over 1000'	10,670.00 lf	569	33,189	128,040	-	-	-	15.11 /lf	161,229	34.55 /lf	368,687
						Demolish, remove pavement & curb, remove bituminous pavement, 4" to 6" thick, excludes hauling and disposal fees	11,855.56 SY	1,129	73,175	-	-	37,886	-	9.37 /SY	111,061	21.42 /SY	253,966
						Site demo, for disposal off site, to 5 mis, add	1,975.93 cy	208	14,168	-	19,759	17,446	29,639	41.00 /cy	81,012	93.84 /cy	185,424
						Selective demolition, saw cutting, each additional inch of depth over 3"	32,010.00 lf	285	19,327	960	-	11,094	-	0.98 /lf	31,381	2.24 /lf	71,760
						02.01.01.00 General Site Demolition	*1.00* LS	2,191	139,858	129,000	19,759	66,426	29,639	384,683.31 /LS	384,683	879,837.14 /LS	879,837
						02.01.01.0010 Demo Asphalt	11,855.56 SY	2,191	139,858	129,000	19,759	66,426	29,639	32.45 /SY	384,683	74.21 /SY	879,837
						02.40 Demolition	*1.00* LS	2,191	139,858	129,000	19,759	66,426	29,639	384,683.31 /LS	384,683	879,837.14 /LS	879,837
						02.0 Existing Conditions	*1.00* LS	2,191	139,858	129,000	19,759	66,426	29,639	384,683.31 /LS	384,683	879,837.14 /LS	879,837
						01.1 Demo Asphalt	*106,700.00* SF	2,191	139,858	129,000	19,759	66,426	29,639	3.61 /SF	384,683	8.25 /SF	879,837
	02.1					Remove Existing 84" Culverts											
		02.0				Existing Conditions											
			02.40			Demolition											
				02.01.01.0011		Remove Existing Dual 84" Culverts											
					02.01.01.00	General Site Demolition											
						Traffic Control, Labor per Day	16.00 day	256	14,930	-	-	-	-	933.15 /day	14,930	2,133.86 /day	34,142
						Trench Box, 8' x 24' x 10'	1.00 mo		-	-	-	2,300	-	2,300.00 /mo	2,300	5,259.48 /mo	5,259
						Dedicated Fire / Safety Monitor	60.00 hr	60	3,499	-	-	-	-	58.32 /hr	3,499	133.37 /hr	8,002
						Storm Sewer Pipe Demolition and Loading, 10' Deep	1,540.00 LF	431	32,984	-	-	22,971	-	36.33 /LF	55,956	83.09 /LF	127,955
						Haul Site Demolition Spoils, 17 yd capacity, 20 miles RT, priced per load	91.00 load	81	5,534	-	-	6,655	-	133.95 /load	12,190	306.31 /load	27,874
						Dump Charges for Site Demolition Spoils, 17 yd end-dump, priced per load	91.00 load		-	15,925	-	-	-	175.00 /load	15,925	400.18 /load	36,416
						Excav. pipe trench, w/ trench box, for > 30" pipe	5,507.86 CY	240	16,494	-	-	24,739	-	7.49 /CY	41,233	17.12 /CY	94,289
						Imported backfill material	5,507.86 cy		-	154,220	-	-	-	28.00 /cy	154,220	64.03 /cy	352,659
						Haul spoils, offsite, 10 - 20 miles	3,696.65 cy		-	-	55,450	-	-	15.00 /cy	55,450	34.30 /cy	126,798
						Dump fees, trench spoils	3,696.65 cy		-	-	-	-	55,450	15.00 /cy	55,450	34.39 /cy	127,120
						02.01.01.00 General Site Demolition	*1.00* LS	1,068	73,442	170,145	55,450	56,666	55,450	411,152.46 /LS	411,152	940,514.50 /LS	940,515
						02.01.01.0011 Remove Existing Dual 84" Culverts	1,540.00 LF	1,068	73,442	170,145	55,450	56,666	55,450	266.98 /LF	411,152	610.72 /LF	940,515
				02.01.01.0012		Remove Existing Single 84" Culvert											
					02.01.01.00	General Site Demolition											
						Traffic Control, Labor per Day	13.00 day	208	12,131	-	-	-	-	933.15 /day	12,131	2,133.86 /day	27,740
						Trench Box, 8' x 24' x 10'	1.00 mo		-	-	-	2,300	-	2,300.00 /mo	2,300	5,259.46 /mo	5,259
						Dedicated Fire / Safety Monitor	52.00 hr	52	3,033	-	-	-	-	58.32 /hr	3,033	133.37 /hr	6,935
						Storm Sewer Pipe Demolition and Loading, 10' Deep	670.00 LF	188	14,350	-	-	9,994	-	36.33 /LF	24,344	83.09 /LF	55,669
						Haul Site Demolition Spoils, 17 yd capacity, 20 miles RT, priced per cy	569.00 cy	30	2,036	-	-	2,448	-	7.88 /cy	4,483	18.02 /cy	10,252
						Dump Charges for Site Demolition Spoils, 17 yd end-dump, priced per cy	569.00 cy		-	8,535	-	-	8,535	30.00 /cy	17,070	68.69 /cy	39,084
						Excav. pipe trench, w/ trench box, for > 30" pipe	2,514.55 CY	55	3,802	-	-	11,405	-	6.05 /CY	15,207	13.83 /CY	34,773
						Pipe zone material	1,131.08 cy		-	31,670	-	-	-	28.00 /cy	31,670	64.03 /cy	72,421
						Imported backfill material	2,514.55 cy		-	70,407	-	-	-	28.00 /cy	70,407	64.03 /cy	161,002
						Haul spoils, offsite, 10 - 20 miles	1,131.08 cy		-	-	16,966	-	-	15.00 /cy	16,966	34.30 /cy	38,797
						Dump fees, trench spoils	1,131.08 cy		-	-	0	-	16,966	15.00 /cy	16,966	34.39 /cy	38,895
						02.01.01.00 General Site Demolition	*1.00* LS	533	35,351	110,613	16,966	26,147	25,501	214,578.11 /LS	214,578	490,829.19 /LS	490,829
						02.01.01.0012 Remove Existing Single 84" Culvert	670.00 LF	533	35,351	110,613	16,966	26,147	25,501	320.27 /LF	214,578	732.58 /LF	490,829
						02.40 Demolition	*1.00* LS	1,601	108,793	280,758	72,416	82,813	80,951	625,730.57 /LS	625,731	1,431,343.69 /LS	1,431,344
						02.0 Existing Conditions	*1.00* LS	1,601	108,793	280,758	72,416	82,813	80,951	625,730.57 /LS	625,731	1,431,343.69 /LS	1,431,344
						02.1 Remove Existing 84" Culverts	2,210.00 LF	1,601	108,793	280,758	72,416	82,813	80,951	283.14 /LF	625,731	647.67 /LF	1,431,344
	03.1					Demo Timber Bridge											
		02.0				Existing Conditions											
			02.40			Demolition											
				02.01.01.0013		Demo Timber Bridge											
					02.01.01.00	General Site Demolition											
						Bridge demolition, pedestrian, precast, 14'x54' long	756.00 SF	407	25,626	-	-	20,798	-	61.41 /SF	46,425	140.42 /SF	106,161
						02.01.01.00 General Site Demolition	*1.00* LS	407	25,626			20,798		46,424.86 /LS	46,425	106,160.93 /LS	106,161
						02.01.01.0013 Demo Timber Bridge	756.00 SF	407	25,626			20,798		61.41 /SF	46,425	140.42 /SF	106,161
						02.40 Demolition	*1.00* LS	407	25,626			20,798		46,424.86 /LS	46,425	106,160.93 /LS	106,161
						02.0 Existing Conditions	*1.00* LS	407	25,626			20,798		46,424.86 /LS	46,425	106,160.93 /LS	106,161
						03.1 Demo Timber Bridge	*1.00* EA	407	25,626			20,798		46,424.86 /EA	46,425	106,160.93 /EA	106,161
	04.1					Creek Channel Excavation											
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.07.0017		Channel Excavation											
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Traffic Control, Labor per Day	17.00 day	272	15,864	-	-	-	-	933.15 /day	15,864	2,133.86 /day	36,276
						Dedicated Fire / Safety Monitor	48.00 hr	48	2,799	-	-	-	-	58.32 /hr	2,799	133.37 /hr	6,402
						Rough Site Grading, Small Crew	19,978.00 sy	355	23,800	-	-	24,995	-	2.44 /sy	48,795	5.59 /sy	111,581
						Finish grading lagoon bottoms	132.00 msf	208	13,905	-	-	10,661	-	186.11 /msf	24,566	425.58 /msf	56,176
						Excav. for Channel	17,100.00 CY	282	19,406	-	-	29,108	-	2.84 /CY	48,514	6.49 /CY	110,939
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	17,100.00 CY	1,166	75,774			64,765		8.22 /CY	140,538	18.79 /CY	321,372
						31.20.07.0017 Channel Excavation	17,100.00 CY	1,166	75,774			64,765		8.22 /CY	140,538	18.79 /CY	321,372
						31.20 Earthworks, Site	17,100.00 CY	1,166	75,774			64,765		8.22 /CY	140,538	18.79 /CY	321,372
						31.0 Earthwork	*1.00* LS	1,166	75,774			64,765		140,538.26 /LS	140,538	321,372.45 /LS	321,372
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.50.06.0009		Site Improvement Allowances											
					32.50.06.00	Site Improvements, Other Improvements											
						Division 01 Allowance SWPPP	1.00 ls		-	-	50,000	-		50,000.00 /ls	50,000	114,336.29 /ls	114,336
						Division 32 Allowance Misc. Traffic Control	1.00 LS		-	-	50,000	-		50,000.00 /LS	50,000	114,336.29 /LS	114,336
						Division 32 Allowance Paving	1.00 ls		-	-	50,000	-		50,000.00 /ls	50,000	114,336.29 /ls	114,336

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Fork Ash Creek Reach 3 Alt 1 Daylight in Place Rev #2 6-8-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #2 6-8-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
						32.50.06.00 Site Improvements, Other Improvements	**1.00 LS**				150,000			**150,000.00 /LS**	**150,000**	**343,008.87 /LS**	**343,009**
						32.50.06.0009 Site Improvement Allowances	**1.00 LS**				150,000			**150,000.00 /LS**	**150,000**	**343,008.87 /LS**	**343,009**
						32.50 Site, Improvements	**1.00 LS**				150,000			**150,000.00 /LS**	**150,000**	**343,008.87 /LS**	**343,009**
						32.0 Exterior Improvements	**1.00 LS**				150,000			**150,000.00 /LS**	**150,000**	**343,008.87 /LS**	**343,009**
						04.1 Creek Channel Excavation	**17,100.00 CY**	1,166	75,774		150,000	64,765		**16.99 /CY**	**290,538**	**38.85 /CY**	**664,381**
	05.1					**Bed Material**											
		31.0				**Earthwork**											
			31.20			**Earthworks, Site**											
				31.20.07.0018		**Bed Material**											
					31.20.07.10	**Earthworks, Sitework, Excavating Bulk Measure**											
						Channel Backfill Bedding	410.00 CY	126	9,510	-	-	14,003	-	57.35 /CY	23,512	131.14 /CY	53,766
						Channel bedding material	410.00 cy		-	11,480	-	-	-	28.00 /cy	11,480	64.03 /cy	26,252
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	**410.00 CY**	126	9,510	11,480		14,003		**85.35 /CY**	**34,992**	**195.17 /CY**	**80,018**
						31.20.07.0018 Bed Material	**410.00 CY**	126	9,510	11,480		14,003		**85.35 /CY**	**34,992**	**195.17 /CY**	**80,018**
						31.20 Earthworks, Site	**410.00 CY**	126	9,510	11,480		14,003		**85.35 /CY**	**34,992**	**195.17 /CY**	**80,018**
						31.0 Earthwork	***1.00* LS**	126	9,510	11,480		14,003		**34,992.27 /LS**	**34,992**	**80,017.72 /LS**	**80,018**
						05.1 Bed Material	**410.00 CY**	126	9,510	11,480		14,003		**85.35 /CY**	**34,992**	**195.17 /CY**	**80,018**
	06.1					**Bank Stabilization**											
		32.0				**Exterior Improvements**											
			32.50			**Site, Improvements**											
				32.25.03.0020		**Bank Stabilization**											
					32.35.03.00	**Site Improvements, Landscaping**											
						Division 32 Allowance for Large Woody Material	1.00 ls		-	-	50,000	-		50,000.00 /ls	50,000	114,336.28 /ls	114,336
						Planting beds preparation, backfill planting pit, prepared planting mix, skid steer loader	1,125.93 cy	66	4,125	-	-	723	-	4.31 /cy	4,848	9.85 /cy	11,086
						Planting beds preparation, excavate planting pit,heavy soil or clay, 1/2 C.Y. backhoe	1,125.93 cy	157	10,472	-	-	3,220	-	12.16 /cy	13,692	27.81 /cy	31,310
						Planting beds preparation, mix planting soil, skid steer loader, includes loam, manure, peat	1,125.93 cy	180	11,276	39,970	-	1,975	-	47.27 /cy	53,221	108.09 /cy	121,703
						Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed with wood fiber mulch added	5,066.67 SY	44	2,959	10,741	-	2,801	-	3.26 /SY	16,502	7.45 /SY	37,736
						Shrubs, average cost, to 1 gallon	1,850.00 ea	167	10,652	6,660	-	3,751	-	11.39 /ea	21,063	26.03 /ea	48,164
						32.35.03.00 Site Improvements, Landscaping	**5,066.67 SY**	613	39,485	57,372	50,000	12,470		**31.45 /SY**	**159,326**	**71.91 /SY**	**364,335**
						32.25.03.0020 Bank Stabilization	***45,600.00* SF**	613	39,485	57,372	50,000	12,470		**3.49 /SF**	**159,326**	**7.99 /SF**	**364,335**
						32.50 Site, Improvements	***1.00* LS**	613	39,485	57,372	50,000	12,470		**159,326.12 /LS**	**159,326**	**364,335.14 /LS**	**364,335**
						32.0 Exterior Improvements	***1.00* LS**	613	39,485	57,372	50,000	12,470		**159,326.12 /LS**	**159,326**	**364,335.14 /LS**	**364,335**
						06.1 Bank Stabilization	***45,600.00* SF**	613	39,485	57,372	50,000	12,470		**3.49 /SF**	**159,326**	**7.99 /SF**	**364,335**
	07.1					**Offhaul Material**											
		31.0				**Earthwork**											
			31.20			**Earthworks, Site**											
				31.20.07.0019		**Offhaul Material**											
					31.20.07.10	**Earthworks, Sitework, Excavating Bulk Measure**											
						Load Offhaul	17,100.00 CY	369	27,834	-	-	30,682	-	3.42 /CY	58,516	7.83 /CY	133,810
						Haul spoils, offsite, 10 - 20 miles	17,100.00 cy		-	-	256,500	-	-	15.00 /cy	256,500	34.30 /cy	586,545
						Dump fees, trench spoils	17,100.00 cy		-	-	-	-	256,500	15.00 /cy	256,500	34.39 /cy	588,033
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	**17,100.00 CY**	369	27,834		256,500	30,682	256,500	**33.42 /CY**	**571,516**	**76.51 /CY**	**1,308,388**
						31.20.07.0019 Offhaul Material	**17,100.00 CY**	369	27,834		256,500	30,682	256,500	**33.42 /CY**	**571,516**	**76.51 /CY**	**1,308,388**
						31.20 Earthworks, Site	**17,100.00 CY**	369	27,834		256,500	30,682	256,500	**33.42 /CY**	**571,516**	**76.51 /CY**	**1,308,388**
						31.0 Earthwork	***1.00* LS**	369	27,834		256,500	30,682	256,500	**571,515.95 /LS**	**571,516**	**1,308,387.91 /LS**	**1,308,388**
						07.1 Offhaul Material	**17,100.00 CY**	369	27,834		256,500	30,682	256,500	**33.42 /CY**	**571,516**	**76.51 /CY**	**1,308,388**
	08.1					**Pumping For Water Diversion**											
		31.0				**Earthwork**											
			31.19			**Dewatering and Bypass Pumping**											
				31.19.06.0021		**Pumping For Water Diversion**											
					31.19.06.00	**Site Preparation, Bypass Pumping, 12" to 24" Pipe**											
						Bypass Pumping, Pumps and Piping, Mob	3.00 ea	24	1,988	-	4,500	1,054	-	2,514.04 /ea	7,542	5,748.92 /ea	17,247
						Bypass Pumping, Set-up Pumps	3.00 ea	48	3,977	1,500	-	1,054	-	2,176.86 /ea	6,531	4,977.87 /ea	14,934
						Bypass Pumping, Install Suction Piping	3.00 ea	24	1,988	450	-	527	-	988.43 /ea	2,965	2,260.27 /ea	6,781
						Bypass Pumping, System Operation	52.00 WK	520	39,556	208,000	-	260,000	-	9,760.70 /WK	507,556	22,320.04 /WK	1,160,642
						31.19.06.00 Site Preparation, Bypass Pumping, 12" to 24" Pipe	**52.00 WK**	616	47,510	209,950	4,500	262,634		**10,088.35 /WK**	**524,594**	**23,069.30 /WK**	**1,199,603**
						31.19.06.0021 Pumping For Water Diversion	**52.00 WK**	616	47,510	209,950	4,500	262,634		**10,088.35 /WK**	**524,594**	**23,069.30 /WK**	**1,199,603**
						31.19 Dewatering and Bypass Pumping	**52.00 WK**	616	47,510	209,950	4,500	262,634		**10,088.35 /WK**	**524,594**	**23,069.30 /WK**	**1,199,603**
						31.0 Earthwork	***1.00* LS**	616	47,510	209,950	4,500	262,634		**524,594.38 /LS**	**524,594**	**1,199,603.45 /LS**	**1,199,603**
						08.1 Pumping For Water Diversion	***1.00* LS**	616	47,510	209,950	4,500	262,634		**524,594.38 /LS**	**524,594**	**1,199,603.45 /LS**	**1,199,603**
	09.1					**Diversion Piping 12"**											
		33.0				**Utilities**											
			33.07			**Buried Process Pipe, HDPE**											
				33.00.09.0022		**Diversion Piping 12"**											
					33.00.09.12	**Buried Pipe, HDPE, 12"**											
						Pipeline LF per day	***200.00 lf***			-	-	-	-	***/lf***		***/lf***	
						25 tn Rough Terrain (per day)	1.00 day	8	633	-	-	1,182	-	1,814.58 /day	1,815	4,149.46 /day	4,149
						12" HDPE pipe, excav/backfill not included	2,200.00 LF	528	42,610	44,000	-	24,047	-	50.30 /LF	110,657	115.02 /LF	253,042
						12" HDPE tee	3.00 ea	15	1,204	880	-	680	-	921.39 /ea	2,764	2,106.97 /ea	6,321
						12" HDPE reducer	3.00 ea	11	874	880	-	493	-	749.07 /ea	2,247	1,712.91 /ea	5,139
						12" HDPE cap	1.00 ea	1	107	247	-	61	-	414.42 /ea	414	947.68 /ea	948
						12" HDPE flange	3.00 ea	8	672		-	137	-	269.49 /ea	808	616.25 /ea	1,849
						Field weld fusion joints, Subcontracted (S), 12"	80.00 ea		-	-	8,688	-	-	108.60 /ea	8,688	248.34 /ea	19,867
						12" Bolt & Gasket Kits, CS, 150#	3.00 ea	7	575	60	-	-	-	211.51 /ea	635	483.67 /ea	1,451
						33.00.09.12 Buried Pipe, HDPE, 12"	**2,200.00 LF**	579	46,675	46,066	8,688	26,599		**58.19 /LF**	**128,028**	**133.08 /LF**	**292,765**
						33.00.09.0022 Diversion Piping 12"	**2,200.00 LF**	579	46,675	46,066	8,688	26,599		**58.19 /LF**	**128,028**	**133.08 /LF**	**292,765**
						33.07 Buried Process Pipe, HDPE	**2,200.00 LF**	579	46,675	46,066	8,688	26,599		**58.19 /LF**	**128,028**	**133.08 /LF**	**292,765**
						33.0 Utilities	**2,200.00 LF**	579	46,675	46,066	8,688	26,599		**58.19 /LF**	**128,028**	**133.08 /LF**	**292,765**
						09.1 Diversion Piping 12"	**2,200.00 LF**	579	46,675	46,066	8,688	26,599		**58.19 /LF**	**128,028**	**133.08 /LF**	**292,765**
	10.1					**Fish Screen**											

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Fork Ash Creek Reach 3 Alt 1 Daylight in Place Rev #2 6-8-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #2 6-8-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.50.0023		Fish Screen											
					33.00.50.00	Buried Pipe, Other											
						Basket-strainer, flanged, SS screen, 12"	1.00 EA	1	80	1,500	-	-	-	1,579.80 /EA	1,580	3,612.56 /EA	3,613
						33.00.50.00 Buried Pipe, Other	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.56 /LF	3,613
						33.00.50.0023 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,612.56 /EA	3,613
						33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.56 /LF	3,613
						33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.56 /LF	3,613
						10.1 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,612.56 /EA	3,613
	11.1					Cofferdam											
		31.0				Earthwork											
			31.30			Site Specialties											
				31.30.01.0024		Cofferdam											
					31.30.01.00	Site Specialties, Port-A-Dams											
						Porta-dam, mob	2.00 EA	48		-	30,000	-	-	15,000.00 /EA	30,000	34,300.89 /EA	68,602
						Porta-dam, installation	2.00 ea	192	15,494	1,000	-	8,744	-	12,619.41 /ea	25,239	28,857.13 /ea	57,714
						Porta-dam, rental	12.00 mo		-	-	180,000	-	-	15,000.00 /mo	180,000	34,300.89 /mo	411,611
						Porta-dam, dewatering operation - fuel cost	12.00 mo		-	108,000	-	-	-	9,000.00 /mo	108,000	20,580.53 /mo	246,966
						Porta-dam, removal	2.00 ea	192	15,494	-	-	8,744	-	12,119.41 /ea	24,239	27,713.76 /ea	55,428
						Porta-dam, demob	2.00 ea	48		-	30,000	-	-	15,000.00 /ea	30,000	34,300.89 /ea	68,602
						31.30.01.00 Site Specialties, Port-A-Dams	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	454,461.16 /EA	908,922
						31.30.01.0024 Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	454,461.16 /EA	908,922
						31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	908,922.32 /LS	908,922
						31.0 Earthwork	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	908,922.32 /LS	908,922
						11.1 Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	454,461.16 /EA	908,922
	12.1					Fish Salvage											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0025		Fish Salvage											
					01.01.06.01	GC Labor											
						Environmental Manager	2.00 MO	347	26,000	1,000	-	-	-	13,499.75 /MO	27,000	27,495.28 /MO	54,991
						Environmental Engineer	4.00 MO	693	51,999	2,000	-	-	-	13,499.75 /MO	53,999	27,495.29 /MO	109,981
						01.01.06.01 GC Labor	6.00 MO	1,040	77,999	3,000				13,499.75 /MO	80,999	27,495.29 /MO	164,972
						01.01.06.0025 Fish Salvage	1.00 LS	1,040	77,999	3,000				80,998.50 /LS	80,999	164,971.73 /LS	164,972
						01.01 Construction Operations	1.00 LS	1,040	77,999	3,000				80,998.50 /LS	80,999	164,971.73 /LS	164,972
						01.0 General Requirements	1.00 LS	1,040	77,999	3,000				80,998.50 /LS	80,999	164,971.73 /LS	164,972
						12.1 Fish Salvage	40.00 DY	1,040	77,999	3,000				2,024.96 /DY	80,999	4,124.29 /DY	164,972
						02.0 Daylight Channel In Place	1.00 LS	9,189	630,132	848,126	801,863	598,679	367,090	3,245,889.80 /LS	3,245,890	7,404,339.21 /LS	7,404,339
03.0						Replace Uglow Bridge											
	01.2					Demo Arch Culvert at Uglow Bridge											
		02.0				Existing Conditions											
			02.40			Demolition											
				02.01.01.0001		Demo Existing Bridge											
					02.01.01.00	General Site Demolition											
						Bridge demolition, pedestrian, precast, 40'x13' long	418.00 SF	225	14,169	-	-	11,500	-	61.41 /SF	25,669	140.42 /SF	58,697
						02.01.01.00 General Site Demolition	1.00 LS	225	14,169			11,500		25,668.77 /LS	25,669	58,697.41 /LS	58,697
						02.01.01.0001 Demo Existing Bridge	418.00 SF	225	14,169			11,500		61.41 /SF	25,669	140.42 /SF	58,697
						02.40 Demolition	1.00 LS	225	14,169			11,500		25,668.77 /LS	25,669	58,697.41 /LS	58,697
						02.0 Existing Conditions	1.00 LS	225	14,169			11,500		25,668.77 /LS	25,669	58,697.41 /LS	58,697
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.09.1015		Backfill Bridge											
					31.20.09.00	Earthworks, Sitework, Site Import											
						Structural Backfill, Dozer and Traxcavator or Loader, Medium Crew	125.00 CY	72	4,965	-	-	4,966	-	79.45 /CY	9,931	181.68 /CY	22,710
						Import Aggregate Base (for overexcavated area) - under slab, Dozer and Traxcavator or Loader, Medium Crew	250.00 tn	64	4,362	-	-	3,978	-	33.36 /tn	8,340	76.28 /tn	19,071
						31.20.09.00 Earthworks, Sitework, Site Import	125.00 CY	136	9,327			8,944		146.17 /CY	18,271	334.25 /CY	41,781
						31.20.09.1015 Backfill Bridge	125.00 CY	136	9,327			8,944		146.17 /CY	18,271	334.25 /CY	41,781
						31.20 Earthworks, Site	125.00 CY	136	9,327			8,944		146.17 /CY	18,271	334.25 /CY	41,781
						31.0 Earthwork	1.00 LS	136	9,327			8,944		18,271.17 /LS	18,271	41,781.17 /LS	41,781
						01.2 Demo Arch Culvert at Uglow Bridge	1.00 LS	361	23,496			20,444		43,939.94 /LS	43,940	100,478.58 /LS	100,479
	02.2					New Uglow Bridge											
		03.0				Concrete Work											
			03.10			Cast-In-Place Concrete Work											
				03.00.99.0028		New Uglow Bridge											
					03.00.99.00	Concrete, Other											
						Division 03 Allowance New Bridge	2,000.00 SF		-	-	1,700,000	-		850.00 /SF	1,700,000	1,943.72 /SF	3,887,434
						03.00.99.00 Concrete, Other	2,000.00 SF				1,700,000			850.00 /SF	1,700,000	1,943.72 /SF	3,887,434
						03.00.99.0028 New Uglow Bridge	2,000.00 SF				1,700,000			850.00 /SF	1,700,000	1,943.72 /SF	3,887,434
						03.10 Cast-In-Place Concrete Work	1.00 LS				1,700,000			1,700,000.00 /LS	1,700,000	3,887,433.71 /LS	3,887,434
						03.0 Concrete Work	1.00 LS				1,700,000			1,700,000.00 /LS	1,700,000	3,887,433.71 /LS	3,887,434
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.07.1004		Excavation at Uglow Bridge											
					31.20.07.00	Earthworks, Sitework, Cut/Fill											
						Dewatering Minor, Generator and Pumps, Mob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,430.09 /ea	6,860
						Dewatering Minor, Set-up Generator and Install Pumps	4.00 ea	32	2,008	-	-	535	-	635.82 /ea	2,543	1,453.95 /ea	5,816
						Dewatering Minor, Sump Rock, delivered	10.00 cy		-	200	-	-	-	20.00 /cy	200	45.73 /cy	457
						Dewatering Minor, Large Generator and 2 Pumps, Rental, Monthly	12.00 mo		-	-	-	334,666	-	27,888.80 /mo	334,666	63,774.03 /mo	765,288

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Fork Ash Creek Reach 3 Alt 1 Daylight in Place Rev #2 6-8-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #2 6-8-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					31.20.07.00	Earthworks, Sitework, Cut/Fill											
						Dewatering Minor, Generator and Pumps, Operation - Labor to maintain / check pumps/ fuel and lube	12.00 mo	6,336	370,880	-	-	35,112	-	33,832.66 /mo	405,992	77,366.00 /mo	928,392
						Dewatering Minor, Remove Generator and Pumps	4.00 ea	32	2,008	-	-	402	-	602.57 /ea	2,410	1,377.92 /ea	5,512
						Dewatering Minor, Generator and Pumps, Demob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,430.09 /ea	6,860
						Shoring, sheet pile, subcontracted	2,400.00 sf	312		-	96,000	-	-	40.00 /sf	96,000	91.47 /sf	219,526
						Structural Excavation, Excavator and Trucks, Medium Crew, 15' depth	1,685.00 CY	96	6,388	-	-	8,889	-	9.07 /CY	15,277	20.73 /CY	34,934
						Grade for slabs / Scarify and Recompact, Dozer and Traxcavator or Loader, Small Crew	222.00 sy	10	721	-	-	736	-	6.56 /sy	1,457	15.00 /sy	3,331
						Structural Backfill, Dozer and Traxcavator or Loader, Medium Crew	870.00 cy	63	4,319	-	-	4,321	-	9.93 /cy	8,640	22.71 /cy	19,758
						Load Excess for Hauling, Rubber Tire Loader, Cat 950	814.00 cy	4	307	-	-	589	-	1.10 /cy	896	2.52 /cy	2,049
						Haul / Remove Excess, 17 yd capacity, 20 miles RT	814.00 cy	43	2,912	-	-	3,502	-	7.88 /cy	6,414	18.02 /cy	14,667
						Dump Charges for For Excess, 17 yd tandem, per cy	814.00 cy		-	12,210	-	-	12,210	30.00 /cy	24,420	68.69 /cy	55,913
						Over excavate and replace with suitable, Excavators and Trucks, Medium Crew	157.00 cy	8	555	-	-	1,011	-	9.98 /cy	1,567	22.82 /cy	3,582
						Import Aggregate Base (for overexcavated area) - under slab, Dozer and Traxcavator or Loader, Small Crew	320.00 tn	30	2,078	-	-	2,122	-	13.12 /tn	4,199	30.01 /tn	9,602
						31.20.07.00 Earthworks, Sitework, Cut/Fill	1,685.00 CY	6,998	392,175	12,410	102,000	391,885	12,210	540.46 /CY	910,680	1,235.93 /CY	2,082,547
						31.20.07.1004 Excavation at Uglow Bridge	1,685.00 CY	6,998	392,175	12,410	102,000	391,885	12,210	540.46 /CY	910,680	1,235.93 /CY	2,082,547
				31.20.09.1005		Grading for Uglow Bridge											
					31.20.09.00	Earthworks, Sitework, Site Import											
						Rough Site Grading, Small Crew	422.00 sy	8	503	-	-	528	-	2.44 /sy	1,031	5.59 /sy	2,357
						Import Site Fill - Medium Crew, per cy	431.00 CY	22	1,446	12,068	-	1,498	-	34.83 /CY	15,013	79.65 /CY	34,330
						31.20.09.00 Earthworks, Sitework, Site Import	431.00 CY	29	1,949	12,068		2,026		37.22 /CY	16,044	85.12 /CY	36,687
						31.20.09.1005 Grading for Uglow Bridge	431.00 CY	29	1,949	12,068		2,026		37.22 /CY	16,044	85.12 /CY	36,687
						31.20 Earthworks, Site	2,116.00 CY	7,027	394,124	24,478	102,000	393,911	12,210	437.96 /CY	926,724	1,001.53 /CY	2,119,234
						31.0 Earthwork	1.00 LS	7,027	394,124	24,478	102,000	393,911	12,210	926,723.67 /LS	926,724	2,119,233.67 /LS	2,119,234
		32.0				Exterior Improvements											
			32.12			Paving											
				32.40.02.1005		Paving for Uglow Bridge											
					32.40.02.00	Site Improvements, Paving, Bituminous Asphalt											
						Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 9" deep	422.22 SY	3	196	3,357	-	212	-	8.92 /SY	3,765	20.39 /SY	8,608
						Plant-mix asphalt paving, for highways and large paved areas, pavement replacement over trench, 6" thick, no hauling included	422.22 sy	215	14,352	16,889	-	1,331	-	77.14 /sy	32,572	176.41 /sy	74,482
						Painted pavement markings, thermoplastic, white or yellow, 6" wide, less than 6000 L.F.	160.00 lf	0	27	221	-	18	-	1.67 /lf	267	3.81 /lf	609
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	422.22 SY	218	14,575	20,466		1,561		86.69 /SY	36,603	198.24 /SY	83,700
						32.40.02.1005 Paving for Uglow Bridge	422.22 SY	218	14,575	20,466		1,561		86.69 /SY	36,603	198.24 /SY	83,700
						32.12 Paving	422.22 SY	218	14,575	20,466		1,561		86.69 /SY	36,603	198.24 /SY	83,700
			32.50			Site, Improvements											
				32.50.06.0009		Site Improvement Allowances											
					32.50.06.00	Site Improvements, Other Improvements											
						Division 01 Allowance SWPPP	1.00 ls		-	-	20,000	-		20,000.00 /ls	20,000	45,734.51 /ls	45,735
						Division 32 Allowance Landscape	1.00 ls		-	-	7,500	-		7,500.00 /ls	7,500	17,150.44 /ls	17,150
						32.50.06.00 Site Improvements, Other Improvements	1.00 LS				27,500			27,500.00 /LS	27,500	62,884.95 /LS	62,885
						32.50.06.0009 Site Improvement Allowances	1.00 LS				27,500			27,500.00 /LS	27,500	62,884.95 /LS	62,885
						32.50 Site, Improvements	1.00 LS				27,500			27,500.00 /LS	27,500	62,884.95 /LS	62,885
						32.0 Exterior Improvements	1.00 LS	218	14,575	20,466	27,500	1,561		64,102.63 /LS	64,103	146,585.12 /LS	146,585
						02.2 New Uglow Bridge	1.00 LS	7,246	408,699	44,944	1,829,500	395,473	12,210	2,690,826.30 /LS	2,690,826	6,153,252.50 /LS	6,153,253
	03.2					Bypass Pumping											
		03.0				Concrete Work											
			31.19			Dewatering and Bypass Pumping											
				31.19.06.0003		Bypass Pumping											
					31.19.06.00	Site Preparation, Bypass Pumping, 12" to 24" Pipe											
						Bypass Pumping, Pumps and Piping, Mob	3.00 ea	24	1,988	-	4,500	1,054	-	2,514.04 /ea	7,542	5,748.92 /ea	17,247
						Bypass Pumping, Set-up Pumps	3.00 ea	48	3,977	1,500	-	1,054	-	2,176.86 /ea	6,531	4,977.87 /ea	14,934
						Bypass Pumping, Install Suction Piping	3.00 ea	24	1,988	450	-	527	-	988.43 /ea	2,965	2,260.27 /ea	6,781
						Bypass Pumping, System Operation	12.00 WK	120	9,128	48,000	-	60,000	-	9,760.70 /WK	117,128	22,320.04 /WK	267,841
						31.19.06.00 Site Preparation, Bypass Pumping, 12" to 24" Pipe	12.00 WK	216	17,082	49,950	4,500	62,634		11,180.53 /WK	134,166	25,566.81 /WK	306,802
						31.19.06.0003 Bypass Pumping	12.00 WK	216	17,082	49,950	4,500	62,634		11,180.53 /WK	134,166	25,566.81 /WK	306,802
						31.19 Dewatering and Bypass Pumping	12.00 WK	216	17,082	49,950	4,500	62,634		11,180.53 /WK	134,166	25,566.81 /WK	306,802
						03.0 Concrete Work	1.00 LS	216	17,082	49,950	4,500	62,634		134,166.38 /LS	134,166	306,801.71 /LS	306,802
						03.2 Bypass Pumping	1.00 LS	216	17,082	49,950	4,500	62,634		134,166.38 /LS	134,166	306,801.71 /LS	306,802
	04.2					Diversion Piping 12"											
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.09.0004		Diversion Piping 12"											
					33.00.09.12	Buried Pipe, HDPE, 12"											
						Pipeline LF per day	*200.00 lf*			-	-	-	-	/lf		/lf	
						25 tn Rough Terrain (per day)	1.00 day	8	633	-	-	1,182	-	1,814.58 /day	1,815	4,149.45 /day	4,149
						12" HDPE pipe, excav/backfill not included	200.00 LF	48	3,874	4,000	-	2,186	-	50.30 /LF	10,060	115.02 /LF	23,004
						12" HDPE tee	3.00 ea	15	1,204	880	-	680	-	921.39 /ea	2,764	2,106.98 /ea	6,321
						12" HDPE reducer	3.00 ea	11	874	880	-	493	-	749.07 /ea	2,247	1,712.92 /ea	5,139
						12" HDPE cap	1.00 ea	1	107	247	-	61	-	414.42 /ea	414	947.67 /ea	948
						12" HDPE flange	3.00 ea	8	672		-	137	-	269.49 /ea	808	616.25 /ea	1,849
						Field weld fusion joints, Subcontracted (S), 12"	20.00 ea		-	-	2,172	-	-	108.60 /ea	2,172	248.34 /ea	4,967
						12" Bolt & Gasket Kits, CS, 150#	3.00 ea	7	575	60	-	-	-	211.51 /ea	635	483.66 /ea	1,451
						33.00.09.12 Buried Pipe, HDPE, 12"	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
						33.00.09.0004 Diversion Piping 12"	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
						33.07 Buried Process Pipe, HDPE	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
						33.0 Utilities	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
						04.2 Diversion Piping 12"	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
	05.2					Fish Screen											

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.50.0005		Fish Screen											
					33.00.50.00	Buried Pipe, Other											
						Basket-strainer, flanged, SS screen, 12"	1.00 EA	1	80	1,500	-	-	-	1,579.80 /EA	1,580	3,612.57 /EA	3,613
						33.00.50.00 Buried Pipe, Other	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.57 /LF	3,613
						33.00.50.0005 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,612.57 /EA	3,613
						33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.57 /LF	3,613
						33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.57 /LF	3,613
						05.2 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,612.57 /EA	3,613
	06.2					Cofferdam											
		31.0				Earthwork											
			31.30			Site Specialties											
				31.30.01.0006		Cofferdam											
					31.30.01.00	Site Specialties, Port-A-Dams											
						Porta-dam, mob	2.00 EA	48		-	30,000	-	-	15,000.00 /EA	30,000	34,300.89 /EA	68,602
						Porta-dam, installation	2.00 ea	192	15,494	1,000	-	8,744	-	12,619.41 /ea	25,239	28,857.12 /ea	57,714
						Porta-dam, rental	4.00 mo		-	-	60,000	-	-	15,000.00 /mo	60,000	34,300.89 /mo	137,204
						Porta-dam, dewatering operation - fuel cost	4.00 mo		-	36,000	-	-	-	9,000.00 /mo	36,000	20,580.53 /mo	82,322
						Porta-dam, removal	2.00 ea	192	15,494	-	-	8,744	-	12,119.41 /ea	24,239	27,713.75 /ea	55,428
						Porta-dam, demob	2.00 ea	48		-	30,000	-	-	15,000.00 /ea	30,000	34,300.88 /ea	68,602
						31.30.01.00 Site Specialties, Port-A-Dams	2.00 EA	480	30,989	37,000	120,000	17,489		102,738.81 /EA	205,478	234,935.48 /EA	469,871
						31.30.01.0006 Cofferdam	2.00 EA	480	30,989	37,000	120,000	17,489		102,738.81 /EA	205,478	234,935.48 /EA	469,871
						31.30 Site Specialties	1.00 LS	480	30,989	37,000	120,000	17,489		205,477.62 /LS	205,478	469,870.95 /LS	469,871
						31.0 Earthwork	1.00 LS	480	30,989	37,000	120,000	17,489		205,477.62 /LS	205,478	469,870.95 /LS	469,871
						06.2 Cofferdam	1.00 LS	480	30,989	37,000	120,000	17,489		205,477.62 /LS	205,478	469,870.95 /LS	469,871
	07.2					Fish Salvage											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0007		Fish Salvage											
					01.01.06.01	GC Labor											
						Environmental Manager	0.50 MO	87	6,500	250	-	-	-	13,499.76 /MO	6,750	27,495.30 /MO	13,748
						Environmental Engineer	1.00 MO	173	13,000	500	-	-	-	13,499.75 /MO	13,500	27,495.30 /MO	27,495
						01.01.06.01 GC Labor	1.50 MO	260	19,500	750				13,499.75 /MO	20,250	27,495.30 /MO	41,243
						01.01.06.0007 Fish Salvage	10.00 DY	260	19,500	750				2,024.96 /DY	20,250	4,124.30 /DY	41,243
						01.01 Construction Operations	1.00 LS	260	19,500	750				20,249.63 /LS	20,250	41,242.95 /LS	41,243
						01.0 General Requirements	1.00 LS	260	19,500	750				20,249.63 /LS	20,250	41,242.95 /LS	41,243
						07.2 Fish Salvage	10.00 DY	260	19,500	750				2,024.96 /DY	20,250	4,124.30 /DY	41,243
	08.2					Traffic Control											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0008		Traffic Control Allowance											
					01.01.06.02	GC Temporary Facilities & Services											
						Division 01 Allowance Traffic Control	90.00 DY		-	-	135,000	-		1,500.00 /DY	135,000	3,055.09 /DY	274,958
						01.01.06.02 GC Temporary Facilities & Services	90.00 DY				135,000			1,500.00 /DY	135,000	3,055.09 /DY	274,958
						01.01.06.0008 Traffic Control Allowance	90.00 DY				135,000			1,500.00 /DY	135,000	3,055.09 /DY	274,958
						01.01 Construction Operations	1.00 LS				135,000			135,000.00 /LS	135,000	274,957.97 /LS	274,958
						01.0 General Requirements	1.00 LS				135,000			135,000.00 /LS	135,000	274,957.97 /LS	274,958
						08.2 Traffic Control	1.00 LS				135,000			135,000.00 /LS	135,000	274,957.97 /LS	274,958
						03.0 Replace Uglow Bridge	**1.00 LS**	8,662	507,785	140,211	2,091,172	500,777	12,210	**3,252,154.76 /LS**	3,252,155	**7,398,044.31 /LS**	7,398,044

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Fork Ash Creek Reach 3 Alt 1 Daylight in Place Rev #2 6-8-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #2 6-8-23
Duration:	Design Stage: 2%	Estimate Class: 5

Estimate Totals

Description	Amount	Totals	Rate	Cost / Unit	% of Total	
Labor	1,603,392		hrs		6.98%	
Material	1,389,506				6.05%	
Subcontract	5,031,707				21.90%	
Equipment	1,678,462		hrs		7.31%	
Other	386,635				1.68%	
Subtotal Raw Costs	**10,089,702**	**10,089,702**			**43.91%**	**43.91%**
Material Sales & Use Tax - %						
Construction Equip Tax - %						
Total Taxes		**10,089,702**				**43.91%**
Location Adj. Factor						
Productivity Adjustment						
Subtotal Adj. Factors		**10,089,702**				**43.91%**
Existing Conditions I,OH&P	278,610		25.000 %		1.21%	
Concrete Work I,OH&P	1,057,857		25.000 %		4.60%	
Masonry Work I,OH&P			25.000 %			
Metals Work I,OH&P			25.000 %			
Architectural (Div 6-12)I,OH&P			25.000 %			
Special Construction I,OH&P			25.000 %			
Conveying Equipment I,OH&P			25.000 %			
Mechanical Work I,OH&P			25.000 %			
Electrical Work I,OH&P			25.000 %			
Site/Civil I,OH&P	1,044,434		25.000 %		4.55%	
Buried Piping I,OH&P	43,649		25.000 %		0.19%	
Tank Construction I,OH&P			25.000 %			
Process Piping I,OH&P			25.000 %			
Instruments & Controls I,OH&P			25.000 %			
Material Handling I,OH&P			25.000 %			
Process Equipment I,OH&P			25.000 %			
Subtotal Subcontractor I,OH&P	**2,424,550**	**12,514,252**			**10.55%**	**54.46%**
Contractor Contingency						
Subtotal Contingency		**12,514,252**				**54.46%**
Total Cost To Prime Contractor		**12,514,252**				**54.46%**
General Conditions	1,251,425		10.000 %		5.45%	
Mobilization/Demobilization	625,713		5.000 %		2.72%	
Subtotal Indirect Costs	**1,877,138**	**14,391,390**			**8.17%**	**62.63%**
Prime Contractor Home OfficeOH	1,439,139		10.000 %		6.26%	
Prime Contractor Profit	2,158,709		15.000 %		9.40%	
Bonds & Insurance	390,367		2.170 %		1.70%	
Subtotal OH&P	**3,988,215**	**18,379,605**			**17.36%**	**79.99%**
Contractor MU on Mech OFCI						
Contractor MU on Elec OFCI						
Total MU on OFCI Equip		**18,379,605**				**79.99%**
Design Contingency	4,594,901		25.000 %		20.00%	
Subtotal Contingency	**4,594,901**	**22,974,506**			**20.00%**	**99.99%**
Escalation						
Subtotal Escalation		**22,974,506**				**99.99%**
Corporate Activity Tax - %	2,242		0.580 %		0.01%	
Total Prime Contractor Costs	**2,242**	**22,976,748**			**0.01%**	**100.00%**
Total Construction Cost		**22,976,748**				**100.00%**
Total		***22,976,748***				

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 3 Alt 2 Daylight to the South Rev #2 6-8-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #2 6-8-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0						**Replace and Remove Main Street Bridge**											
	01.0					Demo Main Street Bridge											
		02.0				Existing Conditions											
			02.40			Demolition											
				02.01.01.0001		Demo Existing Bridge at Main St.											
					02.01.01.00	General Site Demolition											
						Bridge demolition, pedestrian, precast, 40'x13' long	520.00 SF	280	17,627	-	-	14,306	-	61.41 /SF	31,932	140.40 /SF	73,008
						02.01.01.00 General Site Demolition	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,007.54 /LS	73,008
						02.01.01.0001 Demo Existing Bridge at Main St.	520.00 SF	280	17,627			14,306		61.41 /SF	31,932	140.40 /SF	73,008
						02.40 Demolition	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,007.54 /LS	73,008
						02.0 Existing Conditions	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,007.54 /LS	73,008
						01.0 Demo Main Street Bridge	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,007.54 /LS	73,008
	02.0					New Main St. Bridge											
		03.0				Concrete Work											
			03.10			Cast-In-Place Concrete Work											
				03.00.99.0002		New Main St. Bridge											
					03.00.99.00	Concrete, Other											
						Division 03 Allowance New Bridge	4,400.00 SF		-	-	3,300,000	-		750.00 /SF	3,300,000	1,714.73 /SF	7,544,831
						03.00.99.00 Concrete, Other	4,400.00 SF				3,300,000			750.00 /SF	3,300,000	1,714.73 /SF	7,544,831
						03.00.99.0002 New Main St. Bridge	4,400.00 SF				3,300,000			750.00 /SF	3,300,000	1,714.73 /SF	7,544,831
						03.10 Cast-In-Place Concrete Work	1.00 LS				3,300,000			3,300,000.00 /LS	3,300,000	7,544,831.08 /LS	7,544,831
						03.0 Concrete Work	1.00 LS				3,300,000			3,300,000.00 /LS	3,300,000	7,544,831.08 /LS	7,544,831
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.25.01.1001		Structural Excavation and Backfill											
					31.25.01.00	Earthworks, Structural, Excavation											
						Dewatering Minor, Generator and Pumps, Mob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,429.47 /ea	6,859
						Dewatering Minor, Set-up Generator and Install Pumps	4.00 ea	32	2,008	-	-	535	-	635.82 /ea	2,543	1,453.69 /ea	5,815
						Dewatering Minor, Sump Rock, delivered	10.00 cy		-	200	-	-	-	20.00 /cy	200	45.73 /cy	457
						Dewatering Minor, Large Generator and 2 Pumps, Rental, Monthly	12.00 mo		-	-	-	334,666	-	27,888.80 /mo	334,666	63,762.50 /mo	765,150
						Dewatering Minor, Generator and Pumps, Operation - Labor to maintain / check pumps/ fuel and lube	12.00 mo	6,336	370,880	-	-	35,112	-	33,832.66 /mo	405,992	77,352.02 /mo	928,224
						Dewatering Minor, Remove Generator and Pumps	4.00 ea	32	2,008	-	-	402	-	602.57 /ea	2,410	1,377.67 /ea	5,511
						Dewatering Minor, Generator and Pumps, Demob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,429.47 /ea	6,859
						Shoring, sheet pile, subcontracted	3,600.00 sf	468		-	144,000	-	-	40.00 /sf	144,000	91.45 /sf	329,229
						Structural Excavation, Excavator and Trucks, Medium Crew, 15' depth	3,350.00 CY	191	12,699	-	-	17,673	-	9.07 /CY	30,372	20.73 /CY	69,441
						Grade for slabs / Scarify and Recompact, Dozer and Traxcavator or Loader, Small Crew	500.00 sy	23	1,623	-	-	1,657	-	6.56 /sy	3,281	15.00 /sy	7,500
						Structural Backfill, Dozer and Traxcavator or Loader, Medium Crew	1,225.00 cy	88	6,082	-	-	6,084	-	9.93 /cy	12,166	22.71 /cy	27,815
						Load Excess for Hauling, Rubber Tire Loader, Cat 950	1,214.00 cy	6	458	-	-	879	-	1.10 /cy	1,336	2.52 /cy	3,055
						Haul / Remove Excess, 17 yd capacity, 20 miles RT	1,214.00 cy	64	4,343	-	-	5,223	-	7.88 /cy	9,566	18.02 /cy	21,870
						Dump Charges for For Excess, 17 yd tandem, per cy	1,214.00 cy		-	18,210	-	-	-	15.00 /cy	18,210	34.29 /cy	41,634
						Over excavate and replace with suitable, Excavators and Trucks, Small Crew	326.00 cy	15	1,027	-	-	1,314	-	7.18 /cy	2,340	16.41 /cy	5,350
						31.25.01.00 Earthworks, Structural, Excavation	3,350.00 CY	7,288	401,127	18,410	150,000	403,545		290.47 /CY	973,082	664.11 /CY	2,224,769
						31.25.01.1001 Structural Excavation and Backfill	3,350.00 CY	7,288	401,127	18,410	150,000	403,545		290.47 /CY	973,082	664.11 /CY	2,224,769
						31.20 Earthworks, Site	3,350.00 CY	7,288	401,127	18,410	150,000	403,545		290.47 /CY	973,082	664.11 /CY	2,224,769
						31.0 Earthwork	1.00 LS	7,288	401,127	18,410	150,000	403,545		973,081.97 /LS	973,082	2,224,769.43 /LS	2,224,769
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.50.06.0009		Site Improvement Allowances											
					32.50.06.00	Site Improvements, Other Improvements											
						Division 01 Allowance SWPPP	1.00 ls		-	-	20,000	-		20,000.00 /ls	20,000	45,726.25 /ls	45,726
						Division 32 Allowance Paving	1.00 ls		-	-	75,000	-		75,000.00 /ls	75,000	171,473.44 /ls	171,473
						Division 32 Allowance Landscape	1.00 ls		-	-	7,500	-		7,500.00 /ls	7,500	17,147.35 /ls	17,147
						32.50.06.00 Site Improvements, Other Improvements	1.00 LS				102,500			102,500.00 /LS	102,500	234,347.04 /LS	234,347
						32.50.06.0009 Site Improvement Allowances	1.00 LS				102,500			102,500.00 /LS	102,500	234,347.04 /LS	234,347
						32.50 Site, Improvements	1.00 LS				102,500			102,500.00 /LS	102,500	234,347.04 /LS	234,347
						32.0 Exterior Improvements	1.00 LS				102,500			102,500.00 /LS	102,500	234,347.04 /LS	234,347
						02.0 New Main St. Bridge	1.00 LS	7,288	401,127	18,410	3,552,500	403,545		4,375,581.97 /LS	4,375,582	10,003,947.55 /LS	10,003,948
	03.0					Extend 12" Storm Drain											
		33.0				Utilities											
			33.05			Buried Process Pipe, PVC/CPVC											
				33.00.07.0003		12" Storm Drain Extension											
					33.00.07.12	Buried Pipe, PVC, 12"											
						Pipeline LF per Day	***150.00 lf***			-	-	-	-	/lf		/lf	
						Traffic Control, Labor per Day	2.00 day	32	1,866	-	-	-	-	933.15 /day	1,866	2,133.47 /day	4,267
						Trench Box, 8' x 24' x 10'	0.20 mo		-	-	-	460	-	2,300.00 /mo	460	5,258.45 /mo	1,052
						Dedicated Fire / Safety Monitor	8.00 hr	8	467	-	-	-	-	58.32 /hr	467	133.35 /hr	1,067
						Excav. pipe trench, w/ trench box, for 4" - 24" pipe	371.48 CY	32	2,199	-	-	1,510	-	9.99 /CY	3,710	22.83 /CY	8,481
						Backfill / Compact @ pipe zone, for 4" thru 24" pipe	70.72 cy	56	3,675	-	-	2,516	-	87.54 /cy	6,191	200.15 /cy	14,154
						Backfill / Compact above pipe zone, for 4" thru 24" pipe	312.06 cy	32	2,413	-	-	2,874	-	16.94 /cy	5,287	38.73 /cy	12,087
						Pipe zone material	70.72 cy		-	1,980	-	-	-	28.00 /cy	1,980	64.02 /cy	4,527
						Pipe bedding material	20.19 cy		-	565	-	-	-	28.00 /cy	565	64.02 /cy	1,293
						Imported backfill material	312.06 cy		-	8,738	-	-	-	28.00 /cy	8,738	64.02 /cy	19,977
						Haul spoils, offsite, 10 - 20 miles	402.97 cy		-	-	6,045	-	-	15.00 /cy	6,045	34.29 /cy	13,820
						Dump fees, trench spoils	402.97 cy		-	-	-	-	6,045	15.00 /cy	6,045	34.38 /cy	13,855
						12" pipe, PVC, SDR 35, B & S, excav/bkfill not included	300.00 LF	96	7,748	4,500	-	4,372	-	55.40 /LF	16,620	126.66 /LF	37,999
						Pipe Marking, Detection Tape	300.00 lf	3	243	39	-	-	-	0.94 /lf	282	2.15 /lf	645
						Pipe Marking, Copper Wire	300.00 lf	3	243	66	-	-	-	1.03 /lf	309	2.36 /lf	707
						33.00.07.12 Buried Pipe, PVC, 12"	300.00 LF	262	18,854	15,888	6,045	11,733	6,045	195.21 /LF	58,564	446.43 /LF	133,930
						33.00.07.0003 12" Storm Drain Extension	300.00 LF	262	18,854	15,888	6,045	11,733	6,045	195.21 /LF	58,564	446.43 /LF	133,930

BID FORM SUMMARY

Project type: | Project Name: D3540100 North Ash Creek Reach 3 Alt 2 Daylight to the South Rev #2 6-8-23 | Estimator: John DeWolf
Job Size: | Project Number: D3540100 | Rev/Date: Rev #2 6-8-23
Duration: | Design Stage: 2% | Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
						33.05 Buried Process Pipe, PVC/CPVC	300.00 LF	262	18,854	15,888	6,045	11,733	6,045	195.21 /LF	58,564	446.43 /LF	133,930
						33.0 Utilities	300.00 LF	262	18,854	15,888	6,045	11,733	6,045	195.21 /LF	58,564	446.43 /LF	133,930
						03.0 Extend 12" Storm Drain	300.00 LF	262	18,854	15,888	6,045	11,733	6,045	195.21 /LF	58,564	446.43 /LF	133,930
	04.0					Traffic Control											
		01.0				General Requirements											
			01.01			**Construction Operations**											
				01.01.06.0008		Traffic Control Allowance											
					01.01.06.02	GC Temporary Facilities & Services											
						Division 01 Allowance Traffic Control	180.00 DY		-	-	270,000	-		1,500.00 /DY	270,000	3,054.47 /DY	549,804
						01.01.06.02 GC Temporary Facilities & Services	180.00 DY				270,000			1,500.00 /DY	270,000	3,054.47 /DY	549,804
						01.01.06.0008 Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,054.47 /DY	549,804
						01.01 Construction Operations	*1.00* LS				270,000			270,000.00 /LS	270,000	549,804.36 /LS	549,804
						01.0 General Requirements	*1.00* LS				270,000			270,000.00 /LS	270,000	549,804.36 /LS	549,804
						04.0 Traffic Control	180.00 DY				270,000			1,500.00 /DY	270,000	3,054.47 /DY	549,804
						01.0 Replace and Remove Main Street Bridge	*1.00* LS	7,830	437,608	34,298	3,828,545	429,583	6,045	4,736,077.98 /LS	4,736,078	10,760,689.12 /LS	10,760,689
02.0						**Daylight Channel to the South (from Main St. to Uglow)**											
	01.1					Demo Asphalt											
		02.0				Existing Conditions											
			02.40			**Demolition**											
				02.01.01.0010		Demo Asphalt											
					02.01.01.00	General Site Demolition											
						Temporary Fencing, chain link, rented up to 12 months, 6' high, 11 ga, over 1000'	120.00 lf	6	373	376	-	-	-	6.24 /lf	749	14.27 /lf	1,712
						Demolish, remove pavement & curb, remove bituminous pavement, 4" to 6" thick, excludes hauling and disposal fees	133.33 SY	13	823	-	-	426	-	9.37 /SY	1,249	21.42 /SY	2,856
						Site demo, for disposal off site, to 5 mis, add	22.22 cy	2	159	-	222	196	333	41.00 /cy	911	93.82 /cy	2,085
						Selective demolition, saw cutting, each additional inch of depth over 3"	1,800.00 lf	16	1,087	54	-	624	-	0.98 /lf	1,765	2.24 /lf	4,034
						02.01.01.00 General Site Demolition	*1.00* LS	37	2,442	430	222	1,246	333	4,673.63 /LS	4,674	10,687.30 /LS	10,687
						02.01.01.0010 Demo Asphalt	133.33 SY	37	2,442	430	222	1,246	333	35.05 /SY	4,674	80.15 /SY	10,687
						02.40 Demolition	*1.00* LS	37	2,442	430	222	1,246	333	4,673.63 /LS	4,674	10,687.30 /LS	10,687
						02.0 Existing Conditions	*1.00* LS	37	2,442	430	222	1,246	333	4,673.63 /LS	4,674	10,687.30 /LS	10,687
						01.1 Demo Asphalt	*1,200.00* SF	37	2,442	430	222	1,246	333	3.89 /SF	4,674	8.91 /SF	10,687
	02.1					Remove Existing 84" Culverts											
		02.0				Existing Conditions											
			02.40			**Demolition**											
				02.01.01.0011		Remove Existing Dual 84" Culverts											
					02.01.01.00	General Site Demolition											
						Traffic Control, Labor per Day	16.00 day	256	14,930	-	-	-	-	933.15 /day	14,930	2,133.48 /day	34,136
						Trench Box, 8' x 24' x 10'	1.00 mo		-	-	-	2,300	-	2,300.00 /mo	2,300	5,258.53 /mo	5,259
						Dedicated Fire / Safety Monitor	60.00 hr	60	3,499	-	-	-	-	58.32 /hr	3,499	133.34 /hr	8,001
						Storm Sewer Pipe Demolition and Loading, 10' Deep	1,540.00 LF	431	32,984	-	-	22,971	-	36.33 /LF	55,956	83.07 /LF	127,932
						Haul Site Demolition Spoils, 17 yd capacity, 20 miles RT, priced per load	91.00 load	81	5,534	-	-	6,655	-	133.95 /load	12,190	306.26 /load	27,869
						Dump Charges for Site Demolition Spoils, 17 yd end-dump, priced per load	91.00 load		-	15,925	-	-	-	175.00 /load	15,925	400.10 /load	36,410
						Excav. pipe trench, w/ trench box, for > 30" pipe	5,507.86 CY	240	16,494	-	-	24,739	-	7.49 /CY	41,233	17.12 /CY	94,271
						Imported backfill material	5,507.86 cy		-	154,220	-	-	-	28.00 /cy	154,220	64.02 /cy	352,595
						Haul spoils, offsite, 10 - 20 miles	3,696.65 cy		-	-	55,450	-	-	15.00 /cy	55,450	34.29 /cy	126,775
						Dump fees, trench spoils	3,696.65 cy		-	-	-	-	55,450	15.00 /cy	55,450	34.38 /cy	127,097
						02.01.01.00 General Site Demolition	*1.00* LS	1,068	73,442	170,145	55,450	56,666	55,450	411,152.46 /LS	411,152	940,344.61 /LS	940,345
						02.01.01.0011 Remove Existing Dual 84" Culverts	1,540.00 LF	1,068	73,442	170,145	55,450	56,666	55,450	266.98 /LF	411,152	610.61 /LF	940,345
				02.01.01.0012		Remove Existing Single 84" Culvert											
					02.01.01.00	General Site Demolition											
						Traffic Control, Labor per Day	13.00 day	208	12,131	-	-	-	-	933.15 /day	12,131	2,133.48 /day	27,735
						Trench Box, 8' x 24' x 10'	1.00 mo		-	-	-	2,300	-	2,300.00 /mo	2,300	5,258.51 /mo	5,259
						Dedicated Fire / Safety Monitor	52.00 hr	52	3,033	-	-	-	-	58.32 /hr	3,033	133.34 /hr	6,934
						Storm Sewer Pipe Demolition and Loading, 10' Deep	670.00 LF	188	14,350	-	-	9,994	-	36.33 /LF	24,344	83.07 /LF	55,659
						Haul Site Demolition Spoils, 17 yd capacity, 20 miles RT, priced per cy	569.00 cy	30	2,036	-	-	2,448	-	7.88 /cy	4,483	18.02 /cy	10,251
						Dump Charges for Site Demolition Spoils, 17 yd end-dump, priced per cy	569.00 cy		-	0	-	8,535	-	15.00 /cy	8,535	34.29 /cy	19,514
						Excav. pipe trench, w/ trench box, for > 30" pipe	2,514.55 CY	55	3,802	-	-	11,405	-	6.05 /CY	15,207	13.83 /CY	34,767
						Pipe zone material	1,131.08 cy		-	31,670	-	-	-	28.00 /cy	31,670	64.02 /cy	72,408
						Imported backfill material	2,514.55 cy		-	70,407	-	-	-	28.00 /cy	70,407	64.02 /cy	160,973
						Haul spoils, offsite, 10 - 20 miles	1,131.08 cy		-	-	16,966	-	-	15.00 /cy	16,966	34.29 /cy	38,790
						Dump fees, trench spoils	1,131.08 cy		-	-	0	-	16,966	15.00 /cy	16,966	34.38 /cy	38,888
						02.01.01.00 General Site Demolition	*1.00* LS	533	35,351	102,078	16,966	34,682	16,966	206,043.11 /LS	206,043	471,177.32 /LS	471,177
						02.01.01.0012 Remove Existing Single 84" Culvert	670.00 LF	533	35,351	102,078	16,966	34,682	16,966	307.53 /LF	206,043	703.25 /LF	471,177
						02.40 Demolition	*1.00* LS	1,601	108,793	272,223	72,416	91,348	72,416	617,195.57 /LS	617,196	1,411,521.93 /LS	1,411,522
						02.0 Existing Conditions	*1.00* LS	1,601	108,793	272,223	72,416	91,348	72,416	617,195.57 /LS	617,196	1,411,521.93 /LS	1,411,522
						02.1 Remove Existing 84" Culverts	2,210.00 LF	1,601	108,793	272,223	72,416	91,348	72,416	279.27 /LF	617,196	638.70 /LF	1,411,522
	03.1					Demo Timber Bridge											
		02.0				Existing Conditions											
			02.40			**Demolition**											
				02.01.01.0013		Demo Timber Bridge											
					02.01.01.00	General Site Demolition											
						Bridge demolition, pedestrian, precast, 14'x54' long	756.00 SF	407	25,626	-	-	20,798	-	61.41 /SF	46,425	140.40 /SF	106,142
						02.01.01.00 General Site Demolition	*1.00* LS	407	25,626			20,798		46,424.86 /LS	46,425	106,141.76 /LS	106,142
						02.01.01.0013 Demo Timber Bridge	756.00 SF	407	25,626			20,798		61.41 /SF	46,425	140.40 /SF	106,142
						02.40 Demolition	*1.00* LS	407	25,626			20,798		46,424.86 /LS	46,425	106,141.76 /LS	106,142
						02.0 Existing Conditions	*1.00* LS	407	25,626			20,798		46,424.86 /LS	46,425	106,141.76 /LS	106,142
						03.1 Demo Timber Bridge	*1.00* EA	407	25,626			20,798		46,424.86 /EA	46,425	106,141.76 /EA	106,142
	04.1					Creek Channel Excavation											
		31.0				Earthwork											
			31.20			**Earthworks, Site**											
				31.20.07.0017		Channel Excavation											

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 3 Alt 2 Daylight to the South Rev #2 6-8-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #2 6-8-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Traffic Control, Labor per Day	43.00 day	688	40,126	-	-	-	-	933.15 /day	40,126	2,133.48 /day	91,740
						Dedicated Fire / Safety Monitor	172.00 hr	172	10,031	-	-	-	-	58.32 /hr	10,031	133.34 /hr	22,935
						Rough Site Grading, Small Crew	20,352.00 sy	362	24,245	-	-	25,463	-	2.44 /sy	49,708	5.58 /sy	113,649
						Finish grading lagoon bottoms	183.60 msf	289	19,340	-	-	14,829	-	186.11 /msf	34,169	425.50 /msf	78,122
						Excav. for Channel	54,657.00 CY	903	62,028	-	-	93,039	-	2.84 /CY	155,067	6.49 /CY	354,530
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	54,657.00 CY	2,414	155,771			133,331		5.29 /CY	289,101	12.09 /CY	660,975
						31.20.07.0017 Channel Excavation	54,657.00 CY	2,414	155,771			133,331		5.29 /CY	289,101	12.09 /CY	660,975
						31.20 Earthworks, Site	54,657.00 CY	2,414	155,771			133,331		5.29 /CY	289,101	12.09 /CY	660,975
						31.0 Earthwork	*1.00* LS	2,414	155,771			133,331		289,101.12 /LS	289,101	660,975.47 /LS	660,975
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.50.06.0009		Site Improvement Allowances											
					32.50.06.00	Site Improvements, Other Improvements											
						Division 01 Allowance SWPPP	1.00 ls		-	-	50,000	-		50,000.00 /ls	50,000	114,315.62 /ls	114,316
						Division 32 Allowance Misc. Traffic Control	1.00 LS		-	-	25,000	-		25,000.00 /LS	25,000	57,157.82 /LS	57,158
						Division 32 Allowance Paving	1.00 ls		-	-	30,000	-		30,000.00 /ls	30,000	68,589.38 /ls	68,589
						32.50.06.00 Site Improvements, Other Improvements	1.00 LS				105,000			105,000.00 /LS	105,000	240,062.82 /LS	240,063
						32.50.06.0009 Site Improvement Allowances	1.00 LS				105,000			105,000.00 /LS	105,000	240,062.82 /LS	240,063
						32.50 Site, Improvements	1.00 LS				105,000			105,000.00 /LS	105,000	240,062.82 /LS	240,063
						32.0 Exterior Improvements	1.00 LS				105,000			105,000.00 /LS	105,000	240,062.82 /LS	240,063
						04.1 Creek Channel Excavation	54,657.00 CY	2,414	155,771		105,000	133,331		7.21 /CY	394,101	16.49 /CY	901,038
	05.1					Bed Material											
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.07.0018		Bed Material											
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Backfill Bedding	406.00 CY	125	9,417	-	-	13,866	-	57.35 /CY	23,283	131.11 /CY	53,232
						Pipe bedding material	406.00 cy		-	11,368	-	-	-	28.00 /cy	11,368	64.02 /cy	25,991
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	406.00 CY	125	9,417	11,368		13,866		85.35 /CY	34,651	195.13 /CY	79,223
						31.20.07.0018 Bed Material	406.00 CY	125	9,417	11,368		13,866		85.35 /CY	34,651	195.13 /CY	79,223
						31.20 Earthworks, Site	406.00 CY	125	9,417	11,368		13,866		85.35 /CY	34,651	195.13 /CY	79,223
						31.0 Earthwork	*1.00* LS	125	9,417	11,368		13,866		34,650.87 /LS	34,651	79,222.70 /LS	79,223
						05.1 Bed Material	406.00 CY	125	9,417	11,368		13,866		85.35 /CY	34,651	195.13 /CY	79,223
	06.1					Bank Stabilization											
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.25.03.0020		Bank Stabilization											
					32.35.03.00	Site Improvements, Landscaping											
						Division 32 Allowance for Large Woody Material	1.00 ls		-	-	50,000	-		50,000.00 /ls	50,000	114,315.64 /ls	114,316
						Planting beds preparation, backfill planting pit, prepared planting mix, skid steer loader	406.00 cy	24	1,488	-	-	261	-	4.31 /cy	1,748	9.84 /cy	3,997
						Planting beds preparation, excavate planting pit,heavy soil or clay, 1/2 C.Y. backhoe	406.00 cy	56	3,776	-	-	1,161	-	12.16 /cy	4,937	27.80 /cy	11,288
						Planting beds preparation, mix planting soil, skid steer loader, includes loam, manure, peat	406.00 cy	65	4,066	14,413	-	712	-	47.27 /cy	19,191	108.07 /cy	43,877
						Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed with wood fiber mulch added	5,840.00 SY	52	3,494	12,381	-	3,307	-	3.28 /SY	19,182	7.51 /SY	43,856
						Shrubs, average cost, to 1 gallon	1,295.00 ea	117	7,456	4,662	-	2,626	-	11.39 /ea	14,744	26.03 /ea	33,709
						32.35.03.00 Site Improvements, Landscaping	5,840.00 SY	314	20,280	31,456	50,000	8,067		18.80 /SY	109,802	42.99 /SY	251,043
						32.25.03.0020 Bank Stabilization	*52,544.00* SF	314	20,280	31,456	50,000	8,067		2.09 /SF	109,802	4.78 /SF	251,043
						32.50 Site, Improvements	*1.00* LS	314	20,280	31,456	50,000	8,067		109,802.44 /LS	109,802	251,042.69 /LS	251,043
						32.0 Exterior Improvements	*1.00* LS	314	20,280	31,456	50,000	8,067		109,802.44 /LS	109,802	251,042.69 /LS	251,043
						06.1 Bank Stabilization	*52,544.00* SF	314	20,280	31,456	50,000	8,067		2.09 /SF	109,802	4.78 /SF	251,043
	07.1					Offhaul Material											
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.07.0019		Offhaul Material											
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Load Offhaul	54,657.00 CY	1,180	88,965	-	-	98,070	-	3.42 /CY	187,035	7.82 /CY	427,621
						Haul spoils, offsite, 10 - 20 miles	54,657.00 cy		-	-	819,855	-	-	15.00 /cy	819,855	34.29 /cy	1,874,445
						Dump fees, trench spoils	54,657.00 cy		-	-	-	-	819,855	15.00 /cy	819,855	34.38 /cy	1,879,200
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	54,657.00 CY	1,180	88,965		819,855	98,070	819,855	33.42 /CY	1,826,745	76.50 /CY	4,181,266
						31.20.07.0019 Offhaul Material	54,657.00 CY	1,180	88,965		819,855	98,070	819,855	33.42 /CY	1,826,745	76.50 /CY	4,181,266
						31.20 Earthworks, Site	54,657.00 CY	1,180	88,965		819,855	98,070	819,855	33.42 /CY	1,826,745	76.50 /CY	4,181,266
						31.0 Earthwork	*1.00* LS	1,180	88,965		819,855	98,070	819,855	1,826,745.44 /LS	1,826,745	4,181,266.03 /LS	4,181,266
						07.1 Offhaul Material	54,657.00 CY	1,180	88,965		819,855	98,070	819,855	33.42 /CY	1,826,745	76.50 /CY	4,181,266
	08.1					Cofferdam											
		31.0				Earthwork											
			31.30			Site Specialties											
				31.30.01.0024		Cofferdam											
					31.30.01.00	Site Specialties, Port-A-Dams											
						Porta-dam, mob	1.00 EA	24		-	15,000	-	-	15,000.00 /EA	15,000	34,294.66 /EA	34,295
						Porta-dam, installation	1.00 ea	96	7,747	500	-	4,372	-	12,619.41 /ea	12,619	28,851.92 /ea	28,852
						Porta-dam, rental	12.00 mo		-	-	180,000	-	-	15,000.00 /mo	180,000	34,294.69 /mo	411,536
						Porta-dam, dewatering operation - fuel cost	12.00 mo		-	108,000	-	-	-	9,000.00 /mo	108,000	20,576.81 /mo	246,922
						Porta-dam, removal	1.00 ea	96	7,747	-	-	4,372	-	12,119.41 /ea	12,119	27,708.74 /ea	27,709
						Porta-dam, demob	1.00 ea	24		-	15,000	-	-	15,000.00 /ea	15,000	34,294.70 /ea	34,295
						31.30.01.00 Site Specialties, Port-A-Dams	1.00 EA	240	15,494	108,500	210,000	8,744		342,738.82 /EA	342,739	783,608.02 /EA	783,608
						31.30.01.0024 Cofferdam	1.00 EA	240	15,494	108,500	210,000	8,744		342,738.82 /EA	342,739	783,608.02 /EA	783,608
						31.30 Site Specialties	*1.00* LS	240	15,494	108,500	210,000	8,744		342,738.82 /LS	342,739	783,608.02 /LS	783,608
						31.0 Earthwork	*1.00* LS	240	15,494	108,500	210,000	8,744		342,738.82 /LS	342,739	783,608.02 /LS	783,608
						08.1 Cofferdam	*1.00* LS	240	15,494	108,500	210,000	8,744		342,738.82 /LS	342,739	783,608.02 /LS	783,608
	09.1					Fill Existing Channel											

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.09.1002		Fill Existing Channel											
					31.20.09.00	Earthworks, Sitework, Site Import											
						Rough Site Grading, Large Crew	1,000.00 sy	13	893	-	-	1,661	-	2.55 /sy	2,555	5.84 /sy	5,841
						Import Aggregate Base - under slab, Dozer and Traxcavator or Loader, Medium Crew	3,070.00 tn	246	16,739	67,540	-	15,265	-	32.42 /tn	99,544	74.13 /tn	227,589
						Import Site Fill - Medium Crew, per cy	11,200.00 CY	560	37,589	313,600	-	38,935	-	34.83 /CY	390,124	79.64 /CY	891,946
						31.20.09.00 Earthworks, Sitework, Site Import	11,200.00 CY	819	55,221	381,140		55,862		43.95 /CY	492,223	100.48 /CY	1,125,376
						31.20.09.1002 Fill Existing Channel	11,200.00 CY	819	55,221	381,140		55,862		43.95 /CY	492,223	100.48 /CY	1,125,376
						31.20 Earthworks, Site	11,200.00 CY	819	55,221	381,140		55,862		43.95 /CY	492,223	100.48 /CY	1,125,376
						31.0 Earthwork	1.00 LS	819	55,221	381,140		55,862		492,223.16 /LS	492,223	1,125,375.93 /LS	1,125,376
						09.1 Fill Existing Channel	1.00 LS	819	55,221	381,140		55,862		492,223.16 /LS	492,223	1,125,375.93 /LS	1,125,376
						02.0 Daylight Channel to the South (from Main St. to Uglow)	**1.00 LS**	7,137	482,010	805,116	1,257,493	431,332	892,604	**3,868,555.91 /LS**	3,868,556	**8,849,904.65 /LS**	8,849,905
03.0						**Replace and Remove Uglow Bridge**											
	01.2					Grout Fill Arch Culvert at Uglow Bridge											
		03.0				Concrete Work											
			03.10			Cast-In-Place Concrete Work											
				03.10.16.0026		Grout Fill Arch Culvert at Uglow Bridge											
					03.10.16.00	Cast-In-Place Concrete, Fill/Topping/Grouting											
						Concrete, pipe encasement	100.00 CY		-	18,000	-	-	-	180.00 /CY	18,000	411.54 /CY	41,154
						Forms in place for concrete encasement bulkhead	250.00 sf	150	9,956	250	-	-	-	40.83 /sf	10,206	93.34 /sf	23,335
						Placing concrete for encasement, concrete pump	100.00 cy	75	4,091	-	-	-	-	40.91 /cy	4,091	93.52 /cy	9,352
						Hire concrete pump and equipment with certification, subcontract, trailer pump	16.00 hr		-	-	2,080	-	-	130.00 /hr	2,080	297.22 /hr	4,756
						03.10.16.00 Cast-In-Place Concrete, Fill/Topping/Grouting	100.00 CY	225	14,047	18,250	2,080			343.77 /CY	34,377	785.96 /CY	78,596
						03.10.16.0026 Grout Fill Arch Culvert at Uglow Bridge	100.00 CY	225	14,047	18,250	2,080			343.77 /CY	34,377	785.96 /CY	78,596
						03.10 Cast-In-Place Concrete Work	1.00 LS	225	14,047	18,250	2,080			34,376.83 /LS	34,377	78,596.18 /LS	78,596
						03.0 Concrete Work	1.00 LS	225	14,047	18,250	2,080			34,376.83 /LS	34,377	78,596.18 /LS	78,596
						01.2 Grout Fill Arch Culvert at Uglow Bridge	1.00 LS	225	14,047	18,250	2,080			34,376.83 /LS	34,377	78,596.18 /LS	78,596
	02.2					New Uglow Bridge											
		03.0				Concrete Work											
			03.10			Cast-In-Place Concrete Work											
				03.00.99.0028		New Uglow Bridge											
					03.00.99.00	Concrete, Other											
						Division 03 Allowance New Bridge	2,300.00 SF		-	-	1,955,000	-		850.00 /SF	1,955,000	1,943.37 /SF	4,469,741
						03.00.99.00 Concrete, Other	2,300.00 SF				1,955,000			850.00 /SF	1,955,000	1,943.37 /SF	4,469,741
						03.00.99.0028 New Uglow Bridge	2,300.00 SF				1,955,000			850.00 /SF	1,955,000	1,943.37 /SF	4,469,741
						03.10 Cast-In-Place Concrete Work	1.00 LS				1,955,000			1,955,000.00 /LS	1,955,000	4,469,740.85 /LS	4,469,741
						03.0 Concrete Work	1.00 LS				1,955,000			1,955,000.00 /LS	1,955,000	4,469,740.85 /LS	4,469,741
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.25.01.1003		Structural Excavation											
					31.25.01.00	Earthworks, Structural, Excavation											
						Dewatering Minor, Generator and Pumps, Mob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,429.47 /ea	6,859
						Dewatering Minor, Set-up Generator and Install Pumps	4.00 ea	32	2,008	-	-	535	-	635.82 /ea	2,543	1,453.69 /ea	5,815
						Dewatering Minor, Sump Rock, delivered	10.00 cy		-	200	-	-	-	20.00 /cy	200	45.73 /cy	457
						Dewatering Minor, Large Generator and 2 Pumps, Rental, Monthly	12.00 mo		-	-	-	334,666	-	27,888.80 /mo	334,666	63,762.50 /mo	765,150
						Dewatering Minor, Generator and Pumps, Operation - Labor to maintain / check pumps/ fuel and lube	12.00 mo	6,336	370,880	-	-	35,112	-	33,832.66 /mo	405,992	77,352.02 /mo	928,224
						Dewatering Minor, Remove Generator and Pumps	4.00 ea	32	2,008	-	-	402	-	602.57 /ea	2,410	1,377.67 /ea	5,511
						Dewatering Minor, Generator and Pumps, Demob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,429.47 /ea	6,859
						Shoring, sheet pile, subcontracted	2,760.00 sf	359		-	110,400	-	-	40.00 /sf	110,400	91.45 /sf	252,409
						Structural Excavation, Excavator and Trucks, Medium Crew, 15' depth	1,590.00 CY	91	6,027	-	-	8,388	-	9.07 /CY	14,416	20.73 /CY	32,959
						Grade for slabs / Scarify and Recompact, Dozer and Traxcavator or Loader, Small Crew	260.00 sy	12	844	-	-	862	-	6.56 /sy	1,706	15.00 /sy	3,900
						Structural Backfill, Dozer and Traxcavator or Loader, Medium Crew	738.00 cy	53	3,664	-	-	3,665	-	9.93 /cy	7,329	22.71 /cy	16,757
						Load Excess for Hauling, Rubber Tire Loader, Cat 950	851.00 cy	4	321	-	-	616	-	1.10 /cy	937	2.52 /cy	2,141
						Haul / Remove Excess, 17 yd capacity, 20 miles RT	851.00 cy	45	3,044	-	-	3,661	-	7.88 /cy	6,705	18.02 /cy	15,331
						Dump Charges for For Excess, 17 yd tandem, per cy	851.00 cy		-	12,765	-	-	-	15.00 /cy	12,765	34.29 /cy	29,185
						Over excavate and replace with suitable, Excavators and Trucks, Small Crew	170.00 cy	8	535	-	-	685	-	7.18 /cy	1,220	16.41 /cy	2,790
						31.25.01.00 Earthworks, Structural, Excavation	1,590.00 CY	7,004	389,332	12,965	116,400	388,593		570.62 /CY	907,289	1,304.62 /CY	2,074,347
						31.25.01.1003 Structural Excavation	1,590.00 CY	7,004	389,332	12,965	116,400	388,593		570.62 /CY	907,289	1,304.62 /CY	2,074,347
						31.20 Earthworks, Site	1,590.00 CY	7,004	389,332	12,965	116,400	388,593		570.62 /CY	907,289	1,304.62 /CY	2,074,347
						31.0 Earthwork	1.00 LS	7,004	389,332	12,965	116,400	388,593		907,289.26 /LS	907,289	2,074,346.74 /LS	2,074,347
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.40.02.1004		Paving at Uglow											
					32.40.02.00	Site Improvements, Paving, Bituminous Asphalt											
						Fog seal, seal coating, coal tar pitch emulsion, 2 coat, under 1000 S.Y.	152.78 SY	3	207	306	-	-	-	3.35 /SY	512	7.67 /SY	1,171
						Fog seal, sealcoating, prepare and clean surface for sealcoating	152.78 sy	0	26	-	-	6	-	0.21 /sy	32	0.48 /sy	73
						Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 9" deep	152.78 sy	1	71	1,215	-	77	-	8.92 /sy	1,362	20.39 /sy	3,114
						Plant-mix asphalt paving, for highways and large paved areas, pavement replacement over trench, 6" thick, no hauling included	152.78 sy	78	5,193	6,111	-	482	-	77.14 /sy	11,786	176.37 /sy	26,946
						Painted pavement markings, thermoplastic, white or yellow, 4" wide, less than 6000 L.F.	184.00 lf	0	30	169	-	20	-	1.19 /lf	218	2.71 /lf	499
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	152.78 SY	83	5,526	7,801		584		91.05 /SY	13,911	208.17 /SY	31,804
						32.40.02.1004 Paving at Uglow	152.78 SY	83	5,526	7,801		584		91.05 /SY	13,911	208.17 /SY	31,804
				32.50.06.0009		Site Improvement Allowances											
					32.50.06.00	Site Improvements, Other Improvements											
						Division 01 Allowance SWPPP	1.00 ls		-	-	20,000	-		20,000.00 /ls	20,000	45,726.25 /ls	45,726
						Division 32 Allowance Landscape	1.00 ls		-	-	7,500	-		7,500.00 /ls	7,500	17,147.36 /ls	17,147
						32.50.06.00 Site Improvements, Other Improvements	1.00 LS				27,500			27,500.00 /LS	27,500	62,873.61 /LS	62,874

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 3 Alt 2 Daylight to the South Rev #2 6-8-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #2 6-8-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
						32.50.06.0009 Site Improvement Allowances	1.00 LS				27,500			27,500.00 /LS	27,500	62,873.61 /LS	62,874
						32.50 Site, Improvements	1.00 LS	83	5,526	7,801	27,500	584		41,410.55 /LS	41,411	94,677.47 /LS	94,677
						32.0 Exterior Improvements	1.00 LS	83	5,526	7,801	27,500	584		41,410.55 /LS	41,411	94,677.47 /LS	94,677
						02.2 New Uglow Bridge	1.00 LS	7,087	394,858	20,766	2,098,900	389,177		2,903,699.81 /LS	2,903,700	6,638,765.06 /LS	6,638,765
	03.2					Traffic Control											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0008		Traffic Control Allowance											
					01.01.06.02	GC Temporary Facilities & Services											
						Division 01 Allowance Traffic Control	180.00 DY		-	-	270,000	-		1,500.00 /DY	270,000	3,054.47 /DY	549,804
						01.01.06.02 GC Temporary Facilities & Services	180.00 DY				270,000			1,500.00 /DY	270,000	3,054.47 /DY	549,804
						01.01.06.0008 Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,054.47 /DY	549,804
						01.01 Construction Operations	1.00 LS				270,000			270,000.00 /LS	270,000	549,804.35 /LS	549,804
						01.0 General Requirements	1.00 LS				270,000			270,000.00 /LS	270,000	549,804.35 /LS	549,804
						03.2 Traffic Control	1.00 LS				270,000			270,000.00 /LS	270,000	549,804.35 /LS	549,804
						03.0 Replace and Remove Uglow Bridge	**1.00 LS**	7,312	408,905	39,016	2,370,980	389,177		**3,208,076.64 /LS**	3,208,077	**7,267,165.59 /LS**	7,267,166
04.0						**Excavating Floodplain**											
	01.3					Demo, Clear and Grub											
		02.0				Existing Conditions											
			02.40			Demolition											
				02.01.01.0030		Clear and Grub											
					02.01.01.00	General Site Demolition											
						Clearing, heavy overgrowth of weeds and shrubs	2.20 acre	26	1,768	-	-	1,694	-	1,573.57 /acre	3,462	3,597.67 /acre	7,915
						Strip and Haul Topsoil, Excavator, Medium Crew	1,745.00 cy	80	5,292	-	-	7,358	-	7.25 /cy	12,650	16.57 /cy	28,921
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 950	1,745.00 cy	9	658	-	-	1,263	-	1.10 /cy	1,921	2.52 /cy	4,391
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	1,745.00 cy	92	6,243	-	-	7,507	-	7.88 /cy	13,750	18.02 /cy	31,436
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	1,745.00 cy		-	26,175	-	-	-	15.00 /cy	26,175	34.29 /cy	59,844
						Bridge demolition, pedestrian, precast, 52.5'x50	2,625.00 SF	1,413	88,981	-	-	72,217	-	61.41 /SF	161,197	140.40 /SF	368,548
						02.01.01.00 General Site Demolition	1.00 LS	1,620	102,941	26,175		90,039		219,154.38 /LS	219,154	501,055.38 /LS	501,055
						02.01.01.0030 Clear and Grub	1.00 LS	1,620	102,941	26,175		90,039		219,154.38 /LS	219,154	501,055.38 /LS	501,055
						02.40 Demolition	1.00 LS	1,620	102,941	26,175		90,039		219,154.38 /LS	219,154	501,055.38 /LS	501,055
						02.0 Existing Conditions	1.00 LS	1,620	102,941	26,175		90,039		219,154.38 /LS	219,154	501,055.38 /LS	501,055
						01.3 Demo, Clear and Grub	1.00 LS	1,620	102,941	26,175		90,039		219,154.38 /LS	219,154	501,055.38 /LS	501,055
	02.3					Site Earthwork, Grading and Offhaul											
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.07.0031		Site Earthwork, Grading and Offhaul											
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Rough Site Grading, Small Crew	22,288.00 sy	396	26,552	-	-	27,885	-	2.44 /sy	54,437	5.58 /sy	124,460
						Survey: Pre-Excavation	1.00 ls	40		-	7,500	-	-	7,500.00 /ls	7,500	17,147.34 /ls	17,147
						Survey: Post-Excavation	1.00 ls	40		-	7,500	-	-	7,500.00 /ls	7,500	17,147.35 /ls	17,147
						Mass Excavation, Cut To Stockpile, Excavator, Medium Crew	19,662.00 cy	899	59,628	-	-	82,905	-	7.25 /cy	142,532	16.57 /cy	325,873
						Import Site Fill - Medium Crew, per cy	3,481.00 cy	174	11,683	97,468	-	12,101	-	34.83 /cy	121,252	79.64 /cy	277,220
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 950	23,143.00 CY	116	8,722	-	-	16,750	-	1.10 /CY	25,472	2.52 /CY	58,237
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	23,143.00 cy	1,215	82,795	-	-	99,561	-	7.88 /cy	182,356	18.02 /cy	416,922
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	23,143.00 cy		-	347,145	-	-	-	15.00 /cy	347,145	34.29 /cy	793,682
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	23,143.00 CY	2,880	189,379	444,613	15,000	239,202		38.38 /CY	888,194	87.75 /CY	2,030,689
						31.20.07.0031 Site Earthwork, Grading and Offhaul	23,143.00 CY	2,880	189,379	444,613	15,000	239,202		38.38 /CY	888,194	87.75 /CY	2,030,689
						31.20 Earthworks, Site	23,143.00 CY	2,880	189,379	444,613	15,000	239,202		38.38 /CY	888,194	87.75 /CY	2,030,689
						31.0 Earthwork	1.00 LS	2,880	189,379	444,613	15,000	239,202		888,194.06 /LS	888,194	2,030,689.14 /LS	2,030,689
						02.3 Site Earthwork, Grading and Offhaul	1.00 LS	2,880	189,379	444,613	15,000	239,202		888,194.06 /LS	888,194	2,030,689.14 /LS	2,030,689
	03.3					Vegetation Restoration											
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.35.03.0031		Vegetation Restoration											
					32.35.03.00	Site Improvements, Landscaping											
						Seeding, hydro or air seeding for lg areas, incl seed and fertilizer	12,440.00 SY	34	2,102	24,880	-	728	-	2.23 /SY	27,710	5.09 /SY	63,354
						Planting beds preparation, backfill planting pit, prepared planting mix, skid steer loader	2,073.37 cy	121	7,597	-	-	1,331	-	4.31 /cy	8,927	9.84 /cy	20,411
						Planting beds preparation, excavate planting pit,heavy soil or clay, 1/2 C.Y. backhoe	2,073.37 cy	288	19,284	-	-	5,929	-	12.16 /cy	25,214	27.80 /cy	57,647
						Planting beds preparation, mix planting soil, skid steer loader, includes loam, manure, peat	2,073.37 cy	332	20,765	73,605	-	3,637	-	47.27 /cy	98,006	108.07 /cy	224,073
						Shrubs, average cost, to 1 gallon	4,478.00 ea	403	25,783	16,121	-	9,079	-	11.39 /ea	50,983	26.03 /ea	116,562
						32.35.03.00 Site Improvements, Landscaping	12,440.00 SY	1,178	75,531	114,605		20,704		16.95 /SY	210,840	38.75 /SY	482,046
						32.35.03.0031 Vegetation Restoration	12,440.00 SY	1,178	75,531	114,605		20,704		16.95 /SY	210,840	38.75 /SY	482,046
						32.50 Site, Improvements	1.00 LS	1,178	75,531	114,605		20,704		210,840.10 /LS	210,840	482,046.35 /LS	482,046
						32.0 Exterior Improvements	1.00 LS	1,178	75,531	114,605		20,704		210,840.10 /LS	210,840	482,046.35 /LS	482,046
						03.3 Vegetation Restoration	12,440.00 SY	1,178	75,531	114,605		20,704		16.95 /SY	210,840	38.75 /SY	482,046
	04.3					Paving											
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.40.02.0032		Paving											
					32.40.02.00	Site Improvements, Paving, Bituminous Asphalt											
						Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 9" deep	277.78 SY	2	129	2,208	-	139	-	8.92 /SY	2,477	20.38 /SY	5,662
						Plant-mix asphalt paving, for highways and large paved areas, pavement replacement over trench, 6" thick, no hauling included	277.78 sy	141	9,442	11,111	-	876	-	77.14 /sy	21,429	176.37 /sy	48,993
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	277.78 SY	143	9,571	13,319		1,015		86.06 /SY	23,905	196.76 /SY	54,655
						32.40.02.0032 Paving	277.78 SY	143	9,571	13,319		1,015		86.06 /SY	23,905	196.76 /SY	54,655
						32.50 Site, Improvements	1.00 LS	143	9,571	13,319		1,015		23,905.38 /LS	23,905	54,655.15 /LS	54,655
						32.0 Exterior Improvements	1.00 LS	143	9,571	13,319		1,015		23,905.38 /LS	23,905	54,655.15 /LS	54,655
						04.3 Paving	277.78 SY	143	9,571	13,319		1,015		86.06 /SY	23,905	196.76 /SY	54,655
	05.3					Site Grading											

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 3 Alt 2 Daylight to the South Rev #2 6-8-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #2 6-8-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.12.1005		Grading Area											
					31.20.12.00	Earthworks, Sitework, Site Grading											
						Rough Site Grading, Large Crew	22,300.00 SY	297	19,924	-	-	37,051	-	2.55 /SY	56,975	5.84 /SY	130,263
						Finish grading area with grader, large area	22,300.00 sy	178	11,926	-	-	18,288	-	1.35 /sy	30,214	3.10 /sy	69,079
						31.20.12.00 Earthworks, Sitework, Site Grading	22,300.00 SY	476	31,851			55,339		3.91 /SY	87,190	8.94 /SY	199,343
						31.20.12.1005 Grading Area	22,300.00 SY	476	31,851			55,339		3.91 /SY	87,190	8.94 /SY	199,343
						31.20 Earthworks, Site	1.00 CY	476	31,851			55,339		87,189.60 /CY	87,190	199,342.68 /CY	199,343
						31.0 Earthwork	1.00 LS	476	31,851			55,339		87,189.60 /LS	87,190	199,342.68 /LS	199,343
						05.3 Site Grading	1.00 LS	476	31,851			55,339		87,189.60 /LS	87,190	199,342.68 /LS	199,343
						04.0 Excavating Floodplain	1.00 LS	6,297	409,272	598,713	15,000	406,299		1,429,283.52 /LS	1,429,284	3,267,788.70 /LS	3,267,789

Project type:	Project Name: D3540100 North Ash Creek Reach 3 Alt 2 Daylight to the South Rev #2 6-8-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #2 6-8-23
Duration:	Design Stage: 2%	Estimate Class: 5

Estimate Totals

Description	Amount	Totals	Rate	Cost / Unit	% of Total	
Labor	1,737,794		hrs		5.76%	
Material	1,477,143				4.90%	
Subcontract	7,472,018				24.79%	
Equipment	1,656,391		hrs		5.49%	
Other	898,649				2.98%	
Subtotal Raw Costs	**13,241,995**	**13,241,995**			**43.93%**	**43.93%**
Material Sales & Use Tax - %						
Construction Equip Tax - %						
Total Taxes		**13,241,995**				**43.93%**
Location Adj. Factor						
Productivity Adjustment						
Subtotal Adj. Factors		**13,241,995**				**43.93%**
Existing Conditions I,OH&P	229,845		25.000 %		0.76%	
Concrete Work I,OH&P	1,322,344		25.000 %		4.39%	
Masonry Work I,OH&P			25.000 %			
Metals Work I,OH&P			25.000 %			
Architectural (Div 6-12)I,OH&P			25.000 %			
Special Construction I,OH&P			25.000 %			
Conveying Equipment I,OH&P			25.000 %			
Mechanical Work I,OH&P			25.000 %			
Electrical Work I,OH&P			25.000 %			
Site/Civil I,OH&P	1,608,668		25.000 %		5.34%	
Buried Piping I,OH&P	14,641		25.000 %		0.05%	
Tank Construction I,OH&P			25.000 %			
Process Piping I,OH&P			25.000 %			
Instruments & Controls I,OH&P			25.000 %			
Material Handling I,OH&P			25.000 %			
Process Equipment I,OH&P			25.000 %			
Subtotal Subcontractor I,OH&P	**3,175,498**	**16,417,493**			**10.53%**	**54.46%**
Contractor Contingency						
Subtotal Contingency		**16,417,493**				**54.46%**
Total Cost To Prime Contractor		**16,417,493**				**54.46%**
General Conditions	1,641,749		10.000 %		5.45%	
Mobilization/Demobilization	820,875		5.000 %		2.72%	
Subtotal Indirect Costs	**2,462,624**	**18,880,117**			**8.17%**	**62.63%**
Prime Contractor Home OfficeOH	1,888,012		10.000 %		6.26%	
Prime Contractor Profit	2,832,017		15.000 %		9.39%	
Bonds & Insurance	512,123		2.170 %		1.70%	
Subtotal OH&P	**5,232,152**	**24,112,269**			**17.36%**	**79.99%**
Contractor MU on Mech OFCI						
Contractor MU on Elec OFCI						
Total MU on OFCI Equip		**24,112,269**				**79.99%**
Design Contingency	6,028,067		25.000 %		20.00%	
Subtotal Contingency	**6,028,067**	**30,140,336**			**20.00%**	**99.98%**
Escalation						
Subtotal Escalation		**30,140,336**				**99.98%**
Corporate Activity Tax	5,212		0.580 %		0.02%	
Total Prime Contractor Costs	**5,212**	**30,145,548**			**0.02%**	**100.00%**
Total Construction Cost		**30,145,548**				**100.00%**
Total		***30,145,548***				

BID FORM SUMMARY

Project type: | Project Name: D3540100 North Ash Creek Reach 4 Alt 1 Channel Widening Rev #1 5-22-23 | Estimator: John DeWolf

Job Size: | Project Number: D3540100 | Rev/Date: Rev #1 5-22-23

Duration: | Design Stage: 2% | Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0						**Monmouth Cutoff and Holman Bridge**											
	01.0					Demo Monmouth Cutoff Bridge											
		02.0				Existing Conditions											
			02.40			Demolition											
				02.01.01.0001		Demo Existing Bridge											
					02.01.01.00	General Site Demolition											
						Bridge demolition,	5,600.00 SF	3,015	189,825	-	-	154,063	-	61.41 /SF	343,888	140.61 /SF	787,420
						02.01.01.00 General Site Demolition	1.00 LS	3,015	189,825			154,063		343,887.84 /LS	343,888	787,419.99 /LS	787,420
						02.01.01.0001 Demo Existing Bridge	5,600.00 SF	3,015	189,825			154,063		61.41 /SF	343,888	140.61 /SF	787,420
						02.40 Demolition	1.00 LS	3,015	189,825			154,063		343,887.84 /LS	343,888	787,419.99 /LS	787,420
						02.0 Existing Conditions	1.00 LS	3,015	189,825			154,063		343,887.84 /LS	343,888	787,419.99 /LS	787,420
						01.0 Demo Monmouth Cutoff Bridge	1.00 LS	3,015	189,825			154,063		343,887.84 /LS	343,888	787,419.99 /LS	787,420
	02.0					New Bridge											
		03.0				Concrete Work											
			03.10			Cast-In-Place Concrete Work											
				03.00.99.0002		New Monmouth Cutoff Bridge											
					03.00.99.00	Concrete, Other											
						Division 03 Allowance New Bridge	6,000.00 SF		-	-	5,100,000	-		850.00 /SF	5,100,000	1,919.64 /SF	11,517,830
						03.00.99.00 Concrete, Other	6,000.00 SF				5,100,000			850.00 /SF	5,100,000	1,919.64 /SF	11,517,830
						03.00.99.0002 New Monmouth Cutoff Bridge	6,000.00 SF				5,100,000			850.00 /SF	5,100,000	1,919.64 /SF	11,517,830
						03.10 Cast-In-Place Concrete Work	1.00 LS				5,100,000			5,100,000.00 /LS	5,100,000	11,517,829.59 /LS	11,517,830
						03.0 Concrete Work	1.00 LS				5,100,000			5,100,000.00 /LS	5,100,000	11,517,829.59 /LS	11,517,830
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.07.1001		Structrual Excavation and Backfill											
					31.20.07.00	Earthworks, Sitework, Cut/Fill											
						Dewatering Minor, Generator and Pumps, Mob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,387.60 /ea	6,775
						Dewatering Minor, Set-up Generator and Install Pumps	4.00 ea	32	2,008	-	-	535	-	635.82 /ea	2,543	1,445.30 /ea	5,781
						Dewatering Minor, Sump Rock, delivered	10.00 cy		-	200	-	-	-	20.00 /cy	200	46.57 /cy	466
						Dewatering Minor, Large Generator and 2 Pumps, Rental, Monthly	12.00 mo		-	-	-	334,666	-	27,888.80 /mo	334,666	64,936.22 /mo	779,235
						Dewatering Minor, Generator and Pumps, Operation - Labor to maintain / check pumps/ fuel and lube	12.00 mo	6,336	370,880	-	-	35,112	-	33,832.66 /mo	405,992	76,612.42 /mo	919,349
						Dewatering Minor, Remove Generator and Pumps	4.00 ea	32	2,008	-	-	402	-	602.57 /ea	2,410	1,367.89 /ea	5,472
						Dewatering Minor, Generator and Pumps, Demob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,387.60 /ea	6,775
						Shoring, sheet pile, subcontracted	4,500.00 sf	585		-	180,000	-	-	40.00 /sf	180,000	90.34 /sf	406,512
						Structural Excavation, Excavator and Trucks, Medium Crew, 15' depth	3,260.00 CY	186	12,358	-	-	17,198	-	9.07 /CY	29,556	20.84 /CY	67,954
						Grade for slabs / Scarify and Recompact, Dozer and Traxcavator or Loader, Small Crew	667.00 sy	31	2,165	-	-	2,211	-	6.56 /sy	4,376	15.05 /sy	10,038
						Structural Backfill, Dozer and Traxcavator or Loader, Medium Crew	1,371.00 cy	99	6,807	-	-	6,809	-	9.93 /cy	13,616	22.78 /cy	31,227
						Load Excess for Hauling, Rubber Tire Loader, Cat 950	1,888.00 cy	9	712	-	-	1,366	-	1.10 /cy	2,078	2.54 /cy	4,789
						Haul / Remove Excess, 17 yd capacity, 20 miles RT	1,888.00 cy	99	6,754	-	-	8,122	-	7.88 /cy	14,877	18.10 /cy	34,166
						Dump Charges for For Excess, 17 yd tandem, per cy	1,888.00 cy		-	0	-	-	28,320	15.00 /cy	28,320	33.88 /cy	63,958
						Over excavate and replace with suitable, Excavators and Trucks, Medium Crew	444.00 cy	24	1,571	-	-	2,859	-	9.98 /cy	4,430	22.98 /cy	10,205
						Import Aggregate Base (for overexcavated area) - under slab, Dozer and Traxcavator or Loader, Small Crew	900.00 tn	84	5,843	-	-	5,967	-	13.12 /tn	11,810	30.10 /tn	27,089
						31.20.07.00 Earthworks, Sitework, Cut/Fill	3,260.00 CY	7,549	411,106	200	186,000	415,249	28,320	319.29 /CY	1,040,874	730.00 /CY	2,379,790
						31.20.07.1001 Structrual Excavation and Backfill	3,260.00 CY	7,549	411,106	200	186,000	415,249	28,320	319.29 /CY	1,040,874	730.00 /CY	2,379,790
				31.20.09.1002		Grading for Street											
					31.20.09.00	Earthworks, Sitework, Site Import											
						Rough Site Grading, Small Crew	311.00 sy	6	370	-	-	389	-	2.44 /sy	760	5.60 /sy	1,743
						Import Site Fill - Small Crew, per cy	93.00 CY	5	364	2,604	-	289	-	35.03 /CY	3,258	81.28 /CY	7,559
						31.20.09.00 Earthworks, Sitework, Site Import	93.00 CY	11	735	2,604		678		43.19 /CY	4,017	100.02 /CY	9,302
						31.20.09.1002 Grading for Street	93.00 CY	11	735	2,604		678		43.19 /CY	4,017	100.02 /CY	9,302
						31.20 Earthworks, Site	3,353.00 CY	7,560	411,840	2,804	186,000	415,927	28,320	311.63 /CY	1,044,891	712.52 /CY	2,389,092
						31.0 Earthwork	1.00 LS	7,560	411,840	2,804	186,000	415,927	28,320	1,044,891.28 /LS	1,044,891	2,389,091.52 /LS	2,389,092
		32.0				Exterior Improvements											
			32.12			Paving											
				32.40.02.1003		Paving at Street											
					32.40.02.00	Site Improvements, Paving, Bituminous Asphalt											
						Fog seal, seal coating, coal tar pitch emulsion, 2 coat, under 1000 S.Y.	311.11 SY	7	421	622	-	-	-	3.35 /SY	1,043	7.71 /SY	2,399
						Fog seal, sealcoating, prepare and clean surface for sealcoating	311.11 sy	1	53	-	-	12	-	0.21 /sy	65	0.48 /sy	148
						Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 9" deep	311.11 sy	2	144	2,473	-	156	-	8.92 /sy	2,774	20.73 /sy	6,449
						Plant-mix asphalt paving, for highways and large paved areas, pavement replacement over trench, 6" thick, no hauling included	311.11 sy	158	10,575	12,444	-	981	-	77.14 /sy	24,000	177.24 /sy	55,142
						Painted pavement markings, thermoplastic, white or yellow, 6" wide, less than 6000 L.F.	300.00 lf	1	52	414	-	34	-	1.67 /lf	500	3.87 /lf	1,160
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	311.11 SY	169	11,244	15,954		1,183		91.23 /SY	28,382	209.88 /SY	65,297
						32.40.02.1003 Paving at Street	311.11 SY	169	11,244	15,954		1,183		91.23 /SY	28,382	209.88 /SY	65,297
						32.12 Paving	311.11 SY	169	11,244	15,954		1,183		91.23 /SY	28,382	209.88 /SY	65,297
			32.50			Site, Improvements											
				32.50.06.0009		Site Improvement Allowances											
					32.50.06.00	Site Improvements, Other Improvements											
						Division 01 Allowance SWPPP	1.00 LS		-	-	20,000	-		20,000.00 /LS	20,000	45,167.95 /LS	45,168
						Division 32 Allowance Landscape	1.00 ls		-	-	15,000	-		15,000.00 /ls	15,000	33,875.98 /ls	33,876
						32.50.06.00 Site Improvements, Other Improvements	1.00 LS				35,000			35,000.00 /LS	35,000	79,043.93 /LS	79,044
						32.50.06.0009 Site Improvement Allowances	1.00 LS				35,000			35,000.00 /LS	35,000	79,043.93 /LS	79,044
						32.50 Site, Improvements	1.00 LS				35,000			35,000.00 /LS	35,000	79,043.93 /LS	79,044
						32.0 Exterior Improvements	1.00 LS	169	11,244	15,954	35,000	1,183		63,381.92 /LS	63,382	144,341.22 /LS	144,341
						02.0 New Bridge	1.00 LS	7,730	423,085	18,758	5,321,000	417,111	28,320	6,208,273.20 /LS	6,208,273	14,051,262.33 /LS	14,051,262
	03.0					Bypass Pumping and Channelization											
		03.0				Concrete Work											
			31.19			Dewatering and Bypass Pumping											

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 4 Alt 1 Channel Widening Rev #1 5-22-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
				31.19.06.0003		Bypass Pumping											
					31.19.06.00	Site Preparation, Bypass Pumping, 12" to 24" Pipe											
						Generator, Weekly	52.00 wk		-	26,000	-	78,000	-	2,000.00 /wk	104,000	4,656.80 /wk	242,153
						Bypass Pumping, Pumps and Piping, Mob	3.00 ea	24	1,988	-	4,500	1,054	-	2,514.04 /ea	7,542	5,702.29 /ea	17,107
						Bypass Pumping, Set-up Pumps	3.00 ea	48	3,977	1,500	-	1,054	-	2,176.86 /ea	6,531	4,975.79 /ea	14,927
						Bypass Pumping, Install Suction Piping	3.00 ea	24	1,988	450	-	527	-	988.43 /ea	2,965	2,255.07 /ea	6,765
						Bypass Pumping, System Operation	52.00 WK	2,080	158,226	208,000	-	260,000	-	12,042.80 /WK	626,226	27,827.43 /WK	1,447,027
						31.19.06.00 Site Preparation, Bypass Pumping, 12" to 24" Pipe	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
						31.19.06.0003 Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
						31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
						03.0 Concrete Work	1.00 LS	2,176	166,179	235,950	4,500	340,634		747,263.58 /LS	747,264	1,727,979.43 /LS	1,727,979
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.07.0017		Channel Excavation											
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Traffic Control, Labor per Day	5.00 day	80	4,666	-	-	-	-	933.15 /day	4,666	2,107.43 /day	10,537
						Dedicated Fire / Safety Monitor	48.00 hr	48	2,799	-	-	-	-	58.32 /hr	2,799	131.71 /hr	6,322
						Rough Site Grading, Small Crew	1,520.00 sy	27	1,811	-	-	1,902	-	2.44 /sy	3,712	5.60 /sy	8,517
						Finish grading lagoon bottoms	10.00 msf	16	1,053	-	-	808	-	186.11 /msf	1,861	425.96 /msf	4,260
						Excav. for Channel	2,185.00 CY	36	2,480	-	-	3,719	-	2.84 /CY	6,199	6.53 /CY	14,260
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	2,185.00 CY	207	12,809			6,429		8.80 /CY	19,238	20.09 /CY	43,897
						31.20.07.0017 Channel Excavation	2,185.00 CY	207	12,809			6,429		8.80 /CY	19,238	20.09 /CY	43,897
				31.20.07.0019		Offhaul Material											
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Load Offhaul	2,185.00 CY	47	3,557	-	-	3,921	-	3.42 /CY	7,477	7.85 /CY	17,161
						Haul spoils, offsite, 10 - 20 miles	2,185.00 cy		-	-	32,775	-	-	15.00 /cy	32,775	33.88 /cy	74,019
						Dump fees, trench spoils	2,185.00 cy		-	-	-	-	32,775	15.00 /cy	32,775	33.88 /cy	74,019
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	2,185.00 CY	47	3,557		32,775	3,921	32,775	33.42 /CY	73,027	75.61 /CY	165,199
						31.20.07.0019 Offhaul Material	2,185.00 CY	47	3,557		32,775	3,921	32,775	33.42 /CY	73,027	75.61 /CY	165,199
						31.20 Earthworks, Site	4,370.00 CY	254	16,366		32,775	10,349	32,775	21.11 /CY	92,265	47.85 /CY	209,095
			31.30			Site Specialties											
				31.30.01.0006		Cofferdam											
					31.30.01.00	Site Specialties, Port-A-Dams											
						Porta-dam, mob	2.00 EA	48		-	30,000	-	-	15,000.00 /EA	30,000	33,875.97 /EA	67,752
						Porta-dam, installation	2.00 ea	192	15,494	1,000	-	8,744	-	12,619.41 /ea	25,239	28,840.69 /ea	57,681
						Porta-dam, rental	12.00 mo		-	-	180,000	-	-	15,000.00 /mo	180,000	33,875.97 /mo	406,512
						Porta-dam, dewatering operation - fuel cost	12.00 mo		-	108,000	-	-	-	9,000.00 /mo	108,000	20,955.58 /mo	251,467
						Porta-dam, removal	2.00 ea	192	15,494	-	-	8,744	-	12,119.41 /ea	24,239	27,676.49 /ea	55,353
						Porta-dam, demob	2.00 ea	48		-	30,000	-	-	15,000.00 /ea	30,000	33,875.97 /ea	67,752
						31.30.01.00 Site Specialties, Port-A-Dams	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	453,258.43 /EA	906,517
						31.30.01.0006 Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	453,258.43 /EA	906,517
						31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	906,516.86 /LS	906,517
						31.0 Earthwork	1.00 LS	734	47,354	109,000	272,775	27,838	32,775	489,742.46 /LS	489,742	1,115,612.05 /LS	1,115,612
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.09.0004		Diversion Piping 12"											
					33.00.09.12	Buried Pipe, HDPE, 12"											
						Pipeline LF per Day	*200.00 lf*			-	-	-	-	/lf		/lf	
						25 tn Rough Terrain (per day)	1.00 day	8	633	-	-	1,182	-	1,814.58 /day	1,815	4,180.76 /day	4,181
						12" HDPE pipe, excav/backfill not included	750.00 LF	180	14,526	11,685	-	8,198	-	45.88 /LF	34,409	105.47 /LF	79,101
						12" HDPE tee	3.00 ea	15	1,204	880	-	680	-	921.39 /ea	2,764	2,117.27 /ea	6,352
						12" HDPE reducer	3.00 ea	11	874	880	-	493	-	749.07 /ea	2,247	1,723.73 /ea	5,171
						12" HDPE cap	1.00 ea	1	107	247	-	61	-	414.42 /ea	414	957.42 /ea	957
						12" HDPE flange	3.00 ea	8	672		-	137	-	269.49 /ea	808	611.80 /ea	1,835
						Field weld fusion joints, Subcontracted (S), 12"	20.00 ea		-	-	2,172	-	-	108.60 /ea	2,172	245.26 /ea	4,905
						12" Bolt & Gasket Kits, CS, 150#	3.00 ea	7	575	60	-	-	-	211.51 /ea	635	479.07 /ea	1,437
						33.00.09.12 Buried Pipe, HDPE, 12"	750.00 LF	231	18,591	13,752	2,172	10,750		60.35 /LF	45,264	138.59 /LF	103,940
						33.00.09.0004 Diversion Piping 12"	750.00 LF	231	18,591	13,752	2,172	10,750		60.35 /LF	45,264	138.59 /LF	103,940
						33.07 Buried Process Pipe, HDPE	750.00 LF	231	18,591	13,752	2,172	10,750		60.35 /LF	45,264	138.59 /LF	103,940
						33.0 Utilities	750.00 LF	231	18,591	13,752	2,172	10,750		60.35 /LF	45,264	138.59 /LF	103,940
						03.0 Bypass Pumping and Channelization	1.00 LS	3,141	232,125	358,702	279,447	379,222	32,775	1,282,270.32 /LS	1,282,270	2,947,531.32 /LS	2,947,531
	04.0					Fish Screen											
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.50.0005		Fish Screen											
					33.00.50.00	Buried Pipe, Other											
						Basket-strainer, flanged, SS screen, 12"	1.00 EA	1	80	1,500	-	-	-	1,579.80 /EA	1,580	3,672.82 /EA	3,673
						33.00.50.00 Buried Pipe, Other	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
						33.00.50.0005 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,672.82 /EA	3,673
						33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
						33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
						04.0 Fish Screen	1.00 LS	1	80	1,500				1,579.80 /LS	1,580	3,672.82 /LS	3,673
	05.0					Fish Salvage											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0007		Fish Salvage											
					01.01.06.01	GC Labor											
						Environmental Manager	0.10 MO	17	1,300	50	-	-	-	13,499.80 /MO	1,350	27,148.00 /MO	2,715
						Environmental Engineer	0.10 MO	17	1,300	50	-	-	-	13,499.80 /MO	1,350	27,147.90 /MO	2,715
						01.01.06.01 GC Labor	0.20 MO	35	2,600	100				13,499.80 /MO	2,700	27,147.95 /MO	5,430

Project type:
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 4 Alt 1 Channel Widening Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
						01.01.06.0007 Fish Salvage	20.00 DY	35	2,600	100				135.00 /DY	2,700	271.48 /DY	5,430
						01.01 Construction Operations	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.59 /LS	5,430
						01.0 General Requirements	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.59 /LS	5,430
						05.0 Fish Salvage	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.59 /LS	5,430
	06.0					Bank Stabilization											
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.25.03.0020		Bank Stabilization											
					32.35.03.00	Site Improvements, Landscaping											
						Division 32 Allowance for Large Woody Material	1.00 LS		-	-	25,000	-		25,000.00 /LS	25,000	56,459.96 /LS	56,460
						Planting beds preparation, backfill planting pit, prepared planting mix, skid steer loader	106.00 cy	6	388	-	-	68	-	4.31 /cy	456	9.77 /cy	1,036
						Planting beds preparation, excavate planting pit,heavy soil or clay, 1/2 C.Y. backhoe	106.00 cy	15	986	-	-	303	-	12.16 /cy	1,289	27.66 /cy	2,932
						Planting beds preparation, mix planting soil, skid steer loader, includes loam, manure, peat	106.00 cy	17	1,062	3,763	-	186	-	47.27 /cy	5,011	109.36 /cy	11,592
						Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed with wood fiber mulch added	1,520.00 SY	13	888	3,222	-	840	-	3.26 /SY	4,951	7.54 /SY	11,465
						Shrubs, average cost, to 1 gallon	600.00 ea	54	3,455	2,160	-	1,216	-	11.39 /ea	6,831	26.11 /ea	15,664
						32.35.03.00 Site Improvements, Landscaping	1,520.00 SY	105	6,778	9,145	25,000	2,614		28.64 /SY	43,538	65.23 /SY	99,149
						32.25.03.0020 Bank Stabilization	1,520.00 SY	105	6,778	9,145	25,000	2,614		28.64 /SY	43,538	65.23 /SY	99,149
						32.50 Site, Improvements	1.00 LS	105	6,778	9,145	25,000	2,614		43,537.70 /LS	43,538	99,148.61 /LS	99,149
						32.0 Exterior Improvements	1.00 LS	105	6,778	9,145	25,000	2,614		43,537.70 /LS	43,538	99,148.61 /LS	99,149
						06.0 Bank Stabilization	1.00 LS	105	6,778	9,145	25,000	2,614		43,537.70 /LS	43,538	99,148.61 /LS	99,149
	07.0					Traffic Control											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0008		Traffic Control Allowance											
					01.01.06.02	GC Temporary Facilities & Services											
						Division 01 Allowance Traffic Control	180.00 DY		-	-	270,000	-		1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01.06.02 GC Temporary Facilities & Services	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01.06.0008 Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01 Construction Operations	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
						01.0 General Requirements	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
						07.0 Traffic Control	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
	08.0					12" Outfall Line											
		33.0				Utilities											
			33.05			Buried Process Pipe, PVC/CPVC											
				33.00.07.1017		12" Outfall Line											
					33.00.07.12	Buried Pipe, PVC, 12"											
						Traffic Control, Labor per Day	2.00 day	32	1,866	-	-	-	-	933.15 /day	1,866	2,107.43 /day	4,215
						Trench Box, 8' x 24' x 10'	0.25 mo		-	-	-	575	-	2,300.00 /mo	575	5,355.32 /mo	1,339
						Dedicated Fire / Safety Monitor	4.00 hr	4	233	-	-	-	-	58.32 /hr	233	131.71 /hr	527
						Excav. pipe trench, w/ trench box, for 4" - 24" pipe	123.83 CY	32	2,199	-	-	1,510	-	29.95 /CY	3,709	68.50 /CY	8,483
						Backfill / Compact @ pipe zone, for 4" thru 24" pipe	23.57 cy	56	3,675	-	-	2,516	-	262.65 /cy	6,191	600.65 /cy	14,157
						Backfill / Compact above pipe zone, for 4" thru 24" pipe	104.02 cy	32	2,413	-	-	2,874	-	50.82 /cy	5,287	116.71 /cy	12,141
						Pipe zone material	23.57 cy		-	660	-	-	-	28.00 /cy	660	65.20 /cy	1,537
						Pipe bedding material	6.73 cy		-	188	-	-	-	28.00 /cy	188	65.20 /cy	439
						Imported backfill material	104.02 cy		-	2,913	-	-	-	28.00 /cy	2,913	65.20 /cy	6,782
						Haul spoils, offsite, 10 - 20 miles	134.00 cy		-	-	2,010	-	-	15.00 /cy	2,010	33.88 /cy	4,539
						Dump fees, trench spoils	134.00 cy		-	-	-	-	2,010	15.00 /cy	2,010	33.88 /cy	4,539
						12" pipe, PVC, SDR 35, B & S, excav/bkfill not included	100.00 LF	96	7,747	561	-	4,372	-	126.80 /LF	12,680	289.83 /LF	28,983
						Pipe Marking, Detection Tape	100.00 lf	1	81	13	-	-	-	0.94 /lf	94	2.13 /lf	213
						Pipe Marking, Copper Wire	100.00 lf	1	81	22	-	-	-	1.03 /lf	103	2.34 /lf	234
						33.00.07.12 Buried Pipe, PVC, 12"	100.00 LF	254	18,296	4,357	2,010	11,847	2,010	385.20 /LF	38,520	881.27 /LF	88,127
						33.00.07.1017 12" Outfall Line	100.00 LF	254	18,296	4,357	2,010	11,847	2,010	385.20 /LF	38,520	881.27 /LF	88,127
						33.05 Buried Process Pipe, PVC/CPVC	100.00 LF	254	18,296	4,357	2,010	11,847	2,010	385.20 /LF	38,520	881.27 /LF	88,127
						33.0 Utilities	100.00 LF	254	18,296	4,357	2,010	11,847	2,010	385.20 /LF	38,520	881.27 /LF	88,127
						08.0 12" Outfall Line	100.00 LF	254	18,296	4,357	2,010	11,847	2,010	385.20 /LF	38,520	881.27 /LF	88,127
						01.0 Monmouth Cutoff and Holman Bridge	**1.00 LS**	14,280	872,788	392,562	5,897,457	964,856	63,105	**8,190,768.56 /LS**	8,190,769	**18,524,859.31 /LS**	18,524,859
02.0						**Holman Ave Bridge**											
	01.1					Demolition of Holman Bridge											
		02.0				Existing Conditions											
			02.40			Demolition											
				02.01.01.0001		Demo Existing Bridge											
					02.01.01.00	General Site Demolition											
						Bridge demolition,	3,000.00 SF	1,615	101,692	-	-	82,534	-	61.41 /SF	184,226	140.61 /SF	421,832
						02.01.01.00 General Site Demolition	1.00 LS	1,615	101,692			82,534		184,225.63 /LS	184,226	421,832.14 /LS	421,832
						02.01.01.0001 Demo Existing Bridge	3,000.00 SF	1,615	101,692			82,534		61.41 /SF	184,226	140.61 /SF	421,832
						02.40 Demolition	1.00 LS	1,615	101,692			82,534		184,225.63 /LS	184,226	421,832.14 /LS	421,832
						02.0 Existing Conditions	1.00 LS	1,615	101,692			82,534		184,225.63 /LS	184,226	421,832.14 /LS	421,832
						01.1 Demolition of Holman Bridge	1.00 LS	1,615	101,692			82,534		184,225.63 /LS	184,226	421,832.14 /LS	421,832
	02.1					Clear Channel											
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.15.01.1005		Clear Channel											
					31.15.01.00	Site Preparation, Clearing and Grubbing											
						Clearing, heavy overgrowth of weeds and shrubs	1.00 AC	12	803	-	-	770	-	1,573.57 /AC	1,574	3,607.64 /AC	3,608
						Clearing, Tree Removal, 6" - 12", Acre	1.00 acre	160		-	5,000	-	-	5,000.00 /acre	5,000	11,292.00 /acre	11,292
						Strip and Haul Topsoil, Excavator, Medium Crew	807.00 cy	37	2,447	-	-	3,403	-	7.25 /cy	5,850	16.67 /cy	13,450
						Survey: Pre-Excavation	1.00 ls	40		-	7,500	-	-	7,500.00 /ls	7,500	16,937.98 /ls	16,938
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 950	807.00 CY	4	304	-	-	584	-	1.10 /CY	888	2.54 /CY	2,047
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	807.00 cy	42	2,887	-	-	3,472	-	7.88 /cy	6,359	18.10 /cy	14,604
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	807.00 cy		-	0	-	-	12,105	15.00 /cy	12,105	33.88 /cy	27,338

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
						31.15.01.00 Site Preparation, Clearing and Grubbing	1.00 AC	295	6,442		12,500	8,229	12,105	39,275.60 /AC	39,276	89,275.94 /AC	89,276
						31.15.01.1005 Clear Channel	1.00 AC	295	6,442		12,500	8,229	12,105	39,275.60 /AC	39,276	89,275.94 /AC	89,276
						31.20 Earthworks, Site	807.00 CY	295	6,442		12,500	8,229	12,105	48.67 /CY	39,276	110.63 /CY	89,276
						31.0 Earthwork	1.00 LS	295	6,442		12,500	8,229	12,105	39,275.60 /LS	39,276	89,275.94 /LS	89,276
						02.1 Clear Channel	1.00 LS	295	6,442		12,500	8,229	12,105	39,275.60 /LS	39,276	89,275.94 /LS	89,276
	03.1					Bypass and Channeliztion											
		31.0				Earthwork											
			31.19			Dewatering and Bypass Pumping											
				31.19.06.0003		Bypass Pumping											
					31.19.06.00	Site Preparation, Bypass Pumping, 12" to 24" Pipe											
						Generator, Weekly	52.00 wk		-	26,000	-	78,000	-	2,000.00 /wk	104,000	4,656.80 /wk	242,153
						Bypass Pumping, Pumps and Piping, Mob	3.00 ea	24	1,988	-	4,500	1,054	-	2,514.04 /ea	7,542	5,702.29 /ea	17,107
						Bypass Pumping, Set-up Pumps	3.00 ea	48	3,977	1,500	-	1,054	-	2,176.86 /ea	6,531	4,975.79 /ea	14,927
						Bypass Pumping, Install Suction Piping	3.00 ea	24	1,988	450	-	527	-	988.43 /ea	2,965	2,255.06 /ea	6,765
						Bypass Pumping, System Operation	52.00 WK	2,080	158,226	208,000	-	260,000	-	12,042.80 /WK	626,226	27,827.44 /WK	1,447,027
						31.19.06.00 Site Preparation, Bypass Pumping, 12" to 24" Pipe	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
						31.19.06.0003 Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
						31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
			31.20			Earthworks, Site											
				31.20.07.0017		Channel Excavation											
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Traffic Control, Labor per Day	5.00 day	80	4,666	-	-	-	-	933.15 /day	4,666	2,107.43 /day	10,537
						Dedicated Fire / Safety Monitor	48.00 hr	48	2,799	-	-	-	-	58.32 /hr	2,799	131.71 /hr	6,322
						Rough Site Grading, Small Crew	1,520.00 sy	27	1,811	-	-	1,902	-	2.44 /sy	3,712	5.60 /sy	8,517
						Finish grading lagoon bottoms	10.00 msf	16	1,053	-	-	808	-	186.11 /msf	1,861	425.96 /msf	4,260
						Excav. for Channel	2,185.00 CY	36	2,480	-	-	3,719	-	2.84 /CY	6,199	6.53 /CY	14,260
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	2,185.00 CY	207	12,809			6,429		8.80 /CY	19,238	20.09 /CY	43,897
						31.20.07.0017 Channel Excavation	2,185.00 CY	207	12,809			6,429		8.80 /CY	19,238	20.09 /CY	43,897
				31.20.07.0019		Offhaul Material											
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Load Offhaul	2,185.00 CY	47	3,557	-	-	3,921	-	3.42 /CY	7,477	7.85 /CY	17,161
						Haul spoils, offsite, 10 - 20 miles	2,185.00 cy		-	-	32,775	-	-	15.00 /cy	32,775	33.88 /cy	74,019
						Dump fees, trench spoils	2,185.00 cy		-	-	-	-	32,775	15.00 /cy	32,775	33.88 /cy	74,019
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	2,185.00 CY	47	3,557		32,775	3,921	32,775	33.42 /CY	73,027	75.61 /CY	165,199
						31.20.07.0019 Offhaul Material	2,185.00 CY	47	3,557		32,775	3,921	32,775	33.42 /CY	73,027	75.61 /CY	165,199
						31.20 Earthworks, Site	4,370.00 CY	254	16,366		32,775	10,349	32,775	21.11 /CY	92,265	47.85 /CY	209,095
			31.30			Site Specialties											
				31.30.01.0006		Cofferdam											
					31.30.01.00	Site Specialties, Port-A-Dams											
						Porta-dam, mob	2.00 EA	48		-	30,000	-	-	15,000.00 /EA	30,000	33,875.97 /EA	67,752
						Porta-dam, installation	2.00 ea	192	15,494	1,000	-	8,744	-	12,619.41 /ea	25,239	28,840.69 /ea	57,681
						Porta-dam, rental	12.00 mo		-	-	180,000	-	-	15,000.00 /mo	180,000	33,875.97 /mo	406,512
						Porta-dam, dewatering operation - fuel cost	12.00 mo		-	108,000	-	-	-	9,000.00 /mo	108,000	20,955.58 /mo	251,467
						Porta-dam, removal	2.00 ea	192	15,494	-	-	8,744	-	12,119.41 /ea	24,239	27,676.49 /ea	55,353
						Porta-dam, demob	2.00 ea	48		-	30,000	-	-	15,000.00 /ea	30,000	33,875.98 /ea	67,752
						31.30.01.00 Site Specialties, Port-A-Dams	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	453,258.43 /EA	906,517
						31.30.01.0006 Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	453,258.43 /EA	906,517
						31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	906,516.87 /LS	906,517
						31.0 Earthwork	1.00 LS	2,910	213,534	344,950	277,275	368,472	32,775	1,237,006.04 /LS	1,237,006	2,843,591.46 /LS	2,843,591
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.09.0004		Diversion Piping 12"											
					33.00.09.12	Buried Pipe, HDPE, 12"											
						Pipeline LF per Day	*200.00 lf*			-	-	-	-	/lf		/lf	
						25 tn Rough Terrain (per day)	4.00 day	32	2,532	-	-	4,726	-	1,814.59 /day	7,258	4,180.77 /day	16,723
						12" HDPE pipe, excav/backfill not included	750.00 LF	180	14,526	11,685	-	8,198	-	45.88 /LF	34,409	105.47 /LF	79,101
						12" HDPE tee	3.00 ea	15	1,204	880	-	680	-	921.39 /ea	2,764	2,117.27 /ea	6,352
						12" HDPE reducer	3.00 ea	11	874	880	-	493	-	749.07 /ea	2,247	1,723.73 /ea	5,171
						12" HDPE cap	1.00 ea	1	107	247	-	61	-	414.42 /ea	414	957.43 /ea	957
						12" HDPE flange	3.00 ea	8	672		-	137	-	269.49 /ea	808	611.80 /ea	1,835
						Field weld fusion joints, Subcontracted (S), 12"	20.00 ea		-	-	2,172	-	-	108.60 /ea	2,172	245.26 /ea	4,905
						12" Bolt & Gasket Kits, CS, 150#	3.00 ea	7	575	60	-	-	-	211.51 /ea	635	479.07 /ea	1,437
						33.00.09.12 Buried Pipe, HDPE, 12"	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	155.31 /LF	116,482
						33.00.09.0004 Diversion Piping 12"	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	155.31 /LF	116,482
						33.07 Buried Process Pipe, HDPE	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	155.31 /LF	116,482
						33.0 Utilities	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	155.31 /LF	116,482
						03.1 Bypass and Channeliztion	1.00 LS	3,165	234,024	358,702	279,447	382,767	32,775	1,287,714.08 /LS	1,287,714	2,960,073.60 /LS	2,960,074
	04.1					Fish Screen											
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.50.0005		Fish Screen											
					33.00.50.00	Buried Pipe, Other											
						Basket-strainer, flanged, SS screen, 12"	1.00 EA	1	80	1,500	-	-	-	1,579.80 /EA	1,580	3,672.82 /EA	3,673
						33.00.50.00 Buried Pipe, Other	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
						33.00.50.0005 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,672.82 /EA	3,673
						33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
						33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
						04.1 Fish Screen	1.00 LS	1	80	1,500				1,579.80 /LS	1,580	3,672.82 /LS	3,673
	05.1					Fish Salvage											
		01.0				General Requirements											
			01.01			Construction Operations											

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
				01.01.06.0007		Fish Salvage											
					01.01.06.01	GC Labor											
						Environmental Manager	0.10 MO	17	1,300	50	-	-	-	13,499.80 /MO	1,350	27,148.10 /MO	2,715
						Environmental Engineer	0.10 MO	17	1,300	50	-	-	-	13,499.80 /MO	1,350	27,147.80 /MO	2,715
						01.01.06.01 GC Labor	0.20 MO	35	2,600	100				13,499.80 /MO	2,700	27,147.95 /MO	5,430
						01.01.06.0007 Fish Salvage	10.00 DY	35	2,600	100				270.00 /DY	2,700	542.96 /DY	5,430
						01.01 Construction Operations	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.59 /LS	5,430
						01.0 General Requirements	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.59 /LS	5,430
						05.1 Fish Salvage	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.59 /LS	5,430
	06.1					Bank Stabilization											
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.25.03.0020		Bank Stabilization											
					32.35.03.00	Site Improvements, Landscaping											
						Division 32 Allowance for Large Woody Material	1.00 LS		-	-	25,000	-		25,000.00 /LS	25,000	56,459.97 /LS	56,460
						Planting beds preparation, backfill planting pit, prepared planting mix, skid steer loader	106.00 cy	6	388	-	-	68	-	4.31 /cy	456	9.77 /cy	1,036
						Planting beds preparation, excavate planting pit,heavy soil or clay, 1/2 C.Y. backhoe	106.00 cy	15	986	-	-	303	-	12.16 /cy	1,289	27.66 /cy	2,932
						Planting beds preparation, mix planting soil, skid steer loader, includes loam, manure, peat	106.00 cy	17	1,062	3,763	-	186	-	47.27 /cy	5,011	109.36 /cy	11,592
						Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed with wood fiber mulch added	1,520.00 SY	13	888	3,222	-	840	-	3.26 /SY	4,951	7.54 /SY	11,465
						Shrubs, average cost, to 1 gallon	600.00 ea	54	3,455	2,160	-	1,216	-	11.39 /ea	6,831	26.11 /ea	15,664
						32.35.03.00 Site Improvements, Landscaping	1,520.00 SY	105	6,778	9,145	25,000	2,614		28.64 /SY	43,538	65.23 /SY	99,149
						32.25.03.0020 Bank Stabilization	1,520.00 SY	105	6,778	9,145	25,000	2,614		28.64 /SY	43,538	65.23 /SY	99,149
						32.50 Site, Improvements	1.00 LS	105	6,778	9,145	25,000	2,614		43,537.70 /LS	43,538	99,148.62 /LS	99,149
						32.0 Exterior Improvements	1.00 LS	105	6,778	9,145	25,000	2,614		43,537.70 /LS	43,538	99,148.62 /LS	99,149
						06.1 Bank Stabilization	1,520.00 SY	105	6,778	9,145	25,000	2,614		28.64 /SY	43,538	65.23 /SY	99,149
	07.1					Traffic Control											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0008		Traffic Control Allowance											
					01.01.06.02	GC Temporary Facilities & Services											
						Division 01 Allowance Traffic Control	180.00 DY		-	-	270,000	-		1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01.06.02 GC Temporary Facilities & Services	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01.06.0008 Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01 Construction Operations	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
						01.0 General Requirements	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
						07.1 Traffic Control	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
						02.0 Holman Ave Bridge	**1.00 LS**	5,216	351,616	369,447	586,947	476,143	44,880	**1,829,032.77 /LS**	1,829,033	**4,121,700.16 /LS**	4,121,700
03.0						**Monmouth Cutoff Culverts**											
	01.2					Demo Culverts											
		02.0				Existing Conditions											
			02.40			Demolition											
				02.01.01.1006		Remove Culverts											
					02.01.01.00	General Site Demolition											
						Traffic Control, Labor per Day	8.00 day	128	7,465	-	-	-	-	933.15 /day	7,465	2,107.43 /day	16,859
						Trench Box, 8' x 24' x 10'	1.00 mo		-	-	-	2,300	-	2,300.00 /mo	2,300	5,355.32 /mo	5,355
						Dedicated Fire / Safety Monitor	32.00 hr	32	1,866	-	-	-	-	58.32 /hr	1,866	131.71 /hr	4,215
						Storm Sewer Pipe Demolition and Loading, 10' Deep	80.00 LF	22	1,713	-	-	1,193	-	36.33 /LF	2,907	83.10 /LF	6,648
						Haul Site Demolition Spoils, 17 yd capacity, 20 miles RT, priced per cy	71.00 cy	4	254	-	-	305	-	7.88 /cy	559	18.10 /cy	1,285
						Dump Charges for Site Demolition Spoils, 17 yd end-dump, priced per cy	71.00 cy		-	1,065	-	-	-	15.00 /cy	1,065	34.93 /cy	2,480
						Excav. pipe trench, w/ trench box, for > 30" pipe	381.19 CY	8	576	-	-	1,729	-	6.05 /CY	2,305	13.98 /CY	5,327
						Backfill / Compact @ pipe zone, for 30" & larger pipe	201.63 cy	26	1,681	-	-	1,968	-	18.10 /cy	3,649	41.55 /cy	8,378
						Backfill / Compact above pipe zone, for 30" & larger pipe	42.81 cy	1	97	-	-	89	-	4.34 /cy	186	9.95 /cy	426
						Pipe zone material	201.63 cy		-	5,646	-	-	-	28.00 /cy	5,646	65.20 /cy	13,145
						Pipe bedding material	20.71 cy		-	580	-	-	-	28.00 /cy	580	65.20 /cy	1,350
						Imported backfill material	42.81 cy		-	1,199	-	-	-	28.00 /cy	1,199	65.20 /cy	2,791
						Haul spoils, offsite, 10 - 20 miles	265.00 cy		-	-	3,975	-	-	15.00 /cy	3,975	33.88 /cy	8,977
						Dump fees, trench spoils	265.00 CY		-	-	-	-	3,975	15.00 /CY	3,975	33.88 /CY	8,977
						02.01.01.00 General Site Demolition	1.00 LS	221	13,653	8,489	3,975	7,585	3,975	37,676.68 /LS	37,677	86,214.12 /LS	86,214
						02.01.01.1006 Remove Culverts	80.00 LF	221	13,653	8,489	3,975	7,585	3,975	470.96 /LF	37,677	1,077.68 /LF	86,214
						02.40 Demolition	1.00 LS	221	13,653	8,489	3,975	7,585	3,975	37,676.68 /LS	37,677	86,214.12 /LS	86,214
						02.0 Existing Conditions	1.00 LS	221	13,653	8,489	3,975	7,585	3,975	37,676.68 /LS	37,677	86,214.12 /LS	86,214
						01.2 Demo Culverts	1.00 LS	221	13,653	8,489	3,975	7,585	3,975	37,676.68 /LS	37,677	86,214.12 /LS	86,214
	02.2					2 Ea. 4' x8' x40 Box Culverts											
		03.0				Concrete Work											
			03.10			Cast-In-Place Concrete Work											
				03.10.05.1007		18" Base Slab											
					03.10.05.18	Cast-In-Place Concrete, Slabs on Grade, 18" thick											
						Fine grade, for slab on grade, by hand	640.00 sf	4	244	19	-	-	-	0.41 /sf	264	0.93 /sf	597
						Fill, gravel subbase, under building slab on grade	23.70 cy	12	646	664	-	-	-	55.27 /cy	1,310	126.78 /cy	3,005
						Fill, sand subbase, under building slab on grade	3.95 cy	3	162	72	-	-	-	59.06 /cy	233	134.65 /cy	532
						Concrete pumping, subcontract, all inclusive price	35.56 cy		-	-	533	-	-	15.00 /cy	533	33.88 /cy	1,204
						Slab on grade edge forms, 12" to 24"	288.00 sf	63	4,265	288	-	-	-	15.81 /sf	4,553	35.77 /sf	10,303
						Waterstop, PVC, center bulb, 9" wide	160.00 lf	13	862	480	-	-	-	8.39 /lf	1,342	19.15 /lf	3,064
						Reinforcing in place, A615 Gr 60, priced per lbs.	7,111.11 lb		-	10,667	2,844	-	-	1.90 /lb	13,511	4.40 /lb	31,260
						Concrete, ready mix, 4500 psi	35.56 CY		-	6,400	-	-	-	180.00 /CY	6,400	419.11 /CY	14,902
						Add for concrete waste, 4500 psi	1.78 cy		-	320	-	-	-	180.00 /cy	320	419.12 /cy	745
						Add amount for Fuel Surcharges - per concrete truck load	4.00 load		-	80	-	-	-	20.00 /load	80	46.57 /load	186
						Add amount for Environmental Fee - per concrete truck load	4.00 load		-	32	-	-	-	8.00 /load	32	18.63 /load	75
						Placing concrete, concrete pump	35.56 cy	27	1,454	-	-	-	-	40.91 /cy	1,454	92.38 /cy	3,285
						Finishing floors, monolithic, trowel finish (hand)	640.00 sf	19	1,230	13	-	-	-	1.94 /sf	1,243	4.39 /sf	2,807

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					03.10.05.18	Cast-In-Place Concrete, Slabs on Grade, 18" thick											
						Curing, membrane spray	640.00 sf	1	70	26	-	-	-	0.15 /sf	95	0.34 /sf	217
						Polyethelene vapor barrier, 10 mil thick	6.40 sq	1	91	68	-	-	-	24.88 /sq	159	56.93 /sq	364
						03.10.05.18 Cast-In-Place Concrete, Slabs on Grade, 18" thick	35.56 CY	144	9,025	19,128	3,378			886.77 /CY	31,530	2,040.34 /CY	72,546
						03.10.05.1007 18" Base Slab	35.56 CY	144	9,025	19,128	3,378			886.77 /CY	31,530	2,040.34 /CY	72,546
				03.10.06.1008		18" Wall for Box Culvert											
					03.10.06.18	Cast-In-Place Concrete, Straight Walls, 18" thick											
						Concrete pumping, subcontract, all inclusive price	35.56 cy		-	-	533	-	-	15.00 /cy	533	33.88 /cy	1,205
						Forms in place, structural walls, to 8' high, hand set	1,280.00 sf	192	12,924	1,280	-	-	-	11.10 /sf	14,204	25.13 /sf	32,169
						Waterstop, PVC, center bulb, 9" wide	160.00 lf	13	862	480	-	-	-	8.39 /lf	1,342	19.15 /lf	3,064
						Reinforcing in place, A615 Gr 60, priced per lbs.	8,888.89 lb		-	13,333	3,556	-	-	1.90 /lb	16,889	4.40 /lb	39,075
						Concrete, ready mix, 4500 psi	35.56 CY		-	6,400	-	-	-	180.00 /CY	6,400	419.11 /CY	14,902
						Add for concrete waste, 4500 psi	1.78 cy		-	320	-	-	-	180.00 /cy	320	419.12 /cy	745
						Add amount for Fuel Surcharges - per concrete truck load	4.00 load		-	80	-	-	-	20.00 /load	80	46.57 /load	186
						Add amount for Environmental Fee - per concrete truck load	4.00 load		-	32	-	-	-	8.00 /load	32	18.63 /load	75
						Placing concrete, concrete pump, for structural wall >12" - 24" thick	35.56 cy	27	1,454	-	-	-	-	40.91 /cy	1,454	92.38 /cy	3,285
						Patch & plug tieholes	1,280.00 sf	19	1,047	26	-	-	-	0.84 /sf	1,073	1.89 /sf	2,425
						Stone rub	1,280.00 sf	64	3,491	38	-	-	-	2.76 /sf	3,529	6.23 /sf	7,973
						Curing, membrane spray	1,280.00 sf	3	140	51	-	-	-	0.15 /sf	191	0.34 /sf	435
						Below grade dampproofing, Bituminous Asphalt	640.00 sf		-	640	-	-	-	1.00 /sf	640	2.33 /sf	1,490
						03.10.06.18 Cast-In-Place Concrete, Straight Walls, 18" thick	35.56 CY	317	19,918	22,681	4,089			1,313.06 /CY	46,687	3,010.07 /CY	107,026
						03.10.06.1008 18" Wall for Box Culvert	35.56 CY	317	19,918	22,681	4,089			1,313.06 /CY	46,687	3,010.07 /CY	107,026
				03.10.10.1009		18" Top for Box Culvert											
					03.10.10.18	Cast-In-Place Concrete, Elevated Decks, 18" thick											
						Concrete pumping, subcontract, all inclusive price	35.56 cy		-	-	533	-	-	15.00 /cy	533	33.88 /cy	1,204
						Forms in place, elevated slab, soffit	640.00 sf	128	8,616	800	-	-	-	14.71 /sf	9,416	33.31 /sf	21,322
						Forms in place, elevated slab, edge form	288.00 sf	72	4,847	360	-	-	-	18.08 /sf	5,207	40.92 /sf	11,784
						Slab shoring	2,560.00 cf	18	1,206	128	-	-	-	0.52 /cf	1,334	1.18 /cf	3,022
						Waterstop, PVC, center bulb, 9" wide	160.00 lf	13	862	480	-	-	-	8.39 /lf	1,342	19.15 /lf	3,064
						Reinforcing in place, A615 Gr 60, priced per lbs.	8,000.00 lb		-	12,000	3,200	-	-	1.90 /lb	15,200	4.40 /lb	35,168
						Concrete, ready mix, 4500 psi	35.56 CY		-	6,400	-	-	-	180.00 /CY	6,400	419.11 /CY	14,902
						Add for concrete waste, 4500 psi	1.78 cy		-	320	-	-	-	180.00 /cy	320	419.11 /cy	745
						Add amount for Fuel Surcharges - per concrete truck load	4.00 load		-	80	-	-	-	20.00 /load	80	46.57 /load	186
						Add amount for Environmental Fee - per concrete truck load	4.00 load		-	32	-	-	-	8.00 /load	32	18.63 /load	75
						Placing concrete, concrete pump, for elevated slab over 12" thick	35.56 cy	16	873	-	-	-	-	24.54 /cy	873	55.43 /cy	1,971
						Curing, membrane spray	640.00 sf	1	70	26	-	-	-	0.15 /sf	95	0.34 /sf	217
						Concrt fnshng,floors,basic fnshng for unspcf fltwrk,bull float,manual float&broom finish,inclds edging and joints,excluds placing,strikng off&cnsldtng	640.00 sf	8	530	-	-	-	-	0.83 /sf	530	1.87 /sf	1,197
						03.10.10.18 Cast-In-Place Concrete, Elevated Decks, 18" thick	35.56 CY	256	17,003	20,626	3,733			1,163.30 /CY	41,362	2,667.80 /CY	94,856
						03.10.10.1009 18" Top for Box Culvert	35.56 CY	256	17,003	20,626	3,733			1,163.30 /CY	41,362	2,667.80 /CY	94,856
						03.10 Cast-In-Place Concrete Work	1.00 LS	718	45,946	62,434	11,200			119,579.61 /LS	119,580	274,428.72 /LS	274,429
						03.0 Concrete Work	1.00 LS	718	45,946	62,434	11,200			119,579.61 /LS	119,580	274,428.72 /LS	274,429
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.07.1010		Excavation for Culvert											
					31.20.07.00	Earthworks, Sitework, Cut/Fill											
						Dewatering Minor, Generator and Pumps, Mob	4.00 ea	32		-	6,000	-	-	1,500.00 /ea	6,000	3,387.60 /ea	13,550
						Dewatering Minor, Set-up Generator and Install Pumps	8.00 ea	64	4,016	-	-	1,071	-	635.82 /ea	5,087	1,445.30 /ea	11,562
						Dewatering Minor, Sump Rock, delivered	20.00 cy		-	400	-	-	-	20.00 /cy	400	46.57 /cy	931
						Dewatering Minor, Large Generator and 2 Pumps, Rental, Monthly	24.00 mo		-	-	-	669,331	-	27,888.80 /mo	669,331	64,936.22 /mo	1,558,469
						Dewatering Minor, Generator and Pumps, Operation - Labor to maintain / check pumps/ fuel and lube	24.00 mo	12,672	741,760	-	-	70,224	-	33,832.66 /mo	811,984	76,612.42 /mo	1,838,698
						Dewatering Minor, Remove Generator and Pumps	8.00 ea	64	4,016	-	-	805	-	602.57 /ea	4,821	1,367.89 /ea	10,943
						Dewatering Minor, Generator and Pumps, Demob	4.00 ea	32		-	6,000	-	-	1,500.00 /ea	6,000	3,387.60 /ea	13,550
						Shoring, sheet pile, subcontracted	3,000.00 sf	390		-	120,000	-	-	40.00 /sf	120,000	90.34 /sf	271,008
						Structural Excavation, Excavator and Trucks, Medium Crew, 15' depth	700.00 CY	40	2,654	-	-	3,693	-	9.07 /CY	6,346	20.84 /CY	14,591
						Grade for slabs / Scarify and Recompact, Dozer and Traxcavator or Loader, Small Crew	72.00 sy	3	234	-	-	239	-	6.56 /sy	472	15.05 /sy	1,084
						Structural Backfill, Dozer and Traxcavator or Loader, Small Crew	606.00 cy	42	2,951	-	-	3,013	-	9.84 /cy	5,964	22.57 /cy	13,680
						Load Excess for Hauling, Rubber Tire Loader, Cat 950	606.00 cy	3	228	-	-	439	-	1.10 /cy	667	2.54 /cy	1,537
						Haul / Remove Excess, 17 yd capacity, 20 miles RT	606.00 cy	32	2,168	-	-	2,607	-	7.88 /cy	4,775	18.10 /cy	10,966
						Dump Charges for For Excess, 17 yd tandem, per cy	606.00 cy		-	0	-	-	9,090	15.00 /cy	9,090	33.88 /cy	20,529
						Over excavate and replace with suitable, Excavators and Trucks, Small Crew	48.00 cy	2	151	-	-	193	-	7.18 /cy	345	16.49 /cy	792
						31.20.07.00 Earthworks, Sitework, Cut/Fill	700.00 CY	13,377	758,177	400	132,000	751,615	9,090	2,358.97 /CY	1,651,281	5,402.70 /CY	3,781,892
						31.20.07.1010 Excavation for Culvert	700.00 CY	13,377	758,177	400	132,000	751,615	9,090	2,358.97 /CY	1,651,281	5,402.70 /CY	3,781,892
						31.20 Earthworks, Site	700.00 CY	13,377	758,177	400	132,000	751,615	9,090	2,358.97 /CY	1,651,281	5,402.70 /CY	3,781,892
						31.0 Earthwork	1.00 LS	13,377	758,177	400	132,000	751,615	9,090	1,651,281.43 /LS	1,651,281	3,781,891.63 /LS	3,781,892
						02.2 2 Ea. 4' x8' x40 Box Culverts	806.67 CY	14,094	804,122	62,834	143,200	751,615	9,090	2,195.28 /CY	1,770,861	5,028.49 /CY	4,056,320
	03.2					Earthwork for Channel											
		31.0				Earthwork											
			31.19			Dewatering and Bypass Pumping											
				31.19.06.0003		Bypass Pumping											
					31.19.06.00	Site Preparation, Bypass Pumping, 12" to 24" Pipe											
						Generator, Weekly	52.00 wk		-	26,000	-	78,000	-	2,000.00 /wk	104,000	4,656.80 /wk	242,153
						Bypass Pumping, Pumps and Piping, Mob	3.00 ea	24	1,988	-	4,500	1,054	-	2,514.04 /ea	7,542	5,702.29 /ea	17,107
						Bypass Pumping, Set-up Pumps	3.00 ea	48	3,977	1,500	-	1,054	-	2,176.86 /ea	6,531	4,975.79 /ea	14,927
						Bypass Pumping, Install Suction Piping	3.00 ea	24	1,988	450	-	527	-	988.43 /ea	2,965	2,255.07 /ea	6,765
						Bypass Pumping, System Operation	52.00 WK	2,080	158,226	208,000	-	260,000	-	12,042.80 /WK	626,226	27,827.43 /WK	1,447,027
						31.19.06.00 Site Preparation, Bypass Pumping, 12" to 24" Pipe	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
						31.19.06.0003 Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
						31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
			31.20			Earthworks, Site											

BID FORM SUMMARY

Project type: | Project Name: D3540100 North Ash Creek Reach 4 Alt 1 Channel Widening Rev #1 5-22-23 | Estimator: John DeWolf

Job Size: | Project Number: D3540100 | Rev/Date: Rev #1 5-22-23

Duration: | Design Stage: 2% | Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
				31.20.07.1011		Excavation for Channel											
					31.20.07.00	Earthworks, Sitework, Cut/Fill											
						Clearing, heavy overgrowth of weeds and shrubs	2.25 acre	27	1,808	-	-	1,733	-	1,573.56 /acre	3,541	3,607.65 /acre	8,117
						Clearing, Tree Removal, 6" - 12", Acre	2.25 acre	360		-	11,250	-	-	5,000.00 /acre	11,250	11,291.98 /acre	25,407
						Strip and Haul Topsoil, Excavator, Medium Crew	1,796.00 cy	82	5,447	-	-	7,573	-	7.25 /cy	13,019	16.67 /cy	29,933
						Rough Site Grading, Large Crew	10,800.00 sy	144	9,650	-	-	17,944	-	2.55 /sy	27,593	5.89 /sy	63,573
						Survey: Pre-Excavation	1.00 LS	40		-	7,500	-	-	7,500.00 /LS	7,500	16,937.95 /LS	16,938
						Mass Excavation, Cut To Stockpile, Excavator, Medium Crew	8,335.00 CY	381	25,277	-	-	35,144	-	7.25 /CY	60,421	16.67 /CY	138,916
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 950	8,335.00 cy	42	3,141	-	-	6,032	-	1.10 /cy	9,174	2.54 /cy	21,141
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	8,335.00 cy	438	29,819	-	-	35,857	-	7.88 /cy	65,676	18.10 /cy	150,832
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	8,335.00 cy		-	0	-	-	125,025	15.00 /cy	125,025	33.88 /cy	282,356
						31.20.07.00 Earthworks, Sitework, Cut/Fill	8,335.00 CY	1,514	75,141		18,750	104,283	125,025	38.78 /CY	323,199	88.45 /CY	737,213
						31.20.07.1011 Excavation for Channel	8,335.00 CY	1,514	75,141		18,750	104,283	125,025	38.78 /CY	323,199	88.45 /CY	737,213
						31.20 Earthworks, Site	8,335.00 CY	1,514	75,141		18,750	104,283	125,025	38.78 /CY	323,199	88.45 /CY	737,213
			31.30			Site Specialties											
				31.30.01.0006		Cofferdam											
					31.30.01.00	Site Specialties, Port-A-Dams											
						Porta-dam, mob	2.00 EA	48		-	30,000	-	-	15,000.00 /EA	30,000	33,875.97 /EA	67,752
						Porta-dam, installation	2.00 ea	192	15,494	1,000	-	8,744	-	12,619.41 /ea	25,239	28,840.69 /ea	57,681
						Porta-dam, rental	12.00 mo		-	-	180,000	-	-	15,000.00 /mo	180,000	33,875.97 /mo	406,512
						Porta-dam, dewatering operation - fuel cost	12.00 mo		-	108,000	-	-	-	9,000.00 /mo	108,000	20,955.58 /mo	251,467
						Porta-dam, removal	2.00 ea	192	15,494	-	-	8,744	-	12,119.41 /ea	24,239	27,676.49 /ea	55,353
						Porta-dam, demob	2.00 ea	48		-	30,000	-	-	15,000.00 /ea	30,000	33,875.97 /ea	67,752
						31.30.01.00 Site Specialties, Port-A-Dams	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	453,258.43 /EA	906,517
						31.30.01.0006 Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	453,258.43 /EA	906,517
						31.30 Site Specialties	*1.00* LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	906,516.86 /LS	906,517
						31.0 Earthwork	1.00 LS	4,170	272,309	344,950	263,250	462,406	125,025	1,467,940.65 /LS	1,467,941	3,371,709.11 /LS	3,371,709
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.09.0004		Diversion Piping 12"											
					33.00.09.12	Buried Pipe, HDPE, 12"											
						Pipeline LF per Day	*200.00 lf*			-	-	-	-	/lf		/lf	
						25 tn Rough Terrain (per day)	1.00 day	8	633	-	-	1,182	-	1,814.58 /day	1,815	4,180.75 /day	4,181
						12" HDPE pipe, excav/backfill not included	200.00 LF	48	3,874	3,116	-	2,186	-	45.88 /LF	9,176	105.47 /LF	21,094
						12" HDPE tee	3.00 ea	15	1,204	880	-	680	-	921.39 /ea	2,764	2,117.27 /ea	6,352
						12" HDPE reducer	3.00 ea	11	874	880	-	493	-	749.07 /ea	2,247	1,723.74 /ea	5,171
						12" HDPE cap	1.00 ea	1	107	247	-	61	-	414.42 /ea	414	957.41 /ea	957
						12" HDPE flange	3.00 ea	8	672		-	137	-	269.49 /ea	808	611.80 /ea	1,835
						Field weld fusion joints, Subcontracted (S), 12"	20.00 ea		-	-	2,172	-	-	108.60 /ea	2,172	245.26 /ea	4,905
						12" Bolt & Gasket Kits, CS, 150#	3.00 ea	7	575	60	-	-	-	211.51 /ea	635	479.07 /ea	1,437
						33.00.09.12 Buried Pipe, HDPE, 12"	200.00 LF	99	7,939	5,183	2,172	4,738		100.16 /LF	20,031	229.66 /LF	45,933
						33.00.09.0004 Diversion Piping 12"	200.00 LF	99	7,939	5,183	2,172	4,738		100.16 /LF	20,031	229.66 /LF	45,933
						33.07 Buried Process Pipe, HDPE	200.00 LF	99	7,939	5,183	2,172	4,738		100.16 /LF	20,031	229.66 /LF	45,933
						33.0 Utilities	200.00 LF	99	7,939	5,183	2,172	4,738		100.16 /LF	20,031	229.66 /LF	45,933
						03.2 Earthwork for Channel	1.00 LS	4,268	280,248	350,133	265,422	467,144	125,025	1,487,971.74 /LS	1,487,972	3,417,641.72 /LS	3,417,642
	04.2					Fish Screen											
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.50.0005		Fish Screen											
					33.00.50.00	Buried Pipe, Other											
						Basket-strainer, flanged, SS screen, 12"	1.00 EA	1	80	1,500	-	-	-	1,579.80 /EA	1,580	3,672.82 /EA	3,673
						33.00.50.00 Buried Pipe, Other	*1.00* LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
						33.00.50.0005 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,672.82 /EA	3,673
						33.07 Buried Process Pipe, HDPE	*1.00* LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
						33.0 Utilities	*1.00* LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
						04.2 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,672.82 /EA	3,673
	05.2					Fish Salvage											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0007		Fish Salvage											
					01.01.06.01	GC Labor											
						Environmental Manager	0.10 MO	17	1,300	50	-	-	-	13,499.80 /MO	1,350	27,147.90 /MO	2,715
						Environmental Engineer	0.10 MO	17	1,300	50	-	-	-	13,499.80 /MO	1,350	27,147.90 /MO	2,715
						01.01.06.01 GC Labor	0.20 MO	35	2,600	100				13,499.80 /MO	2,700	27,147.90 /MO	5,430
						01.01.06.0007 Fish Salvage	0.00	35	2,600	100				/DY	2,700	/DY	5,430
						01.01 Construction Operations	*1.00* LS	35	2,600	100				2,699.96 /LS	2,700	5,429.58 /LS	5,430
						01.0 General Requirements	*1.00* LS	35	2,600	100				2,699.96 /LS	2,700	5,429.58 /LS	5,430
						05.2 Fish Salvage	*1.00* LS	35	2,600	100				2,699.96 /LS	2,700	5,429.58 /LS	5,430
	06.2					Bank Stabilization											
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.25.03.0020		Bank Stabilization											
					32.35.03.00	Site Improvements, Landscaping											
						Division 32 Allowance for Large Woody Material	1.00 LS		-	-	25,000	-		25,000.00 /LS	25,000	56,459.96 /LS	56,460
						Planting beds preparation, backfill planting pit, prepared planting mix, skid steer loader	240.00 cy	14	879	-	-	154	-	4.31 /cy	1,033	9.77 /cy	2,345
						Planting beds preparation, excavate planting pit,heavy soil or clay, 1/2 C.Y. backhoe	240.00 cy	33	2,232	-	-	686	-	12.16 /cy	2,919	27.66 /cy	6,639
						Planting beds preparation, mix planting soil, skid steer loader, includes loam, manure, peat	106.00 cy	17	1,062	3,763	-	186	-	47.27 /cy	5,011	109.36 /cy	11,592
						Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed with wood fiber mulch added	3,450.00 SY	30	2,015	7,314	-	1,908	-	3.26 /SY	11,237	7.54 /SY	26,022
						Shrubs, average cost, to 1 gallon	600.00 ea	54	3,455	2,160	-	1,216	-	11.39 /ea	6,831	26.11 /ea	15,664

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
						32.35.03.00 Site Improvements, Landscaping	3,450.00 SY	148	9,643	13,237	25,000	4,150		15.08 /SY	52,030	34.41 /SY	118,722
						32.25.03.0020 Bank Stabilization	3,450.00 SY	148	9,643	13,237	25,000	4,150		15.08 /SY	52,030	34.41 /SY	118,722
						32.50 Site, Improvements	1.00 LS	148	9,643	13,237	25,000	4,150		52,030.21 /LS	52,030	118,722.04 /LS	118,722
						32.0 Exterior Improvements	1.00 LS	148	9,643	13,237	25,000	4,150		52,030.21 /LS	52,030	118,722.04 /LS	118,722
						06.2 Bank Stabilization	3,450.00 SY	148	9,643	13,237	25,000	4,150		15.08 /SY	52,030	34.41 /SY	118,722
	07.2					Traffic Control											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0008		Traffic Control Allowance											
					01.01.06.02	GC Temporary Facilities & Services											
						Division 01 Allowance Traffic Control	180.00 DY		-	-	270,000	-		1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01.06.02 GC Temporary Facilities & Services	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01.06.0008 Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01 Construction Operations	*1.00* LS				270,000			270,000.00 /LS	270,000	542,267.44 /LS	542,267
						01.0 General Requirements	*1.00* LS				270,000			270,000.00 /LS	270,000	542,267.44 /LS	542,267
						07.2 Traffic Control	*1.00* LS				270,000			270,000.00 /LS	270,000	542,267.44 /LS	542,267
						03.0 Monmouth Cutoff Culverts	**2.00 LS**	18,768	1,110,346	436,293	707,597	1,230,494	138,090	**1,811,409.72 /LS**	3,622,819	**4,115,134.04 /LS**	8,230,268
04.0						**Godsey Rd. Bridge**											
	01.3					Demo Godsey Bridge											
		02.0				Existing Conditions											
			02.40			Demolition											
				02.01.01.0001		Demo Existing Bridge											
					02.01.01.00	General Site Demolition											
						Bridge demolition,	2,125.00 SF	1,144	72,032	-	-	58,461	-	61.41 /SF	130,493	140.61 /SF	298,798
						02.01.01.00 General Site Demolition	*1.00* LS	1,144	72,032			58,461		130,493.16 /LS	130,493	298,797.79 /LS	298,798
						02.01.01.0001 Demo Existing Bridge	2,125.00 SF	1,144	72,032			58,461		61.41 /SF	130,493	140.61 /SF	298,798
						02.40 Demolition	*1.00* LS	1,144	72,032			58,461		130,493.16 /LS	130,493	298,797.79 /LS	298,798
						02.0 Existing Conditions	*1.00* LS	1,144	72,032			58,461		130,493.16 /LS	130,493	298,797.79 /LS	298,798
						01.3 Demo Godsey Bridge	*1.00* LS	1,144	72,032			58,461		130,493.16 /LS	130,493	298,797.79 /LS	298,798
	02.3					New Godsey Rd. Bridge											
		03.0				Concrete Work											
			03.10			Cast-In-Place Concrete Work											
				03.00.99.0002		New Monmouth Cutoff Bridge											
					03.00.99.00	Concrete, Other											
						Division 03 Allowance New Bridge	6,000.00 SF		-	-	5,700,000	-		950.00 /SF	5,700,000	2,145.48 /SF	12,872,868
						03.00.99.00 Concrete, Other	6,000.00 SF				5,700,000			950.00 /SF	5,700,000	2,145.48 /SF	12,872,868
						03.00.99.0002 New Monmouth Cutoff Bridge	6,000.00 SF				5,700,000			950.00 /SF	5,700,000	2,145.48 /SF	12,872,868
						03.10 Cast-In-Place Concrete Work	*1.00* LS				5,700,000			5,700,000.00 /LS	5,700,000	12,872,868.37 /LS	12,872,868
						03.0 Concrete Work	*1.00* LS				5,700,000			5,700,000.00 /LS	5,700,000	12,872,868.37 /LS	12,872,868
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.07.1012		Excavation for Channel											
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Dewatering Minor, Generator and Pumps, Mob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,387.60 /ea	6,775
						Dewatering Minor, Set-up Generator and Install Pumps	4.00 ea	32	2,008	-	-	535	-	635.82 /ea	2,543	1,445.30 /ea	5,781
						Dewatering Minor, Sump Rock, delivered	10.00 cy		-	200	-	-	-	20.00 /cy	200	46.57 /cy	466
						Dewatering Minor, Large Generator and 2 Pumps, Rental, Monthly	12.00 mo		-	-	-	334,666	-	27,888.80 /mo	334,666	64,936.22 /mo	779,235
						Dewatering Minor, Generator and Pumps, Operation - Labor to maintain / check pumps/ fuel and lube	12.00 mo	6,336	370,880	-	-	35,112	-	33,832.66 /mo	405,992	76,612.42 /mo	919,349
						Dewatering Minor, Remove Generator and Pumps	4.00 ea	32	2,008	-	-	402	-	602.57 /ea	2,410	1,367.89 /ea	5,472
						Dewatering Minor, Generator and Pumps, Demob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,387.60 /ea	6,775
						Shoring, sheet pile, subcontracted	6,000.00 sf	780		-	240,000	-	-	40.00 /sf	240,000	90.34 /sf	542,016
						Structural Excavation, Excavator and Trucks, Medium Crew, 15' depth	2,955.00 CY	169	11,202	-	-	15,589	-	9.07 /CY	26,791	20.84 /CY	61,597
						Grade for slabs / Scarify and Recompact, Dozer and Traxcavator or Loader, Small Crew	667.00 sy	31	2,165	-	-	2,211	-	6.56 /sy	4,376	15.05 /sy	10,038
						Structural Backfill, Dozer and Traxcavator or Loader, Small Crew	1,288.00 cy	90	6,271	-	-	6,404	-	9.84 /cy	12,676	22.57 /cy	29,076
						Load Excess for Hauling, Rubber Tire Loader, Cat 950	1,667.00 cy	8	628	-	-	1,206	-	1.10 /cy	1,835	2.54 /cy	4,228
						Haul / Remove Excess, 17 yd capacity, 20 miles RT	1,667.00 cy	88	5,964	-	-	7,171	-	7.88 /cy	13,135	18.10 /cy	30,166
						Dump Charges for For Excess, 17 yd tandem, per cy	1,667.00 cy		-	25,005	-	-	-	15.00 /cy	25,005	34.93 /cy	58,222
						Over excavate and replace with suitable, Excavators and Trucks, Small Crew	444.00 cy	21	1,398	-	-	1,789	-	7.18 /cy	3,187	16.49 /cy	7,323
						Import Aggregate Base (for overexcavated area) - under slab, Dozer and Traxcavator or Loader, Small Crew	900.00 tn	84	5,843	-	-	5,967	-	13.12 /tn	11,810	30.10 /tn	27,089
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	2,955.00 CY	7,703	408,367	25,205	246,000	411,054		369.08 /CY	1,090,626	843.86 /CY	2,493,607
						31.20.07.1012 Excavation for Channel	2,955.00 CY	7,703	408,367	25,205	246,000	411,054		369.08 /CY	1,090,626	843.86 /CY	2,493,607
				31.20.08.1013		Import Fill											
					31.20.09.00	Earthworks, Sitework, Site Import											
						Rough Site Grading, Small Crew	22.00 sy	0	26	-	-	28	-	2.44 /sy	54	5.60 /sy	123
						Import Site Fill - Small Crew, per cy	86.00 CY	5	337	2,408	-	268	-	35.03 /CY	3,012	81.28 /CY	6,990
						31.20.09.00 Earthworks, Sitework, Site Import	86.00 CY	5	363	2,408		295		35.65 /CY	3,066	82.72 /CY	7,114
						31.20.08.1013 Import Fill	86.00 CY	5	363	2,408		295		35.65 /CY	3,066	82.72 /CY	7,114
						31.20 Earthworks, Site	3,041.00 CY	7,708	408,730	27,613	246,000	411,349		359.65 /CY	1,093,693	822.33 /CY	2,500,720
						31.0 Earthwork	*1.00* LS	7,708	408,730	27,613	246,000	411,349		1,093,692.53 /LS	1,093,693	2,500,720.34 /LS	2,500,720
		32.0				Exterior Improvements											
			32.12			Paving											
				32.40.02.1014		Paving											
					32.40.02.00	Site Improvements, Paving, Bituminous Asphalt											
						Fog seal, seal coating, coal tar pitch emulsion, 2 coat, under 1000 S.Y.	220.00 SY	5	298	440	-	-	-	3.35 /SY	738	7.71 /SY	1,697
						Fog seal, sealcoating, prepare and clean surface for sealcoating	220.00 sy	1	37	-	-	9	-	0.21 /sy	46	0.48 /sy	105
						Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 9" deep	220.00 sy	1	102	1,749	-	110	-	8.92 /sy	1,962	20.73 /sy	4,560
						Plant-mix asphalt paving, for highways and large paved areas, pavement replacement over trench, 6" thick, no hauling included	220.00 sy	112	7,478	8,800	-	694	-	77.14 /sy	16,972	177.24 /sy	38,993

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 4 Alt 1 Channel Widening Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					32.40.02.00	Site Improvements, Paving, Bituminous Asphalt											
						Painted pavement markings, thermoplastic, white or yellow, 4" wide, less than 6000 L.F.	400.00 lf	1	64	368	-	43	-	1.19 /lf	475	2.75 /lf	1,101
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	220.00 SY	120	7,979	11,357		855		91.78 /SY	20,191	211.16 /SY	46,455
						32.40.02.1014 Paving	220.00 SY	120	7,979	11,357		855		91.78 /SY	20,191	211.16 /SY	46,455
						32.12 Paving	220.00 SY	120	7,979	11,357		855		91.78 /SY	20,191	211.16 /SY	46,455
						32.0 Exterior Improvements	1.00 LS	120	7,979	11,357		855		20,191.38 /LS	20,191	46,455.02 /LS	46,455
						02.3 New Godsey Rd. Bridge	1.00 LS	7,828	416,709	38,970	5,946,000	412,205		6,813,883.91 /LS	6,813,884	15,420,043.73 /LS	15,420,044
	03.3					Channel Earthwork											
		31.0				Earthwork											
			31.19			Dewatering and Bypass Pumping											
				31.19.06.0003		Bypass Pumping											
					31.19.06.00	Site Preparation, Bypass Pumping, 12" to 24" Pipe											
						Generator, Weekly	52.00 wk		-	26,000	-	78,000	-	2,000.00 /wk	104,000	4,656.80 /wk	242,153
						Bypass Pumping, Pumps and Piping, Mob	3.00 ea	24	1,988	-	4,500	1,054	-	2,514.04 /ea	7,542	5,702.28 /ea	17,107
						Bypass Pumping, Set-up Pumps	3.00 ea	48	3,977	1,500	-	1,054	-	2,176.86 /ea	6,531	4,975.79 /ea	14,927
						Bypass Pumping, Install Suction Piping	3.00 ea	24	1,988	450	-	527	-	988.43 /ea	2,965	2,255.06 /ea	6,765
						Bypass Pumping, System Operation	52.00 WK	2,080	158,226	208,000	-	260,000	-	12,042.80 /WK	626,226	27,827.43 /WK	1,447,027
						31.19.06.00 Site Preparation, Bypass Pumping, 12" to 24" Pipe	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
						31.19.06.0003 Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
						31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
			31.20			Earthworks, Site											
				31.20.07.1015		Channel Excavation											
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Clearing, heavy overgrowth of weeds and shrubs	3.25 acre	39	2,611	-	-	2,503	-	1,573.57 /acre	5,114	3,607.66 /acre	11,725
						Clearing, Tree Removal, 6" - 12", Acre	3.25 acre	520		-	16,250	-	-	5,000.00 /acre	16,250	11,291.98 /acre	36,699
						Strip and Haul Topsoil, Excavator, Medium Crew	2,620.00 cy	120	7,946	-	-	11,047	-	7.25 /cy	18,993	16.67 /cy	43,666
						Survey: Pre-Excavation	1.00 ls	40		-	7,500	-	-	7,500.00 /ls	7,500	16,937.99 /ls	16,938
						Mass Excavation, Cut To Stockpile, Excavator, Medium Crew	18,867.00 CY	862	57,217	-	-	79,552	-	7.25 /CY	136,769	16.67 /CY	314,448
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 950	18,867.00 cy	94	7,111	-	-	13,655	-	1.10 /cy	20,766	2.54 /cy	47,853
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	18,867.00 cy	991	67,497	-	-	81,166	-	7.88 /cy	148,663	18.10 /cy	341,421
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	18,867.00 cy		-	0	-	-	283,005	15.00 /cy	283,005	33.88 /cy	639,138
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	18,867.00 CY	2,667	142,382		23,750	187,923	283,005	33.77 /CY	637,060	76.95 /CY	1,451,889
						31.20.07.1015 Channel Excavation	18,867.00 CY	2,667	142,382		23,750	187,923	283,005	33.77 /CY	637,060	76.95 /CY	1,451,889
						31.20 Earthworks, Site	18,867.00 CY	2,667	142,382		23,750	187,923	283,005	33.77 /CY	637,060	76.95 /CY	1,451,889
			31.30			Site Specialties											
				31.30.01.0006		Cofferdam											
					31.30.01.00	Site Specialties, Port-A-Dams											
						Porta-dam, mob	2.00 EA	48		-	30,000	-	-	15,000.00 /EA	30,000	33,875.96 /EA	67,752
						Porta-dam, installation	2.00 ea	192	15,494	1,000	-	8,744	-	12,619.41 /ea	25,239	28,840.70 /ea	57,681
						Porta-dam, rental	12.00 mo		-	-	180,000	-	-	15,000.00 /mo	180,000	33,875.97 /mo	406,512
						Porta-dam, dewatering operation - fuel cost	12.00 mo		-	108,000	-	-	-	9,000.00 /mo	108,000	20,955.58 /mo	251,467
						Porta-dam, removal	2.00 ea	192	15,494	-	-	8,744	-	12,119.41 /ea	24,239	27,676.49 /ea	55,353
						Porta-dam, demob	2.00 ea	48		-	30,000	-	-	15,000.00 /ea	30,000	33,875.97 /ea	67,752
						31.30.01.00 Site Specialties, Port-A-Dams	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	453,258.43 /EA	906,517
						31.30.01.0006 Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	453,258.43 /EA	906,517
						31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	906,516.86 /LS	906,517
						31.0 Earthwork	1.00 LS	5,323	339,550	344,950	268,250	546,046	283,005	1,781,800.98 /LS	1,781,801	4,086,385.43 /LS	4,086,385
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.09.0004		Diversion Piping 12"											
					33.00.09.12	Buried Pipe, HDPE, 12"											
						Pipeline LF per Day	*200.00 lf*			-	-	-	-	/lf		/lf	
						25 tn Rough Terrain (per day)	2.00 day	16	1,266	-	-	2,363	-	1,814.59 /day	3,629	4,180.77 /day	8,362
						12" HDPE pipe, excav/backfill not included	300.00 LF	72	5,810	4,674	-	3,279	-	45.88 /LF	13,764	105.47 /LF	31,640
						12" HDPE tee	3.00 ea	15	1,204	880	-	680	-	921.39 /ea	2,764	2,117.27 /ea	6,352
						12" HDPE reducer	3.00 ea	11	874	880	-	493	-	749.07 /ea	2,247	1,723.73 /ea	5,171
						12" HDPE cap	1.00 ea	1	107	247	-	61	-	414.42 /ea	414	957.43 /ea	957
						12" HDPE flange	3.00 ea	8	672		-	137	-	269.49 /ea	808	611.80 /ea	1,835
						Field weld fusion joints, Subcontracted (S), 12"	20.00 ea		-	-	2,172	-	-	108.60 /ea	2,172	245.26 /ea	4,905
						12" Bolt & Gasket Kits, CS, 150#	3.00 ea	7	575	60	-	-	-	211.51 /ea	635	479.07 /ea	1,437
						33.00.09.12 Buried Pipe, HDPE, 12"	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
						33.00.09.0004 Diversion Piping 12"	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
						33.07 Buried Process Pipe, HDPE	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
						33.0 Utilities	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
						03.3 Channel Earthwork	1.00 LS	5,453	350,058	351,691	270,422	553,059	283,005	1,808,234.51 /LS	1,808,235	4,147,045.57 /LS	4,147,046
	04.3					Fish Screen											
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.50.0005		Fish Screen											
					33.00.50.00	Buried Pipe, Other											
						Basket-strainer, flanged, SS screen, 12"	1.00 EA	1	80	1,500	-	-	-	1,579.80 /EA	1,580	3,672.80 /EA	3,673
						33.00.50.00 Buried Pipe, Other	0.00	1	80	1,500				/LF	1,580	/LF	3,673
						33.00.50.0005 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,672.80 /EA	3,673
						33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.80 /LF	3,673
						33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.80 /LF	3,673
						04.3 Fish Screen	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.80 /LF	3,673
	05.3					Fish Salvage											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0007		Fish Salvage											
					01.01.06.01	GC Labor											

Project type:	Project Name: D3540100 North Ash Creek Reach 4 Alt 1 Channel Widening Rev #1 5-22-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					01.01.06.01	GC Labor											
						Environmental Manager	0.10 MO	17	1,300	50	-	-	-	13,499.80 /MO	1,350	27,148.10 /MO	2,715
						Environmental Engineer	0.10 MO	17	1,300	50	-	-	-	13,499.80 /MO	1,350	27,148.00 /MO	2,715
						01.01.06.01 GC Labor	0.20 MO	35	2,600	100				13,499.80 /MO	2,700	27,148.05 /MO	5,430
						01.01.06.0007 Fish Salvage	2.00 DY	35	2,600	100				1,349.98 /DY	2,700	2,714.81 /DY	5,430
						01.01 Construction Operations	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.61 /LS	5,430
						01.0 General Requirements	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.61 /LS	5,430
						05.3 Fish Salvage	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.61 /LS	5,430
	06.3					Bank Stabilization											
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.25.03.0020		Bank Stabilization											
					32.35.03.00	Site Improvements, Landscaping											
						Division 32 Allowance for Large Woody Material	1.00 LS		-	-	25,000	-		25,000.00 /LS	25,000	56,459.94 /LS	56,460
						Planting beds preparation, backfill planting pit, prepared planting mix, skid steer loader	349.00 cy	20	1,279	-	-	224	-	4.31 /cy	1,503	9.77 /cy	3,409
						Planting beds preparation, excavate planting pit,heavy soil or clay, 1/2 C.Y. backhoe	349.00 cy	49	3,246	-	-	998	-	12.16 /cy	4,244	27.66 /cy	9,655
						Planting beds preparation, mix planting soil, skid steer loader, includes loam, manure, peat	349.00 cy	56	3,495	12,390	-	612	-	47.27 /cy	16,497	109.36 /cy	38,167
						Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed with wood fiber mulch added	5,032.00 SY	44	2,939	10,668	-	2,782	-	3.26 /SY	16,389	7.54 /SY	37,955
						Shrubs, average cost, to 1 gallon	600.00 ea	54	3,455	2,160	-	1,216	-	11.39 /ea	6,831	26.11 /ea	15,664
						32.35.03.00 Site Improvements, Landscaping	5,032.00 SY	223	14,414	25,217	25,000	5,833		14.00 /SY	70,464	32.06 /SY	161,309
						32.25.03.0020 Bank Stabilization	5,032.00 SY	223	14,414	25,217	25,000	5,833		14.00 /SY	70,464	32.06 /SY	161,309
						32.50 Site, Improvements	1.00 LS	223	14,414	25,217	25,000	5,833		70,463.98 /LS	70,464	161,309.22 /LS	161,309
						32.0 Exterior Improvements	1.00 LS	223	14,414	25,217	25,000	5,833		70,463.98 /LS	70,464	161,309.22 /LS	161,309
						06.3 Bank Stabilization	1.00 LS	223	14,414	25,217	25,000	5,833		70,463.98 /LS	70,464	161,309.22 /LS	161,309
	07.3					Traffic Control											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0008		Traffic Control Allowance											
					01.01.06.02	GC Temporary Facilities & Services											
						Division 01 Allowance Traffic Control	180.00 DY		-	-	270,000	-		1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01.06.02 GC Temporary Facilities & Services	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01.06.0008 Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01 Construction Operations	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.44 /LS	542,267
						01.0 General Requirements	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.44 /LS	542,267
						07.3 Traffic Control	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.44 /LS	542,267
	08.3					12" Outfall Line											
		33.0				Utilities											
			33.05			Buried Process Pipe, PVC/CPVC											
				33.00.07.1018		12" Outfall Line											
					33.00.07.12	Buried Pipe, PVC, 12"											
						Traffic Control, Labor per Day	1.00 day	16	933	-	-	-	-	933.15 /day	933	2,107.46 /day	2,107
						Trench Box, 8' x 24' x 10'	0.25 mo		-	-	-	575	-	2,300.00 /mo	575	5,355.24 /mo	1,339
						Dedicated Fire / Safety Monitor	4.00 hr	4	233	-	-	-	-	58.32 /hr	233	131.71 /hr	527
						Excav. pipe trench, w/ trench box, for 4" - 24" pipe	61.91 CY	16	1,099	-	-	755	-	29.95 /CY	1,854	68.50 /CY	4,241
						Backfill / Compact @ pipe zone, for 4" thru 24" pipe	11.79 cy	28	1,837	-	-	1,258	-	262.50 /cy	3,095	600.30 /cy	7,077
						Backfill / Compact above pipe zone, for 4" thru 24" pipe	52.01 cy	16	1,206	-	-	1,437	-	50.82 /cy	2,643	116.71 /cy	6,070
						Pipe zone material	11.79 cy		-	330	-	-	-	28.00 /cy	330	65.19 /cy	769
						Pipe bedding material	3.37 cy		-	94	-	-	-	28.00 /cy	94	65.19 /cy	220
						Imported backfill material	52.01 cy		-	1,456	-	-	-	28.00 /cy	1,456	65.20 /cy	3,391
						Haul spoils, offsite, 10 - 20 miles	118.86 cy		-	-	1,783	-	-	15.00 /cy	1,783	33.88 /cy	4,027
						Dump fees, trench spoils	134.00 cy		-	-	-	-	2,010	15.00 /cy	2,010	33.88 /cy	4,539
						12" pipe, PVC, SDR 35, B & S, excav/bkfill not included	50.00 LF	48	3,874	281	-	2,186	-	126.80 /LF	6,340	289.83 /LF	14,491
						Pipe Marking, Detection Tape	50.00 lf	1	41	7	-	-	-	0.94 /lf	47	2.13 /lf	107
						Pipe Marking, Copper Wire	50.00 lf	1	41	11	-	-	-	1.03 /lf	52	2.34 /lf	117
						33.00.07.12 Buried Pipe, PVC, 12"	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	980.44 /LF	49,022
						33.00.07.1018 12" Outfall Line	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	980.44 /LF	49,022
						33.05 Buried Process Pipe, PVC/CPVC	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	980.44 /LF	49,022
						33.0 Utilities	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	980.44 /LF	49,022
						08.3 12" Outfall Line	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	980.44 /LF	49,022
						04.0 Godsey Rd. Bridge	**1.00 LS**	14,813	865,157	419,657	6,513,205	1,035,768	285,015	**9,118,801.86 /LS**	9,118,802	**20,627,588.28 /LS**	20,627,588
05.0						**Diversion Structure and Bridge**											
	01.4					Demo Diversion Structure											
		02.0				Existing Conditions											
			02.40			Demolition											
				02.01.01.0001		Demo Existing Bridge											
					02.01.01.00	General Site Demolition											
						Bridge demolition,	660.00 SF	355	22,372	-	-	18,157	-	61.41 /SF	40,530	140.61 /SF	92,803
						02.01.01.00 General Site Demolition	1.00 LS	355	22,372			18,157		40,529.64 /LS	40,530	92,803.06 /LS	92,803
						02.01.01.0001 Demo Existing Bridge	660.00 SF	355	22,372			18,157		61.41 /SF	40,530	140.61 /SF	92,803
						02.40 Demolition	1.00 LS	355	22,372			18,157		40,529.64 /LS	40,530	92,803.06 /LS	92,803
						02.0 Existing Conditions	1.00 LS	355	22,372			18,157		40,529.64 /LS	40,530	92,803.06 /LS	92,803
						01.4 Demo Diversion Structure	1.00 LS	355	22,372			18,157		40,529.64 /LS	40,530	92,803.06 /LS	92,803
	02.4					New Diversion Structure and Bridge											
		03.0				Concrete Work											
			03.10			Cast-In-Place Concrete Work											
				03.00.99.0002		New Monmouth Cutoff Bridge											
					03.00.99.00	Concrete, Other											
						Division 03 Allowance Diversion Structure	1,275.00 SF		-	-	1,083,750	-		850.00 /SF	1,083,750	1,919.64 /SF	2,447,539
						Division 03 Allowance New Bridge	1.00 LS		-	-	900,000	-		900,000.00 /LS	900,000	2,032,558.17 /LS	2,032,558

BID FORM SUMMARY

Project type: | Project Name: D3540100 North Ash Creek Reach 4 Alt 1 Channel Widening Rev #1 5-22-23 | Estimator: John DeWolf
Job Size: | Project Number: D3540100 | Rev/Date: Rev #1 5-22-23
Duration: | Design Stage: 2% | Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
						03.00.99.00 Concrete, Other	**1,275.00 SF**				**1,983,750**			**1,555.88 /SF**	**1,983,750**	**3,513.80 /SF**	**4,480,097**
						03.00.99.0002 New Monmouth Cutoff Bridge	**1,275.00 SF**				**1,983,750**			**1,555.88 /SF**	**1,983,750**	**3,513.80 /SF**	**4,480,097**
						03.10 Cast-In-Place Concrete Work	***1.00* LS**				**1,983,750**			**1,983,750.00 /LS**	**1,983,750**	**4,480,096.97 /LS**	**4,480,097**
						03.0 Concrete Work	***1.00* LS**				**1,983,750**			**1,983,750.00 /LS**	**1,983,750**	**4,480,096.97 /LS**	**4,480,097**
		31.0				**Earthwork**											
			31.20			**Earthworks, Site**											
				31.20.07.1016		**Diversion Structure Earthwork**											
					31.20.07.00	**Earthworks, Sitework, Cut/Fill**											
						Dewatering Minor, Generator and Pumps, Mob	2.00 ea	**16**		**-**	**3,000**	**-**	**-**	1,500.00 /ea	**3,000**	3,387.60 /ea	**6,775**
						Dewatering Minor, Set-up Generator and Install Pumps	4.00 ea	**32**	**2,008**	**-**	**-**	**535**	**-**	635.82 /ea	**2,543**	1,445.30 /ea	**5,781**
						Dewatering Minor, Sump Rock, delivered	10.00 cy		**-**	**200**	**-**	**-**	**-**	20.00 /cy	**200**	46.57 /cy	**466**
						Dewatering Minor, Large Generator and 2 Pumps, Rental, Monthly	12.00 mo		**-**	**-**	**-**	**334,666**	**-**	27,888.80 /mo	**334,666**	64,936.22 /mo	**779,235**
						Dewatering Minor, Generator and Pumps, Operation - Labor to maintain / check pumps/ fuel and lube	12.00 mo	**6,336**	**370,880**	**-**	**-**	**35,112**	**-**	33,832.66 /mo	**405,992**	76,612.42 /mo	**919,349**
						Dewatering Minor, Remove Generator and Pumps	4.00 ea	**32**	**2,008**	**-**	**-**	**402**	**-**	602.57 /ea	**2,410**	1,367.88 /ea	**5,472**
						Dewatering Minor, Generator and Pumps, Demob	2.00 ea	**16**		**-**	**3,000**	**-**	**-**	1,500.00 /ea	**3,000**	3,387.59 /ea	**6,775**
						Shoring, sheet pile, subcontracted	2,550.00 sf	**332**		**-**	**102,000**	**-**	**-**	40.00 /sf	**102,000**	90.34 /sf	**230,357**
						Structural Excavation, Excavator and Trucks, Medium Crew, 15' depth	879.00 CY	**50**	**3,332**	**-**	**-**	**4,637**	**-**	9.07 /CY	**7,969**	20.84 /CY	**18,323**
						Grade for slabs / Scarify and Recompact, Dozer and Traxcavator or Loader, Small Crew	142.00 sy	**7**	**461**	**-**	**-**	**471**	**-**	6.56 /sy	**932**	15.05 /sy	**2,137**
						Structural Backfill, Dozer and Traxcavator or Loader, Small Crew	502.00 cy	**35**	**2,444**	**-**	**-**	**2,496**	**-**	9.84 /cy	**4,940**	22.57 /cy	**11,332**
						Load Excess for Hauling, Rubber Tire Loader, Cat 950	502.00 cy	**3**	**189**	**-**	**-**	**363**	**-**	1.10 /cy	**553**	2.54 /cy	**1,273**
						Haul / Remove Excess, 17 yd capacity, 20 miles RT	502.00 cy	**26**	**1,796**	**-**	**-**	**2,160**	**-**	7.88 /cy	**3,956**	18.10 /cy	**9,084**
						Dump Charges for For Excess, 17 yd tandem, per cy	502.00 cy		**-**	**7,530**	**-**	**-**	**-**	15.00 /cy	**7,530**	34.93 /cy	**17,533**
						Over excavate and replace with suitable, Excavators and Trucks, Medium Crew	94.00 cy	**5**	**333**	**-**	**-**	**605**	**-**	9.98 /cy	**938**	22.98 /cy	**2,161**
						Import Aggregate Base (for overexcavated area) - under slab, Dozer and Traxcavator or Loader, Small Crew	191.00 tn	**18**	**1,240**	**-**	**-**	**1,266**	**-**	13.12 /tn	**2,506**	30.10 /tn	**5,749**
						31.20.07.00 Earthworks, Sitework, Cut/Fill	**879.00 CY**	**6,907**	**384,691**	**7,730**	**108,000**	**382,714**		**1,004.70 /CY**	**883,135**	**2,300.11 /CY**	**2,021,801**
						31.20.07.1016 Diversion Structure Earthwork	**879.00 CY**	**6,907**	**384,691**	**7,730**	**108,000**	**382,714**		**1,004.70 /CY**	**883,135**	**2,300.11 /CY**	**2,021,801**
						31.20 Earthworks, Site	**879.00 CY**	**6,907**	**384,691**	**7,730**	**108,000**	**382,714**		**1,004.70 /CY**	**883,135**	**2,300.11 /CY**	**2,021,801**
						31.0 Earthwork	***1.00* LS**	**6,907**	**384,691**	**7,730**	**108,000**	**382,714**		**883,134.78 /LS**	**883,135**	**2,021,800.85 /LS**	**2,021,801**
						02.4 New Diversion Structure and Bridge	***1.00* LS**	**6,907**	**384,691**	**7,730**	**2,091,750**	**382,714**		**2,866,884.78 /LS**	**2,866,885**	**6,501,897.82 /LS**	**6,501,898**
	03.4					**Channel Earthwork**											
		31.0				**Earthwork**											
			31.19			**Dewatering and Bypass Pumping**											
				31.19.06.0003		**Bypass Pumping**											
					31.19.06.00	**Site Preparation, Bypass Pumping, 12" to 24" Pipe**											
						Generator, Weekly	52.00 wk		**-**	**26,000**	**-**	**78,000**	**-**	2,000.00 /wk	**104,000**	4,656.80 /wk	**242,153**
						Bypass Pumping, Pumps and Piping, Mob	3.00 ea	**24**	**1,988**	**-**	**4,500**	**1,054**	**-**	2,514.04 /ea	**7,542**	5,702.29 /ea	**17,107**
						Bypass Pumping, Set-up Pumps	3.00 ea	**48**	**3,977**	**1,500**	**-**	**1,054**	**-**	2,176.86 /ea	**6,531**	4,975.79 /ea	**14,927**
						Bypass Pumping, Install Suction Piping	3.00 ea	**24**	**1,988**	**450**	**-**	**527**	**-**	988.43 /ea	**2,965**	2,255.07 /ea	**6,765**
						Bypass Pumping, System Operation	52.00 WK	**2,080**	**158,226**	**208,000**	**-**	**260,000**	**-**	12,042.80 /WK	**626,226**	27,827.43 /WK	**1,447,027**
						31.19.06.00 Site Preparation, Bypass Pumping, 12" to 24" Pipe	**52.00 WK**	**2,176**	**166,179**	**235,950**	**4,500**	**340,634**		**14,370.45 /WK**	**747,264**	**33,230.37 /WK**	**1,727,979**
						31.19.06.0003 Bypass Pumping	**52.00 WK**	**2,176**	**166,179**	**235,950**	**4,500**	**340,634**		**14,370.45 /WK**	**747,264**	**33,230.37 /WK**	**1,727,979**
						31.19 Dewatering and Bypass Pumping	**52.00 WK**	**2,176**	**166,179**	**235,950**	**4,500**	**340,634**		**14,370.45 /WK**	**747,264**	**33,230.37 /WK**	**1,727,979**
			31.20			**Earthworks, Site**											
				31.20.07.1015		**Channel Excavation**											
					31.20.07.10	**Earthworks, Sitework, Excavating Bulk Measure**											
						Clearing, heavy overgrowth of weeds and shrubs	1.35 acre	**16**	**1,085**	**-**	**-**	**1,040**	**-**	1,573.57 /acre	**2,124**	3,607.66 /acre	**4,870**
						Clearing, Tree Removal, 6" - 12", Acre	1.35 acre	**216**		**-**	**6,750**	**-**	**-**	5,000.00 /acre	**6,750**	11,291.99 /acre	**15,244**
						Strip and Haul Topsoil, Excavator, Medium Crew	1,075.00 cy	**49**	**3,260**	**-**	**-**	**4,533**	**-**	7.25 /cy	**7,793**	16.67 /cy	**17,917**
						Survey: Pre-Excavation	1.00 ls	**40**		**-**	**7,500**	**-**	**-**	7,500.00 /ls	**7,500**	16,937.98 /ls	**16,938**
						Mass Excavation, Cut To Stockpile, Excavator, Medium Crew	10,311.00 CY	**471**	**31,270**	**-**	**-**	**43,476**	**-**	7.25 /CY	**74,746**	16.67 /CY	**171,849**
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 950	10,311.00 cy	**52**	**3,886**	**-**	**-**	**7,463**	**-**	1.10 /cy	**11,349**	2.54 /cy	**26,152**
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	10,311.00 cy	**542**	**36,888**	**-**	**-**	**44,358**	**-**	7.88 /cy	**81,246**	18.10 /cy	**186,590**
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	10,311.00 cy		**-**	**0**	**-**	**-**	**154,665**	15.00 /cy	**154,665**	33.88 /cy	**349,295**
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	**10,311.00 CY**	**1,386**	**76,388**		**14,250**	**100,869**	**154,665**	**33.57 /CY**	**346,172**	**76.51 /CY**	**788,856**
						31.20.07.1015 Channel Excavation	**10,311.00 CY**	**1,386**	**76,388**		**14,250**	**100,869**	**154,665**	**33.57 /CY**	**346,172**	**76.51 /CY**	**788,856**
						31.20 Earthworks, Site	**10,311.00 CY**	**1,386**	**76,388**		**14,250**	**100,869**	**154,665**	**33.57 /CY**	**346,172**	**76.51 /CY**	**788,856**
			31.30			**Site Specialties**											
				31.30.01.0006		**Cofferdam**											
					31.30.01.00	**Site Specialties, Port-A-Dams**											
						Porta-dam, mob	2.00 EA	**48**		**-**	**30,000**	**-**	**-**	15,000.00 /EA	**30,000**	33,875.97 /EA	**67,752**
						Porta-dam, installation	2.00 ea	**192**	**15,494**	**1,000**	**-**	**8,744**	**-**	12,619.41 /ea	**25,239**	28,840.69 /ea	**57,681**
						Porta-dam, rental	12.00 mo		**-**	**-**	**180,000**	**-**	**-**	15,000.00 /mo	**180,000**	33,875.97 /mo	**406,512**
						Porta-dam, dewatering operation - fuel cost	12.00 mo		**-**	**108,000**	**-**	**-**	**-**	9,000.00 /mo	**108,000**	20,955.58 /mo	**251,467**
						Porta-dam, removal	2.00 ea	**192**	**15,494**	**-**	**-**	**8,744**	**-**	12,119.41 /ea	**24,239**	27,676.49 /ea	**55,353**
						Porta-dam, demob	2.00 ea	**48**		**-**	**30,000**	**-**	**-**	15,000.00 /ea	**30,000**	33,875.96 /ea	**67,752**
						31.30.01.00 Site Specialties, Port-A-Dams	**2.00 EA**	**480**	**30,989**	**109,000**	**240,000**	**17,489**		**198,738.81 /EA**	**397,478**	**453,258.42 /EA**	**906,517**
						31.30.01.0006 Cofferdam	**2.00 EA**	**480**	**30,989**	**109,000**	**240,000**	**17,489**		**198,738.81 /EA**	**397,478**	**453,258.42 /EA**	**906,517**
						31.30 Site Specialties	***1.00* LS**	**480**	**30,989**	**109,000**	**240,000**	**17,489**		**397,477.62 /LS**	**397,478**	**906,516.84 /LS**	**906,517**
						31.0 Earthwork	***1.00* LS**	**4,042**	**273,557**	**344,950**	**258,750**	**458,992**	**154,665**	**1,490,913.51 /LS**	**1,490,914**	**3,423,351.95 /LS**	**3,423,352**
		33.0				**Utilities**											
			33.07			**Buried Process Pipe, HDPE**											
				33.00.09.0004		**Diversion Piping 12"**											
					33.00.09.12	**Buried Pipe, HDPE, 12"**											
						Pipeline LF per Day	***200.00 lf***			**-**	**-**	**-**	**-**	***/lf***		***/lf***	
						25 tn Rough Terrain (per day)	2.00 day	**16**	**1,266**	**-**	**-**	**2,363**	**-**	1,814.59 /day	**3,629**	4,180.78 /day	**8,362**
						12" HDPE pipe, excav/backfill not included	300.00 LF	**72**	**5,810**	**4,674**	**-**	**3,279**	**-**	45.88 /LF	**13,764**	105.47 /LF	**31,640**
						12" HDPE tee	3.00 ea	**15**	**1,204**	**880**	**-**	**680**	**-**	921.39 /ea	**2,764**	2,117.26 /ea	**6,352**
						12" HDPE reducer	3.00 ea	**11**	**874**	**880**	**-**	**493**	**-**	749.07 /ea	**2,247**	1,723.74 /ea	**5,171**
						12" HDPE cap	1.00 ea	**1**	**107**	**247**	**-**	**61**	**-**	414.42 /ea	**414**	957.43 /ea	**957**

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					33.00.09.12	Buried Pipe, HDPE, 12"											
						12" HDPE flange	3.00 ea	8	672		-	137	-	269.49 /ea	808	611.80 /ea	1,835
						Field weld fusion joints, Subcontracted (S), 12"	20.00 ea		-	-	2,172	-	-	108.60 /ea	2,172	245.26 /ea	4,905
						12" Bolt & Gasket Kits, CS, 150#	3.00 ea	7	575	60	-	-	-	211.51 /ea	635	479.08 /ea	1,437
						33.00.09.12 Buried Pipe, HDPE, 12"	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
						33.00.09.0004 Diversion Piping 12"	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
						33.07 Buried Process Pipe, HDPE	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
						33.0 Utilities	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
						03.4 Channel Earthwork	1.00 LS	4,172	284,065	351,691	260,922	466,004	154,665	1,517,347.04 /LS	1,517,347	3,484,012.11 /LS	3,484,012
	04.4					Fish Screen											
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.50.0005		Fish Screen											
					33.00.50.00	Buried Pipe, Other											
						Basket-strainer, flanged, SS screen, 12"	1.00 EA	1	80	1,500	-	-	-	1,579.80 /EA	1,580	3,672.81 /EA	3,673
						33.00.50.00 Buried Pipe, Other	0.00	1	80	1,500				/LF	1,580	/LF	3,673
						33.00.50.0005 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,672.81 /EA	3,673
						33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.81 /LF	3,673
						33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.81 /LF	3,673
						04.4 Fish Screen	1.00 LS	1	80	1,500				1,579.80 /LS	1,580	3,672.81 /LS	3,673
	05.4					Fish Salvage											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0007		Fish Salvage											
					01.01.06.01	GC Labor											
						Environmental Manager	0.10 MO	17	1,300	50	-	-	-	13,499.80 /MO	1,350	27,147.90 /MO	2,715
						Environmental Engineer	0.10 MO	17	1,300	50	-	-	-	13,499.80 /MO	1,350	27,148.10 /MO	2,715
						01.01.06.01 GC Labor	0.20 MO	35	2,600	100				13,499.80 /MO	2,700	27,148.00 /MO	5,430
						01.01.06.0007 Fish Salvage	2.00 DY	35	2,600	100				1,349.98 /DY	2,700	2,714.80 /DY	5,430
						01.01 Construction Operations	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.60 /LS	5,430
						01.0 General Requirements	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.60 /LS	5,430
						05.4 Fish Salvage	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.60 /LS	5,430
	06.4					Bank Stabilization											
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.25.03.0020		Bank Stabilization											
					32.35.03.00	Site Improvements, Landscaping											
						Division 32 Allowance for Large Woody Material	1.00 LS		-	-	25,000	-		25,000.00 /LS	25,000	56,459.94 /LS	56,460
						Planting beds preparation, backfill planting pit, prepared planting mix, skid steer loader	143.00 cy	8	524	-	-	92	-	4.31 /cy	616	9.77 /cy	1,397
						Planting beds preparation, excavate planting pit,heavy soil or clay, 1/2 C.Y. backhoe	143.00 cy	20	1,330	-	-	409	-	12.16 /cy	1,739	27.66 /cy	3,956
						Planting beds preparation, mix planting soil, skid steer loader, includes loam, manure, peat	143.00 cy	23	1,432	5,077	-	251	-	47.27 /cy	6,759	109.36 /cy	15,638
						Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed with wood fiber mulch added	2,062.00 SY	18	1,204	4,371	-	1,140	-	3.26 /SY	6,716	7.54 /SY	15,553
						Shrubs, average cost, to 1 gallon	600.00 ea	54	3,455	2,160	-	1,216	-	11.39 /ea	6,831	26.11 /ea	15,664
						32.35.03.00 Site Improvements, Landscaping	2,062.00 SY	123	7,945	11,608	25,000	3,108		23.11 /SY	47,661	52.70 /SY	108,668
						32.25.03.0020 Bank Stabilization	2,062.00 SY	123	7,945	11,608	25,000	3,108		23.11 /SY	47,661	52.70 /SY	108,668
						32.50 Site, Improvements	1.00 LS	123	7,945	11,608	25,000	3,108		47,661.19 /LS	47,661	108,668.06 /LS	108,668
						32.0 Exterior Improvements	1.00 LS	123	7,945	11,608	25,000	3,108		47,661.19 /LS	47,661	108,668.06 /LS	108,668
						06.4 Bank Stabilization	1.00 LS	123	7,945	11,608	25,000	3,108		47,661.19 /LS	47,661	108,668.06 /LS	108,668
	07.4					Traffic Control											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0008		Traffic Control Allowance											
					01.01.06.02	GC Temporary Facilities & Services											
						Division 01 Allowance Traffic Control	180.00 DY		-	-	270,000	-		1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01.06.02 GC Temporary Facilities & Services	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01.06.0008 Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
						01.01 Construction Operations	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
						01.0 General Requirements	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
						07.4 Traffic Control	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
						05.0 Diversion Structure and Bridge	**1.00 LS**	11,594	701,753	372,628	2,647,672	869,984	154,665	**4,746,702.41 /LS**	4,746,702	**10,738,750.91 /LS**	10,738,751

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 4 Alt 1 Channel Widening Rev #1 5-22-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Estimate Totals

Description	Amount	Totals		Rate	Cost / Unit	% of Total	
Labor	3,901,661		hrs			6.23%	
Material	1,990,587					3.18%	
Subcontract	16,352,878					26.12%	
Equipment	4,577,245		hrs			7.31%	
Other	685,755					1.10%	
Subtotal Raw Costs	**27,508,126**	**27,508,126**				**43.94%**	**43.94%**
Material Sales & Use Tax - %	139,341			7.000 %		0.22%	
Construction Equip Tax - %	320,407			7.000 %		0.51%	
Total Taxes	**459,748**	**27,967,874**				**0.73%**	**44.67%**
Location Adj. Factor							
Productivity Adjustment							
Subtotal Adj. Factors		**27,967,874**					**44.67%**
Existing Conditions I,OH&P	184,203			25.000 %		0.29%	
Concrete Work I,OH&P	3,412,648			25.000 %		5.45%	
Masonry Work I,OH&P				25.000 %			
Metals Work I,OH&P				25.000 %			
Architectural (Div 6-12)I,OH&P				25.000 %			
Special Construction I,OH&P				25.000 %			
Conveying Equipment I,OH&P				25.000 %			
Mechanical Work I,OH&P				25.000 %			
Electrical Work I,OH&P				25.000 %			
Site/Civil I,OH&P	2,880,121			25.000 %		4.60%	
Buried Piping I,OH&P	59,184			25.000 %		0.09%	
Tank Construction I,OH&P				25.000 %			
Process Piping I,OH&P				25.000 %			
Instruments & Controls I,OH&P				25.000 %			
Material Handling I,OH&P				25.000 %			
Process Equipment I,OH&P				25.000 %			
Subtotal Subcontractor I,OH&P	**6,536,156**	**34,504,030**				**10.44%**	**55.11%**
Contractor Contingency							
Subtotal Contingency		**34,504,030**					**55.11%**
Total Cost To Prime Contractor		**34,504,030**					**55.11%**
General Conditions	3,450,403			10.000 %		5.51%	
Mobilization/Demobilization	1,035,121			3.000 %		1.65%	
Subtotal Indirect Costs	**4,485,524**	**38,989,554**				**7.16%**	**62.28%**
Prime Contractor Home OfficeOH	3,898,955			10.000 %		6.23%	
Prime Contractor Profit	5,848,433			15.000 %		9.34%	
Bonds & Insurance	1,057,592			2.170 %		1.69%	
Subtotal OH&P	**10,804,980**	**49,794,534**				**17.26%**	**79.54%**
Contractor MU on Mech OFCI							
Contractor MU on Elec OFCI							
Total MU on OFCI Equip		**49,794,534**					**79.54%**
Design Contingency	12,448,633			25.000 %		19.88%	
Subtotal Contingency	**12,448,633**	**62,243,167**				**19.88%**	**99.42%**
Escalation							
Subtotal Escalation		**62,243,167**					**99.42%**
CAT Tax	361,010			0.580 %		0.58%	
Total Contractor Costs	**361,010**	**62,604,177**				**0.58%**	**100.00%**
Total Construction Cost		**62,604,177**					**100.00%**
Total		***62,604,177***					

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Water Detention Pond Rev #1 5-22-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0						**Monmouth Cutoff Culverts**											
	01.2					**Demo Culverts**											
		02.0				**Existing Conditions**											
			02.40			**Demolition**											
				02.01.01.1006		**Remove Culverts**											
					02.01.01.00	**General Site Demolition**											
						Traffic Control, Labor per Day	8.00 day	128	7,465	-	-	-	-	933.15 /day	7,465	2,094.90 /day	16,759
						Trench Box, 8' x 24' x 10'	1.00 mo		-	-	-	2,300	-	2,300.00 /mo	2,300	5,163.44 /mo	5,163
						Dedicated Fire / Safety Monitor	32.00 hr	32	1,866	-	-	-	-	58.32 /hr	1,866	130.93 /hr	4,190
						Storm Sewer Pipe Demolition and Loading, 10' Deep	80.00 LF	22	1,713	-	-	1,193	-	36.33 /LF	2,907	81.57 /LF	6,526
						Haul Site Demolition Spoils, 17 yd capacity, 20 miles RT, priced per cy	71.00 cy	4	254	-	-	305	-	7.88 /cy	559	17.69 /cy	1,256
						Dump Charges for Site Demolition Spoils, 17 yd end-dump, priced per cy	71.00 cy		-	0	-	-	1,065	15.00 /cy	1,065	33.67 /cy	2,391
						Excav. pipe trench, w/ trench box, for > 30" pipe	381.19 CY	8	576	-	-	1,729	-	6.05 /CY	2,305	13.58 /CY	5,175
						Backfill / Compact @ pipe zone, for 30" & larger pipe	201.63 cy	26	1,681	-	-	1,968	-	18.10 /cy	3,649	40.62 /cy	8,191
						Backfill / Compact above pipe zone, for 30" & larger pipe	42.81 cy	1	97	-	-	89	-	4.34 /cy	186	9.75 /cy	417
						Pipe zone material	201.63 cy		-	5,646	-	-	-	28.00 /cy	5,646	62.86 /cy	12,674
						Pipe bedding material	20.71 cy		-	580	-	-	-	28.00 /cy	580	62.86 /cy	1,302
						Imported backfill material	42.81 cy		-	1,199	-	-	-	28.00 /cy	1,199	62.86 /cy	2,691
						Haul spoils, offsite, 10 - 20 miles	265.00 cy		-	-	3,975	-	-	15.00 /cy	3,975	33.67 /cy	8,924
						Dump fees, trench spoils	265.00 CY		-	-	-	-	3,975	15.00 /CY	3,975	33.67 /CY	8,924
						02.01.01.00 General Site Demolition	***1.00* LS**	221	13,653	7,424	3,975	7,585	5,040	**37,676.68 /LS**	37,677	**84,583.09 /LS**	**84,583**
						02.01.01.1006 Remove Culverts	**80.00 LF**	221	13,653	7,424	3,975	7,585	5,040	**470.96 /LF**	37,677	**1,057.29 /LF**	**84,583**
						02.40 Demolition	***1.00* LS**	221	13,653	7,424	3,975	7,585	5,040	**37,676.68 /LS**	37,677	**84,583.09 /LS**	**84,583**
						02.0 Existing Conditions	***1.00* LS**	221	13,653	7,424	3,975	7,585	5,040	**37,676.68 /LS**	37,677	**84,583.09 /LS**	**84,583**
						01.2 Demo Culverts	***1.00* LS**	221	13,653	7,424	3,975	7,585	5,040	**37,676.68 /LS**	37,677	**84,583.09 /LS**	**84,583**
	02.2					**2 Ea. 4' x8' x40 Box Culverts**											
		03.0				**Concrete Work**											
			03.10			**Cast-In-Place Concrete Work**											
				03.10.05.1007		**18" Base Slab**											
					03.10.05.18	**Cast-In-Place Concrete, Slabs on Grade, 18" thick**											
						Fine grade, for slab on grade, by hand	640.00 sf	4	244	19	-	-	-	0.41 /sf	264	0.92 /sf	592
						Fill, gravel subbase, under building slab on grade	23.70 cy	12	646	664	-	-	-	55.27 /cy	1,310	124.08 /cy	2,941
						Fill, sand subbase, under building slab on grade	3.95 cy	3	162	72	-	-	-	59.06 /cy	233	132.58 /cy	524
						Concrete pumping, subcontract, all inclusive price	35.56 cy		-	-	533	-	-	15.00 /cy	533	33.67 /cy	1,197
						Slab on grade edge forms, 12" to 24"	288.00 sf	63	4,265	288	-	-	-	15.81 /sf	4,553	35.49 /sf	10,221
						Waterstop, PVC, center bulb, 9" wide	160.00 lf	13	862	480	-	-	-	8.39 /lf	1,342	18.82 /lf	3,012
						Reinforcing in place, A615 Gr 60, priced per lbs.	7,111.11 lb		-	10,667	2,844	-	-	1.90 /lb	13,511	4.27 /lb	30,332
						Concrete, ready mix, 4500 psi	35.56 CY		-	5,333	-	-	-	150.00 /CY	5,333	336.75 /CY	11,973
						Add for concrete waste, 4500 psi	1.78 cy		-	267	-	-	-	150.00 /cy	267	336.75 /cy	599
						Add amount for Fuel Surcharges - per concrete truck load	4.00 load		-	80	-	-	-	20.00 /load	80	44.90 /load	180
						Add amount for Environmental Fee - per concrete truck load	4.00 load		-	32	-	-	-	8.00 /load	32	17.96 /load	72
						Placing concrete, concrete pump	35.56 cy	27	1,454	-	-	-	-	40.91 /cy	1,454	91.83 /cy	3,265
						Finishing floors, monolithic, trowel finish (hand)	640.00 sf	19	1,230	13	-	-	-	1.94 /sf	1,243	4.36 /sf	2,790
						Curing, membrane spray	640.00 sf	1	70	26	-	-	-	0.15 /sf	95	0.33 /sf	214
						Polyethelene vapor barrier, 10 mil thick	6.40 sq	1	91	68	-	-	-	24.88 /sq	159	55.86 /sq	358
						03.10.05.18 Cast-In-Place Concrete, Slabs on Grade, 18" thick	**35.56 CY**	144	9,025	18,008	3,378			**855.27 /CY**	30,410	**1,920.06 /CY**	**68,270**
						03.10.05.1007 18" Base Slab	**35.56 CY**	144	9,025	18,008	3,378			**855.27 /CY**	30,410	**1,920.06 /CY**	**68,270**
				03.10.06.1008		**18" Wall for Box Culvert**											
					03.10.06.18	**Cast-In-Place Concrete, Straight Walls, 18" thick**											
						Concrete pumping, subcontract, all inclusive price	35.56 cy		-	-	533	-	-	15.00 /cy	533	33.67 /cy	1,197
						Forms in place, structural walls, to 8' high, hand set	1,280.00 sf	192	12,924	1,280	-	-	-	11.10 /sf	14,204	24.91 /sf	31,888
						Waterstop, PVC, center bulb, 9" wide	160.00 lf	13	862	480	-	-	-	8.39 /lf	1,342	18.82 /lf	3,012
						Reinforcing in place, A615 Gr 60, priced per lbs.	8,888.89 lb		-	13,333	3,556	-	-	1.90 /lb	16,889	4.27 /lb	37,915
						Concrete, ready mix, 4500 psi	35.56 CY		-	5,333	-	-	-	150.00 /CY	5,333	336.75 /CY	11,973
						Add for concrete waste, 4500 psi	1.78 cy		-	267	-	-	-	150.00 /cy	267	336.75 /cy	599
						Add amount for Fuel Surcharges - per concrete truck load	4.00 load		-	80	-	-	-	20.00 /load	80	44.90 /load	180
						Add amount for Environmental Fee - per concrete truck load	4.00 load		-	32	-	-	-	8.00 /load	32	17.96 /load	72
						Placing concrete, concrete pump, for structural wall >12" - 24" thick	35.56 cy	27	1,454	-	-	-	-	40.91 /cy	1,454	91.83 /cy	3,265
						Patch & plug tieholes	1,280.00 sf	19	1,047	26	-	-	-	0.84 /sf	1,073	1.88 /sf	2,408
						Stone rub	1,280.00 sf	64	3,491	38	-	-	-	2.76 /sf	3,529	6.19 /sf	7,923
						Curing, membrane spray	1,280.00 sf	3	140	51	-	-	-	0.15 /sf	191	0.33 /sf	428
						Below grade dampproofing, Bituminous Asphalt	640.00 sf		-	640	-	-	-	1.00 /sf	640	2.24 /sf	1,437
						03.10.06.18 Cast-In-Place Concrete, Straight Walls, 18" thick	**35.56 CY**	317	19,918	21,561	4,089			**1,281.56 /CY**	45,567	**2,877.08 /CY**	**102,297**
						03.10.06.1008 18" Wall for Box Culvert	**35.56 CY**	317	19,918	21,561	4,089			**1,281.56 /CY**	45,567	**2,877.08 /CY**	**102,297**
				03.10.10.1009		**18" Top for Box Culvert**											

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Water Detention Pond Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					03.10.10.18	Cast-In-Place Concrete, Elevated Decks, 18" thick											
						Concrete pumping, subcontract, all inclusive price	35.56 cy		-	-	533	-	-	15.00 /cy	533	33.67 /cy	1,197
						Forms in place, elevated slab, soffit	640.00 sf	128	8,616	800	-	-	-	14.71 /sf	9,416	33.03 /sf	21,139
						Forms in place, elevated slab, edge form	288.00 sf	72	4,847	360	-	-	-	18.08 /sf	5,207	40.59 /sf	11,689
						Slab shoring	2,560.00 cf	18	1,206	128	-	-	-	0.52 /cf	1,334	1.17 /cf	2,995
						Waterstop, PVC, center bulb, 9" wide	160.00 lf	13	862	480	-	-	-	8.39 /lf	1,342	18.82 /lf	3,012
						Reinforcing in place, A615 Gr 60, priced per lbs.	8,000.00 lb		-	12,000	3,200	-	-	1.90 /lb	15,200	4.27 /lb	34,124
						Concrete, ready mix, 4500 psi	35.56 CY		-	5,333	-	-	-	150.00 /CY	5,333	336.75 /CY	11,973
						Add for concrete waste, 4500 psi	1.78 cy		-	267	-	-	-	150.00 /cy	267	336.76 /cy	599
						Add amount for Fuel Surcharges - per concrete truck load	4.00 load		-	80	-	-	-	20.00 /load	80	44.90 /load	180
						Add amount for Environmental Fee - per concrete truck load	4.00 load		-	32	-	-	-	8.00 /load	32	17.96 /load	72
						Placing concrete, concrete pump, for elevated slab over 12" thick	35.56 cy	16	873	-	-	-	-	24.54 /cy	873	55.10 /cy	1,959
						Curing, membrane spray	640.00 sf	1	70	26	-	-	-	0.15 /sf	95	0.33 /sf	214
						Concrt fnshng,floors,basic fnshng for unspcf fltwrk,bull float,manual float&broom finish,inclds edging and joints,excluds placing,strikng off&cnsldtng	640.00 sf	8	530	-	-	-	-	0.83 /sf	530	1.86 /sf	1,190
						03.10.10.18 Cast-In-Place Concrete, Elevated Decks, 18" thick	35.56 CY	256	17,003	19,506	3,733			1,131.80 /CY	40,242	2,540.86 /CY	90,343
						03.10.10.1009 18" Top for Box Culvert	35.56 CY	256	17,003	19,506	3,733			1,131.80 /CY	40,242	2,540.86 /CY	90,343
						03.10 Cast-In-Place Concrete Work	***1.00*** **LS**	718	45,946	59,074	11,200			**116,219.55 /LS**	116,220	**260,909.68 /LS**	260,910
						03.0 Concrete Work	*1.00* LS	718	45,946	59,074	11,200			116,219.55 /LS	116,220	260,909.68 /LS	260,910
		31.0				Earthwork											
			31.20			**Earthworks, Site**											
				31.20.07.1010		Excavation for Culvert											
					31.20.07.00	Earthworks, Sitework, Cut/Fill											
						Dewatering Minor, Generator and Pumps, Mob	4.00 ea	32		-	6,000	-	-	1,500.00 /ea	6,000	3,367.46 /ea	13,470
						Dewatering Minor, Set-up Generator and Install Pumps	8.00 ea	64	4,016	-	-	1,071	-	635.82 /ea	5,087	1,427.40 /ea	11,419
						Dewatering Minor, Sump Rock, delivered	20.00 cy		-	400	-	-	-	20.00 /cy	400	44.90 /cy	898
						Dewatering Minor, Large Generator and 2 Pumps, Rental, Monthly	24.00 mo		-	-	-	669,331	-	27,888.80 /mo	669,331	62,609.57 /mo	1,502,630
						Dewatering Minor, Generator and Pumps, Operation - Labor to maintain / check pumps/ fuel and lube	24.00 mo	12,672	741,760	-	-	70,224	-	33,832.66 /mo	811,984	75,953.37 /mo	1,822,881
						Dewatering Minor, Remove Generator and Pumps	8.00 ea	64	4,016	-	-	805	-	602.57 /ea	4,821	1,352.75 /ea	10,822
						Dewatering Minor, Generator and Pumps, Demob	4.00 ea	32		-	6,000	-	-	1,500.00 /ea	6,000	3,367.46 /ea	13,470
						Shoring, sheet pile, subcontracted	3,000.00 sf	390		-	120,000	-	-	40.00 /sf	120,000	89.80 /sf	269,397
						Structural Excavation, Excavator and Trucks, Medium Crew, 15' depth	700.00 CY	40	2,654	-	-	3,693	-	9.07 /CY	6,346	20.35 /CY	14,248
						Grade for slabs / Scarify and Recompact, Dozer and Traxcavator or Loader, Small Crew	72.00 sy	3	234	-	-	239	-	6.56 /sy	472	14.73 /sy	1,060
						Structural Backfill, Dozer and Traxcavator or Loader, Small Crew	606.00 cy	42	2,951	-	-	3,013	-	9.84 /cy	5,964	22.09 /cy	13,389
						Load Excess for Hauling, Rubber Tire Loader, Cat 950	606.00 cy	3	228	-	-	439	-	1.10 /cy	667	2.47 /cy	1,497
						Haul / Remove Excess, 17 yd capacity, 20 miles RT	606.00 cy	32	2,168	-	-	2,607	-	7.88 /cy	4,775	17.69 /cy	10,720
						Dump Charges for For Excess, 17 yd tandem, per cy	606.00 cy		-	9,090	-	-	9,090	30.00 /cy	18,180	67.35 /cy	40,814
						Over excavate and replace with suitable, Excavators and Trucks, Small Crew	48.00 cy	2	151	-	-	193	-	7.18 /cy	345	16.12 /cy	774
						31.20.07.00 Earthworks, Sitework, Cut/Fill	700.00 CY	13,377	758,177	9,490	132,000	751,615	9,090	2,371.96 /CY	1,660,371	5,324.98 /CY	3,727,488
						31.20.07.1010 Excavation for Culvert	700.00 CY	13,377	758,177	9,490	132,000	751,615	9,090	2,371.96 /CY	1,660,371	5,324.98 /CY	3,727,488
						31.20 Earthworks, Site	**700.00 CY**	13,377	758,177	9,490	132,000	751,615	9,090	**2,371.96 /CY**	1,660,371	**5,324.98 /CY**	3,727,488
						31.0 Earthwork	*1.00* LS	13,377	758,177	9,490	132,000	751,615	9,090	1,660,371.43 /LS	1,660,371	3,727,487.71 /LS	3,727,488
						02.2 2 Ea. 4' x8' x40 Box Culverts	806.67 CY	14,094	804,122	68,564	143,200	751,615	9,090	2,202.38 /CY	1,776,591	4,944.29 /CY	3,988,397
	03.2					Earthwork for Channel											
		31.0				Earthwork											
			31.19			**Dewatering and Bypass Pumping**											
				31.19.06.0003		Bypass Pumping											
					31.19.06.00	Site Preparation, Bypass Pumping, 12" to 24" Pipe											
						Generator, Weekly	52.00 wk		-	26,000	-	78,000	-	2,000.00 /wk	104,000	4,489.94 /wk	233,477
						Bypass Pumping, Pumps and Piping, Mob	3.00 ea	24	1,988	-	4,500	1,054	-	2,514.04 /ea	7,542	5,643.95 /ea	16,932
						Bypass Pumping, Set-up Pumps	3.00 ea	48	3,977	1,500	-	1,054	-	2,176.86 /ea	6,531	4,886.98 /ea	14,661
						Bypass Pumping, Install Suction Piping	3.00 ea	24	1,988	450	-	527	-	988.43 /ea	2,965	2,219.00 /ea	6,657
						Bypass Pumping, System Operation	52.00 WK	2,080	158,226	208,000	-	260,000	-	12,042.80 /WK	626,226	27,035.75 /WK	1,405,859
						31.19.06.00 Site Preparation, Bypass Pumping, 12" to 24" Pipe	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,261.27 /WK	1,677,586
						31.19.06.0003 Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,261.27 /WK	1,677,586
						31.19 Dewatering and Bypass Pumping	**52.00 WK**	2,176	166,179	235,950	4,500	340,634		**14,370.45 /WK**	747,264	**32,261.27 /WK**	1,677,586
			31.20			**Earthworks, Site**											
				31.20.07.1011		Excavation for Channel											
					31.20.07.00	Earthworks, Sitework, Cut/Fill											
						Clearing, heavy overgrowth of weeds and shrubs	2.25 acre	27	1,808	-	-	1,733	-	1,573.56 /acre	3,541	3,532.61 /acre	7,948
						Clearing, Tree Removal, 6" - 12", Acre	2.25 acre	360		-	11,250	-	-	5,000.00 /acre	11,250	11,224.86 /acre	25,256
						Strip and Haul Topsoil, Excavator, Medium Crew	1,796.00 cy	82	5,447	-	-	7,573	26,940	22.25 /cy	39,959	49.95 /cy	89,708
						Rough Site Grading, Large Crew	10,800.00 sy	144	9,650	-	-	17,944	-	2.55 /sy	27,593	5.74 /sy	61,946
						Survey: Pre-Excavation	1.00 LS	40		-	7,500	-	-	7,500.00 /LS	7,500	16,837.30 /LS	16,837

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Water Detention Pond Rev #1 5-22-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					31.20.07.00	Earthworks, Sitework, Cut/Fill											
						Mass Excavation, Cut To Stockpile, Excavator, Medium Crew	8,335.00 CY	381	25,277	-	-	35,144	-	7.25 /CY	60,421	16.27 /CY	135,645
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 950	8,335.00 cy	42	3,141	-	-	6,032	-	1.10 /cy	9,174	2.47 /cy	20,595
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	8,335.00 cy	438	29,819	-	-	35,857	-	7.88 /cy	65,676	17.69 /cy	147,440
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	8,335.00 cy		-	0	-	-	125,025	15.00 /cy	125,025	33.67 /cy	280,678
						31.20.07.00 Earthworks, Sitework, Cut/Fill	8,335.00 CY	1,514	75,141		18,750	104,283	151,965	42.01 /CY	350,139	94.31 /CY	786,053
						31.20.07.1011 Excavation for Channel	8,335.00 CY	1,514	75,141		18,750	104,283	151,965	42.01 /CY	350,139	94.31 /CY	786,053
						31.20 Earthworks, Site	8,335.00 CY	1,514	75,141		18,750	104,283	151,965	42.01 /CY	350,139	94.31 /CY	786,053
			31.30			Site Specialties											
				31.30.01.0006		Cofferdam											
					31.30.01.00	Site Specialties, Port-A-Dams											
						Porta-dam, mob	2.00 EA	48		-	30,000	-	-	15,000.00 /EA	30,000	33,674.59 /EA	67,349
						Porta-dam, installation	2.00 ea	192	15,494	1,000	-	8,744	-	12,619.41 /ea	25,239	28,330.21 /ea	56,660
						Porta-dam, rental	12.00 mo		-	-	180,000	-	-	15,000.00 /mo	180,000	33,674.58 /mo	404,095
						Porta-dam, dewatering operation - fuel cost	12.00 mo		-	108,000	-	-	-	9,000.00 /mo	108,000	20,204.75 /mo	242,457
						Porta-dam, removal	2.00 ea	192	15,494	-	-	8,744	-	12,119.41 /ea	24,239	27,207.72 /ea	54,415
						Porta-dam, demob	2.00 ea	48		-	30,000	-	-	15,000.00 /ea	30,000	33,674.59 /ea	67,349
						31.30.01.00 Site Specialties, Port-A-Dams	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	446,163.10 /EA	892,326
						31.30.01.0006 Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	446,163.10 /EA	892,326
						31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	892,326.21 /LS	892,326
						31.0 Earthwork	1.00 LS	4,170	272,309	344,950	263,250	462,406	151,965	1,494,880.65 /LS	1,494,881	3,355,965.51 /LS	3,355,966
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.09.0004		Diversion Piping 12"											
					33.00.09.12	Buried Pipe, HDPE, 12"											
						Pipeline lf per Day	*200.00 lf*			-	-	-	-	/lf		/lf	
						25 tn Rough Terrain (per day)	4.00 day	32	2,532	-	-	4,726	-	1,814.59 /day	7,258	4,073.69 /day	16,295
						12" HDPE pipe, excav/backfill not included	750.00 LF	180	14,526	11,685	-	8,198	-	45.88 /LF	34,409	103.00 /LF	77,247
						12" HDPE tee	3.00 ea	15	1,204	880	-	680	-	921.39 /ea	2,764	2,068.50 /ea	6,206
						12" HDPE reducer	3.00 ea	11	874	880	-	493	-	749.07 /ea	2,247	1,681.64 /ea	5,045
						12" HDPE cap	1.00 ea	1	107	247	-	61	-	414.42 /ea	414	930.37 /ea	930
						12" HDPE flange	3.00 ea	8	672		-	137	-	269.49 /ea	808	604.99 /ea	1,815
						Field weld fusion joints, Subcontracted (S), 12"	20.00 ea		-	-	2,172	-	-	108.60 /ea	2,172	243.80 /ea	4,876
						12" Bolt & Gasket Kits, CS, 150#	3.00 ea	7	575	60	-	-	-	211.51 /ea	635	474.83 /ea	1,425
						33.00.09.12 Buried Pipe, HDPE, 12"	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	151.78 /LF	113,838
						33.00.09.0004 Diversion Piping 12"	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	151.78 /LF	113,838
						33.07 Buried Process Pipe, HDPE	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	151.78 /LF	113,838
						33.0 Utilities	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	151.78 /LF	113,838
						03.2 Earthwork for Channel	1.00 LS	4,424	292,800	358,702	265,422	476,701	151,965	1,545,588.69 /LS	1,545,589	3,469,803.65 /LS	3,469,804
	04.2					Fish Screen											
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.50.0005		Fish Screen											
					33.00.50.00	Buried Pipe, Other											
						Basket-strainer, flanged, SS screen, 12"	1.00 EA	1	80	1,500	-	-	-	1,579.80 /EA	1,580	3,546.60 /EA	3,547
						33.00.50.00 Buried Pipe, Other	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,546.60 /LF	3,547
						33.00.50.0005 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,546.60 /EA	3,547
						33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,546.60 /LF	3,547
						33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,546.60 /LF	3,547
						04.2 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,546.60 /EA	3,547
	05.2					Fish Salvage											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0007		Fish Salvage											
					01.01.06.01	GC Labor											
						Environmental Manager	0.10 MO	17	1,300	50	-	-	-	13,499.80 /MO	1,350	26,931.70 /MO	2,693
						Environmental Engineer	0.20 MO	35	2,600	100	-	-	-	13,499.75 /MO	2,700	26,931.70 /MO	5,386
						01.01.06.01 GC Labor	0.30 MO	52	3,900	150				13,499.77 /MO	4,050	26,931.70 /MO	8,080
						01.01.06.0007 Fish Salvage	2.00 DY	52	3,900	150				2,024.97 /DY	4,050	4,039.76 /DY	8,080
						01.01 Construction Operations	1.00 LS	52	3,900	150				4,049.93 /LS	4,050	8,079.51 /LS	8,080
						01.0 General Requirements	1.00 LS	52	3,900	150				4,049.93 /LS	4,050	8,079.51 /LS	8,080
						05.2 Fish Salvage	1.00 LS	52	3,900	150				4,049.93 /LS	4,050	8,079.51 /LS	8,080
	06.2					Bank Stabilization											
		32.0				Exterior Improvements											
			32.50			Site, Improvements											

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
				32.25.03.0020		Bank Stabilization											
					32.35.03.00	Site Improvements, Landscaping											
						Division 32 Allowance for Large Woody Material	1.00 LS		-	-	25,000	-		25,000.00 /LS	25,000	56,124.30 /LS	56,124
						Planting beds preparation, backfill planting pit, prepared planting mix, skid steer loader	240.00 cy	14	879	-	-	154	-	4.31 /cy	1,033	9.67 /cy	2,320
						Planting beds preparation, excavate planting pit,heavy soil or clay, 1/2 C.Y. backhoe	240.00 cy	33	2,232	-	-	686	-	12.16 /cy	2,919	27.30 /cy	6,552
						Planting beds preparation, mix planting soil, skid steer loader, includes loam, manure, peat	106.00 cy	17	1,062	3,763	-	186	-	47.27 /cy	5,011	106.12 /cy	11,248
						Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed with wood fiber mulch added	3,450.00 SY	30	2,015	7,314	-	1,908	-	3.26 /SY	11,237	7.31 /SY	25,226
						Shrubs, average cost, to 1 gallon	600.00 ea	54	3,455	2,160	-	1,216	-	11.39 /ea	6,831	25.56 /ea	15,336
						32.35.03.00 Site Improvements, Landscaping	3,450.00 SY	148	9,643	13,237	25,000	4,150		15.08 /SY	52,030	33.86 /SY	116,806
						32.25.03.0020 Bank Stabilization	3,450.00 SY	148	9,643	13,237	25,000	4,150		15.08 /SY	52,030	33.86 /SY	116,806
						32.50 Site, Improvements	**1.00 LS**	148	9,643	13,237	25,000	4,150		**52,030.21 /LS**	52,030	**116,806.37 /LS**	116,806
						32.0 Exterior Improvements	1.00 LS	148	9,643	13,237	25,000	4,150		52,030.21 /LS	52,030	116,806.37 /LS	116,806
						06.2 Bank Stabilization	3,450.00 SY	148	9,643	13,237	25,000	4,150		15.08 /SY	52,030	33.86 /SY	116,806
	07.2					Traffic Control and SWPPP											
		01.0				General Requirements											
			01.01			**Construction Operations**											
				01.01.06.0008		Traffic Control and SWPPP											
					01.01.06.02	GC Temporary Facilities & Services											
						Division 01 Allowance Traffic Control	180.00 DY		-	-	270,000	-		1,500.00 /DY	270,000	2,992.46 /DY	538,642
						Division 01 Allowance SWPPP	1.00 ls		-	-	1,500	-	100,000	101,500.00 /ls	101,500	202,489.67 /ls	202,490
						01.01.06.02 GC Temporary Facilities & Services	180.00 DY				271,500		100,000	2,063.89 /DY	371,500	4,117.40 /DY	741,132
						01.01.06.0008 Traffic Control and SWPPP	180.00 DY				271,500		100,000	2,063.89 /DY	371,500	4,117.40 /DY	741,132
						01.01 Construction Operations	***1.00* LS**				271,500		100,000	**371,500.00 /LS**	371,500	**741,132.16 /LS**	741,132
						01.0 General Requirements	*1.00* LS				271,500		100,000	371,500.00 /LS	371,500	741,132.16 /LS	741,132
						07.2 Traffic Control and SWPPP	*1.00* LS				271,500		100,000	371,500.00 /LS	371,500	741,132.16 /LS	741,132
						01.0 Monmouth Cutoff Culverts	***1.00* LS**	18,941	1,124,197	449,577	709,097	1,240,050	266,095	**3,789,016.29 /LS**	3,789,016	**8,412,348.77 /LS**	**8,412,349**
02.0						**Godsey Rd. Bridge**											
	01.3					Demo Godsey Bridge											
		02.0				Existing Conditions											
			02.40			**Demolition**											
				02.01.01.0001		Demo Existing Bridge											
					02.01.01.00	General Site Demolition											
						Bridge demolition,	2,125.00 SF	1,144	72,032	-	-	58,461	-	61.41 /SF	130,493	137.86 /SF	292,954
						02.01.01.00 General Site Demolition	*1.00* LS	1,144	72,032			58,461		130,493.16 /LS	130,493	292,953.53 /LS	292,954
						02.01.01.0001 Demo Existing Bridge	2,125.00 SF	1,144	72,032			58,461		61.41 /SF	130,493	137.86 /SF	292,954
						02.40 Demolition	***1.00* LS**	1,144	72,032			58,461		**130,493.16 /LS**	130,493	**292,953.53 /LS**	292,954
						02.0 Existing Conditions	*1.00* LS	1,144	72,032			58,461		130,493.16 /LS	130,493	292,953.53 /LS	292,954
						01.3 Demo Godsey Bridge	*1.00* LS	1,144	72,032			58,461		130,493.16 /LS	130,493	292,953.53 /LS	292,954
	02.3					New Godsey Rd. Bridge											
		03.0				Concrete Work											
			03.10			**Cast-In-Place Concrete Work**											
				03.00.99.0002		New Monmouth Cutoff and Holman Bridge											
					03.00.99.00	Concrete, Other											
						Division 03 Allowance New Bridge	3,300.00 SF		-	-	3,135,000	-		950.00 /SF	3,135,000	2,132.72 /SF	7,037,988
						03.00.99.00 Concrete, Other	3,300.00 SF				3,135,000			950.00 /SF	3,135,000	2,132.72 /SF	7,037,988
						03.00.99.0002 New Monmouth Cutoff and Holman Bridge	3,300.00 SF				3,135,000			950.00 /SF	3,135,000	2,132.72 /SF	7,037,988
						03.10 Cast-In-Place Concrete Work	***1.00* LS**				3,135,000			**3,135,000.00 /LS**	3,135,000	**7,037,987.86 /LS**	7,037,988
						03.0 Concrete Work	*1.00* LS				3,135,000			3,135,000.00 /LS	3,135,000	7,037,987.86 /LS	7,037,988
		31.0				Earthwork											
			31.20			**Earthworks, Site**											
				31.20.07.1012		Excavation for Channel											
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Dewatering Minor, Generator and Pumps, Mob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,367.47 /ea	6,735
						Dewatering Minor, Set-up Generator and Install Pumps	4.00 ea	32	2,008	-	-	535	-	635.82 /ea	2,543	1,427.39 /ea	5,710
						Dewatering Minor, Sump Rock, delivered	10.00 cy		-	200	-	-	-	20.00 /cy	200	44.90 /cy	449
						Dewatering Minor, Large Generator and 2 Pumps, Rental, Monthly	12.00 mo		-	-	-	334,666	-	27,888.80 /mo	334,666	62,609.57 /mo	751,315
						Dewatering Minor, Generator and Pumps, Operation - Labor to maintain / check pumps/ fuel and lube	12.00 mo	6,336	370,880	-	-	35,112	-	33,832.66 /mo	405,992	75,953.37 /mo	911,440
						Dewatering Minor, Remove Generator and Pumps	4.00 ea	32	2,008	-	-	402	-	602.57 /ea	2,410	1,352.75 /ea	5,411
						Dewatering Minor, Generator and Pumps, Demob	2.00 ea	16		-	3,000	-	-	1,500.00 /ea	3,000	3,367.46 /ea	6,735
						Shoring, sheet pile, subcontracted	3,300.00 sf	429		-	132,000	-	-	40.00 /sf	132,000	89.80 /sf	296,336
						Structural Excavation, Excavator and Trucks, Medium Crew, 15' depth	2,667.00 CY	152	10,110	-	-	14,070	-	9.07 /CY	24,180	20.35 /CY	54,284
						Grade for slabs / Scarify and Recompact, Dozer and Traxcavator or Loader, Small Crew	367.00 sy	17	1,191	-	-	1,217	-	6.56 /sy	2,408	14.73 /sy	5,406
						Structural Backfill, Dozer and Traxcavator or Loader, Small Crew	1,506.00 cy	105	7,333	-	-	7,488	-	9.84 /cy	14,821	22.09 /cy	33,274

BID FORM SUMMARY

Project type: | Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Water Detention Pond Rev #1 5-22-23 | Estimator: John DeWolf
Job Size: | Project Number: D3540100 | Rev/Date: Rev #1 5-22-23
Duration: | Design Stage: 2% | Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Load Excess for Hauling, Rubber Tire Loader, Cat 950	1,161.00 cy	6	438	-	-	840	-	1.10 /cy	1,278	2.47 /cy	2,869
						Haul / Remove Excess, 17 yd capacity, 20 miles RT	1,161.00 cy	61	4,154	-	-	4,995	-	7.88 /cy	9,148	17.69 /cy	20,537
						Dump Charges for For Excess, 17 yd tandem, per cy	1,161.00 cy		-	17,415	-	-	17,415	30.00 /cy	34,830	67.35 /cy	78,192
						Over excavate and replace with suitable, Excavators and Trucks, Small Crew	244.00 cy	11	768	-	-	983	-	7.18 /cy	1,752	16.12 /cy	3,932
						Import Aggregate Base (for overexcavated area) - under slab, Dozer and Traxcavator or Loader, Small Crew	495.00 tn	46	3,214	-	-	3,282	-	13.12 /tn	6,495	29.46 /tn	14,582
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	2,667.00 CY	7,260	402,103	17,615	138,000	403,590	17,415	366.98 /CY	978,723	823.85 /CY	2,197,207
						31.20.07.1012 Excavation for Channel	2,667.00 CY	7,260	402,103	17,615	138,000	403,590	17,415	366.98 /CY	978,723	823.85 /CY	2,197,207
				31.20.08.1013		Import Fill											
					31.20.09.00	Earthworks, Sitework, Site Import											
						Rough Site Grading, Small Crew	327.00 sy	6	390	-	-	409	-	2.44 /sy	799	5.48 /sy	1,793
						Import Site Fill - Small Crew, per cy	184.00 CY	11	720	5,152	-	573	-	35.03 /CY	6,445	78.63 /CY	14,469
						31.20.09.00 Earthworks, Sitework, Site Import	184.00 CY	17	1,110	5,152		982		39.37 /CY	7,244	88.38 /CY	16,262
						31.20.08.1013 Import Fill	184.00 CY	17	1,110	5,152		982		39.37 /CY	7,244	88.38 /CY	16,262
						31.20 Earthworks, Site	2,851.00 CY	7,277	403,213	22,767	138,000	404,572	17,415	345.83 /CY	985,967	776.38 /CY	2,213,469
						31.0 Earthwork	*1.00* LS	7,277	403,213	22,767	138,000	404,572	17,415	985,967.01 /LS	985,967	2,213,468.54 /LS	2,213,469
		32.0				Exterior Improvements											
			32.12			Paving											
				32.40.02.1014		Paving											
					32.40.02.00	Site Improvements, Paving, Bituminous Asphalt											
						Fog seal, seal coating, coal tar pitch emulsion, 2 coat, under 1000 S.Y.	220.00 SY	5	298	440	-	-	-	3.35 /SY	738	7.53 /SY	1,656
						Fog seal, sealcoating, prepare and clean surface for sealcoating	220.00 sy	1	37	-	-	9	-	0.21 /sy	46	0.47 /sy	104
						Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 9" deep	326.67 sy	2	152	2,597	-	164	-	8.92 /sy	2,913	20.02 /sy	6,539
						Plant-mix asphalt paving, for highways and large paved areas, pavement replacement over trench, 6" thick, no hauling included	326.67 sy	166	11,104	13,067	-	1,030	-	77.14 /sy	25,200	173.18 /sy	56,574
						Painted pavement markings, thermoplastic, white or yellow, 4" wide, less than 6000 L.F.	220.00 lf	1	35	202	-	23	-	1.19 /lf	261	2.66 /lf	586
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	220.00 SY	175	11,625	16,306		1,226		132.53 /SY	29,157	297.54 /SY	65,458
						32.40.02.1014 Paving	220.00 SY	175	11,625	16,306		1,226		132.53 /SY	29,157	297.54 /SY	65,458
						32.12 Paving	220.00 SY	175	11,625	16,306		1,226		132.53 /SY	29,157	297.54 /SY	65,458
						32.0 Exterior Improvements	*1.00* LS	175	11,625	16,306		1,226		29,157.47 /LS	29,157	65,457.70 /LS	65,458
						02.3 New Godsey Rd. Bridge	*1.00* LS	7,452	414,839	39,073	3,273,000	405,798	17,415	4,150,124.48 /LS	4,150,124	9,316,914.10 /LS	9,316,914
	03.3					Channel Earthwork											
		31.0				Earthwork											
			31.19			Dewatering and Bypass Pumping											
				31.19.06.0003		Bypass Pumping											
					31.19.06.00	Site Preparation, Bypass Pumping, 12" to 24" Pipe											
						Generator, Weekly	52.00 wk		-	26,000	-	78,000	-	2,000.00 /wk	104,000	4,489.94 /wk	233,477
						Bypass Pumping, Pumps and Piping, Mob	3.00 ea	24	1,988	-	4,500	1,054	-	2,514.04 /ea	7,542	5,643.96 /ea	16,932
						Bypass Pumping, Set-up Pumps	3.00 ea	48	3,977	1,500	-	1,054	-	2,176.86 /ea	6,531	4,886.98 /ea	14,661
						Bypass Pumping, Install Suction Piping	3.00 ea	24	1,988	450	-	527	-	988.43 /ea	2,965	2,219.00 /ea	6,657
						Bypass Pumping, System Operation	52.00 WK	2,080	158,226	208,000	-	260,000	-	12,042.80 /WK	626,226	27,035.75 /WK	1,405,859
						31.19.06.00 Site Preparation, Bypass Pumping, 12" to 24" Pipe	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,261.27 /WK	1,677,586
						31.19.06.0003 Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,261.27 /WK	1,677,586
						31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,261.27 /WK	1,677,586
			31.20			Earthworks, Site											
				31.20.07.1015		Channel Excavation											
					31.20.07.10	Earthworks, Sitework, Excavating Bulk Measure											
						Clearing, heavy overgrowth of weeds and shrubs	3.25 acre	39	2,611	-	-	2,503	-	1,573.57 /acre	5,114	3,532.62 /acre	11,481
						Clearing, Tree Removal, 6" - 12", Acre	3.25 acre	520		-	16,250	-	-	5,000.00 /acre	16,250	11,224.86 /acre	36,481
						Strip and Haul Topsoil, Excavator, Medium Crew	2,620.00 cy	120	7,946	-	-	11,047	39,300	22.25 /cy	58,293	49.95 /cy	130,866
						Survey: Pre-Excavation	1.00 ls	40		-	7,500	-	-	7,500.00 /ls	7,500	16,837.30 /ls	16,837
						Mass Excavation, Cut To Stockpile, Excavator, Medium Crew	18,867.00 CY	862	57,217	-	-	79,552	-	7.25 /CY	136,769	16.27 /CY	307,043
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 950	18,867.00 cy	94	7,111	-	-	13,655	-	1.10 /cy	20,766	2.47 /cy	46,619
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	18,867.00 cy	991	67,497	-	-	81,166	-	7.88 /cy	148,663	17.69 /cy	333,744
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	18,867.00 cy		-	0	-	-	283,005	15.00 /cy	283,005	33.67 /cy	635,338
						31.20.07.10 Earthworks, Sitework, Excavating Bulk Measure	18,867.00 CY	2,667	142,382		23,750	187,923	322,305	35.85 /CY	676,360	80.48 /CY	1,518,409
						31.20.07.1015 Channel Excavation	18,867.00 CY	2,667	142,382		23,750	187,923	322,305	35.85 /CY	676,360	80.48 /CY	1,518,409
						31.20 Earthworks, Site	18,867.00 CY	2,667	142,382		23,750	187,923	322,305	35.85 /CY	676,360	80.48 /CY	1,518,409
			31.30			Site Specialties											
				31.30.01.0006		Cofferdam											
					31.30.01.00	Site Specialties, Port-A-Dams											
						Porta-dam, mob	2.00 EA	48		-	30,000	-	-	15,000.00 /EA	30,000	33,674.58 /EA	67,349
						Porta-dam, installation	2.00 ea	192	15,494	1,000	-	8,744	-	12,619.41 /ea	25,239	28,330.22 /ea	56,660

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					31.30.01.00	Site Specialties, Port-A-Dams											
						Porta-dam, rental	12.00 mo		-	-	180,000	-	-	15,000.00 /mo	180,000	33,674.58 /mo	404,095
						Porta-dam, dewatering operation - fuel cost	12.00 mo		-	108,000	-	-	-	9,000.00 /mo	108,000	20,204.75 /mo	242,457
						Porta-dam, removal	2.00 ea	192	15,494	-	-	8,744	-	12,119.41 /ea	24,239	27,207.72 /ea	54,415
						Porta-dam, demob	2.00 ea	48		-	30,000	-	-	15,000.00 /ea	30,000	33,674.58 /ea	67,349
						31.30.01.00 Site Specialties, Port-A-Dams	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	446,163.10 /EA	892,326
						31.30.01.0006 Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	446,163.10 /EA	892,326
						31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	892,326.21 /LS	892,326
						31.0 Earthwork	1.00 LS	5,323	339,550	344,950	268,250	546,046	322,305	1,821,100.98 /LS	1,821,101	4,088,321.09 /LS	4,088,321
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.09.0004		Diversion Piping 12"											
					33.00.09.12	Buried Pipe, HDPE, 12"											
						Pipeline lf per Day	*200.00 lf*			-	-	-	-	/lf		/lf	
						25 tn Rough Terrain (per day)	2.00 day	16	1,266	-	-	2,363	-	1,814.59 /day	3,629	4,073.69 /day	8,147
						12" HDPE pipe, excav/backfill not included	750.00 LF	180	14,526	11,685	-	8,198	-	45.88 /LF	34,409	103.00 /LF	77,247
						12" HDPE tee	3.00 ea	15	1,204	880	-	680	-	921.39 /ea	2,764	2,068.50 /ea	6,206
						12" HDPE reducer	3.00 ea	11	874	880	-	493	-	749.07 /ea	2,247	1,681.64 /ea	5,045
						12" HDPE cap	1.00 ea	1	107	247	-	61	-	414.42 /ea	414	930.37 /ea	930
						12" HDPE flange	3.00 ea	8	672		-	137	-	269.49 /ea	808	604.99 /ea	1,815
						Field weld fusion joints, Subcontracted (S), 12"	38.00 ea		-	-	4,127	-	-	108.60 /ea	4,127	243.80 /ea	9,265
						12" Bolt & Gasket Kits, CS, 150#	3.00 ea	7	575	60	-	-	-	211.51 /ea	635	474.84 /ea	1,425
						33.00.09.12 Buried Pipe, HDPE, 12"	750.00 LF	239	19,224	13,752	4,127	11,931		65.38 /LF	49,034	146.77 /LF	110,079
						33.00.09.0004 Diversion Piping 12"	750.00 LF	239	19,224	13,752	4,127	11,931		65.38 /LF	49,034	146.77 /LF	110,079
						33.07 Buried Process Pipe, HDPE	750.00 LF	239	19,224	13,752	4,127	11,931		65.38 /LF	49,034	146.77 /LF	110,079
						33.0 Utilities	750.00 LF	239	19,224	13,752	4,127	11,931		65.38 /LF	49,034	146.77 /LF	110,079
						03.3 Channel Earthwork	1.00 LS	5,561	358,774	358,702	272,377	557,977	322,305	1,870,134.65 /LS	1,870,135	4,198,400.33 /LS	4,198,400
	04.3					Fish Screen											
		33.0				Utilities											
			33.07			Buried Process Pipe, HDPE											
				33.00.50.0005		Fish Screen											
					33.00.50.00	Buried Pipe, Other											
						Basket-strainer, flanged, SS screen, 12"	1.00 EA	1	80	1,500	-	-	-	1,579.80 /EA	1,580	3,546.60 /EA	3,547
						33.00.50.00 Buried Pipe, Other	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,546.60 /LF	3,547
						33.00.50.0005 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,546.60 /EA	3,547
						33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,546.60 /LF	3,547
						33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,546.60 /LF	3,547
						04.3 Fish Screen	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,546.60 /LF	3,547
	05.3					Fish Salvage											
		01.0				General Requirements											
			01.01			Construction Operations											
				01.01.06.0007		Fish Salvage											
					01.01.06.01	GC Labor											
						Environmental Manager	0.10 MO	17	1,300	50	-	-	-	13,499.80 /MO	1,350	26,931.60 /MO	2,693
						Environmental Engineer	0.10 MO	17	1,300	50	-	-	-	13,499.80 /MO	1,350	26,931.80 /MO	2,693
						01.01.06.01 GC Labor	0.20 MO	35	2,600	100				13,499.80 /MO	2,700	26,931.70 /MO	5,386
						01.01.06.0007 Fish Salvage	2.00 DY	35	2,600	100				1,349.98 /DY	2,700	2,693.17 /DY	5,386
						01.01 Construction Operations	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,386.34 /LS	5,386
						01.0 General Requirements	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,386.34 /LS	5,386
						05.3 Fish Salvage	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,386.34 /LS	5,386
	06.3					Bank Stabilization											
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.25.03.0020		Bank Stabilization											
					32.35.03.00	Site Improvements, Landscaping											
						Division 32 Allowance for Large Woody Material	1.00 LS		-	-	25,000	-		25,000.00 /LS	25,000	56,124.31 /LS	56,124
						Planting beds preparation, backfill planting pit, prepared planting mix, skid steer loader	349.00 cy	20	1,279	-	-	224	-	4.31 /cy	1,503	9.67 /cy	3,374
						Planting beds preparation, excavate planting pit,heavy soil or clay, 1/2 C.Y. backhoe	349.00 cy	49	3,246	-	-	998	-	12.16 /cy	4,244	27.30 /cy	9,528
						Planting beds preparation, mix planting soil, skid steer loader, includes loam, manure, peat	349.00 cy	56	3,495	12,390	-	612	-	47.27 /cy	16,497	106.12 /cy	37,035
						Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed with wood fiber mulch added	5,032.00 SY	44	2,939	10,668	-	2,782	-	3.26 /SY	16,389	7.31 /SY	36,793
						Shrubs, average cost, to 1 gallon	600.00 ea	54	3,455	2,160	-	1,216	-	11.39 /ea	6,831	25.56 /ea	15,336
						32.35.03.00 Site Improvements, Landscaping	5,032.00 SY	223	14,414	25,217	25,000	5,833		14.00 /SY	70,464	31.44 /SY	158,190
						32.25.03.0020 Bank Stabilization	5,032.00 SY	223	14,414	25,217	25,000	5,833		14.00 /SY	70,464	31.44 /SY	158,190

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Water Detention Pond Rev #1 5-22-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
						32.50 Site, Improvements	1.00 LS	223	14,414	25,217	25,000	5,833		70,463.98 /LS	70,464	158,189.68 /LS	158,190
						32.0 Exterior Improvements	1.00 LS	223	14,414	25,217	25,000	5,833		70,463.98 /LS	70,464	158,189.68 /LS	158,190
						06.3 Bank Stabilization	1.00 LS	223	14,414	25,217	25,000	5,833		70,463.98 /LS	70,464	158,189.68 /LS	158,190
	07.3					**Traffic Control and SWPPP**											
		01.0				**General Requirements**											
			01.01			**Construction Operations**											
				01.01.06.0008		**Traffic Control and SWPPP**											
					01.01.06.02	**GC Temporary Facilities & Services**											
						Division 01 Allowance Traffic Control	180.00 DY		-	-	270,000	-		1,500.00 /DY	270,000	2,992.46 /DY	538,642
						Division 01 Allowance SWPPP	1.00 ls		-	-	1,500	-		1,500.00 /ls	1,500	2,992.46 /ls	2,992
						01.01.06.02 GC Temporary Facilities & Services	180.00 DY				271,500			1,508.33 /DY	271,500	3,009.08 /DY	541,635
						01.01.06.0008 Traffic Control and SWPPP	180.00 DY				271,500			1,508.33 /DY	271,500	3,009.08 /DY	541,635
						01.01 Construction Operations	1.00 LS				271,500			271,500.00 /LS	271,500	541,634.95 /LS	541,635
						01.0 General Requirements	1.00 LS				271,500			271,500.00 /LS	271,500	541,634.95 /LS	541,635
						07.3 Traffic Control and SWPPP	1.00 LS				271,500			271,500.00 /LS	271,500	541,634.95 /LS	541,635
	08.3					**12" Outfall Line**											
		33.0				**Utilities**											
			33.05			**Buried Process Pipe, PVC/CPVC**											
				33.00.07.1018		**12" Outfall Line**											
					33.00.07.12	**Buried Pipe, PVC, 12"**											
						Traffic Control, Labor per Day	1.00 day	16	933	-	-	-	-	933.15 /day	933	2,094.88 /day	2,095
						Trench Box, 8' x 24' x 10'	0.25 mo		-	-	-	575	-	2,300.00 /mo	575	5,163.44 /mo	1,291
						Dedicated Fire / Safety Monitor	4.00 hr	4	233	-	-	-	-	58.32 /hr	233	130.93 /hr	524
						Excav. pipe trench, w/ trench box, for 4" - 24" pipe	61.91 CY	16	1,099	-	-	755	-	29.95 /CY	1,854	67.25 /CY	4,163
						Backfill / Compact @ pipe zone, for 4" thru 24" pipe	11.79 cy	28	1,837	-	-	1,258	-	262.50 /cy	3,095	589.30 /cy	6,948
						Backfill / Compact above pipe zone, for 4" thru 24" pipe	52.01 cy	16	1,206	-	-	1,437	-	50.82 /cy	2,643	114.10 /cy	5,934
						Pipe zone material	11.79 cy		-	330	-	-	-	28.00 /cy	330	62.86 /cy	741
						Pipe bedding material	3.37 cy		-	94	-	-	-	28.00 /cy	94	62.86 /cy	212
						Imported backfill material	52.01 cy		-	1,456	-	-	-	28.00 /cy	1,456	62.86 /cy	3,269
						Haul spoils, offsite, 10 - 20 miles	118.86 cy		-	-	1,783	-	-	15.00 /cy	1,783	33.67 /cy	4,003
						Dump fees, trench spoils	134.00 cy		-	-	-	-	2,010	15.00 /cy	2,010	33.67 /cy	4,512
						12" pipe, PVC, SDR 35, B & S, excav/bkfill not included	50.00 LF	48	3,874	281	-	2,186	-	126.80 /LF	6,340	284.67 /LF	14,234
						Pipe Marking, Detection Tape	50.00 lf	1	41	7	-	-	-	0.94 /lf	47	2.11 /lf	106
						Pipe Marking, Copper Wire	50.00 lf	1	41	11	-	-	-	1.03 /lf	52	2.31 /lf	116
						33.00.07.12 Buried Pipe, PVC, 12"	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	962.94 /LF	48,147
						33.00.07.1018 12" Outfall Line	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	962.94 /LF	48,147
						33.05 Buried Process Pipe, PVC/CPVC	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	962.94 /LF	48,147
						33.0 Utilities	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	962.94 /LF	48,147
						08.3 12" Outfall Line	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	962.94 /LF	48,147
						02.0 Godsey Rd. Bridge	1.00 LS	14,544	872,002	426,771	3,843,660	1,034,280	341,730	6,518,442.57 /LS	6,518,443	14,565,172.42 /LS	14,565,172
03.0						**Driveway Culvert**											
	01.4					**New 36" RCP Culvert**											
		02.0				**Existing Conditions**											
			02.40			**Demolition**											
				02.01.01.1002		**Remove 24" Culvert**											
					02.01.01.00	**General Site Demolition**											
						Storm Sewer Pipe Demolition and Loading, 6' Deep	40.00 lf	7	526	-	-	362	-	22.19 /lf	888	49.82 /lf	1,993
						Excav. pipe trench, w/ trench box, for 4" - 24" pipe	40.55 CY	1	80	-	-	110	-	4.68 /CY	190	10.51 /CY	426
						Backfill / Compact @ pipe zone, for 4" thru 24" pipe	15.91 cy	2	137	-	-	94	-	14.57 /cy	232	32.71 /cy	520
						Backfill / Compact above pipe zone, for 4" thru 24" pipe	20.88 cy	1	45	-	-	36	-	3.88 /cy	81	8.72 /cy	182
						Haul spoils, offsite, 10 - 20 miles	19.45 cy		-	-	292	-	-	15.00 /cy	292	33.68 /cy	655
						02.01.01.00 General Site Demolition	1.00 LS	11	788		292	603		1,682.07 /LS	1,682	3,776.20 /LS	3,776
						02.01.01.1002 Remove 24" Culvert	40.00 lf	11	788		292	603		42.05 /lf	1,682	94.41 /lf	3,776
						02.40 Demolition	1.00 LS	11	788		292	603		1,682.07 /LS	1,682	3,776.20 /LS	3,776
						02.0 Existing Conditions	1.00 LS	11	788		292	603		1,682.07 /LS	1,682	3,776.20 /LS	3,776
		33.0				**Utilities**											
			33.08			**Buried Process Pipe, RCP**											
				33.00.10.1001		**New 36" RCP Culvert**											
					33.00.10.36	**Buried Pipe, RCP, 36"**											
						Traffic Control, Labor per Day	1.00 day	16	926	-	-	-	-	925.65 /day	926	2,078.06 /day	2,078
						25 tn Rough Terrain (per day)	1.00 day	8	620	-	-	1,527	-	2,147.19 /day	2,147	4,820.37 /day	4,820
						Excav. pipe trench, w/ trench box, for > 30" pipe	50.30 CY	1	75	-	-	227	-	5.99 /CY	302	13.46 /CY	677
						Backfill / Compact @ pipe zone, for 30" & larger pipe	23.12 cy	3	191	-	-	224	-	17.94 /cy	415	40.28 /cy	931
						Backfill / Compact above pipe zone, for 30" & larger pipe	17.49 cy	1	39	-	-	36	-	4.30 /cy	75	9.65 /cy	169
						Pipe zone material	23.12 cy		-	647	-	-	-	28.00 /cy	647	62.86 /cy	1,453

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					33.00.10.36	Buried Pipe, RCP, 36"											
						Pipe bedding material	4.39 cy		-	123	-	-	-	28.00 /cy	123	62.85 /cy	276
						Imported backfill material	17.49 cy		-	490	-	-	-	28.00 /cy	490	62.86 /cy	1,099
						Haul spoils, offsite, 10 - 20 miles	45.00 cy		-	-	675	-	-	15.00 /cy	675	33.67 /cy	1,515
						Dump fees, trench spoils	45.00 cy		-	-	-	-	675	15.00 /cy	675	33.67 /cy	1,515
						36" pipe, RCP, Class III B & S, excav/bkfill not included, 0-8'	40.00 LF	6	471	3,318	-	344	-	103.32 /LF	4,133	231.95 /LF	9,278
						36" flared end, RCP, B & S	2.00 ea	11	824	2,920	-	688	-	2,215.89 /ea	4,432	4,974.60 /ea	9,949
						Pipe Marking, Detection Tape	40.00 lf	0	32	5	-	-	-	0.92 /lf	37	2.07 /lf	83
						Pipe Marking, Copper Wire	40.00 lf	0	32	9	-	-	-	1.01 /lf	41	2.28 /lf	91
						33.00.10.36 Buried Pipe, RCP, 36"	40.00 LF	46	3,208	7,512	675	3,046	675	377.91 /LF	15,116	848.40 /LF	33,936
						33.00.10.1001 New 36" RCP Culvert	40.00 LF	46	3,208	7,512	675	3,046	675	377.91 /LF	15,116	848.40 /LF	33,936
						33.08 Buried Process Pipe, RCP	40.00 LF	46	3,208	7,512	675	3,046	675	377.91 /LF	15,116	848.40 /LF	33,936
						33.0 Utilities	40.00 LF	46	3,208	7,512	675	3,046	675	377.91 /LF	15,116	848.40 /LF	33,936
						01.4 New 36" RCP Culvert	40.00 LF	57	3,996	7,512	967	3,649	675	419.96 /LF	16,798	942.80 /LF	37,712
	02.4					Paving at Culvert											
		32.0				Exterior Improvements											
			32.12			Paving											
				32.40.02.1003		Paving at Culvert											
					32.40.02.00	Site Improvements, Paving, Bituminous Asphalt											
						Base course drainage layers, aggregate base course for roadways and large paved areas, bank run gravel, spread and compacted, 9" deep	44.44 SY	0	20	380	-	22	-	9.51 /SY	422	21.34 /SY	948
						Plant-mix asphalt paving, for highways and large paved areas, pavement replacement over trench, 6" thick, no hauling included	44.44 sy	23	1,492	1,778	-	119	-	76.24 /sy	3,388	171.15 /sy	7,606
						32.40.02.00 Site Improvements, Paving, Bituminous Asphalt	44.44 SY	23	1,512	2,158		141		85.74 /SY	3,811	192.49 /SY	8,555
						32.40.02.1003 Paving at Culvert	44.44 SY	23	1,512	2,158		141		85.74 /SY	3,811	192.49 /SY	8,555
						32.12 Paving	44.44 SY	23	1,512	2,158		141		85.74 /SY	3,811	192.49 /SY	8,555
						32.0 Exterior Improvements	1.00 LS	23	1,512	2,158		141		3,810.66 /LS	3,811	8,554.84 /LS	8,555
						02.4 Paving at Culvert	44.44 SY	23	1,512	2,158		141		85.74 /SY	3,811	192.49 /SY	8,555
						03.0 Driveway Culvert	1.00 LS	80	5,508	9,670	967	3,790	675	20,609.13 /LS	20,609	46,266.93 /LS	46,267
04.0						Detention Pond											
	01.5					Detention Pond											
		31.0				Earthwork											
			31.20			Earthworks, Site											
				31.20.07.1004		Earthwork at Pond											
					31.20.07.00	Earthworks, Sitework, Cut/Fill											
						Temporary Fencing, Chain Link	3,000.00 lf	600		-	36,000	-	-	12.00 /lf	36,000	26.94 /lf	80,819
						Clearing, heavy overgrowth of weeds and shrubs	9.00 acre	108	7,153	-	-	7,449	-	1,622.44 /acre	14,602	3,642.33 /acre	32,781
						Clearing, Tree Removal, 6" - 12", Acre	9.00 acre	1,440		-	45,000	-	-	5,000.00 /acre	45,000	11,224.86 /acre	101,024
						Strip and Haul Topsoil, Scraper, Large Crew	7,181.00 cy	103	7,252	-	-	42,990	107,715	22.00 /cy	157,957	49.38 /cy	354,609
						Rough Site Grading, Large Crew	43,086.00 sy	574	38,082	-	-	72,876	-	2.58 /sy	110,957	5.78 /sy	249,096
						Survey: Pre-Excavation	1.00 LS	40		-	7,500	-	-	7,500.00 /LS	7,500	16,837.28 /LS	16,837
						Mass Excavation, Cut To Stockpile, Scraper, Large Crew	46,588.00 CY	669	47,048	-	-	278,906	-	7.00 /CY	325,954	15.71 /CY	731,758
						Import Site Fill - Large Crew, per cy	7,725.00 cy	300	19,907	216,300	-	23,188	-	33.58 /cy	259,395	75.38 /cy	582,334
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 966	46,588.00 cy	155	11,554	-	-	39,148	-	1.09 /cy	50,702	2.44 /cy	113,825
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	46,588.00 cy	2,447	162,554	-	-	211,136	-	8.02 /cy	373,690	18.01 /cy	838,924
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	46,588.00 cy		-	0	-	-	698,820	15.00 /cy	698,820	33.67 /cy	1,568,831
						31.20.07.00 Earthworks, Sitework, Cut/Fill	46,588.00 CY	6,437	293,550	216,300	88,500	675,693	806,535	44.66 /CY	2,080,578	100.26 /CY	4,670,839
						31.20.07.1004 Earthwork at Pond	46,588.00 CY	6,437	293,550	216,300	88,500	675,693	806,535	44.66 /CY	2,080,578	100.26 /CY	4,670,839
						31.20 Earthworks, Site	46,588.00 CY	6,437	293,550	216,300	88,500	675,693	806,535	44.66 /CY	2,080,578	100.26 /CY	4,670,839
						31.0 Earthwork	1.00 LS	6,437	293,550	216,300	88,500	675,693	806,535	2,080,577.75 /LS	2,080,578	4,670,839.20 /LS	4,670,839
						01.5 Detention Pond	1.00 LS	6,437	293,550	216,300	88,500	675,693	806,535	2,080,577.75 /LS	2,080,578	4,670,839.20 /LS	4,670,839
						04.0 Detention Pond	1.00 LS	6,437	293,550	216,300	88,500	675,693	806,535	2,080,577.75 /LS	2,080,578	4,670,839.20 /LS	4,670,839
05.0						Inlet Coveyance Channel											
	01.6					Channel Earthwork											
		03.0				Concrete Work											
			03.10			Cast-In-Place Concrete Work											
				03.00.99.1006		Allowance for Concrete Head Wall											
					03.00.99.00	Concrete, Other											
						Division 03 Allowance Concrete Head Wall	1.00 LS		-	-	100,000	-		100,000.00 /LS	100,000	224,497.25 /LS	224,497
						03.00.99.00 Concrete, Other	1.00 SF				100,000			100,000.00 /SF	100,000	224,497.25 /SF	224,497
						03.00.99.1006 Allowance for Concrete Head Wall	1.00 LS				100,000			100,000.00 /LS	100,000	224,497.25 /LS	224,497
						03.10 Cast-In-Place Concrete Work	1.00 LS				100,000			100,000.00 /LS	100,000	224,497.25 /LS	224,497
						03.0 Concrete Work	1.00 LS				100,000			100,000.00 /LS	100,000	224,497.25 /LS	224,497
		31.0				Earthwork											
			31.20			Earthworks, Site											

BID FORM SUMMARY

Project type: | Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Water Detention Pond Rev #1 5-22-23 | Estimator: John DeWolf

Job Size: | Project Number: D3540100 | Rev/Date: Rev #1 5-22-23

Duration: | Design Stage: 2% | Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
				31.20.07.1005		Earthwork at Channel											
					31.20.07.00	Earthworks, Sitework, Cut/Fill											
						Clearing, heavy overgrowth of weeds and shrubs	0.50 acre	6	397	-	-	414	-	1,622.44 /acre	811	3,642.30 /acre	1,821
						Clearing, Tree Removal, 6" - 12", Acre	0.50 acre	80		-	2,500	-	-	5,000.00 /acre	2,500	11,224.86 /acre	5,612
						Strip and Haul Topsoil, Excavator, Small Crew	404.00 cy	24	1,607	-	-	1,210	6,060	21.97 /cy	8,877	49.33 /cy	19,928
						Rough Site Grading, Small Crew	2,445.00 sy	43	2,881	-	-	3,105	-	2.45 /sy	5,986	5.50 /sy	13,440
						Survey: Pre-Excavation	1.00 ls	40		-	7,500	-	-	7,500.00 /ls	7,500	16,837.30 /ls	16,837
						Mass Excavation, Cut To Stockpile, Excavator, Medium Crew	4,500.00 CY	206	13,431	-	-	20,716	-	7.59 /CY	34,147	17.04 /CY	76,659
						Load Excess Spoils for Off-Site Hauling, Rubber Tire Loader, Cat 950	4,500.00 cy	23	1,674	-	-	3,130	-	1.07 /cy	4,804	2.40 /cy	10,785
						Haul Excess Spoils Off-Site, 17 yd capacity, 20 miles RT	4,500.00 cy	236	15,701	-	-	20,394	-	8.02 /cy	36,095	18.01 /cy	81,033
						Excess Spoils Dump Charges for 17 yd end dumps, per cy	4,500.00 cy		-	0	-	-	67,500	15.00 /cy	67,500	33.67 /cy	151,536
						Fine grading, loam or topsoil fine grade for large area, 15,000 S.Y. or more	43,086.00 sy	414	27,531	-	-	20,975	-	1.13 /sy	48,506	2.53 /sy	108,894
						31.20.07.00 Earthworks, Sitework, Cut/Fill	4,500.00 CY	1,072	63,223		10,000	69,943	73,560	48.16 /CY	216,726	108.12 /CY	486,545
						31.20.07.1005 Earthwork at Channel	1.00 LS	1,072	63,223		10,000	69,943	73,560	216,726.38 /LS	216,726	486,544.68 /LS	486,545
						31.20 Earthworks, Site	4,500.00 CY	1,072	63,223		10,000	69,943	73,560	48.16 /CY	216,726	108.12 /CY	486,545
			31.30			Site Specialties											
				31.30.09.1007		Rock Armor Bedding											
					31.30.09.00	Site Specialties, Rip Rap											
						Rip-rap, machine-placed, Type M, 12"	281.00 CY	47	3,026	5,620	-	2,081	-	38.17 /CY	10,727	85.70 /CY	24,082
						Filter Fabric under 12" Rip-Rap	843.00 sy	2		1,265	-		-	1.50 /sy	1,265	3.37 /sy	2,839
						Fill, sand subbase, under 12" rip-rap, small crew	569.00 tn	142	9,190	6,828	-	6,322	-	39.26 /tn	22,339	88.14 /tn	50,151
						Add cost to grout 12" Rip-rap	281.00 cy		-	23,885	-	-	-	85.00 /cy	23,885	190.82 /cy	53,621
						31.30.09.00 Site Specialties, Rip Rap	281.00 CY	191	12,215	37,598		8,403		207.17 /CY	58,216	465.10 /CY	130,693
						31.30.09.1007 Rock Armor Bedding	281.00 CY	191	12,215	37,598		8,403		207.17 /CY	58,216	465.10 /CY	130,693
						31.30 Site Specialties	1.00 LS	191	12,215	37,598		8,403		58,215.84 /LS	58,216	130,692.94 /LS	130,693
						31.0 Earthwork	1.00 LS	1,263	75,438	37,598	10,000	78,347	73,560	274,942.22 /LS	274,942	617,237.62 /LS	617,238
		32.0				Exterior Improvements											
			32.50			Site, Improvements											
				32.35.03.1008		Hydroseed Basin											
					32.35.03.00	Site Improvements, Landscaping											
						Seeding, mechanical seeding hydro or air seeding for large areas, includes lime, fertilizer and seed with wood fiber mulch added	43,086.00 SY	116	7,695	94,789	-	3,142	-	2.45 /SY	105,626	5.50 /SY	237,127
						32.35.03.00 Site Improvements, Landscaping	43,086.00 SY	116	7,695	94,789		3,142		2.45 /SY	105,626	5.50 /SY	237,127
						32.35.03.1008 Hydroseed Basin	43,086.00 SY	116	7,695	94,789		3,142		2.45 /SY	105,626	5.50 /SY	237,127
						32.50 Site, Improvements	1.00 LS	116	7,695	94,789		3,142		105,625.99 /LS	105,626	237,127.43 /LS	237,127
						32.0 Exterior Improvements	1.00 LS	116	7,695	94,789		3,142		105,625.99 /LS	105,626	237,127.43 /LS	237,127
						01.6 Channel Earthwork	1.00 LS	1,379	83,133	132,387	110,000	81,489	73,560	480,568.21 /LS	480,568	1,078,862.30 /LS	1,078,862
						05.0 Inlet Coveyance Channel	**1.00 LS**	1,379	83,133	132,387	110,000	81,489	73,560	**480,568.21 /LS**	480,568	**1,078,862.30 /LS**	1,078,862
06.0						**Outlet Conveyance Channel**											
	01.7					Overflow Wier											
		03.0				Concrete Work											
			03.10			Cast-In-Place Concrete Work											
				03.00.99.1010		Overflow Wier Allowance											
					03.00.99.00	Concrete, Other											
						Division 03 Allowance Overflow Wier Allowance	1.00 LS		-	-	100,000	-		100,000.00 /LS	100,000	224,497.20 /LS	224,497
						03.00.99.00 Concrete, Other	1.00 SF				100,000			100,000.00 /SF	100,000	224,497.20 /SF	224,497
						03.00.99.1010 Overflow Wier Allowance	1.00 LS				100,000			100,000.00 /LS	100,000	224,497.20 /LS	224,497
				03.00.99.1012		Head and Wing Wall Allowance											
					03.00.99.00	Concrete, Other											
						Head and Wall Allowacne	1.00 ls		-	-	100,000	-		100,000.00 /ls	100,000	224,497.23 /ls	224,497
						03.00.99.00 Concrete, Other	1.00 SF				100,000			100,000.00 /SF	100,000	224,497.23 /SF	224,497
						03.00.99.1012 Head and Wing Wall Allowance	1.00 LS				100,000			100,000.00 /LS	100,000	224,497.23 /LS	224,497
						03.10 Cast-In-Place Concrete Work	1.00 LS				200,000			200,000.00 /LS	200,000	448,994.43 /LS	448,994
						03.0 Concrete Work	1.00 LS				200,000			200,000.00 /LS	200,000	448,994.43 /LS	448,994
		33.0				Utilities											
			33.08			Buried Process Pipe, RCP											
				33.00.10.1011		24" RCP Outlet Piping											
					33.00.10.24	Buried Pipe, RCP, 24"											
						Pipeline lf per Day	*25.00 lf*			-	-	-	-	/lf		/lf	
						Trench Box, 8' x 24' x 10'	0.25 mo		-	-	-	575	-	2,300.00 /mo	575	5,163.44 /mo	1,291
						Dedicated Fire / Safety Monitor	8.00 hr	8	463	-	-	-	-	57.85 /hr	463	129.88 /hr	1,039
						25 tn Rough Terrain (per day)	1.00 day	8	620	-	-	1,527	-	2,147.19 /day	2,147	4,820.38 /day	4,820
						Excav. pipe trench, w/ trench box, for 4" - 24" pipe	60.01 CY	16	1,082	-	-	750	-	30.53 /CY	1,832	68.54 /CY	4,113
						Backfill / Compact @ pipe zone, for 4" thru 24" pipe	9.94 cy	28	1,818	-	-	1,249	-	308.56 /cy	3,067	692.71 /cy	6,886
						Backfill / Compact above pipe zone, for 4" thru 24" pipe	51.18 cy	16	1,190	-	-	1,428	-	51.16 /cy	2,618	114.85 /cy	5,878

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Water Detention Pond Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Unit Price	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					33.00.10.24	**Buried Pipe, RCP, 24"**											
						Pipe zone material	9.94 cy		-	278	-	-	-	28.00 /cy	278	62.86 /cy	625
						Pipe bedding material	2.22 cy		-	62	-	-	-	28.00 /cy	62	62.86 /cy	140
						Imported backfill material	51.18 cy		-	1,433	-	-	-	28.00 /cy	1,433	62.86 /cy	3,217
						Haul spoils, offsite, 10 - 20 miles	63.50 cy		-	-	953	-	-	15.00 /cy	953	33.67 /cy	2,138
						Dump fees, trench spoils	63.50 cy		-	-	-	-	953	15.00 /cy	953	33.67 /cy	2,138
						24" pipe, RCP, Class V, B & S, excav/bkfill not included	25.00 LF	48	3,799	988	-	2,172	-	278.33 /LF	6,958	624.84 /LF	15,621
						24" flared end, RCP, B & S	1.00 ea	3	237	465	-	136	-	838.17 /ea	838	1,881.66 /ea	1,882
						Grout joint, ID or OD, 24"	4.00 ea	3	193	32	-	-	-	56.19 /ea	225	126.15 /ea	505
						Pipe Marking, Detection Tape	25.00 lf	0	20	3	-	-	-	0.92 /lf	23	2.07 /lf	52
						Pipe Marking, Copper Wire	25.00 lf	0	20	6	-	-	-	1.01 /lf	25	2.27 /lf	57
						33.00.10.24 Buried Pipe, RCP, 24"	**25.00 LF**	130	9,443	3,267	953	7,836	953	**898.03 /LF**	22,451	**2,016.05 /LF**	50,401
						33.00.10.1011 24" RCP Outlet Piping	**25.00 LF**	130	9,443	3,267	953	7,836	953	**898.03 /LF**	22,451	**2,016.05 /LF**	50,401
						33.08 Buried Process Pipe, RCP	**25.00 LF**	130	9,443	3,267	953	7,836	953	**898.03 /LF**	22,451	**2,016.05 /LF**	50,401
						33.0 Utilities	**25.00 LF**	130	9,443	3,267	953	7,836	953	**898.03 /LF**	22,451	**2,016.05 /LF**	50,401
		40.0				**Process Pipe**											
			40.50			**Water Control Gates, Sluice Gates**											
				40.13.01.1013		**24" Slide Gate**											
					40.30.01.24	**Sluice Gates, Round, 24" Dia.**											
						24" Diameter Circular Sluice Gate Wall Thimble - FURNISH	1.00 EA		-	813	-	-	-	813.00 /EA	813	1,825.17 /EA	1,825
						24" Diameter Circular Sluice Gate Wall Thimble - Installation	1.00 ea	24	1,580	2,275	-	-	-	3,854.85 /ea	3,855	8,654.03 /ea	8,654
						24" Diameter Circular Sluice Gate - FURNISH	1.00 ea		-	3,900	-	-	-	3,900.00 /ea	3,900	8,755.39 /ea	8,755
						24" Diameter Circular Sluice Gate - Installation	1.00 ea	16	1,053	-	-	-	-	1,053.23 /ea	1,053	2,364.49 /ea	2,364
						Boxout Concrete at Sluice Gate Frame Invert	10.00 lf	2	132	14	-	-	-	14.52 /lf	145	32.59 /lf	326
						Grout Boxout at Sluice Gate Frame Invert	4.00 cf	6	395	144	-	-	-	134.74 /cf	539	302.49 /cf	1,210
						Sluice Gate Anchor Bolts	8.00 ea	2	105	60	-	-	-	20.67 /ea	165	46.39 /ea	371
						Sluice Gate Extension Stem - FURNISH	10.00 lf		-	200	-	-	-	20.00 /lf	200	44.90 /lf	449
						Sluice Gate Extension Stem - Installation	10.00 lf	2	132	-	-	-	-	13.17 /lf	132	29.55 /lf	296
						40.30.01.24 Sluice Gates, Round, 24" Dia.	**1.00 EA**	52	3,397	7,406				**10,802.16 /EA**	10,802	**24,250.56 /EA**	24,251
						40.13.01.1013 24" Slide Gate	**1.00 EA**	52	3,397	7,406				**10,802.16 /EA**	10,802	**24,250.56 /EA**	24,251
						40.50 Water Control Gates, Sluice Gates	**1.00 EA**	52	3,397	7,406				**10,802.16 /EA**	10,802	**24,250.56 /EA**	24,251
						40.0 Process Pipe	***1.00* LS**	52	3,397	7,406				**10,802.16 /LS**	10,802	**24,250.56 /LS**	24,251
						01.7 Overflow Wier	**1.00 LS**	182	12,839	10,672	200,953	7,836	953	**233,252.84 /LS**	233,253	**523,646.13 /LS**	523,646
						06.0 Outlet Conveyance Channel	**1.00 LS**	182	12,839	10,672	200,953	7,836	953	**233,252.84 /LS**	233,253	**523,646.13 /LS**	523,646

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Water Detention Pond Rev #1 5-22-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Estimate Totals

Description	Amount	Totals	Rate	Cost / Unit	% of Total	
Labor	2,391,229		hrs		8.11%	
Material	1,245,376				4.23%	
Subcontract	4,953,176				16.81%	
Equipment	3,043,138		hrs		10.33%	
Other	1,489,548				5.05%	
Subtotal Raw Costs	**13,122,467**	**13,122,467**			**44.53%**	**44.53%**
Material Sales & Use Tax - %						
Construction Equip Tax - %						
Total Taxes		**13,122,467**				**44.53%**
Location Adj. Factor						
Productivity Adjustment						
Subtotal Adj. Factors		**13,122,467**				**44.53%**
Existing Conditions I,OH&P	42,463		25.000 %		0.14%	
Concrete Work I,OH&P	887,805		25.000 %		3.01%	
Masonry Work I,OH&P			25.000 %			
Metals Work I,OH&P			25.000 %			
Architectural (Div 6-12)I,OH&P			25.000 %			
Special Construction I,OH&P			25.000 %			
Conveying Equipment I,OH&P			25.000 %			
Mechanical Work I,OH&P			25.000 %			
Electrical Work I,OH&P			25.000 %			
Site/Civil I,OH&P	2,144,732		25.000 %		7.28%	
Buried Piping I,OH&P	40,479		25.000 %		0.14%	
Tank Construction I,OH&P			25.000 %			
Process Piping I,OH&P	2,701		25.000 %		0.01%	
Instruments & Controls I,OH&P			25.000 %			
Material Handling I,OH&P			25.000 %			
Process Equipment I,OH&P			25.000 %			
Subtotal Subcontractor I,OH&P	**3,118,180**	**16,240,647**			**10.58%**	**55.11%**
Contractor Contingency						
Subtotal Contingency		**16,240,647**				**55.11%**
Total Cost To Prime Contractor		**16,240,647**				**55.11%**
General Conditions	1,624,065		10.000 %		5.51%	
Mobilization/Demobilization	487,219		3.000 %		1.65%	
Subtotal Indirect Costs	**2,111,284**	**18,351,931**			**7.16%**	**62.28%**
Prime Contractor Home OfficeOH	1,835,193		10.000 %		6.23%	
Prime Contractor Profit	2,752,790		15.000 %		9.34%	
Bonds & Insurance	497,796		2.170 %		1.69%	
Subtotal OH&P	**5,085,779**	**23,437,710**			**17.26%**	**79.54%**
Contractor MU on Mech OFCI						
Contractor MU on Elec OFCI						
Total MU on OFCI Equip		**23,437,710**				**79.54%**
Design Contingency	5,859,427		25.000 %		19.88%	
Subtotal Contingency	**5,859,427**	**29,297,137**			**19.88%**	**99.42%**
Escalation						
Subtotal Escalation		**29,297,137**				**99.42%**
Corporate Activity Tax	169,923		0.580 %		0.58%	
Total Prime Contractor Costs	**169,923**	**29,467,060**			**0.58%**	**100.00%**
Total Construction Cost		**29,467,060**				**100.00%**
Total		***29,467,060***				

Work Activity Report

BID FORM SUMMARY

Project type: Channelization | Project Name: D3540100 North Ash Creek Reach 1 Alt 1 Kings Valley Highway Bridge Replacement Rev #1 5-22-23 | Estimator: John DeWolf
Job Size: | Project Number: D3540100 | Rev/Date: Rev #1 5-22-23
Duration: | Design Stage: 2% | Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0					**Reach 1 Alternate 1**											
	01.0				Build Detour											
		31.0			Earthwork											
			31.19		Dewatering and Bypass Pumping											
				31.19.06.0003	Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,977.80 /WK	1,714,846
					31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,977.80 /WK	1,714,846
			31.23		Earthworks, Imported Fill											
				31.20.05.0001	Build Temporary Bypass	2,500.00 CY	504	30,098	76,000	7,500	19,597	6,000	55.68 /CY	139,195	127.77 /CY	319,430
				31.20.05.0002	Remove Temp Bypass	2,500.00 CY	410	25,683	37,500	7,500	29,764	37,500	55.18 /CY	137,947	126.63 /CY	316,566
					31.23 Earthworks, Imported Fill	*2,500.00* CY	914	55,781	113,500	15,000	49,361	43,500	110.86 /CY	277,143	254.40 /CY	635,997
					31.0 Earthwork	1.00 LS	3,090	221,961	349,450	19,500	389,995	43,500	1,024,406.38 /LS	1,024,406	2,350,842.59 /LS	2,350,843
		32.0			Exterior Improvements											
			32.12		Paving											
				32.40.02.0003	Pave Temp Bypass	1,230.00 SY	90	12,000		73,296	44,000		105.12 /SY	129,296	241.23 /SY	296,713
					32.12 Paving	1,230.00 SY	90	12,000		73,296	44,000		105.12 /SY	129,296	241.23 /SY	296,713
					32.0 Exterior Improvements	*1.00* LS	90	12,000		73,296	44,000		129,296.00 /LS	129,296	296,712.85 /LS	296,713
		33.0			Utilities											
			33.12		Buried Process Pipe, Corrugated Metal											
				33.00.16.0004	Temp Culvert	260.00 LF	580	38,044	22,571	4,388	27,248	4,388	371.69 /LF	96,640	852.97 /LF	221,772
					33.12 Buried Process Pipe, Corrugated Metal	260.00 LF	580	38,044	22,571	4,388	27,248	4,388	371.69 /LF	96,640	852.97 /LF	221,772
					33.0 Utilities	260.00 LF	580	38,044	22,571	4,388	27,248	4,388	371.69 /LF	96,640	852.97 /LF	221,772
					01.0 Build Detour	*1.00* LS	3,760	272,005	372,021	97,184	461,243	47,888	1,250,341.92 /LS	1,250,342	2,869,327.14 /LS	2,869,327
	02.0				Demo Existing Bridge and Paving											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0005	Demo Existing Bridge	*1.00* LS	765	44,773	4,610	3,878	7,517		60,777.72 /LS	60,778	139,474.77 /LS	139,475
					02.40 Demolition	*1.00* LS	765	44,773	4,610	3,878	7,517		60,777.72 /LS	60,778	139,474.77 /LS	139,475
					02.0 Existing Conditions	*1.00* LS	765	44,773	4,610	3,878	7,517		60,777.72 /LS	60,778	139,474.77 /LS	139,475
					02.0 Demo Existing Bridge and Paving	*1.00* LS	765	44,773	4,610	3,878	7,517		60,777.72 /LS	60,778	139,474.77 /LS	139,475
	03.0				New Kings Highway Bridge											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											
				03.00.99.0006	New Kings Highway Bridge	1,050.00 SF				1,050,000			1,000.00 /SF	1,050,000	2,294.83 /SF	2,409,576
					03.10 Cast-In-Place Concrete Work	*1.00* CY				1,050,000			1,050,000.00 /CY	1,050,000	2,409,575.69 /CY	2,409,576
					03.0 Concrete Work	*1.00* CY				1,050,000			1,050,000.00 /CY	1,050,000	2,409,575.69 /CY	2,409,576
		31.0			Earthwork											
			31.25		Earthworks, Structural											
				31.25.01.0007	Excavation and Structural Backfill	800.00 CY	13,005	753,056	6,020	49,880	749,618		1,948.22 /CY	1,558,573	4,470.83 /CY	3,576,667
					31.25 Earthworks, Structural	800.00 CY	13,005	753,056	6,020	49,880	749,618		1,948.22 /CY	1,558,573	4,470.83 /CY	3,576,667
					31.0 Earthwork	*1.00* LS	13,005	753,056	6,020	49,880	749,618		1,558,573.21 /LS	1,558,573	3,576,666.78 /LS	3,576,667
					03.0 New Kings Highway Bridge	*1.00* LS	13,005	753,056	6,020	1,099,880	749,618		2,608,573.21 /LS	2,608,573	5,986,242.47 /LS	5,986,242
	04.0				Site Improvements											
		32.0			Exterior Improvements											
			32.12		Paving											
				32.40.02.0008	Excavation and Structural Backfill	320.00 SY	187	12,422	16,926		1,664		96.91 /SY	31,011	222.39 /SY	71,166
					32.12 Paving	320.00 SY	187	12,422	16,926		1,664		96.91 /SY	31,011	222.39 /SY	71,166
			32.50		Site, Improvements											
				32.50.06.0009	Site Improvement Allowances	1.00 LS				40,000			40,000.00 /LS	40,000	91,793.36 /LS	91,793
					32.50 Site, Improvements	1.00 LS				40,000			40,000.00 /LS	40,000	91,793.36 /LS	91,793
					32.0 Exterior Improvements	1.00 LS	187	12,422	16,926	40,000	1,664		71,011.38 /LS	71,011	162,959.31 /LS	162,959
					04.0 Site Improvements	1.00 LS	187	12,422	16,926	40,000	1,664		71,011.38 /LS	71,011	162,959.31 /LS	162,959
	05.0				Traffic Control											
		31.0			Earthwork											
			31.10		Temporary Works											
				31.10.07.0010	Traffic Control	*1.00* LS	280	8,072	5,760		42,023		55,854.80 /LS	55,855	128,177.50 /LS	128,178
					31.10 Temporary Works	*1.00* LS	280	8,072	5,760		42,023		55,854.80 /LS	55,855	128,177.50 /LS	128,178
					31.0 Earthwork	*1.00* LS	280	8,072	5,760		42,023		55,854.80 /LS	55,855	128,177.50 /LS	128,178
					05.0 Traffic Control	*1.00* LS	280	8,072	5,760		42,023		55,854.80 /LS	55,855	128,177.50 /LS	128,178
					01.0 Reach 1 Alternate 1	*1.00* LS	17,998	1,090,327	405,337	1,240,942	1,262,064	47,888	4,046,559.03 /LS	4,046,559	9,286,181.19 /LS	9,286,181

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 1 Alt 1 Kings Valley Highway Bridge Replacement Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Estimate Totals

Description	Amount	Totals	Rate	Cost / Unit	% of Total	
Labor	1,090,327		hrs		11.67%	
Material	405,337				4.34%	
Subcontract	1,240,942				13.29%	
Equipment	1,262,064		hrs		13.51%	
Other	47,888				0.51%	
Subtotal Raw Costs	**4,046,558**	**4,046,558**			**43.32%**	**43.32%**
Material Sales & Use Tax - %						
Construction Equip Tax - %						
Total Taxes		**4,046,558**				**43.32%**
Location Adj. Factor						
Productivity Adjustment						
Subtotal Adj. Factors		**4,046,558**				**43.32%**
Existing Conditions I,OH&P	15,194		25.000 %		0.16%	
Concrete Work I,OH&P	262,500		25.000 %		2.81%	
Masonry Work I,OH&P			25.000 %			
Metals Work I,OH&P			25.000 %			
Architectural (Div 6-12)I,OH&P			25.000 %			
Special Construction I,OH&P			25.000 %			
Conveying Equipment I,OH&P			25.000 %			
Mechanical Work I,OH&P			25.000 %			
Electrical Work I,OH&P			25.000 %			
Site/Civil I,OH&P	709,785		25.000 %		7.60%	
Buried Piping I,OH&P	24,160		25.000 %		0.26%	
Tank Construction I,OH&P			25.000 %			
Process Piping I,OH&P			25.000 %			
Instruments & Controls I,OH&P			25.000 %			
Material Handling I,OH&P			25.000 %			
Process Equipment I,OH&P			25.000 %			
Subtotal Subcontractor I,OH&P	**1,011,639**	**5,058,197**			**10.83%**	**54.16%**
Contractor Contingency						
Subtotal Contingency		**5,058,197**				**54.16%**
Total Cost To Prime Contractor		**5,058,197**				**54.16%**
General Conditions	505,820		10.000 %		5.42%	
Mobilization/Demobilization	252,910		5.000 %		2.71%	
Subtotal Indirect Costs	**758,730**	**5,816,927**			**8.12%**	**62.28%**
Prime Contractor Home OfficeOH	581,693		10.000 %		6.23%	
Prime Contractor Profit	872,539		15.000 %		9.34%	
Bonds & Insurance	157,784		2.170 %		1.69%	
Subtotal OH&P	**1,612,016**	**7,428,943**			**17.26%**	**79.54%**
Contractor MU on Mech OFCI						
Contractor MU on Elec OFCI						
Total MU on OFCI Equip		**7,428,943**				**79.54%**
Design Contingency	1,857,236		25.000 %		19.88%	
Subtotal Contingency	**1,857,236**	**9,286,179**			**19.88%**	**99.42%**
Escalation						
Subtotal Escalation		**9,286,179**				**99.42%**
Corporate Activity Tax	53,860		0.580 %		0.58%	
Total Prime Contractor Costs	**53,860**	**9,340,039**			**0.58%**	**100.00%**
Total Construction Cost		**9,340,039**				**100.00%**
Total		***9,340,039***				

BID FORM SUMMARY

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 1 Alt 2 Kings Valley Highway Aux. Culvert Installation Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Crew	Labor Productivity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0					**Reach 1 Alternate 2**													
	01.1				Build Detour													
		31.0			Earthwork													
			31.19		Dewatering and Bypass Pumping													
				31.19.06.0003	Bypass Pumping	52.00 WK			2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,977.81 /WK	1,714,846
					31.19 Dewatering and Bypass Pumping	52.00 WK			2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,977.81 /WK	1,714,846
			31.23		Earthworks, Imported Fill													
				31.20.05.0001	Build Temporary Bypass	2,500.00 CY			504	30,098	43,500	7,500	19,597	6,000	42.68 /CY	106,695	97.94 /CY	244,848
				31.20.05.0002	Remove Temp Bypass	2,500.00 CY			410	25,683	37,500	7,500	29,764	37,500	55.18 /CY	137,947	126.63 /CY	316,566
					31.23 Earthworks, Imported Fill	5,000.00 CY			914	55,781	81,000	15,000	49,361	43,500	48.93 /CY	244,643	112.28 /CY	561,415
					31.0 Earthwork	1.00 LS			3,090	221,961	316,950	19,500	389,995	43,500	991,906.38 /LS	991,906	2,276,260.47 /LS	2,276,260
		32.0			Exterior Improvements													
			32.12		Paving													
				32.40.02.0003	Pave Temp Bypass	1,230.00 SY			90	12,000		73,296	50,000		110.00 /SY	135,296	252.42 /SY	310,482
					32.12 Paving	1,230.00 SY			90	12,000		73,296	50,000		110.00 /SY	135,296	252.42 /SY	310,482
					32.0 Exterior Improvements	0.00			90	12,000		73,296	50,000		/LS	135,296	/LS	310,482
		33.0			Utilities													
			33.12		Buried Process Pipe, Corrugated Metal													
				33.00.16.0004	Temp Culvert	260.00 LF			580	38,044	29,071	4,388	27,248	15	379.87 /LF	98,766	871.74 /LF	226,652
					33.12 Buried Process Pipe, Corrugated Metal	260.00 LF			580	38,044	29,071	4,388	27,248	15	379.87 /LF	98,766	871.74 /LF	226,652
					33.0 Utilities	260.00 LF			580	38,044	29,071	4,388	27,248	15	379.87 /LF	98,766	871.74 /LF	226,652
					01.1 Build Detour	1.00 LS			3,760	272,005	346,021	97,184	467,243	43,515	1,225,968.67 /LS	1,225,969	2,813,394.56 /LS	2,813,395
	02.1				Demo Existing Bridge and Paving													
		02.0			Existing Conditions													
			02.40		Demolition													
				02.01.01.0005	Demo Existing Bridge	*1.00* LS			765	44,773	3,649	3,265	7,517	3,060	62,263.88 /LS	62,264	142,885.27 /LS	142,885
					02.40 Demolition	*1.00* LS			765	44,773	3,649	3,265	7,517	3,060	62,263.88 /LS	62,264	142,885.27 /LS	142,885
					02.0 Existing Conditions	*1.00* LS			765	44,773	3,649	3,265	7,517	3,060	62,263.88 /LS	62,264	142,885.27 /LS	142,885
					02.1 Demo Existing Bridge and Paving	*1.00* LS			765	44,773	3,649	3,265	7,517	3,060	62,263.88 /LS	62,264	142,885.27 /LS	142,885
	03.1				Box Culverts													
		03.0			Concrete Work													
			03.10		Cast-In-Place Concrete Work													
				03.10.05.0012	18" Base Slab at Box Culverts	31.11 CY			127	7,985	16,757	2,956			890.28 /CY	27,698	2,043.05 /CY	63,561
				03.10.06.0013	12" Walls at Box Culvert	20.74 CY			261	16,506	13,451	2,385			1,559.32 /CY	32,342	3,578.39 /CY	74,219
				03.10.10.0014	12" Top Slab at Box Culvert	20.74 CY			196	13,049	12,501	2,178			1,336.86 /CY	27,728	3,067.87 /CY	63,631
					03.10 Cast-In-Place Concrete Work	72.59 CY			584	37,540	42,709	7,519			1,209.03 /CY	87,767	2,774.53 /CY	201,411
					03.0 Concrete Work	72.59 CY			584	37,540	42,709	7,519			1,209.03 /CY	87,767	2,774.53 /CY	201,411
		31.0			Earthwork													
			31.25		Earthworks, Structural													
				31.25.01.0011	Excavation for Box Culverts	540.00 CY			13,031	751,305	3,846	62,000	746,601		2,895.84 /CY	1,563,752	6,645.46 /CY	3,588,550
					31.25 Earthworks, Structural	540.00 CY			13,031	751,305	3,846	62,000	746,601		2,895.84 /CY	1,563,752	6,645.46 /CY	3,588,550
					31.0 Earthwork	*1.00* LS			13,031	751,305	3,846	62,000	746,601		1,563,751.59 /LS	1,563,752	3,588,550.29 /LS	3,588,550
					03.1 Box Culverts	*1.00* LS			13,615	788,845	46,555	69,519	746,601		1,651,518.82 /LS	1,651,519	3,789,961.51 /LS	3,789,962
	03.2				2'x4' Pre-Cast Box Culverts													
		33.0			Utilities													
			33.08		Buried Process Pipe, RCP													
				33.00.15.0015	2'x4' Pre-Cast Box Culverts 64 Feet Long	64.00 LF			432	31,829	59,816	1,125	29,581	1,125	1,929.32 /LF	123,477	4,427.47 /LF	283,358
				33.00.15.0016	2'x4' Pre-Cast Box Culverts 75 Feet Long	75.00 LF			433	31,846	65,683	1,320	29,580	1,320	1,729.98 /LF	129,749	3,970.03 /LF	297,752
					33.08 Buried Process Pipe, RCP	139.00 LF			865	63,676	125,499	2,445	59,161	2,445	1,821.77 /LF	253,225	4,180.65 /LF	581,110
					33.0 Utilities	139.00 LF			865	63,676	125,499	2,445	59,161	2,445	1,821.77 /LF	253,225	4,180.65 /LF	581,110
					03.2 2'x4' Pre-Cast Box Culverts	*1.00* LS			865	63,676	125,499	2,445	59,161	2,445	253,225.43 /LS	253,225	581,110.34 /LS	581,110
	04.1				Site Imrpovements													
		32.0			Exterior Improvements													
			32.12		Paving													
				32.40.02.0008	Excavation and Structural Backfill	320.00 SY			187	12,422	16,926		1,664		96.91 /SY	31,011	222.39 /SY	71,166
					32.12 Paving	320.00 SY			187	12,422	16,926		1,664		96.91 /SY	31,011	222.39 /SY	71,166
			32.50		Site, Improvements													
				32.50.06.0009	Site Improvement Allowances	1.00 LS						40,000			40,000.00 /LS	40,000	91,793.36 /LS	91,793
					32.50 Site, Improvements	1.00 LS						40,000			40,000.00 /LS	40,000	91,793.36 /LS	91,793
					32.0 Exterior Improvements	1.00 LS			187	12,422	16,926	40,000	1,664		71,011.38 /LS	71,011	162,959.32 /LS	162,959
					04.1 Site Imrpovements	1.00 LS			187	12,422	16,926	40,000	1,664		71,011.38 /LS	71,011	162,959.32 /LS	162,959
	04.2				Trench Paving													
		32.0			Exterior Improvements													
			32.12		Paving													
				32.40.02.0017	Trench Paving	155.56 SY			84	5,604	7,816		580		90.00 /SY	14,000	206.54 /SY	32,129
					32.12 Paving	155.56 SY			84	5,604	7,816		580		90.00 /SY	14,000	206.54 /SY	32,129
			32.50		Site, Improvements													
				32.50.06.0009	Site Improvement Allowances	1.00 LS						40,000			40,000.00 /LS	40,000	91,793.35 /LS	91,793
					32.50 Site, Improvements	1.00 LS						40,000			40,000.00 /LS	40,000	91,793.35 /LS	91,793
					32.0 Exterior Improvements	1.00 LS			84	5,604	7,816	40,000	580		54,000.48 /LS	54,000	123,922.13 /LS	123,922
					04.2 Trench Paving	1.00 LS			84	5,604	7,816	40,000	580		54,000.48 /LS	54,000	123,922.13 /LS	123,922
	05.1				Traffic Control													
		31.0			Earthwork													
			31.10		Temporary Works													
				31.10.07.0010	Traffic Control	*1.00* LS			40	2,600	5,760		42,023		50,382.80 /LS	50,383	115,620.16 /LS	115,620
					31.10 Temporary Works	*1.00* LS			40	2,600	5,760		42,023		50,382.80 /LS	50,383	115,620.16 /LS	115,620
					31.0 Earthwork	*1.00* LS			40	2,600	5,760		42,023		50,382.80 /LS	50,383	115,620.16 /LS	115,620
					05.1 Traffic Control	*1.00* LS			40	2,600	5,760		42,023		50,382.80 /LS	50,383	115,620.16 /LS	115,620
	05.2				Traffic Control													
		31.0			Earthwork													
			31.10		Temporary Works													

BID FORM SUMMARY

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 1 Alt 2 Kings Valley Highway Aux. Culvert Installation Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Crew	Labor Productivity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
				31.10.07.0018	Traffic Control	1.00 LS			240	5,832	17,539		40,789		64,159.80 /LS	64,160	147,236.10 /LS	147,236
					31.10 Temporary Works	1.00 LS			240	5,832	17,539		40,789		64,159.80 /LS	64,160	147,236.10 /LS	147,236
					31.0 Earthwork	1.00 LS			240	5,832	17,539		40,789		64,159.80 /LS	64,160	147,236.10 /LS	147,236
					05.2 Traffic Control	1.00 LS			240	5,832	17,539		40,789		64,159.80 /LS	64,160	147,236.10 /LS	147,236
					01.0 Reach 1 Alternate 2	1.00 LS			19,556	1,195,756	569,765	252,413	1,365,577	49,020	3,432,531.26 /LS	3,432,531	7,877,089.39 /LS	7,877,089

Estimate Totals

Description	Amount	Totals		Rate		Cost / Unit	% of Total	
Labor	1,195,756		hrs				15.09%	
Material	569,765						7.19%	
Subcontract	252,413						3.19%	
Equipment	1,365,577		hrs				17.24%	
Other	49,020						0.62%	
Subtotal Raw Costs	**3,432,531**	**3,432,531**					**43.32%**	**43.32%**
Material Sales & Use Tax - %								
Construction Equip Tax - %								
Total Taxes		**3,432,531**						**43.32%**
Location Adj. Factor								
Productivity Adjustment								
Subtotal Adj. Factors		**3,432,531**						**43.32%**
Existing Conditions I,OH&P	15,566			25.000	%		0.20%	
Concrete Work I,OH&P	21,942			25.000	%		0.28%	
Masonry Work I,OH&P				25.000	%			
Metals Work I,OH&P				25.000	%			
Architectural (Div 6-12)I,OH&P				25.000	%			
Special Construction I,OH&P				25.000	%			
Conveying Equipment I,OH&P				25.000	%			
Mechanical Work I,OH&P				25.000	%			
Electrical Work I,OH&P				25.000	%			
Site/Civil I,OH&P	732,627			25.000	%		9.25%	
Buried Piping I,OH&P	87,998			25.000	%		1.11%	
Tank Construction I,OH&P				25.000	%			
Process Piping I,OH&P				25.000	%			
Instruments & Controls I,OH&P				25.000	%			
Material Handling I,OH&P				25.000	%			
Process Equipment I,OH&P				25.000	%			
Subtotal Subcontractor I,OH&P	**858,133**	**4,290,664**					**10.83%**	**54.16%**
Contractor Contingency								
Subtotal Contingency		**4,290,664**						**54.16%**
Total Cost To Prime Contractor		**4,290,664**						**54.16%**
General Conditions	429,066			10.000	%		5.42%	
Mobilization/Demobilization	214,533			5.000	%		2.71%	
Subtotal Indirect Costs	**643,599**	**4,934,263**					**8.12%**	**62.28%**
Prime Contractor Home OfficeOH	493,426			10.000	%		6.23%	
Prime Contractor Profit	740,140			15.000	%		9.34%	
Bonds & Insurance	133,842			2.170	%		1.69%	
Subtotal OH&P	**1,367,408**	**6,301,671**					**17.26%**	**79.54%**
Contractor MU on Mech OFCI								
Contractor MU on Elec OFCI								
Total MU on OFCI Equip		**6,301,671**						**79.54%**
Design Contingency	1,575,418			25.000	%		19.88%	
Subtotal Contingency	**1,575,418**	**7,877,089**					**19.88%**	**99.42%**
Escalation								
Subtotal Escalation		**7,877,089**						**99.42%**
Corporate Activity Tax	45,687			0.580	%		0.58%	
Total Prime Contractor Costs	**45,687**	**7,922,776**					**0.58%**	**100.00%**
Total Construction Cost		**7,922,776**						**100.00%**
Total		***7,922,776***						

BID FORM SUMMARY

Project type: Channelization
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 2 Cemetery Culvert Replacements Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0					**Reach 2 Cemetery Culverts**											
	01.2				Demo Existing Culverts											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0014	Demo Culverts	1.00 LS	1,064	72,223	19,350	91,375	47,168		230,116.59 /LS	230,117	528,079.38 /LS	528,079
					02.40 Demolition	1.00 LS	1,064	72,223	19,350	91,375	47,168		230,116.59 /LS	230,117	528,079.38 /LS	528,079
					02.0 Existing Conditions	1.00 LS	1,064	72,223	19,350	91,375	47,168		230,116.59 /LS	230,117	528,079.38 /LS	528,079
		31.0			Earthwork											
			31.19		Dewatering and Bypass Pumping											
				31.19.06.0003	Bypass Pumping	8.00 WK	416	32,296	37,950	4,500	54,634		16,172.55 /WK	129,380	37,113.31 /WK	296,906
					31.19 Dewatering and Bypass Pumping	8.00 WK	416	32,296	37,950	4,500	54,634		16,172.55 /WK	129,380	37,113.31 /WK	296,906
					31.0 Earthwork	1.00 LS	416	32,296	37,950	4,500	54,634		129,380.38 /LS	129,380	296,906.49 /LS	296,906
					01.2 Demo Existing Culverts	1.00 LS	1,480	104,520	57,300	95,875	101,802		359,496.97 /LS	359,497	824,985.87 /LS	824,986
	03.2				2'x4' Pre-Cast Box Culverts											
		33.0			Utilities											
			33.08		Buried Process Pipe, RCP											
				33.00.15.0015	2'x4' Pre-Cast Box Culverts 64 Feet Long	64.00 LF	432	31,829	59,816	1,125	29,581	1,125	1,929.32 /LF	123,477	4,427.47 /LF	283,358
				33.00.15.0016	2'x4' Pre-Cast Box Culverts 75 Feet Long	75.00 LF	433	31,846	65,683	1,320	29,580	1,320	1,729.98 /LF	129,749	3,970.03 /LF	297,752
					33.08 Buried Process Pipe, RCP	139.00 LF	865	63,676	125,499	2,445	59,161	2,445	1,821.77 /LF	253,225	4,180.65 /LF	581,110
					33.0 Utilities	139.00 LF	865	63,676	125,499	2,445	59,161	2,445	1,821.77 /LF	253,225	4,180.65 /LF	581,110
					03.2 2'x4' Pre-Cast Box Culverts	139.00 LF	865	63,676	125,499	2,445	59,161	2,445	1,821.77 /LF	253,225	4,180.65 /LF	581,110
	04.2				Trench Paving											
		32.0			Exterior Improvements											
			32.12		Paving											
				32.40.02.0017	Trench Paving	155.56 SY	84	5,604	7,816		580		90.00 /SY	14,000	206.54 /SY	32,129
					32.12 Paving	155.56 SY	84	5,604	7,816		580		90.00 /SY	14,000	206.54 /SY	32,129
			32.50		Site, Improvements											
				32.50.06.0009	Site Improvement Allowances	1.00 LS				40,000			40,000.00 /LS	40,000	91,793.36 /LS	91,793
					32.50 Site, Improvements	1.00 LS				40,000			40,000.00 /LS	40,000	91,793.36 /LS	91,793
					32.0 Exterior Improvements	1.00 LS	84	5,604	7,816	40,000	580		54,000.48 /LS	54,000	123,922.13 /LS	123,922
					04.2 Trench Paving	1.00 LS	84	5,604	7,816	40,000	580		54,000.48 /LS	54,000	123,922.13 /LS	123,922
	05.2				Traffic Control											
		31.0			Earthwork											
			31.10		Temporary Works											
				31.10.07.0018	Traffic Control	1.00 LS	240	5,832	17,539		40,789		64,159.80 /LS	64,160	147,236.10 /LS	147,236
					31.10 Temporary Works	1.00 LS	240	5,832	17,539		40,789		64,159.80 /LS	64,160	147,236.10 /LS	147,236
					31.0 Earthwork	1.00 LS	240	5,832	17,539		40,789		64,159.80 /LS	64,160	147,236.10 /LS	147,236
					05.2 Traffic Control	1.00 LS	240	5,832	17,539		40,789		64,159.80 /LS	64,160	147,236.10 /LS	147,236
					01.0 Reach 2 Cemetery Culverts	**1.00 LS**	2,669	179,632	208,154	138,320	202,332	2,445	**730,882.68 /LS**	730,883	**1,677,254.43 /LS**	1,677,254

Estimate Totals

Description	Amount	Totals	Rate	Cost / Unit	% of Total	
Labor	179,632	hrs			10.65%	
Material	208,154				12.34%	
Subcontract	138,320				8.20%	
Equipment	202,332	hrs			11.99%	
Other	2,445				0.14%	
Subtotal Raw Costs	**730,883**	**730,883**			**43.32%**	**43.32%**
Material Sales & Use Tax - %						
Construction Equip Tax - %						
Total Taxes		**730,883**				**43.32%**
Location Adj. Factor						
Productivity Adjustment						
Subtotal Adj. Factors		**730,883**				**43.32%**
Existing Conditions I,OH&P	57,529		25.000 %		3.41%	
Concrete Work I,OH&P			25.000 %			
Masonry Work I,OH&P			25.000 %			
Metals Work I,OH&P			25.000 %			
Architectural (Div 6-12)I,OH&P			25.000 %			
Special Construction I,OH&P			25.000 %			
Conveying Equipment I,OH&P			25.000 %			
Mechanical Work I,OH&P			25.000 %			
Electrical Work I,OH&P			25.000 %			
Site/Civil I,OH&P	61,885		25.000 %		3.67%	
Buried Piping I,OH&P	63,306		25.000 %		3.75%	
Tank Construction I,OH&P			25.000 %			
Process Piping I,OH&P			25.000 %			
Instruments & Controls I,OH&P			25.000 %			
Material Handling I,OH&P			25.000 %			
Process Equipment I,OH&P			25.000 %			
Subtotal Subcontractor I,OH&P	**182,720**	**913,603**			**10.83%**	**54.16%**
Contractor Contingency						
Subtotal Contingency		**913,603**				**54.16%**
Total Cost To Prime Contractor		**913,603**				**54.16%**
General Conditions	91,360		10.000 %		5.42%	
Mobilization/Demobilization	45,680		5.000 %		2.71%	
Subtotal Indirect Costs	**137,040**	**1,050,643**			**8.12%**	**62.28%**
Prime Contractor Home OfficeOH	105,064		10.000 %		6.23%	
Prime Contractor Profit	157,597		15.000 %		9.34%	
Bonds & Insurance	28,499		2.170 %		1.69%	
Subtotal OH&P	**291,160**	**1,341,803**			**17.26%**	**79.54%**
Contractor MU on Mech OFCI						
Contractor MU on Elec OFCI						
Total MU on OFCI Equip		**1,341,803**				**79.54%**
Design Contingency	335,451		25.000 %		19.88%	
Subtotal Contingency	**335,451**	**1,677,254**			**19.88%**	**99.42%**
Escalation						
Subtotal Escalation		**1,677,254**				**99.42%**
Corporate Activity Tax	9,728		0.580 %		0.58%	
Total Prime Contractor Costs	**9,728**	**1,686,982**			**0.58%**	**100.00%**
Total Construction Cost		**1,686,982**				**100.00%**
Total		***1,686,982***				

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Fork Ash Creek Reach 3 Alt 1 Daylight in Place Rev #2 6-8-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #2 6-8-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0					Replace Main Street Bridge											
	01.0				Demo Main Street Bridge											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0001	Demo Existing Bridge	520.00 SF	280	17,627			14,306		61.41 /SF	31,932	140.42 /SF	73,021
					02.40 Demolition	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,020.73 /LS	73,021
					02.0 Existing Conditions	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,020.73 /LS	73,021
					01.0 Demo Main Street Bridge	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,020.73 /LS	73,021
	02.0				New Main St. Bridge											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											
				03.00.99.0002	New Main St. Bridge	2,200.00 SF				1,650,000			750.00 /SF	1,650,000	1,715.04 /SF	3,773,097
					03.10 Cast-In-Place Concrete Work	1.00 LS				1,650,000			1,650,000.00 /LS	1,650,000	3,773,097.44 /LS	3,773,097
					03.0 Concrete Work	1.00 LS				1,650,000			1,650,000.00 /LS	1,650,000	3,773,097.44 /LS	3,773,097
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.1001	Structrual Excavation and Backfill	672.00 CY	3,622	199,275	7,535	72,000	197,723	7,335	720.04 /CY	483,868	1,646.60 /CY	1,106,516
				31.20.09.1002	Grading for Street	358.00 CY	32	2,122	10,024		1,871		39.15 /CY	14,017	89.54 /CY	32,054
					31.20 Earthworks, Site	1,030.00 CY	3,654	201,398	17,559	72,000	199,594	7,335	483.38 /CY	497,885	1,105.41 /CY	1,138,570
					31.0 Earthwork	1.00 LS	3,654	201,398	17,559	72,000	199,594	7,335	497,885.32 /LS	497,885	1,138,569.69 /LS	1,138,570
		32.0			Exterior Improvements											
			32.12		Paving											
				32.40.02.1003	Paving at Main Street Bridge	604.44 SY	327	21,765	30,344		2,245		89.92 /SY	54,354	205.63 /SY	124,294
					32.12 Paving	604.44 SY	327	21,765	30,344		2,245		89.92 /SY	54,354	205.63 /SY	124,294
			32.50		Site, Improvements											
				32.50.06.0009	Site Improvement Allowances	1.00 LS				35,000			35,000.00 /LS	35,000	80,035.40 /LS	80,035
					32.50 Site, Improvements	1.00 LS				35,000			35,000.00 /LS	35,000	80,035.40 /LS	80,035
					32.0 Exterior Improvements	1.00 LS	327	21,765	30,344	35,000	2,245		89,354.35 /LS	89,354	204,328.90 /LS	204,329
					02.0 New Main St. Bridge	1.00 LS	3,981	223,163	47,903	1,757,000	201,839	7,335	2,237,239.67 /LS	2,237,240	5,115,996.03 /LS	5,115,996
	03.0				Bypass Pumping											
		03.0			Concrete Work											
			31.19		Dewatering and Bypass Pumping											
				31.19.06.0003	Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,861.29 /WK	1,708,787
					31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,861.29 /WK	1,708,787
					03.0 Concrete Work	1.00 LS	2,176	166,179	235,950	4,500	340,634		747,263.58 /LS	747,264	1,708,786.86 /LS	1,708,787
		31.0			Earthwork											
			31.30		Site Specialties											
				31.30.01.0006	Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	454,461.14 /EA	908,922
					31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	908,922.27 /LS	908,922
					31.0 Earthwork	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	908,922.27 /LS	908,922
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.09.0004	Diversion Piping 12"	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
					33.07 Buried Process Pipe, HDPE	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
					33.0 Utilities	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
					03.0 Bypass Pumping	1.00 LS	2,755	205,107	351,017	246,672	362,861		1,165,656.29 /LS	1,165,656	2,665,536.20 /LS	2,665,536
	04.0				Fish Screen											
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.50.0005	Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,612.57 /EA	3,613
					33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.57 /LF	3,613
					33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.57 /LF	3,613
					04.0 Fish Screen	1.00 LS	1	80	1,500				1,579.80 /LS	1,580	3,612.57 /LS	3,613
	05.0				Fish Salvage											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0007	Fish Salvage	32.00 DY	260	19,500	750				632.80 /DY	20,250	1,288.84 /DY	41,243
					01.01 Construction Operations	1.00 LS	260	19,500	750				20,249.63 /LS	20,250	41,242.95 /LS	41,243
					01.0 General Requirements	1.00 LS	260	19,500	750				20,249.63 /LS	20,250	41,242.95 /LS	41,243
					05.0 Fish Salvage	1.00 LS	260	19,500	750				20,249.63 /LS	20,250	41,242.95 /LS	41,243
	08.0				Traffic Control											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0008	Traffic Control Allowance	90.00 DY				135,000			1,500.00 /DY	135,000	3,055.09 /DY	274,958
					01.01 Construction Operations	1.00 LS				135,000			135,000.00 /LS	135,000	274,957.96 /LS	274,958
					01.0 General Requirements	1.00 LS				135,000			135,000.00 /LS	135,000	274,957.96 /LS	274,958
					08.0 Traffic Control	90.00 DY				135,000			1,500.00 /DY	135,000	3,055.09 /DY	274,958
					01.0 Replace Main Street Bridge	1.00 LS	7,277	465,476	401,169	2,138,672	579,006	7,335	3,591,657.83 /LS	3,591,658	8,174,366.44 /LS	8,174,366
02.0					Daylight Channel In Place											
	01.1				Demo Asphalt											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0010	Demo Asphalt	11,855.56 SY	2,191	139,858	129,000	19,759	66,426	29,639	32.45 /SY	384,683	74.21 /SY	879,837
					02.40 Demolition	1.00 LS	2,191	139,858	129,000	19,759	66,426	29,639	384,683.31 /LS	384,683	879,837.14 /LS	879,837

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					02.0 Existing Conditions	1.00 LS	2,191	139,858	129,000	19,759	66,426	29,639	384,683.31 /LS	384,683	879,837.14 /LS	879,837
					01.1 Demo Asphalt	106,700.00 SF	2,191	139,858	129,000	19,759	66,426	29,639	3.61 /SF	384,683	8.25 /SF	879,837
	02.1				Remove Existing 84" Culverts											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0011	Remove Existing Dual 84" Culverts	1,540.00 LF	1,068	73,442	170,145	55,450	56,666	55,450	266.98 /LF	411,152	610.72 /LF	940,515
				02.01.01.0012	Remove Existing Single 84" Culvert	670.00 LF	533	35,351	110,613	16,966	26,147	25,501	320.27 /LF	214,578	732.58 /LF	490,829
					02.40 Demolition	1.00 LS	1,601	108,793	280,758	72,416	82,813	80,951	625,730.57 /LS	625,731	1,431,343.69 /LS	1,431,344
					02.0 Existing Conditions	1.00 LS	1,601	108,793	280,758	72,416	82,813	80,951	625,730.57 /LS	625,731	1,431,343.69 /LS	1,431,344
					02.1 Remove Existing 84" Culverts	2,210.00 LF	1,601	108,793	280,758	72,416	82,813	80,951	283.14 /LF	625,731	647.67 /LF	1,431,344
	03.1				Demo Timber Bridge											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0013	Demo Timber Bridge	756.00 SF	407	25,626			20,798		61.41 /SF	46,425	140.42 /SF	106,161
					02.40 Demolition	1.00 LS	407	25,626			20,798		46,424.86 /LS	46,425	106,160.93 /LS	106,161
					02.0 Existing Conditions	1.00 LS	407	25,626			20,798		46,424.86 /LS	46,425	106,160.93 /LS	106,161
					03.1 Demo Timber Bridge	1.00 EA	407	25,626			20,798		46,424.86 /EA	46,425	106,160.93 /EA	106,161
	04.1				Creek Channel Excavation											
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.0017	Channel Excavation	17,100.00 CY	1,166	75,774			64,765		8.22 /CY	140,538	18.79 /CY	321,372
					31.20 Earthworks, Site	17,100.00 CY	1,166	75,774			64,765		8.22 /CY	140,538	18.79 /CY	321,372
					31.0 Earthwork	1.00 LS	1,166	75,774			64,765		140,538.26 /LS	140,538	321,372.45 /LS	321,372
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.50.06.0009	Site Improvement Allowances	1.00 LS				150,000			150,000.00 /LS	150,000	343,008.87 /LS	343,009
					32.50 Site, Improvements	1.00 LS				150,000			150,000.00 /LS	150,000	343,008.87 /LS	343,009
					32.0 Exterior Improvements	1.00 LS				150,000			150,000.00 /LS	150,000	343,008.87 /LS	343,009
					04.1 Creek Channel Excavation	17,100.00 CY	1,166	75,774		150,000	64,765		16.99 /CY	290,538	38.85 /CY	664,381
	05.1				Bed Material											
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.0018	Bed Material	410.00 CY	126	9,510	11,480		14,003		85.35 /CY	34,992	195.17 /CY	80,018
					31.20 Earthworks, Site	410.00 CY	126	9,510	11,480		14,003		85.35 /CY	34,992	195.17 /CY	80,018
					31.0 Earthwork	1.00 LS	126	9,510	11,480		14,003		34,992.27 /LS	34,992	80,017.72 /LS	80,018
					05.1 Bed Material	410.00 CY	126	9,510	11,480		14,003		85.35 /CY	34,992	195.17 /CY	80,018
	06.1				Bank Stabilization											
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.25.03.0020	Bank Stabilization	45,600.00 SF	613	39,485	57,372	50,000	12,470		3.49 /SF	159,326	7.99 /SF	364,335
					32.50 Site, Improvements	1.00 LS	613	39,485	57,372	50,000	12,470		159,326.12 /LS	159,326	364,335.14 /LS	364,335
					32.0 Exterior Improvements	1.00 LS	613	39,485	57,372	50,000	12,470		159,326.12 /LS	159,326	364,335.14 /LS	364,335
					06.1 Bank Stabilization	45,600.00 SF	613	39,485	57,372	50,000	12,470		3.49 /SF	159,326	7.99 /SF	364,335
	07.1				Offhaul Material											
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.0019	Offhaul Material	17,100.00 CY	369	27,834		256,500	30,682	256,500	33.42 /CY	571,516	76.51 /CY	1,308,388
					31.20 Earthworks, Site	17,100.00 CY	369	27,834		256,500	30,682	256,500	33.42 /CY	571,516	76.51 /CY	1,308,388
					31.0 Earthwork	1.00 LS	369	27,834		256,500	30,682	256,500	571,515.95 /LS	571,516	1,308,387.91 /LS	1,308,388
					07.1 Offhaul Material	17,100.00 CY	369	27,834		256,500	30,682	256,500	33.42 /CY	571,516	76.51 /CY	1,308,388
	08.1				Pumping For Water Diversion											
		31.0			Earthwork											
			31.19		Dewatering and Bypass Pumping											
				31.19.06.0021	Pumping For Water Diversion	52.00 WK	616	47,510	209,950	4,500	262,634		10,088.35 /WK	524,594	23,069.30 /WK	1,199,603
					31.19 Dewatering and Bypass Pumping	52.00 WK	616	47,510	209,950	4,500	262,634		10,088.35 /WK	524,594	23,069.30 /WK	1,199,603
					31.0 Earthwork	1.00 LS	616	47,510	209,950	4,500	262,634		524,594.38 /LS	524,594	1,199,603.45 /LS	1,199,603
					08.1 Pumping For Water Diversion	1.00 LS	616	47,510	209,950	4,500	262,634		524,594.38 /LS	524,594	1,199,603.45 /LS	1,199,603
	09.1				Diversion Piping 12"											
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.09.0022	Diversion Piping 12"	2,200.00 LF	579	46,675	46,066	8,688	26,599		58.19 /LF	128,028	133.08 /LF	292,765
					33.07 Buried Process Pipe, HDPE	2,200.00 LF	579	46,675	46,066	8,688	26,599		58.19 /LF	128,028	133.08 /LF	292,765
					33.0 Utilities	2,200.00 LF	579	46,675	46,066	8,688	26,599		58.19 /LF	128,028	133.08 /LF	292,765
					09.1 Diversion Piping 12"	2,200.00 LF	579	46,675	46,066	8,688	26,599		58.19 /LF	128,028	133.08 /LF	292,765
	10.1				Fish Screen											
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.50.0023	Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,612.56 /EA	3,613
					33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.56 /LF	3,613
					33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.56 /LF	3,613
					10.1 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,612.56 /EA	3,613
	11.1				Cofferdam											
		31.0			Earthwork											
			31.30		Site Specialties											
				31.30.01.0024	Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	454,461.16 /EA	908,922

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	908,922.32 /LS	908,922
					31.0 Earthwork	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	908,922.32 /LS	908,922
					11.1 Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	454,461.16 /EA	908,922
	12.1				Fish Salvage											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0025	Fish Salvage	1.00 LS	1,040	77,999	3,000				80,998.50 /LS	80,999	164,971.73 /LS	164,972
					01.01 Construction Operations	1.00 LS	1,040	77,999	3,000				80,998.50 /LS	80,999	164,971.73 /LS	164,972
					01.0 General Requirements	1.00 LS	1,040	77,999	3,000				80,998.50 /LS	80,999	164,971.73 /LS	164,972
					12.1 Fish Salvage	40.00 DY	1,040	77,999	3,000				2,024.96 /DY	80,999	4,124.29 /DY	164,972
					02.0 Daylight Channel In Place	**1.00 LS**	9,189	630,132	848,126	801,863	598,679	367,090	**3,245,889.80 /LS**	3,245,890	**7,404,339.21 /LS**	7,404,339
03.0					**Replace Uglow Bridge**											
	01.2				Demo Arch Culvert at Uglow Bridge											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0001	Demo Existing Bridge	418.00 SF	225	14,169			11,500		61.41 /SF	25,669	140.42 /SF	58,697
					02.40 Demolition	1.00 LS	225	14,169			11,500		25,668.77 /LS	25,669	58,697.41 /LS	58,697
					02.0 Existing Conditions	1.00 LS	225	14,169			11,500		25,668.77 /LS	25,669	58,697.41 /LS	58,697
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.09.1015	Backfill Bridge	125.00 CY	136	9,327			8,944		146.17 /CY	18,271	334.25 /CY	41,781
					31.20 Earthworks, Site	125.00 CY	136	9,327			8,944		146.17 /CY	18,271	334.25 /CY	41,781
					31.0 Earthwork	1.00 LS	136	9,327			8,944		18,271.17 /LS	18,271	41,781.17 /LS	41,781
					01.2 Demo Arch Culvert at Uglow Bridge	1.00 LS	361	23,496			20,444		43,939.94 /LS	43,940	100,478.58 /LS	100,479
	02.2				New Uglow Bridge											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											
				03.00.99.0028	New Uglow Bridge	2,000.00 SF				1,700,000			850.00 /SF	1,700,000	1,943.72 /SF	3,887,434
					03.10 Cast-In-Place Concrete Work	1.00 LS				1,700,000			1,700,000.00 /LS	1,700,000	3,887,433.71 /LS	3,887,434
					03.0 Concrete Work	1.00 LS				1,700,000			1,700,000.00 /LS	1,700,000	3,887,433.71 /LS	3,887,434
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.1004	Excavation at Uglow Bridge	1,685.00 CY	6,998	392,175	12,410	102,000	391,885	12,210	540.46 /CY	910,680	1,235.93 /CY	2,082,547
				31.20.09.1005	Grading for Uglow Bridge	431.00 CY	29	1,949	12,068		2,026		37.22 /CY	16,044	85.12 /CY	36,687
					31.20 Earthworks, Site	2,116.00 CY	7,027	394,124	24,478	102,000	393,911	12,210	437.96 /CY	926,724	1,001.53 /CY	2,119,234
					31.0 Earthwork	1.00 LS	7,027	394,124	24,478	102,000	393,911	12,210	926,723.67 /LS	926,724	2,119,233.67 /LS	2,119,234
		32.0			Exterior Improvements											
			32.12		Paving											
				32.40.02.1005	Paving for Uglow Bridge	422.22 SY	218	14,575	20,466		1,561		86.69 /SY	36,603	198.24 /SY	83,700
					32.12 Paving	422.22 SY	218	14,575	20,466		1,561		86.69 /SY	36,603	198.24 /SY	83,700
			32.50		Site, Improvements											
				32.50.06.0009	Site Improvement Allowances	1.00 LS				27,500			27,500.00 /LS	27,500	62,884.95 /LS	62,885
					32.50 Site, Improvements	1.00 LS				27,500			27,500.00 /LS	27,500	62,884.95 /LS	62,885
					32.0 Exterior Improvements	1.00 LS	218	14,575	20,466	27,500	1,561		64,102.63 /LS	64,103	146,585.12 /LS	146,585
					02.2 New Uglow Bridge	1.00 LS	7,246	408,699	44,944	1,829,500	395,473	12,210	2,690,826.30 /LS	2,690,826	6,153,252.50 /LS	6,153,253
	03.2				Bypass Pumping											
		03.0			Concrete Work											
			31.19		Dewatering and Bypass Pumping											
				31.19.06.0003	Bypass Pumping	12.00 WK	216	17,082	49,950	4,500	62,634		11,180.53 /WK	134,166	25,566.81 /WK	306,802
					31.19 Dewatering and Bypass Pumping	12.00 WK	216	17,082	49,950	4,500	62,634		11,180.53 /WK	134,166	25,566.81 /WK	306,802
					03.0 Concrete Work	1.00 LS	216	17,082	49,950	4,500	62,634		134,166.38 /LS	134,166	306,801.71 /LS	306,802
					03.2 Bypass Pumping	1.00 LS	216	17,082	49,950	4,500	62,634		134,166.38 /LS	134,166	306,801.71 /LS	306,802
	04.2				Diversion Piping 12"											
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.09.0004	Diversion Piping 12"	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
					33.07 Buried Process Pipe, HDPE	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
					33.0 Utilities	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
					04.2 Diversion Piping 12"	200.00 LF	99	7,939	6,067	2,172	4,738		104.58 /LF	20,915	239.14 /LF	47,827
	05.2				Fish Screen											
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.50.0005	Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,612.57 /EA	3,613
					33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.57 /LF	3,613
					33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,612.57 /LF	3,613
					05.2 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,612.57 /EA	3,613
	06.2				Cofferdam											
		31.0			Earthwork											
			31.30		Site Specialties											
				31.30.01.0006	Cofferdam	2.00 EA	480	30,989	37,000	120,000	17,489		102,738.81 /EA	205,478	234,935.48 /EA	469,871
					31.30 Site Specialties	1.00 LS	480	30,989	37,000	120,000	17,489		205,477.62 /LS	205,478	469,870.95 /LS	469,871
					31.0 Earthwork	1.00 LS	480	30,989	37,000	120,000	17,489		205,477.62 /LS	205,478	469,870.95 /LS	469,871
					06.2 Cofferdam	1.00 LS	480	30,989	37,000	120,000	17,489		205,477.62 /LS	205,478	469,870.95 /LS	469,871
	07.2				Fish Salvage											
		01.0			General Requirements											
			01.01		Construction Operations											

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
				01.01.06.0007	Fish Salvage	10.00 DY	260	19,500	750				2,024.96 /DY	20,250	4,124.30 /DY	41,243
					01.01 Construction Operations	1.00 LS	260	19,500	750				20,249.63 /LS	20,250	41,242.95 /LS	41,243
					01.0 General Requirements	1.00 LS	260	19,500	750				20,249.63 /LS	20,250	41,242.95 /LS	41,243
					07.2 Fish Salvage	10.00 DY	260	19,500	750				2,024.96 /DY	20,250	4,124.30 /DY	41,243
	08.2				Traffic Control											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0008	Traffic Control Allowance	90.00 DY				135,000			1,500.00 /DY	135,000	3,055.09 /DY	274,958
					01.01 Construction Operations	1.00 LS				135,000			135,000.00 /LS	135,000	274,957.97 /LS	274,958
					01.0 General Requirements	1.00 LS				135,000			135,000.00 /LS	135,000	274,957.97 /LS	274,958
					08.2 Traffic Control	1.00 LS				135,000			135,000.00 /LS	135,000	274,957.97 /LS	274,958
					03.0 Replace Uglow Bridge	**1.00 LS**	8,662	507,785	140,211	2,091,172	500,777	12,210	**3,252,154.76 /LS**	3,252,155	**7,398,044.31 /LS**	7,398,044

Estimate Totals

Description	Amount	Totals		Rate	Cost / Unit	% of Total	
Labor	1,603,392		hrs			6.98%	
Material	1,389,506					6.05%	
Subcontract	5,031,707					21.90%	
Equipment	1,678,462		hrs			7.31%	
Other	386,635					1.68%	
Subtotal Raw Costs	**10,089,702**	**10,089,702**				**43.91%**	**43.91%**
Material Sales & Use Tax - %							
Construction Equip Tax - %							
Total Taxes		**10,089,702**					**43.91%**
Location Adj. Factor							
Productivity Adjustment							
Subtotal Adj. Factors		**10,089,702**					**43.91%**
Existing Conditions I,OH&P	278,610			25.000 %		1.21%	
Concrete Work I,OH&P	1,057,857			25.000 %		4.60%	
Masonry Work I,OH&P				25.000 %			
Metals Work I,OH&P				25.000 %			
Architectural (Div 6-12)I,OH&P				25.000 %			
Special Construction I,OH&P				25.000 %			
Conveying Equipment I,OH&P				25.000 %			
Mechanical Work I,OH&P				25.000 %			
Electrical Work I,OH&P				25.000 %			
Site/Civil I,OH&P	1,044,434			25.000 %		4.55%	
Buried Piping I,OH&P	43,649			25.000 %		0.19%	
Tank Construction I,OH&P				25.000 %			
Process Piping I,OH&P				25.000 %			
Instruments & Controls I,OH&P				25.000 %			
Material Handling I,OH&P				25.000 %			
Process Equipment I,OH&P				25.000 %			
Subtotal Subcontractor I,OH&P	**2,424,550**	**12,514,252**				**10.55%**	**54.46%**
Contractor Contingency							
Subtotal Contingency		**12,514,252**					**54.46%**
Total Cost To Prime Contractor		**12,514,252**					**54.46%**
General Conditions	1,251,425			10.000 %		5.45%	
Mobilization/Demobilization	625,713			5.000 %		2.72%	
Subtotal Indirect Costs	**1,877,138**	**14,391,390**				**8.17%**	**62.63%**
Prime Contractor Home OfficeOH	1,439,139			10.000 %		6.26%	
Prime Contractor Profit	2,158,709			15.000 %		9.40%	
Bonds & Insurance	390,367			2.170 %		1.70%	
Subtotal OH&P	**3,988,215**	**18,379,605**				**17.36%**	**79.99%**
Contractor MU on Mech OFCI							
Contractor MU on Elec OFCI							
Total MU on OFCI Equip		**18,379,605**					**79.99%**
Design Contingency	4,594,901			25.000 %		20.00%	
Subtotal Contingency	**4,594,901**	**22,974,506**				**20.00%**	**99.99%**
Escalation							
Subtotal Escalation		**22,974,506**					**99.99%**
Corporate Activity Tax - %	2,242			0.580 %		0.01%	
Total Prime Contractor Costs	**2,242**	**22,976,748**				**0.01%**	**100.00%**
Total Construction Cost		**22,976,748**					**100.00%**
Total		***22,976,748***					

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0					Replace and Remove Main Street Bridge											
	01.0				Demo Main Street Bridge											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0001	Demo Existing Bridge at Main St.	520.00 SF	280	17,627			14,306		61.41 /SF	31,932	140.40 /SF	73,008
					02.40 Demolition	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,007.54 /LS	73,008
					02.0 Existing Conditions	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,007.54 /LS	73,008
					01.0 Demo Main Street Bridge	1.00 LS	280	17,627			14,306		31,932.44 /LS	31,932	73,007.54 /LS	73,008
	02.0				New Main St. Bridge											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											
				03.00.99.0002	New Main St. Bridge	4,400.00 SF				3,300,000			750.00 /SF	3,300,000	1,714.73 /SF	7,544,831
					03.10 Cast-In-Place Concrete Work	1.00 LS				3,300,000			3,300,000.00 /LS	3,300,000	7,544,831.08 /LS	7,544,831
					03.0 Concrete Work	1.00 LS				3,300,000			3,300,000.00 /LS	3,300,000	7,544,831.08 /LS	7,544,831
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.25.01.1001	Structural Excavation and Backfill	3,350.00 CY	7,288	401,127	18,410	150,000	403,545		290.47 /CY	973,082	664.11 /CY	2,224,769
					31.20 Earthworks, Site	3,350.00 CY	7,288	401,127	18,410	150,000	403,545		290.47 /CY	973,082	664.11 /CY	2,224,769
					31.0 Earthwork	1.00 LS	7,288	401,127	18,410	150,000	403,545		973,081.97 /LS	973,082	2,224,769.43 /LS	2,224,769
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.50.06.0009	Site Improvement Allowances	1.00 LS				102,500			102,500.00 /LS	102,500	234,347.04 /LS	234,347
					32.50 Site, Improvements	1.00 LS				102,500			102,500.00 /LS	102,500	234,347.04 /LS	234,347
					32.0 Exterior Improvements	1.00 LS				102,500			102,500.00 /LS	102,500	234,347.04 /LS	234,347
					02.0 New Main St. Bridge	1.00 LS	7,288	401,127	18,410	3,552,500	403,545		4,375,581.97 /LS	4,375,582	10,003,947.55 /LS	10,003,948
	03.0				Extend 12" Storm Drain											
		33.0			Utilities											
			33.05		Buried Process Pipe, PVC/CPVC											
				33.00.07.0003	12" Storm Drain Extension	300.00 LF	262	18,854	15,888	6,045	11,733	6,045	195.21 /LF	58,564	446.43 /LF	133,930
					33.05 Buried Process Pipe, PVC/CPVC	300.00 LF	262	18,854	15,888	6,045	11,733	6,045	195.21 /LF	58,564	446.43 /LF	133,930
					33.0 Utilities	300.00 LF	262	18,854	15,888	6,045	11,733	6,045	195.21 /LF	58,564	446.43 /LF	133,930
					03.0 Extend 12" Storm Drain	300.00 LF	262	18,854	15,888	6,045	11,733	6,045	195.21 /LF	58,564	446.43 /LF	133,930
	04.0				Traffic Control											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0008	Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,054.47 /DY	549,804
					01.01 Construction Operations	1.00 LS				270,000			270,000.00 /LS	270,000	549,804.36 /LS	549,804
					01.0 General Requirements	1.00 LS				270,000			270,000.00 /LS	270,000	549,804.36 /LS	549,804
					04.0 Traffic Control	180.00 DY				270,000			1,500.00 /DY	270,000	3,054.47 /DY	549,804
					01.0 Replace and Remove Main Street Bridge	1.00 LS	7,830	437,608	34,298	3,828,545	429,583	6,045	4,736,077.98 /LS	4,736,078	10,760,689.12 /LS	10,760,689
02.0					Daylight Channel to the South (from Main St. to Uglow)											
	01.1				Demo Asphalt											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0010	Demo Asphalt	133.33 SY	37	2,442	430	222	1,246	333	35.05 /SY	4,674	80.15 /SY	10,687
					02.40 Demolition	1.00 LS	37	2,442	430	222	1,246	333	4,673.63 /LS	4,674	10,687.30 /LS	10,687
					02.0 Existing Conditions	1.00 LS	37	2,442	430	222	1,246	333	4,673.63 /LS	4,674	10,687.30 /LS	10,687
					01.1 Demo Asphalt	1,200.00 SF	37	2,442	430	222	1,246	333	3.89 /SF	4,674	8.91 /SF	10,687
	02.1				Remove Existing 84" Culverts											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0011	Remove Existing Dual 84" Culverts	1,540.00 LF	1,068	73,442	170,145	55,450	56,666	55,450	266.98 /LF	411,152	610.61 /LF	940,345
				02.01.01.0012	Remove Existing Single 84" Culvert	670.00 LF	533	35,351	102,078	16,966	34,682	16,966	307.53 /LF	206,043	703.25 /LF	471,177
					02.40 Demolition	1.00 LS	1,601	108,793	272,223	72,416	91,348	72,416	617,195.57 /LS	617,196	1,411,521.93 /LS	1,411,522
					02.0 Existing Conditions	1.00 LS	1,601	108,793	272,223	72,416	91,348	72,416	617,195.57 /LS	617,196	1,411,521.93 /LS	1,411,522
					02.1 Remove Existing 84" Culverts	2,210.00 LF	1,601	108,793	272,223	72,416	91,348	72,416	279.27 /LF	617,196	638.70 /LF	1,411,522
	03.1				Demo Timber Bridge											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0013	Demo Timber Bridge	756.00 SF	407	25,626			20,798		61.41 /SF	46,425	140.40 /SF	106,142
					02.40 Demolition	1.00 LS	407	25,626			20,798		46,424.86 /LS	46,425	106,141.76 /LS	106,142
					02.0 Existing Conditions	1.00 LS	407	25,626			20,798		46,424.86 /LS	46,425	106,141.76 /LS	106,142
					03.1 Demo Timber Bridge	1.00 EA	407	25,626			20,798		46,424.86 /EA	46,425	106,141.76 /EA	106,142
	04.1				Creek Channel Excavation											
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.0017	Channel Excavation	54,657.00 CY	2,414	155,771			133,331		5.29 /CY	289,101	12.09 /CY	660,975
					31.20 Earthworks, Site	54,657.00 CY	2,414	155,771			133,331		5.29 /CY	289,101	12.09 /CY	660,975
					31.0 Earthwork	1.00 LS	2,414	155,771			133,331		289,101.12 /LS	289,101	660,975.47 /LS	660,975
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.50.06.0009	Site Improvement Allowances	1.00 LS				105,000			105,000.00 /LS	105,000	240,062.82 /LS	240,063
					32.50 Site, Improvements	1.00 LS				105,000			105,000.00 /LS	105,000	240,062.82 /LS	240,063
					32.0 Exterior Improvements	1.00 LS				105,000			105,000.00 /LS	105,000	240,062.82 /LS	240,063
					04.1 Creek Channel Excavation	54,657.00 CY	2,414	155,771		105,000	133,331		7.21 /CY	394,101	16.49 /CY	901,038
	05.1				Bed Material											
		31.0			Earthwork											

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 3 Alt 2 Daylight to the South Rev #2 6-8-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #2 6-8-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
			31.20		Earthworks, Site											
				31.20.07.0018	Bed Material	406.00 CY	125	9,417	11,368		13,866		85.35 /CY	34,651	195.13 /CY	79,223
					31.20 Earthworks, Site	406.00 CY	125	9,417	11,368		13,866		85.35 /CY	34,651	195.13 /CY	79,223
					31.0 Earthwork	1.00 LS	125	9,417	11,368		13,866		34,650.87 /LS	34,651	79,222.70 /LS	79,223
					05.1 Bed Material	406.00 CY	125	9,417	11,368		13,866		85.35 /CY	34,651	195.13 /CY	79,223
	06.1				Bank Stabilization											
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.25.03.0020	Bank Stabilization	52,544.00 SF	314	20,280	31,456	50,000	8,067		2.09 /SF	109,802	4.78 /SF	251,043
					32.50 Site, Improvements	1.00 LS	314	20,280	31,456	50,000	8,067		109,802.44 /LS	109,802	251,042.69 /LS	251,043
					32.0 Exterior Improvements	1.00 LS	314	20,280	31,456	50,000	8,067		109,802.44 /LS	109,802	251,042.69 /LS	251,043
					06.1 Bank Stabilization	52,544.00 SF	314	20,280	31,456	50,000	8,067		2.09 /SF	109,802	4.78 /SF	251,043
	07.1				Offhaul Material											
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.0019	Offhaul Material	54,657.00 CY	1,180	88,965		819,855	98,070	819,855	33.42 /CY	1,826,745	76.50 /CY	4,181,266
					31.20 Earthworks, Site	54,657.00 CY	1,180	88,965		819,855	98,070	819,855	33.42 /CY	1,826,745	76.50 /CY	4,181,266
					31.0 Earthwork	1.00 LS	1,180	88,965		819,855	98,070	819,855	1,826,745.44 /LS	1,826,745	4,181,266.03 /LS	4,181,266
					07.1 Offhaul Material	54,657.00 CY	1,180	88,965		819,855	98,070	819,855	33.42 /CY	1,826,745	76.50 /CY	4,181,266
	08.1				Cofferdam											
		31.0			Earthwork											
			31.30		Site Specialties											
				31.30.01.0024	Cofferdam	1.00 EA	240	15,494	108,500	210,000	8,744		342,738.82 /EA	342,739	783,608.02 /EA	783,608
					31.30 Site Specialties	1.00 LS	240	15,494	108,500	210,000	8,744		342,738.82 /LS	342,739	783,608.02 /LS	783,608
					31.0 Earthwork	1.00 LS	240	15,494	108,500	210,000	8,744		342,738.82 /LS	342,739	783,608.02 /LS	783,608
					08.1 Cofferdam	1.00 LS	240	15,494	108,500	210,000	8,744		342,738.82 /LS	342,739	783,608.02 /LS	783,608
	09.1				Fill Existing Channel											
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.09.1002	Fill Existing Channel	11,200.00 CY	819	55,221	381,140		55,862		43.95 /CY	492,223	100.48 /CY	1,125,376
					31.20 Earthworks, Site	11,200.00 CY	819	55,221	381,140		55,862		43.95 /CY	492,223	100.48 /CY	1,125,376
					31.0 Earthwork	1.00 LS	819	55,221	381,140		55,862		492,223.16 /LS	492,223	1,125,375.93 /LS	1,125,376
					09.1 Fill Existing Channel	1.00 LS	819	55,221	381,140		55,862		492,223.16 /LS	492,223	1,125,375.93 /LS	1,125,376
					02.0 Daylight Channel to the South (from Main St. to Uglow)	**1.00 LS**	7,137	482,010	805,116	1,257,493	431,332	892,604	**3,868,555.91 /LS**	3,868,556	**8,849,904.65 /LS**	8,849,905
03.0					**Replace and Remove Uglow Bridge**											
	01.2				Grout Fill Arch Culvert at Uglow Bridge											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											
				03.10.16.0026	Grout Fill Arch Culvert at Uglow Bridge	100.00 CY	225	14,047	18,250	2,080			343.77 /CY	34,377	785.96 /CY	78,596
					03.10 Cast-In-Place Concrete Work	1.00 LS	225	14,047	18,250	2,080			34,376.83 /LS	34,377	78,596.18 /LS	78,596
					03.0 Concrete Work	1.00 LS	225	14,047	18,250	2,080			34,376.83 /LS	34,377	78,596.18 /LS	78,596
					01.2 Grout Fill Arch Culvert at Uglow Bridge	1.00 LS	225	14,047	18,250	2,080			34,376.83 /LS	34,377	78,596.18 /LS	78,596
	02.2				New Uglow Bridge											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											
				03.00.99.0028	New Uglow Bridge	2,300.00 SF				1,955,000			850.00 /SF	1,955,000	1,943.37 /SF	4,469,741
					03.10 Cast-In-Place Concrete Work	1.00 LS				1,955,000			1,955,000.00 /LS	1,955,000	4,469,740.85 /LS	4,469,741
					03.0 Concrete Work	1.00 LS				1,955,000			1,955,000.00 /LS	1,955,000	4,469,740.85 /LS	4,469,741
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.25.01.1003	Structural Excavation	1,590.00 CY	7,004	389,332	12,965	116,400	388,593		570.62 /CY	907,289	1,304.62 /CY	2,074,347
					31.20 Earthworks, Site	1,590.00 CY	7,004	389,332	12,965	116,400	388,593		570.62 /CY	907,289	1,304.62 /CY	2,074,347
					31.0 Earthwork	1.00 LS	7,004	389,332	12,965	116,400	388,593		907,289.26 /LS	907,289	2,074,346.74 /LS	2,074,347
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.40.02.1004	Paving at Uglow	152.78 SY	83	5,526	7,801		584		91.05 /SY	13,911	208.17 /SY	31,804
				32.50.06.0009	Site Improvement Allowances	1.00 LS				27,500			27,500.00 /LS	27,500	62,873.61 /LS	62,874
					32.50 Site, Improvements	1.00 LS	83	5,526	7,801	27,500	584		41,410.55 /LS	41,411	94,677.47 /LS	94,677
					32.0 Exterior Improvements	1.00 LS	83	5,526	7,801	27,500	584		41,410.55 /LS	41,411	94,677.47 /LS	94,677
					02.2 New Uglow Bridge	1.00 LS	7,087	394,858	20,766	2,098,900	389,177		2,903,699.81 /LS	2,903,700	6,638,765.06 /LS	6,638,765
	03.2				Traffic Control											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0008	Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,054.47 /DY	549,804
					01.01 Construction Operations	1.00 LS				270,000			270,000.00 /LS	270,000	549,804.35 /LS	549,804
					01.0 General Requirements	1.00 LS				270,000			270,000.00 /LS	270,000	549,804.35 /LS	549,804
					03.2 Traffic Control	1.00 LS				270,000			270,000.00 /LS	270,000	549,804.35 /LS	549,804
					03.0 Replace and Remove Uglow Bridge	**1.00 LS**	7,312	408,905	39,016	2,370,980	389,177		**3,208,076.64 /LS**	3,208,077	**7,267,165.59 /LS**	7,267,166
04.0					**Excavating Floodplain**											
	01.3				Demo, Clear and Grub											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0030	Clear and Grub	1.00 LS	1,620	102,941	26,175		90,039		219,154.38 /LS	219,154	501,055.38 /LS	501,055
					02.40 Demolition	1.00 LS	1,620	102,941	26,175		90,039		219,154.38 /LS	219,154	501,055.38 /LS	501,055
					02.0 Existing Conditions	1.00 LS	1,620	102,941	26,175		90,039		219,154.38 /LS	219,154	501,055.38 /LS	501,055
					01.3 Demo, Clear and Grub	1.00 LS	1,620	102,941	26,175		90,039		219,154.38 /LS	219,154	501,055.38 /LS	501,055
	02.3				Site Earthwork, Grading and Offhaul											

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 3 Alt 2 Daylight to the South Rev #2 6-8-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #2 6-8-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.0031	Site Earthwork, Grading and Offhaul	23,143.00 CY	2,880	189,379	444,613	15,000	239,202		38.38 /CY	888,194	87.75 /CY	2,030,689
					31.20 Earthworks, Site	23,143.00 CY	2,880	189,379	444,613	15,000	239,202		38.38 /CY	888,194	87.75 /CY	2,030,689
					31.0 Earthwork	1.00 LS	2,880	189,379	444,613	15,000	239,202		888,194.06 /LS	888,194	2,030,689.14 /LS	2,030,689
					02.3 Site Earthwork, Grading and Offhaul	1.00 LS	2,880	189,379	444,613	15,000	239,202		888,194.06 /LS	888,194	2,030,689.14 /LS	2,030,689
	03.3				Vegetation Restoration											
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.35.03.0031	Vegetation Restoration	12,440.00 SY	1,178	75,531	114,605		20,704		16.95 /SY	210,840	38.75 /SY	482,046
					32.50 Site, Improvements	1.00 LS	1,178	75,531	114,605		20,704		210,840.10 /LS	210,840	482,046.35 /LS	482,046
					32.0 Exterior Improvements	1.00 LS	1,178	75,531	114,605		20,704		210,840.10 /LS	210,840	482,046.35 /LS	482,046
					03.3 Vegetation Restoration	12,440.00 SY	1,178	75,531	114,605		20,704		16.95 /SY	210,840	38.75 /SY	482,046
	04.3				Paving											
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.40.02.0032	Paving	277.78 SY	143	9,571	13,319		1,015		86.06 /SY	23,905	196.76 /SY	54,655
					32.50 Site, Improvements	1.00 LS	143	9,571	13,319		1,015		23,905.38 /LS	23,905	54,655.15 /LS	54,655
					32.0 Exterior Improvements	1.00 LS	143	9,571	13,319		1,015		23,905.38 /LS	23,905	54,655.15 /LS	54,655
					04.3 Paving	277.78 SY	143	9,571	13,319		1,015		86.06 /SY	23,905	196.76 /SY	54,655
	05.3				Site Grading											
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.12.1005	Grading Area	22,300.00 SY	476	31,851			55,339		3.91 /SY	87,190	8.94 /SY	199,343
					31.20 Earthworks, Site	1.00 CY	476	31,851			55,339		87,189.60 /CY	87,190	199,342.68 /CY	199,343
					31.0 Earthwork	1.00 LS	476	31,851			55,339		87,189.60 /LS	87,190	199,342.68 /LS	199,343
					05.3 Site Grading	1.00 LS	476	31,851			55,339		87,189.60 /LS	87,190	199,342.68 /LS	199,343
					04.0 Excavating Floodplain	1.00 LS	6,297	409,272	598,713	15,000	406,299		1,429,283.52 /LS	1,429,284	3,267,788.70 /LS	3,267,789

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 3 Alt 2 Daylight to the South Rev #2 6-8-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #2 6-8-23
Duration:	Design Stage: 2%	Estimate Class: 5

Estimate Totals

Description	Amount	Totals	Rate	Cost / Unit	% of Total	
Labor	1,737,794		hrs		5.76%	
Material	1,477,143				4.90%	
Subcontract	7,472,018				24.79%	
Equipment	1,656,391		hrs		5.49%	
Other	898,649				2.98%	
Subtotal Raw Costs	**13,241,995**	**13,241,995**			**43.93%**	**43.93%**
Material Sales & Use Tax - %						
Construction Equip Tax - %						
Total Taxes		**13,241,995**				**43.93%**
Location Adj. Factor						
Productivity Adjustment						
Subtotal Adj. Factors		**13,241,995**				**43.93%**
Existing Conditions I,OH&P	229,845		25.000 %		0.76%	
Concrete Work I,OH&P	1,322,344		25.000 %		4.39%	
Masonry Work I,OH&P			25.000 %			
Metals Work I,OH&P			25.000 %			
Architectural (Div 6-12)I,OH&P			25.000 %			
Special Construction I,OH&P			25.000 %			
Conveying Equipment I,OH&P			25.000 %			
Mechanical Work I,OH&P			25.000 %			
Electrical Work I,OH&P			25.000 %			
Site/Civil I,OH&P	1,608,668		25.000 %		5.34%	
Buried Piping I,OH&P	14,641		25.000 %		0.05%	
Tank Construction I,OH&P			25.000 %			
Process Piping I,OH&P			25.000 %			
Instruments & Controls I,OH&P			25.000 %			
Material Handling I,OH&P			25.000 %			
Process Equipment I,OH&P			25.000 %			
Subtotal Subcontractor I,OH&P	**3,175,498**	**16,417,493**			**10.53%**	**54.46%**
Contractor Contingency						
Subtotal Contingency		**16,417,493**				**54.46%**
Total Cost To Prime Contractor		**16,417,493**				**54.46%**
General Conditions	1,641,749		10.000 %		5.45%	
Mobilization/Demobilization	820,875		5.000 %		2.72%	
Subtotal Indirect Costs	**2,462,624**	**18,880,117**			**8.17%**	**62.63%**
Prime Contractor Home OfficeOH	1,888,012		10.000 %		6.26%	
Prime Contractor Profit	2,832,017		15.000 %		9.39%	
Bonds & Insurance	512,123		2.170 %		1.70%	
Subtotal OH&P	**5,232,152**	**24,112,269**			**17.36%**	**79.99%**
Contractor MU on Mech OFCI						
Contractor MU on Elec OFCI						
Total MU on OFCI Equip		**24,112,269**				**79.99%**
Design Contingency	6,028,067		25.000 %		20.00%	
Subtotal Contingency	**6,028,067**	**30,140,336**			**20.00%**	**99.98%**
Escalation						
Subtotal Escalation		**30,140,336**				**99.98%**
Corporate Activity Tax	5,212		0.580 %		0.02%	
Total Prime Contractor Costs	**5,212**	**30,145,548**			**0.02%**	**100.00%**
Total Construction Cost		**30,145,548**				**100.00%**
Total		***30,145,548***				

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 4 Alt 1 Channel Widening Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0					**Monmouth Cutoff and Holman Bridge**											
	01.0				Demo Monmouth Cutoff Bridge											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0001	Demo Existing Bridge	5,600.00 SF	3,015	189,825			154,063		61.41 /SF	343,888	140.61 /SF	787,420
					02.40 Demolition	1.00 LS	3,015	189,825			154,063		343,887.84 /LS	343,888	787,419.99 /LS	787,420
					02.0 Existing Conditions	1.00 LS	3,015	189,825			154,063		343,887.84 /LS	343,888	787,419.99 /LS	787,420
					01.0 Demo Monmouth Cutoff Bridge	1.00 LS	3,015	189,825			154,063		343,887.84 /LS	343,888	787,419.99 /LS	787,420
	02.0				New Bridge											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											
				03.00.99.0002	New Monmouth Cutoff Bridge	6,000.00 SF				5,100,000			850.00 /SF	5,100,000	1,919.64 /SF	11,517,830
					03.10 Cast-In-Place Concrete Work	1.00 LS				5,100,000			5,100,000.00 /LS	5,100,000	11,517,829.59 /LS	11,517,830
					03.0 Concrete Work	1.00 LS				5,100,000			5,100,000.00 /LS	5,100,000	11,517,829.59 /LS	11,517,830
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.1001	Structrual Excavation and Backfill	3,260.00 CY	7,549	411,106	200	186,000	415,249	28,320	319.29 /CY	1,040,874	730.00 /CY	2,379,790
				31.20.09.1002	Grading for Street	93.00 CY	11	735	2,604		678		43.19 /CY	4,017	100.02 /CY	9,302
					31.20 Earthworks, Site	3,353.00 CY	7,560	411,840	2,804	186,000	415,927	28,320	311.63 /CY	1,044,891	712.52 /CY	2,389,092
					31.0 Earthwork	1.00 LS	7,560	411,840	2,804	186,000	415,927	28,320	1,044,891.28 /LS	1,044,891	2,389,091.52 /LS	2,389,092
		32.0			Exterior Improvements											
			32.12		Paving											
				32.40.02.1003	Paving at Street	311.11 SY	169	11,244	15,954		1,183		91.23 /SY	28,382	209.88 /SY	65,297
					32.12 Paving	311.11 SY	169	11,244	15,954		1,183		91.23 /SY	28,382	209.88 /SY	65,297
			32.50		Site, Improvements											
				32.50.06.0009	Site Improvement Allowances	1.00 LS				35,000			35,000.00 /LS	35,000	79,043.93 /LS	79,044
					32.50 Site, Improvements	1.00 LS				35,000			35,000.00 /LS	35,000	79,043.93 /LS	79,044
					32.0 Exterior Improvements	1.00 LS	169	11,244	15,954	35,000	1,183		63,381.92 /LS	63,382	144,341.22 /LS	144,341
					02.0 New Bridge	1.00 LS	7,730	423,085	18,758	5,321,000	417,111	28,320	6,208,273.20 /LS	6,208,273	14,051,262.33 /LS	14,051,262
	03.0				Bypass Pumping and Channelization											
		03.0			Concrete Work											
			31.19		Dewatering and Bypass Pumping											
				31.19.06.0003	Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
					31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
					03.0 Concrete Work	1.00 LS	2,176	166,179	235,950	4,500	340,634		747,263.58 /LS	747,264	1,727,979.43 /LS	1,727,979
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.0017	Channel Excavation	2,185.00 CY	207	12,809			6,429		8.80 /CY	19,238	20.09 /CY	43,897
				31.20.07.0019	Offhaul Material	2,185.00 CY	47	3,557		32,775	3,921	32,775	33.42 /CY	73,027	75.61 /CY	165,199
					31.20 Earthworks, Site	4,370.00 CY	254	16,366		32,775	10,349	32,775	21.11 /CY	92,265	47.85 /CY	209,095
			31.30		Site Specialties											
				31.30.01.0006	Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	453,258.43 /EA	906,517
					31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	906,516.86 /LS	906,517
					31.0 Earthwork	1.00 LS	734	47,354	109,000	272,775	27,838	32,775	489,742.46 /LS	489,742	1,115,612.05 /LS	1,115,612
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.09.0004	Diversion Piping 12"	750.00 LF	231	18,591	13,752	2,172	10,750		60.35 /LF	45,264	138.59 /LF	103,940
					33.07 Buried Process Pipe, HDPE	750.00 LF	231	18,591	13,752	2,172	10,750		60.35 /LF	45,264	138.59 /LF	103,940
					33.0 Utilities	750.00 LF	231	18,591	13,752	2,172	10,750		60.35 /LF	45,264	138.59 /LF	103,940
					03.0 Bypass Pumping and Channelization	1.00 LS	3,141	232,125	358,702	279,447	379,222	32,775	1,282,270.32 /LS	1,282,270	2,947,531.32 /LS	2,947,531
	04.0				Fish Screen											
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.50.0005	Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,672.82 /EA	3,673
					33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
					33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
					04.0 Fish Screen	1.00 LS	1	80	1,500				1,579.80 /LS	1,580	3,672.82 /LS	3,673
	05.0				Fish Salvage											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0007	Fish Salvage	20.00 DY	35	2,600	100				135.00 /DY	2,700	271.48 /DY	5,430
					01.01 Construction Operations	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.59 /LS	5,430
					01.0 General Requirements	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.59 /LS	5,430
					05.0 Fish Salvage	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.59 /LS	5,430
	06.0				Bank Stabilization											
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.25.03.0020	Bank Stabilization	1,520.00 SY	105	6,778	9,145	25,000	2,614		28.64 /SY	43,538	65.23 /SY	99,149
					32.50 Site, Improvements	1.00 LS	105	6,778	9,145	25,000	2,614		43,537.70 /LS	43,538	99,148.61 /LS	99,149
					32.0 Exterior Improvements	1.00 LS	105	6,778	9,145	25,000	2,614		43,537.70 /LS	43,538	99,148.61 /LS	99,149
					06.0 Bank Stabilization	1.00 LS	105	6,778	9,145	25,000	2,614		43,537.70 /LS	43,538	99,148.61 /LS	99,149
	07.0				Traffic Control											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0008	Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
					01.01 Construction Operations	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 4 Alt 1 Channel Widening Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					01.0 General Requirements	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
					07.0 Traffic Control	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
	08.0				12" Outfall Line											
		33.0			Utilities											
			33.05		Buried Process Pipe, PVC/CPVC											
				33.00.07.1017	12" Outfall Line	100.00 LF	254	18,296	4,357	2,010	11,847	2,010	385.20 /LF	38,520	881.27 /LF	88,127
					33.05 Buried Process Pipe, PVC/CPVC	100.00 LF	254	18,296	4,357	2,010	11,847	2,010	385.20 /LF	38,520	881.27 /LF	88,127
					33.0 Utilities	100.00 LF	254	18,296	4,357	2,010	11,847	2,010	385.20 /LF	38,520	881.27 /LF	88,127
					08.0 12" Outfall Line	100.00 LF	254	18,296	4,357	2,010	11,847	2,010	385.20 /LF	38,520	881.27 /LF	88,127
					01.0 Monmouth Cutoff and Holman Bridge	**1.00 LS**	14,280	872,788	392,562	5,897,457	964,856	63,105	**8,190,768.56 /LS**	8,190,769	**18,524,859.31 /LS**	18,524,859
02.0					**Holman Ave Bridge**											
	01.1				Demolition of Holman Bridge											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0001	Demo Existing Bridge	3,000.00 SF	1,615	101,692			82,534		61.41 /SF	184,226	140.61 /SF	421,832
					02.40 Demolition	1.00 LS	1,615	101,692			82,534		184,225.63 /LS	184,226	421,832.14 /LS	421,832
					02.0 Existing Conditions	1.00 LS	1,615	101,692			82,534		184,225.63 /LS	184,226	421,832.14 /LS	421,832
					01.1 Demolition of Holman Bridge	1.00 LS	1,615	101,692			82,534		184,225.63 /LS	184,226	421,832.14 /LS	421,832
	02.1				Clear Channel											
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.15.01.1005	Clear Channel	1.00 AC	295	6,442		12,500	8,229	12,105	39,275.60 /AC	39,276	89,275.94 /AC	89,276
					31.20 Earthworks, Site	807.00 CY	295	6,442		12,500	8,229	12,105	48.67 /CY	39,276	110.63 /CY	89,276
					31.0 Earthwork	1.00 LS	295	6,442		12,500	8,229	12,105	39,275.60 /LS	39,276	89,275.94 /LS	89,276
					02.1 Clear Channel	1.00 LS	295	6,442		12,500	8,229	12,105	39,275.60 /LS	39,276	89,275.94 /LS	89,276
	03.1				Bypass and Channeliztion											
		31.0			Earthwork											
			31.19		Dewatering and Bypass Pumping											
				31.19.06.0003	Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
					31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
			31.20		Earthworks, Site											
				31.20.07.0017	Channel Excavation	2,185.00 CY	207	12,809			6,429		8.80 /CY	19,238	20.09 /CY	43,897
				31.20.07.0019	Offhaul Material	2,185.00 CY	47	3,557		32,775	3,921	32,775	33.42 /CY	73,027	75.61 /CY	165,199
					31.20 Earthworks, Site	4,370.00 CY	254	16,366		32,775	10,349	32,775	21.11 /CY	92,265	47.85 /CY	209,095
			31.30		Site Specialties											
				31.30.01.0006	Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	453,258.43 /EA	906,517
					31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	906,516.87 /LS	906,517
					31.0 Earthwork	1.00 LS	2,910	213,534	344,950	277,275	368,472	32,775	1,237,006.04 /LS	1,237,006	2,843,591.46 /LS	2,843,591
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.09.0004	Diversion Piping 12"	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	155.31 /LF	116,482
					33.07 Buried Process Pipe, HDPE	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	155.31 /LF	116,482
					33.0 Utilities	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	155.31 /LF	116,482
					03.1 Bypass and Channeliztion	1.00 LS	3,165	234,024	358,702	279,447	382,767	32,775	1,287,714.08 /LS	1,287,714	2,960,073.60 /LS	2,960,074
	04.1				Fish Screen											
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.50.0005	Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,672.82 /EA	3,673
					33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
					33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
					04.1 Fish Screen	1.00 LS	1	80	1,500				1,579.80 /LS	1,580	3,672.82 /LS	3,673
	05.1				Fish Salvage											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0007	Fish Salvage	10.00 DY	35	2,600	100				270.00 /DY	2,700	542.96 /DY	5,430
					01.01 Construction Operations	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.59 /LS	5,430
					01.0 General Requirements	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.59 /LS	5,430
					05.1 Fish Salvage	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.59 /LS	5,430
	06.1				Bank Stabilization											
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.25.03.0020	Bank Stabilization	1,520.00 SY	105	6,778	9,145	25,000	2,614		28.64 /SY	43,538	65.23 /SY	99,149
					32.50 Site, Improvements	1.00 LS	105	6,778	9,145	25,000	2,614		43,537.70 /LS	43,538	99,148.62 /LS	99,149
					32.0 Exterior Improvements	1.00 LS	105	6,778	9,145	25,000	2,614		43,537.70 /LS	43,538	99,148.62 /LS	99,149
					06.1 Bank Stabilization	1,520.00 SY	105	6,778	9,145	25,000	2,614		28.64 /SY	43,538	65.23 /SY	99,149
	07.1				Traffic Control											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0008	Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
					01.01 Construction Operations	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
					01.0 General Requirements	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
					07.1 Traffic Control	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
					02.0 Holman Ave Bridge	**1.00 LS**	5,216	351,616	369,447	586,947	476,143	44,880	**1,829,032.77 /LS**	1,829,033	**4,121,700.16 /LS**	4,121,700
03.0					**Monmouth Cutoff Culverts**											
	01.2				Demo Culverts											
		02.0			Existing Conditions											
			02.40		Demolition											

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
				02.01.01.1006	Remove Culverts	80.00 LF	221	13,653	8,489	3,975	7,585	3,975	470.96 /LF	37,677	1,077.68 /LF	86,214
					02.40 Demolition	1.00 LS	221	13,653	8,489	3,975	7,585	3,975	37,676.68 /LS	37,677	86,214.12 /LS	86,214
					02.0 Existing Conditions	1.00 LS	221	13,653	8,489	3,975	7,585	3,975	37,676.68 /LS	37,677	86,214.12 /LS	86,214
					01.2 Demo Culverts	1.00 LS	221	13,653	8,489	3,975	7,585	3,975	37,676.68 /LS	37,677	86,214.12 /LS	86,214
	02.2				2 Ea. 4' x8' x40 Box Culverts											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											
				03.10.05.1007	18" Base Slab	35.56 CY	144	9,025	19,128	3,378			886.77 /CY	31,530	2,040.34 /CY	72,546
				03.10.06.1008	18" Wall for Box Culvert	35.56 CY	317	19,918	22,681	4,089			1,313.06 /CY	46,687	3,010.07 /CY	107,026
				03.10.10.1009	18" Top for Box Culvert	35.56 CY	256	17,003	20,626	3,733			1,163.30 /CY	41,362	2,667.80 /CY	94,856
					03.10 Cast-In-Place Concrete Work	1.00 LS	718	45,946	62,434	11,200			119,579.61 /LS	119,580	274,428.72 /LS	274,429
					03.0 Concrete Work	1.00 LS	718	45,946	62,434	11,200			119,579.61 /LS	119,580	274,428.72 /LS	274,429
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.1010	Excavation for Culvert	700.00 CY	13,377	758,177	400	132,000	751,615	9,090	2,358.97 /CY	1,651,281	5,402.70 /CY	3,781,892
					31.20 Earthworks, Site	700.00 CY	13,377	758,177	400	132,000	751,615	9,090	2,358.97 /CY	1,651,281	5,402.70 /CY	3,781,892
					31.0 Earthwork	1.00 LS	13,377	758,177	400	132,000	751,615	9,090	1,651,281.43 /LS	1,651,281	3,781,891.63 /LS	3,781,892
					02.2 2 Ea. 4' x8' x40 Box Culverts	806.67 CY	14,094	804,122	62,834	143,200	751,615	9,090	2,195.28 /CY	1,770,861	5,028.49 /CY	4,056,320
	03.2				Earthwork for Channel											
		31.0			Earthwork											
			31.19		Dewatering and Bypass Pumping											
				31.19.06.0003	Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
					31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
			31.20		Earthworks, Site											
				31.20.07.1011	Excavation for Channel	8,335.00 CY	1,514	75,141		18,750	104,283	125,025	38.78 /CY	323,199	88.45 /CY	737,213
					31.20 Earthworks, Site	8,335.00 CY	1,514	75,141		18,750	104,283	125,025	38.78 /CY	323,199	88.45 /CY	737,213
			31.30		Site Specialties											
				31.30.01.0006	Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	453,258.43 /EA	906,517
					31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	906,516.86 /LS	906,517
					31.0 Earthwork	1.00 LS	4,170	272,309	344,950	263,250	462,406	125,025	1,467,940.65 /LS	1,467,941	3,371,709.11 /LS	3,371,709
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.09.0004	Diversion Piping 12"	200.00 LF	99	7,939	5,183	2,172	4,738		100.16 /LF	20,031	229.66 /LF	45,933
					33.07 Buried Process Pipe, HDPE	200.00 LF	99	7,939	5,183	2,172	4,738		100.16 /LF	20,031	229.66 /LF	45,933
					33.0 Utilities	200.00 LF	99	7,939	5,183	2,172	4,738		100.16 /LF	20,031	229.66 /LF	45,933
					03.2 Earthwork for Channel	1.00 LS	4,268	280,248	350,133	265,422	467,144	125,025	1,487,971.74 /LS	1,487,972	3,417,641.72 /LS	3,417,642
	04.2				Fish Screen											
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.50.0005	Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,672.82 /EA	3,673
					33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
					33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.82 /LF	3,673
					04.2 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,672.82 /EA	3,673
	05.2				Fish Salvage											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0007	Fish Salvage	0.00	35	2,600	100				/DY	2,700	/DY	5,430
					01.01 Construction Operations	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.58 /LS	5,430
					01.0 General Requirements	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.58 /LS	5,430
					05.2 Fish Salvage	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.58 /LS	5,430
	06.2				Bank Stabilization											
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.25.03.0020	Bank Stabilization	3,450.00 SY	148	9,643	13,237	25,000	4,150		15.08 /SY	52,030	34.41 /SY	118,722
					32.50 Site, Improvements	1.00 LS	148	9,643	13,237	25,000	4,150		52,030.21 /LS	52,030	118,722.04 /LS	118,722
					32.0 Exterior Improvements	1.00 LS	148	9,643	13,237	25,000	4,150		52,030.21 /LS	52,030	118,722.04 /LS	118,722
					06.2 Bank Stabilization	3,450.00 SY	148	9,643	13,237	25,000	4,150		15.08 /SY	52,030	34.41 /SY	118,722
	07.2				Traffic Control											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0008	Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
					01.01 Construction Operations	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.44 /LS	542,267
					01.0 General Requirements	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.44 /LS	542,267
					07.2 Traffic Control	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.44 /LS	542,267
					03.0 Monmouth Cutoff Culverts	**2.00 LS**	18,768	1,110,346	436,293	707,597	1,230,494	138,090	**1,811,409.72 /LS**	3,622,819	**4,115,134.04 /LS**	8,230,268
04.0					**Godsey Rd. Bridge**											
	01.3				Demo Godsey Bridge											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0001	Demo Existing Bridge	2,125.00 SF	1,144	72,032			58,461		61.41 /SF	130,493	140.61 /SF	298,798
					02.40 Demolition	1.00 LS	1,144	72,032			58,461		130,493.16 /LS	130,493	298,797.79 /LS	298,798
					02.0 Existing Conditions	1.00 LS	1,144	72,032			58,461		130,493.16 /LS	130,493	298,797.79 /LS	298,798
					01.3 Demo Godsey Bridge	1.00 LS	1,144	72,032			58,461		130,493.16 /LS	130,493	298,797.79 /LS	298,798
	02.3				New Godsey Rd. Bridge											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
				03.00.99.0002	New Monmouth Cutoff Bridge	6,000.00 SF				5,700,000			950.00 /SF	5,700,000	2,145.48 /SF	12,872,868
					03.10 Cast-In-Place Concrete Work	1.00 LS				5,700,000			5,700,000.00 /LS	5,700,000	12,872,868.37 /LS	12,872,868
					03.0 Concrete Work	1.00 LS				5,700,000			5,700,000.00 /LS	5,700,000	12,872,868.37 /LS	12,872,868
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.1012	Excavation for Channel	2,955.00 CY	7,703	408,367	25,205	246,000	411,054		369.08 /CY	1,090,626	843.86 /CY	2,493,607
				31.20.08.1013	Import Fill	86.00 CY	5	363	2,408		295		35.65 /CY	3,066	82.72 /CY	7,114
					31.20 Earthworks, Site	3,041.00 CY	7,708	408,730	27,613	246,000	411,349		359.65 /CY	1,093,693	822.33 /CY	2,500,720
					31.0 Earthwork	1.00 LS	7,708	408,730	27,613	246,000	411,349		1,093,692.53 /LS	1,093,693	2,500,720.34 /LS	2,500,720
		32.0			Exterior Improvements											
			32.12		Paving											
				32.40.02.1014	Paving	220.00 SY	120	7,979	11,357		855		91.78 /SY	20,191	211.16 /SY	46,455
					32.12 Paving	220.00 SY	120	7,979	11,357		855		91.78 /SY	20,191	211.16 /SY	46,455
					32.0 Exterior Improvements	1.00 LS	120	7,979	11,357		855		20,191.38 /LS	20,191	46,455.02 /LS	46,455
					02.3 New Godsey Rd. Bridge	1.00 LS	7,828	416,709	38,970	5,946,000	412,205		6,813,883.91 /LS	6,813,884	15,420,043.73 /LS	15,420,044
	03.3				Channel Earthwork											
		31.0			Earthwork											
			31.19		Dewatering and Bypass Pumping											
				31.19.06.0003	Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
					31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
			31.20		Earthworks, Site											
				31.20.07.1015	Channel Excavation	18,867.00 CY	2,667	142,382		23,750	187,923	283,005	33.77 /CY	637,060	76.95 /CY	1,451,889
					31.20 Earthworks, Site	18,867.00 CY	2,667	142,382		23,750	187,923	283,005	33.77 /CY	637,060	76.95 /CY	1,451,889
			31.30		Site Specialties											
				31.30.01.0006	Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	453,258.43 /EA	906,517
					31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	906,516.86 /LS	906,517
					31.0 Earthwork	1.00 LS	5,323	339,550	344,950	268,250	546,046	283,005	1,781,800.98 /LS	1,781,801	4,086,385.43 /LS	4,086,385
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.09.0004	Diversion Piping 12"	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
					33.07 Buried Process Pipe, HDPE	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
					33.0 Utilities	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
					03.3 Channel Earthwork	1.00 LS	5,453	350,058	351,691	270,422	553,059	283,005	1,808,234.51 /LS	1,808,235	4,147,045.57 /LS	4,147,046
	04.3				Fish Screen											
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.50.0005	Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,672.80 /EA	3,673
					33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.80 /LF	3,673
					33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.80 /LF	3,673
					04.3 Fish Screen	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.80 /LF	3,673
	05.3				Fish Salvage											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0007	Fish Salvage	2.00 DY	35	2,600	100				1,349.98 /DY	2,700	2,714.81 /DY	5,430
					01.01 Construction Operations	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.61 /LS	5,430
					01.0 General Requirements	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.61 /LS	5,430
					05.3 Fish Salvage	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.61 /LS	5,430
	06.3				Bank Stabilization											
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.25.03.0020	Bank Stabilization	5,032.00 SY	223	14,414	25,217	25,000	5,833		14.00 /SY	70,464	32.06 /SY	161,309
					32.50 Site, Improvements	1.00 LS	223	14,414	25,217	25,000	5,833		70,463.98 /LS	70,464	161,309.22 /LS	161,309
					32.0 Exterior Improvements	1.00 LS	223	14,414	25,217	25,000	5,833		70,463.98 /LS	70,464	161,309.22 /LS	161,309
					06.3 Bank Stabilization	1.00 LS	223	14,414	25,217	25,000	5,833		70,463.98 /LS	70,464	161,309.22 /LS	161,309
	07.3				Traffic Control											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0008	Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
					01.01 Construction Operations	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.44 /LS	542,267
					01.0 General Requirements	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.44 /LS	542,267
					07.3 Traffic Control	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.44 /LS	542,267
	08.3				12" Outfall Line											
		33.0			Utilities											
			33.05		Buried Process Pipe, PVC/CPVC											
				33.00.07.1018	12" Outfall Line	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	980.44 /LF	49,022
					33.05 Buried Process Pipe, PVC/CPVC	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	980.44 /LF	49,022
					33.0 Utilities	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	980.44 /LF	49,022
					08.3 12" Outfall Line	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	980.44 /LF	49,022
					04.0 Godsey Rd. Bridge	**1.00 LS**	14,813	865,157	419,657	6,513,205	1,035,768	285,015	**9,118,801.86 /LS**	9,118,802	**20,627,588.28 /LS**	20,627,588
05.0					**Diversion Structure and Bridge**											
	01.4				Demo Diversion Structure											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0001	Demo Existing Bridge	660.00 SF	355	22,372			18,157		61.41 /SF	40,530	140.61 /SF	92,803
					02.40 Demolition	1.00 LS	355	22,372			18,157		40,529.64 /LS	40,530	92,803.06 /LS	92,803
					02.0 Existing Conditions	1.00 LS	355	22,372			18,157		40,529.64 /LS	40,530	92,803.06 /LS	92,803

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
					01.4 Demo Diversion Structure	1.00 LS	355	22,372			18,157		40,529.64 /LS	40,530	92,803.06 /LS	92,803
	02.4				New Diversion Structure and Bridge											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											
				03.00.99.0002	New Monmouth Cutoff Bridge	1,275.00 SF				1,983,750			1,555.88 /SF	1,983,750	3,513.80 /SF	4,480,097
					03.10 Cast-In-Place Concrete Work	1.00 LS				1,983,750			1,983,750.00 /LS	1,983,750	4,480,096.97 /LS	4,480,097
					03.0 Concrete Work	1.00 LS				1,983,750			1,983,750.00 /LS	1,983,750	4,480,096.97 /LS	4,480,097
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.1016	Diversion Structure Earthwork	879.00 CY	6,907	384,691	7,730	108,000	382,714		1,004.70 /CY	883,135	2,300.11 /CY	2,021,801
					31.20 Earthworks, Site	879.00 CY	6,907	384,691	7,730	108,000	382,714		1,004.70 /CY	883,135	2,300.11 /CY	2,021,801
					31.0 Earthwork	1.00 LS	6,907	384,691	7,730	108,000	382,714		883,134.78 /LS	883,135	2,021,800.85 /LS	2,021,801
					02.4 New Diversion Structure and Bridge	1.00 LS	6,907	384,691	7,730	2,091,750	382,714		2,866,884.78 /LS	2,866,885	6,501,897.82 /LS	6,501,898
	03.4				Channel Earthwork											
		31.0			Earthwork											
			31.19		Dewatering and Bypass Pumping											
				31.19.06.0003	Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
					31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	33,230.37 /WK	1,727,979
			31.20		Earthworks, Site											
				31.20.07.1015	Channel Excavation	10,311.00 CY	1,386	76,388		14,250	100,869	154,665	33.57 /CY	346,172	76.51 /CY	788,856
					31.20 Earthworks, Site	10,311.00 CY	1,386	76,388		14,250	100,869	154,665	33.57 /CY	346,172	76.51 /CY	788,856
			31.30		Site Specialties											
				31.30.01.0006	Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	453,258.42 /EA	906,517
					31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	906,516.84 /LS	906,517
					31.0 Earthwork	1.00 LS	4,042	273,557	344,950	258,750	458,992	154,665	1,490,913.51 /LS	1,490,914	3,423,351.95 /LS	3,423,352
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.09.0004	Diversion Piping 12"	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
					33.07 Buried Process Pipe, HDPE	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
					33.0 Utilities	300.00 LF	131	10,509	6,741	2,172	7,013		88.11 /LF	26,434	202.20 /LF	60,660
					03.4 Channel Earthwork	1.00 LS	4,172	284,065	351,691	260,922	466,004	154,665	1,517,347.04 /LS	1,517,347	3,484,012.11 /LS	3,484,012
	04.4				Fish Screen											
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.50.0005	Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,672.81 /EA	3,673
					33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.81 /LF	3,673
					33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,672.81 /LF	3,673
					04.4 Fish Screen	1.00 LS	1	80	1,500				1,579.80 /LS	1,580	3,672.81 /LS	3,673
	05.4				Fish Salvage											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0007	Fish Salvage	2.00 DY	35	2,600	100				1,349.98 /DY	2,700	2,714.80 /DY	5,430
					01.01 Construction Operations	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.60 /LS	5,430
					01.0 General Requirements	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.60 /LS	5,430
					05.4 Fish Salvage	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,429.60 /LS	5,430
	06.4				Bank Stabilization											
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.25.03.0020	Bank Stabilization	2,062.00 SY	123	7,945	11,608	25,000	3,108		23.11 /SY	47,661	52.70 /SY	108,668
					32.50 Site, Improvements	1.00 LS	123	7,945	11,608	25,000	3,108		47,661.19 /LS	47,661	108,668.06 /LS	108,668
					32.0 Exterior Improvements	1.00 LS	123	7,945	11,608	25,000	3,108		47,661.19 /LS	47,661	108,668.06 /LS	108,668
					06.4 Bank Stabilization	1.00 LS	123	7,945	11,608	25,000	3,108		47,661.19 /LS	47,661	108,668.06 /LS	108,668
	07.4				Traffic Control											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0008	Traffic Control Allowance	180.00 DY				270,000			1,500.00 /DY	270,000	3,012.60 /DY	542,267
					01.01 Construction Operations	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
					01.0 General Requirements	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
					07.4 Traffic Control	1.00 LS				270,000			270,000.00 /LS	270,000	542,267.45 /LS	542,267
					05.0 Diversion Structure and Bridge	**1.00 LS**	11,594	701,753	372,628	2,647,672	869,984	154,665	**4,746,702.41 /LS**	4,746,702	**10,738,750.91 /LS**	10,738,751

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 4 Alt 1 Channel Widening Rev #1 5-22-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Estimate Totals

Description	Amount	Totals	Rate	Cost / Unit	% of Total	
Labor	3,901,661		hrs		6.23%	
Material	1,990,587				3.18%	
Subcontract	16,352,878				26.12%	
Equipment	4,577,245		hrs		7.31%	
Other	685,755				1.10%	
Subtotal Raw Costs	**27,508,126**	**27,508,126**			**43.94%**	**43.94%**
Material Sales & Use Tax - %	139,341		7.000 %		0.22%	
Construction Equip Tax - %	320,407		7.000 %		0.51%	
Total Taxes	**459,748**	**27,967,874**			**0.73%**	**44.67%**
Location Adj. Factor						
Productivity Adjustment						
Subtotal Adj. Factors		**27,967,874**				**44.67%**
Existing Conditions I,OH&P	184,203		25.000 %		0.29%	
Concrete Work I,OH&P	3,412,648		25.000 %		5.45%	
Masonry Work I,OH&P			25.000 %			
Metals Work I,OH&P			25.000 %			
Architectural (Div 6-12)I,OH&P			25.000 %			
Special Construction I,OH&P			25.000 %			
Conveying Equipment I,OH&P			25.000 %			
Mechanical Work I,OH&P			25.000 %			
Electrical Work I,OH&P			25.000 %			
Site/Civil I,OH&P	2,880,121		25.000 %		4.60%	
Buried Piping I,OH&P	59,184		25.000 %		0.09%	
Tank Construction I,OH&P			25.000 %			
Process Piping I,OH&P			25.000 %			
Instruments & Controls I,OH&P			25.000 %			
Material Handling I,OH&P			25.000 %			
Process Equipment I,OH&P			25.000 %			
Subtotal Subcontractor I,OH&P	**6,536,156**	**34,504,030**			**10.44%**	**55.11%**
Contractor Contingency						
Subtotal Contingency		**34,504,030**				**55.11%**
Total Cost To Prime Contractor		**34,504,030**				**55.11%**
General Conditions	3,450,403		10.000 %		5.51%	
Mobilization/Demobilization	1,035,121		3.000 %		1.65%	
Subtotal Indirect Costs	**4,485,524**	**38,989,554**			**7.16%**	**62.28%**
Prime Contractor Home OfficeOH	3,898,955		10.000 %		6.23%	
Prime Contractor Profit	5,848,433		15.000 %		9.34%	
Bonds & Insurance	1,057,592		2.170 %		1.69%	
Subtotal OH&P	**10,804,980**	**49,794,534**			**17.26%**	**79.54%**
Contractor MU on Mech OFCI						
Contractor MU on Elec OFCI						
Total MU on OFCI Equip		**49,794,534**				**79.54%**
Design Contingency	12,448,633		25.000 %		19.88%	
Subtotal Contingency	**12,448,633**	**62,243,167**			**19.88%**	**99.42%**
Escalation						
Subtotal Escalation		**62,243,167**				**99.42%**
CAT Tax	361,010		0.580 %		0.58%	
Total Contractor Costs	**361,010**	**62,604,177**			**0.58%**	**100.00%**
Total Construction Cost		**62,604,177**				**100.00%**
Total		***62,604,177***				

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Water Detention Pond Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
01.0					Monmouth Cutoff Culverts											
	01.2				Demo Culverts											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.1006	Remove Culverts	80.00 LF	221	13,653	7,424	3,975	7,585	5,040	470.96 /LF	37,677	1,057.29 /LF	84,583
					02.40 Demolition	1.00 LS	221	13,653	7,424	3,975	7,585	5,040	37,676.68 /LS	37,677	84,583.09 /LS	84,583
					02.0 Existing Conditions	1.00 LS	221	13,653	7,424	3,975	7,585	5,040	37,676.68 /LS	37,677	84,583.09 /LS	84,583
					01.2 Demo Culverts	1.00 LS	221	13,653	7,424	3,975	7,585	5,040	37,676.68 /LS	37,677	84,583.09 /LS	84,583
	02.2				2 Ea. 4' x8' x40 Box Culverts											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											
				03.10.05.1007	18" Base Slab	35.56 CY	144	9,025	18,008	3,378			855.27 /CY	30,410	1,920.06 /CY	68,270
				03.10.06.1008	18" Wall for Box Culvert	35.56 CY	317	19,918	21,561	4,089			1,281.56 /CY	45,567	2,877.08 /CY	102,297
				03.10.10.1009	18" Top for Box Culvert	35.56 CY	256	17,003	19,506	3,733			1,131.80 /CY	40,242	2,540.86 /CY	90,343
					03.10 Cast-In-Place Concrete Work	1.00 LS	718	45,946	59,074	11,200			116,219.55 /LS	116,220	260,909.68 /LS	260,910
					03.0 Concrete Work	1.00 LS	718	45,946	59,074	11,200			116,219.55 /LS	116,220	260,909.68 /LS	260,910
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.1010	Excavation for Culvert	700.00 CY	13,377	758,177	9,490	132,000	751,615	9,090	2,371.96 /CY	1,660,371	5,324.98 /CY	3,727,488
					31.20 Earthworks, Site	700.00 CY	13,377	758,177	9,490	132,000	751,615	9,090	2,371.96 /CY	1,660,371	5,324.98 /CY	3,727,488
					31.0 Earthwork	1.00 LS	13,377	758,177	9,490	132,000	751,615	9,090	1,660,371.43 /LS	1,660,371	3,727,487.71 /LS	3,727,488
					02.2 2 Ea. 4' x8' x40 Box Culverts	806.67 CY	14,094	804,122	68,564	143,200	751,615	9,090	2,202.38 /CY	1,776,591	4,944.29 /CY	3,988,397
	03.2				Earthwork for Channel											
		31.0			Earthwork											
			31.19		Dewatering and Bypass Pumping											
				31.19.06.0003	Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,261.27 /WK	1,677,586
					31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,261.27 /WK	1,677,586
			31.20		Earthworks, Site											
				31.20.07.1011	Excavation for Channel	8,335.00 CY	1,514	75,141		18,750	104,283	151,965	42.01 /CY	350,139	94.31 /CY	786,053
					31.20 Earthworks, Site	8,335.00 CY	1,514	75,141		18,750	104,283	151,965	42.01 /CY	350,139	94.31 /CY	786,053
			31.30		Site Specialties											
				31.30.01.0006	Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	446,163.10 /EA	892,326
					31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	892,326.21 /LS	892,326
					31.0 Earthwork	1.00 LS	4,170	272,309	344,950	263,250	462,406	151,965	1,494,880.65 /LS	1,494,881	3,355,965.51 /LS	3,355,966
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.09.0004	Diversion Piping 12"	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	151.78 /LF	113,838
					33.07 Buried Process Pipe, HDPE	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	151.78 /LF	113,838
					33.0 Utilities	750.00 LF	255	20,490	13,752	2,172	14,294		67.61 /LF	50,708	151.78 /LF	113,838
					03.2 Earthwork for Channel	1.00 LS	4,424	292,800	358,702	265,422	476,701	151,965	1,545,588.69 /LS	1,545,589	3,469,803.65 /LS	3,469,804
	04.2				Fish Screen											
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.50.0005	Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,546.60 /EA	3,547
					33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,546.60 /LF	3,547
					33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,546.60 /LF	3,547
					04.2 Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,546.60 /EA	3,547
	05.2				Fish Salvage											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0007	Fish Salvage	2.00 DY	52	3,900	150				2,024.97 /DY	4,050	4,039.76 /DY	8,080
					01.01 Construction Operations	1.00 LS	52	3,900	150				4,049.93 /LS	4,050	8,079.51 /LS	8,080
					01.0 General Requirements	1.00 LS	52	3,900	150				4,049.93 /LS	4,050	8,079.51 /LS	8,080
					05.2 Fish Salvage	1.00 LS	52	3,900	150				4,049.93 /LS	4,050	8,079.51 /LS	8,080
	06.2				Bank Stabilization											
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.25.03.0020	Bank Stabilization	3,450.00 SY	148	9,643	13,237	25,000	4,150		15.08 /SY	52,030	33.86 /SY	116,806
					32.50 Site, Improvements	1.00 LS	148	9,643	13,237	25,000	4,150		52,030.21 /LS	52,030	116,806.37 /LS	116,806
					32.0 Exterior Improvements	1.00 LS	148	9,643	13,237	25,000	4,150		52,030.21 /LS	52,030	116,806.37 /LS	116,806
					06.2 Bank Stabilization	3,450.00 SY	148	9,643	13,237	25,000	4,150		15.08 /SY	52,030	33.86 /SY	116,806
	07.2				Traffic Control and SWPPP											
		01.0			General Requirements											
			01.01		Construction Operations											

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Water Detention Pond Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
				01.01.06.0008	Traffic Control and SWPPP	180.00 DY				271,500		100,000	2,063.89 /DY	371,500	4,117.40 /DY	741,132
					01.01 Construction Operations	1.00 LS				271,500		100,000	371,500.00 /LS	371,500	741,132.16 /LS	741,132
					01.0 General Requirements	1.00 LS				271,500		100,000	371,500.00 /LS	371,500	741,132.16 /LS	741,132
					07.2 Traffic Control and SWPPP	1.00 LS				271,500		100,000	371,500.00 /LS	371,500	741,132.16 /LS	741,132
					01.0 Monmouth Cutoff Culverts	**1.00 LS**	18,941	1,124,197	449,577	709,097	1,240,050	266,095	**3,789,016.29 /LS**	3,789,016	**8,412,348.77 /LS**	8,412,349
02.0					**Godsey Rd. Bridge**											
	01.3				Demo Godsey Bridge											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.0001	Demo Existing Bridge	2,125.00 SF	1,144	72,032			58,461		61.41 /SF	130,493	137.86 /SF	292,954
					02.40 Demolition	1.00 LS	1,144	72,032			58,461		130,493.16 /LS	130,493	292,953.53 /LS	292,954
					02.0 Existing Conditions	1.00 LS	1,144	72,032			58,461		130,493.16 /LS	130,493	292,953.53 /LS	292,954
					01.3 Demo Godsey Bridge	1.00 LS	1,144	72,032			58,461		130,493.16 /LS	130,493	292,953.53 /LS	292,954
	02.3				New Godsey Rd. Bridge											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											
				03.00.99.0002	New Monmouth Cutoff and Holman Bridge	3,300.00 SF				3,135,000			950.00 /SF	3,135,000	2,132.72 /SF	7,037,988
					03.10 Cast-In-Place Concrete Work	1.00 LS				3,135,000			3,135,000.00 /LS	3,135,000	7,037,987.86 /LS	7,037,988
					03.0 Concrete Work	1.00 LS				3,135,000			3,135,000.00 /LS	3,135,000	7,037,987.86 /LS	7,037,988
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.1012	Excavation for Channel	2,667.00 CY	7,260	402,103	17,615	138,000	403,590	17,415	366.98 /CY	978,723	823.85 /CY	2,197,207
				31.20.08.1013	Import Fill	184.00 CY	17	1,110	5,152		982		39.37 /CY	7,244	88.38 /CY	16,262
					31.20 Earthworks, Site	2,851.00 CY	7,277	403,213	22,767	138,000	404,572	17,415	345.83 /CY	985,967	776.38 /CY	2,213,469
					31.0 Earthwork	1.00 LS	7,277	403,213	22,767	138,000	404,572	17,415	985,967.01 /LS	985,967	2,213,468.54 /LS	2,213,469
		32.0			Exterior Improvements											
			32.12		Paving											
				32.40.02.1014	Paving	220.00 SY	175	11,625	16,306		1,226		132.53 /SY	29,157	297.54 /SY	65,458
					32.12 Paving	220.00 SY	175	11,625	16,306		1,226		132.53 /SY	29,157	297.54 /SY	65,458
					32.0 Exterior Improvements	1.00 LS	175	11,625	16,306		1,226		29,157.47 /LS	29,157	65,457.70 /LS	65,458
					02.3 New Godsey Rd. Bridge	1.00 LS	7,452	414,839	39,073	3,273,000	405,798	17,415	4,150,124.48 /LS	4,150,124	9,316,914.10 /LS	9,316,914
	03.3				Channel Earthwork											
		31.0			Earthwork											
			31.19		Dewatering and Bypass Pumping											
				31.19.06.0003	Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,261.27 /WK	1,677,586
					31.19 Dewatering and Bypass Pumping	52.00 WK	2,176	166,179	235,950	4,500	340,634		14,370.45 /WK	747,264	32,261.27 /WK	1,677,586
			31.20		Earthworks, Site											
				31.20.07.1015	Channel Excavation	18,867.00 CY	2,667	142,382		23,750	187,923	322,305	35.85 /CY	676,360	80.48 /CY	1,518,409
					31.20 Earthworks, Site	18,867.00 CY	2,667	142,382		23,750	187,923	322,305	35.85 /CY	676,360	80.48 /CY	1,518,409
			31.30		Site Specialties											
				31.30.01.0006	Cofferdam	2.00 EA	480	30,989	109,000	240,000	17,489		198,738.81 /EA	397,478	446,163.10 /EA	892,326
					31.30 Site Specialties	1.00 LS	480	30,989	109,000	240,000	17,489		397,477.62 /LS	397,478	892,326.21 /LS	892,326
					31.0 Earthwork	1.00 LS	5,323	339,550	344,950	268,250	546,046	322,305	1,821,100.98 /LS	1,821,101	4,088,321.09 /LS	4,088,321
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.09.0004	Diversion Piping 12"	750.00 LF	239	19,224	13,752	4,127	11,931		65.38 /LF	49,034	146.77 /LF	110,079
					33.07 Buried Process Pipe, HDPE	750.00 LF	239	19,224	13,752	4,127	11,931		65.38 /LF	49,034	146.77 /LF	110,079
					33.0 Utilities	750.00 LF	239	19,224	13,752	4,127	11,931		65.38 /LF	49,034	146.77 /LF	110,079
					03.3 Channel Earthwork	1.00 LS	5,561	358,774	358,702	272,377	557,977	322,305	1,870,134.65 /LS	1,870,135	4,198,400.33 /LS	4,198,400
	04.3				Fish Screen											
		33.0			Utilities											
			33.07		Buried Process Pipe, HDPE											
				33.00.50.0005	Fish Screen	1.00 EA	1	80	1,500				1,579.80 /EA	1,580	3,546.60 /EA	3,547
					33.07 Buried Process Pipe, HDPE	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,546.60 /LF	3,547
					33.0 Utilities	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,546.60 /LF	3,547
					04.3 Fish Screen	1.00 LF	1	80	1,500				1,579.80 /LF	1,580	3,546.60 /LF	3,547
	05.3				Fish Salvage											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0007	Fish Salvage	2.00 DY	35	2,600	100				1,349.98 /DY	2,700	2,693.17 /DY	5,386
					01.01 Construction Operations	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,386.34 /LS	5,386
					01.0 General Requirements	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,386.34 /LS	5,386
					05.3 Fish Salvage	1.00 LS	35	2,600	100				2,699.96 /LS	2,700	5,386.34 /LS	5,386
	06.3				Bank Stabilization											

BID FORM SUMMARY

Project type:
Job Size:
Duration:

Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Water Detention Pond Rev #1 5-22-23
Project Number: D3540100
Design Stage: 2%

Estimator: John DeWolf
Rev/Date: Rev #1 5-22-23
Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.25.03.0020	Bank Stabilization	5,032.00 SY	223	14,414	25,217	25,000	5,833		14.00 /SY	70,464	31.44 /SY	158,190
					32.50 Site, Improvements	1.00 LS	223	14,414	25,217	25,000	5,833		70,463.98 /LS	70,464	158,189.68 /LS	158,190
					32.0 Exterior Improvements	1.00 LS	223	14,414	25,217	25,000	5,833		70,463.98 /LS	70,464	158,189.68 /LS	158,190
					06.3 Bank Stabilization	1.00 LS	223	14,414	25,217	25,000	5,833		70,463.98 /LS	70,464	158,189.68 /LS	158,190
	07.3				Traffic Control and SWPPP											
		01.0			General Requirements											
			01.01		Construction Operations											
				01.01.06.0008	Traffic Control and SWPPP	180.00 DY				271,500			1,508.33 /DY	271,500	3,009.08 /DY	541,635
					01.01 Construction Operations	1.00 LS				271,500			271,500.00 /LS	271,500	541,634.95 /LS	541,635
					01.0 General Requirements	1.00 LS				271,500			271,500.00 /LS	271,500	541,634.95 /LS	541,635
					07.3 Traffic Control and SWPPP	1.00 LS				271,500			271,500.00 /LS	271,500	541,634.95 /LS	541,635
	08.3				12" Outfall Line											
		33.0			Utilities											
			33.05		Buried Process Pipe, PVC/CPVC											
				33.00.07.1018	12" Outfall Line	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	962.94 /LF	48,147
					33.05 Buried Process Pipe, PVC/CPVC	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	962.94 /LF	48,147
					33.0 Utilities	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	962.94 /LF	48,147
					08.3 12" Outfall Line	50.00 LF	129	9,264	2,179	1,783	6,211	2,010	428.93 /LF	21,447	962.94 /LF	48,147
					02.0 Godsey Rd. Bridge	**1.00 LS**	14,544	872,002	426,771	3,843,660	1,034,280	341,730	**6,518,442.57 /LS**	6,518,443	**14,565,172.42 /LS**	**14,565,172**
03.0					**Driveway Culvert**											
	01.4				New 36" RCP Culvert											
		02.0			Existing Conditions											
			02.40		Demolition											
				02.01.01.1002	Remove 24" Culvert	40.00 lf	11	788		292	603		42.05 /lf	1,682	94.41 /lf	3,776
					02.40 Demolition	1.00 LS	11	788		292	603		1,682.07 /LS	1,682	3,776.20 /LS	3,776
					02.0 Existing Conditions	1.00 LS	11	788		292	603		1,682.07 /LS	1,682	3,776.20 /LS	3,776
		33.0			Utilities											
			33.08		Buried Process Pipe, RCP											
				33.00.10.1001	New 36" RCP Culvert	40.00 LF	46	3,208	7,512	675	3,046	675	377.91 /LF	15,116	848.40 /LF	33,936
					33.08 Buried Process Pipe, RCP	40.00 LF	46	3,208	7,512	675	3,046	675	377.91 /LF	15,116	848.40 /LF	33,936
					33.0 Utilities	40.00 LF	46	3,208	7,512	675	3,046	675	377.91 /LF	15,116	848.40 /LF	33,936
					01.4 New 36" RCP Culvert	40.00 LF	57	3,996	7,512	967	3,649	675	419.96 /LF	16,798	942.80 /LF	37,712
	02.4				Paving at Culvert											
		32.0			Exterior Improvements											
			32.12		Paving											
				32.40.02.1003	Paving at Culvert	44.44 SY	23	1,512	2,158		141		85.74 /SY	3,811	192.49 /SY	8,555
					32.12 Paving	44.44 SY	23	1,512	2,158		141		85.74 /SY	3,811	192.49 /SY	8,555
					32.0 Exterior Improvements	1.00 LS	23	1,512	2,158		141		3,810.66 /LS	3,811	8,554.84 /LS	8,555
					02.4 Paving at Culvert	44.44 SY	23	1,512	2,158		141		85.74 /SY	3,811	192.49 /SY	8,555
					03.0 Driveway Culvert	**1.00 LS**	80	5,508	9,670	967	3,790	675	**20,609.13 /LS**	20,609	**46,266.93 /LS**	**46,267**
04.0					**Detention Pond**											
	01.5				Detention Pond											
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.1004	Earthwork at Pond	46,588.00 CY	6,437	293,550	216,300	88,500	675,693	806,535	44.66 /CY	2,080,578	100.26 /CY	4,670,839
					31.20 Earthworks, Site	46,588.00 CY	6,437	293,550	216,300	88,500	675,693	806,535	44.66 /CY	2,080,578	100.26 /CY	4,670,839
					31.0 Earthwork	1.00 LS	6,437	293,550	216,300	88,500	675,693	806,535	2,080,577.75 /LS	2,080,578	4,670,839.20 /LS	4,670,839
					01.5 Detention Pond	1.00 LS	6,437	293,550	216,300	88,500	675,693	806,535	2,080,577.75 /LS	2,080,578	4,670,839.20 /LS	4,670,839
					04.0 Detention Pond	**1.00 LS**	6,437	293,550	216,300	88,500	675,693	806,535	**2,080,577.75 /LS**	2,080,578	**4,670,839.20 /LS**	**4,670,839**
05.0					**Inlet Coveyance Channel**											
	01.6				Channel Earthwork											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											
				03.00.99.1006	Allowance for Concrete Head Wall	1.00 LS				100,000			100,000.00 /LS	100,000	224,497.25 /LS	224,497
					03.10 Cast-In-Place Concrete Work	1.00 LS				100,000			100,000.00 /LS	100,000	224,497.25 /LS	224,497
					03.0 Concrete Work	1.00 LS				100,000			100,000.00 /LS	100,000	224,497.25 /LS	224,497
		31.0			Earthwork											
			31.20		Earthworks, Site											
				31.20.07.1005	Earthwork at Channel	1.00 LS	1,072	63,223		10,000	69,943	73,560	216,726.38 /LS	216,726	486,544.68 /LS	486,545
					31.20 Earthworks, Site	4,500.00 CY	1,072	63,223		10,000	69,943	73,560	48.16 /CY	216,726	108.12 /CY	486,545
			31.30		Site Specialties											

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Water Detention Pond Rev #1 5-22-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Area	Bid Item	Work Pkg	Trade Pkg	WorkActiv	Description	Takeoff Quantity	Labor Hours	Labor Amount	Material Amount	Sub Amount	Equip Amount	Other Amount	Total Cost/Unit	Total Amount	Grand Total Price	Grand Total Amount
				31.30.09.1007	Rock Armor Bedding	281.00 CY	191	12,215	37,598		8,403		207.17 /CY	58,216	465.10 /CY	130,693
					31.30 Site Specialties	1.00 LS	191	12,215	37,598		8,403		58,215.84 /LS	58,216	130,692.94 /LS	130,693
					31.0 Earthwork	1.00 LS	1,263	75,438	37,598	10,000	78,347	73,560	274,942.22 /LS	274,942	617,237.62 /LS	617,238
		32.0			Exterior Improvements											
			32.50		Site, Improvements											
				32.35.03.1008	Hydroseed Basin	43,086.00 SY	116	7,695	94,789		3,142		2.45 /SY	105,626	5.50 /SY	237,127
					32.50 Site, Improvements	1.00 LS	116	7,695	94,789		3,142		105,625.99 /LS	105,626	237,127.43 /LS	237,127
					32.0 Exterior Improvements	1.00 LS	116	7,695	94,789		3,142		105,625.99 /LS	105,626	237,127.43 /LS	237,127
					01.6 Channel Earthwork	1.00 LS	1,379	83,133	132,387	110,000	81,489	73,560	480,568.21 /LS	480,568	1,078,862.30 /LS	1,078,862
					05.0 Inlet Coveyance Channel	1.00 LS	1,379	83,133	132,387	110,000	81,489	73,560	480,568.21 /LS	480,568	1,078,862.30 /LS	1,078,862
06.0					Outlet Conveyance Channel											
	01.7				Overflow Wier											
		03.0			Concrete Work											
			03.10		Cast-In-Place Concrete Work											
				03.00.99.1010	Overflow Wier Allowance	1.00 LS				100,000			100,000.00 /LS	100,000	224,497.20 /LS	224,497
				03.00.99.1012	Head and Wing Wall Allowance	1.00 LS				100,000			100,000.00 /LS	100,000	224,497.23 /LS	224,497
					03.10 Cast-In-Place Concrete Work	1.00 LS				200,000			200,000.00 /LS	200,000	448,994.43 /LS	448,994
					03.0 Concrete Work	1.00 LS				200,000			200,000.00 /LS	200,000	448,994.43 /LS	448,994
		33.0			Utilities											
			33.08		Buried Process Pipe, RCP											
				33.00.10.1011	24" RCP Outlet Piping	25.00 LF	130	9,443	3,267	953	7,836	953	898.03 /LF	22,451	2,016.05 /LF	50,401
					33.08 Buried Process Pipe, RCP	25.00 LF	130	9,443	3,267	953	7,836	953	898.03 /LF	22,451	2,016.05 /LF	50,401
					33.0 Utilities	25.00 LF	130	9,443	3,267	953	7,836	953	898.03 /LF	22,451	2,016.05 /LF	50,401
		40.0			Process Pipe											
			40.50		Water Control Gates, Sluice Gates											
				40.13.01.1013	24" Slide Gate	1.00 EA	52	3,397	7,406				10,802.16 /EA	10,802	24,250.56 /EA	24,251
					40.50 Water Control Gates, Sluice Gates	1.00 EA	52	3,397	7,406				10,802.16 /EA	10,802	24,250.56 /EA	24,251
					40.0 Process Pipe	1.00 LS	52	3,397	7,406				10,802.16 /LS	10,802	24,250.56 /LS	24,251
					01.7 Overflow Wier	1.00 LS	182	12,839	10,672	200,953	7,836	953	233,252.84 /LS	233,253	523,646.13 /LS	523,646
					06.0 Outlet Conveyance Channel	1.00 LS	182	12,839	10,672	200,953	7,836	953	233,252.84 /LS	233,253	523,646.13 /LS	523,646

BID FORM SUMMARY

Project type:	Project Name: D3540100 North Ash Creek Reach 4 Alt 2 Storm Water Detention Pond Rev #1 5-22-23	Estimator: John DeWolf
Job Size:	Project Number: D3540100	Rev/Date: Rev #1 5-22-23
Duration:	Design Stage: 2%	Estimate Class: 5

Estimate Totals

Description	Amount	Totals	Rate	Cost / Unit	% of Total	
Labor	2,391,229		hrs		8.11%	
Material	1,245,376				4.23%	
Subcontract	4,953,176				16.81%	
Equipment	3,043,138		hrs		10.33%	
Other	1,489,548				5.05%	
Subtotal Raw Costs	**13,122,467**	**13,122,467**			**44.53%**	**44.53%**
Material Sales & Use Tax - %						
Construction Equip Tax - %						
Total Taxes		**13,122,467**				**44.53%**
Location Adj. Factor						
Productivity Adjustment						
Subtotal Adj. Factors		**13,122,467**				**44.53%**
Existing Conditions I,OH&P	42,463		25.000 %		0.14%	
Concrete Work I,OH&P	887,805		25.000 %		3.01%	
Masonry Work I,OH&P			25.000 %			
Metals Work I,OH&P			25.000 %			
Architectural (Div 6-12)I,OH&P			25.000 %			
Special Construction I,OH&P			25.000 %			
Conveying Equipment I,OH&P			25.000 %			
Mechanical Work I,OH&P			25.000 %			
Electrical Work I,OH&P			25.000 %			
Site/Civil I,OH&P	2,144,732		25.000 %		7.28%	
Buried Piping I,OH&P	40,479		25.000 %		0.14%	
Tank Construction I,OH&P			25.000 %			
Process Piping I,OH&P	2,701		25.000 %		0.01%	
Instruments & Controls I,OH&P			25.000 %			
Material Handling I,OH&P			25.000 %			
Process Equipment I,OH&P			25.000 %			
Subtotal Subcontractor I,OH&P	**3,118,180**	**16,240,647**			**10.58%**	**55.11%**
Contractor Contingency						
Subtotal Contingency		**16,240,647**				**55.11%**
Total Cost To Prime Contractor		**16,240,647**				**55.11%**
General Conditions	1,624,065		10.000 %		5.51%	
Mobilization/Demobilization	487,219		3.000 %		1.65%	
Subtotal Indirect Costs	**2,111,284**	**18,351,931**			**7.16%**	**62.28%**
Prime Contractor Home OfficeOH	1,835,193		10.000 %		6.23%	
Prime Contractor Profit	2,752,790		15.000 %		9.34%	
Bonds & Insurance	497,796		2.170 %		1.69%	
Subtotal OH&P	**5,085,779**	**23,437,710**			**17.26%**	**79.54%**
Contractor MU on Mech OFCI						
Contractor MU on Elec OFCI						
Total MU on OFCI Equip		**23,437,710**				**79.54%**
Design Contingency	5,859,427		25.000 %		19.88%	
Subtotal Contingency	**5,859,427**	**29,297,137**			**19.88%**	**99.42%**
Escalation						
Subtotal Escalation		**29,297,137**				**99.42%**
Corporate Activity Tax	169,923		0.580 %		0.58%	
Total Prime Contractor Costs	**169,923**	**29,467,060**			**0.58%**	**100.00%**
Total Construction Cost		**29,467,060**				**100.00%**
Total		***29,467,060***				

Scope Document

Reach 1 Alternative 2 - Kings Valley Highway Auxilary culvert installation

Add auxilary culverts north of the current bridge to address flooding

Demolition Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Existing Bridge	EA	1			20 ft x 6.7 ft box culvert with flared wingwalls, 51 ft long - concrete

Construction Quantities

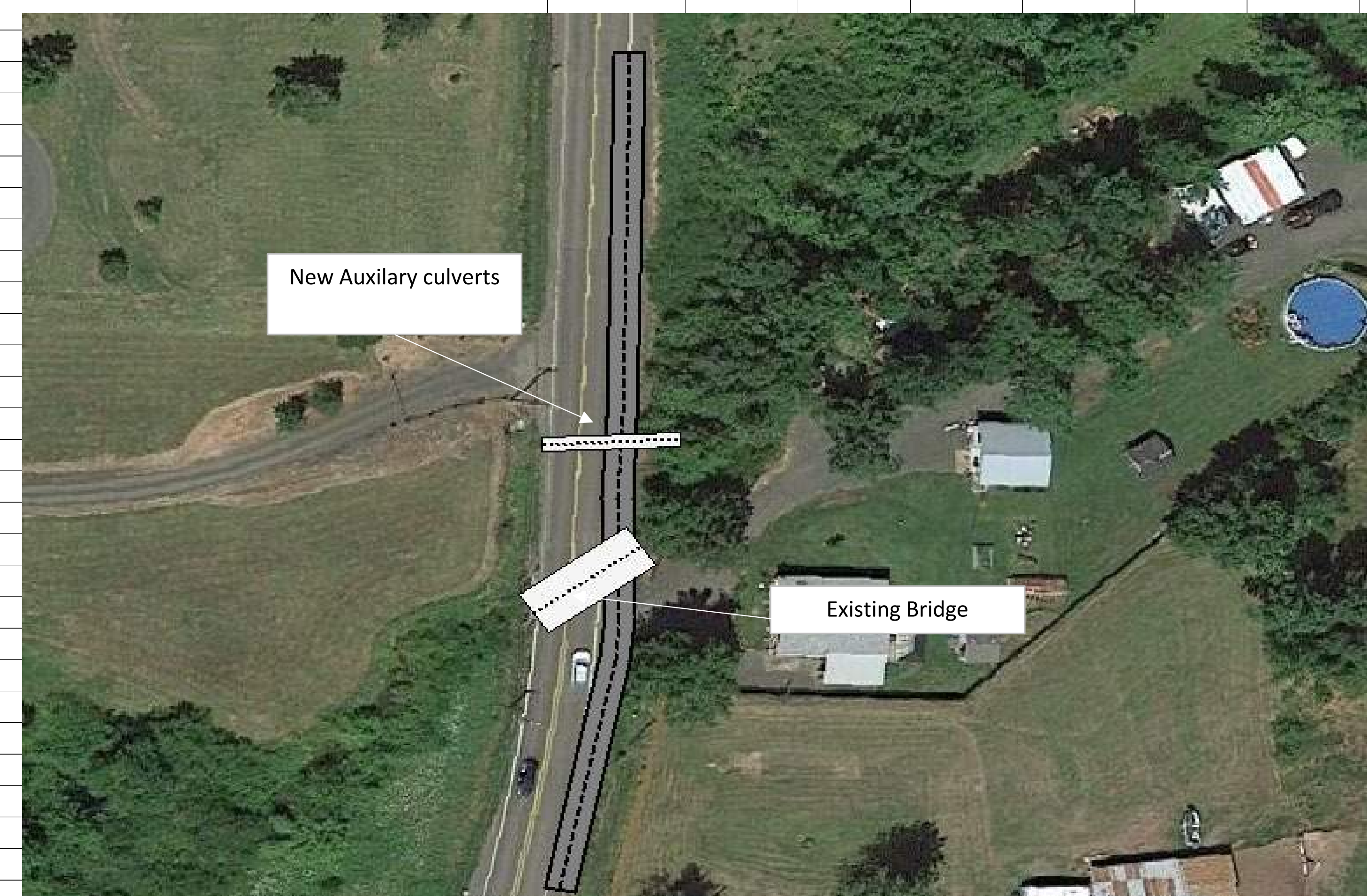
Item	Unit	Quantity	Unit Price	Total Price	Notes
New auxilary culverts	EA	2			Assume 3' of cover, 8 ft x 4ft concrete box culvert with wingwalls

Misc Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Traffic Control	days	?			assume road must remain open during construction

Assumptions

Existing Bridge



Reach 1 Alternative 1 - Kings Valley Highway Bridge Replacement

Add auxilary culverts north of the current bridge to address flooding

Demolition Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Existing Bridge	EA	1			20 ft x 6.7 ft box culvert with flared wingwalls, 51 ft long - concrete

Construction Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
New KVH bridge	EA	1			35 ft span bridge, 30 ft width, 10 ft to the channel bottom
Road Conforming					
Road Fill	CY	170			
Surface to Pave	SF	2820			94 ft, 30 ft wide road

Misc Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Traffic Control	days	?			assume road must remain open during construction

Assumptions

- road will need to be raised ~4 ft to provide adequate freeboard

Existing Bridge

Reach 2 - Cemetery Culverts

Replace two existing culverts with two upsized culverts

Demolition Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
24" RCP culvert, 64 ft length	EA	1			Assume 3' of cover
24" RCP culvert, 75 ft length	EA	2			Assume 3' of cover

Construction Quantities

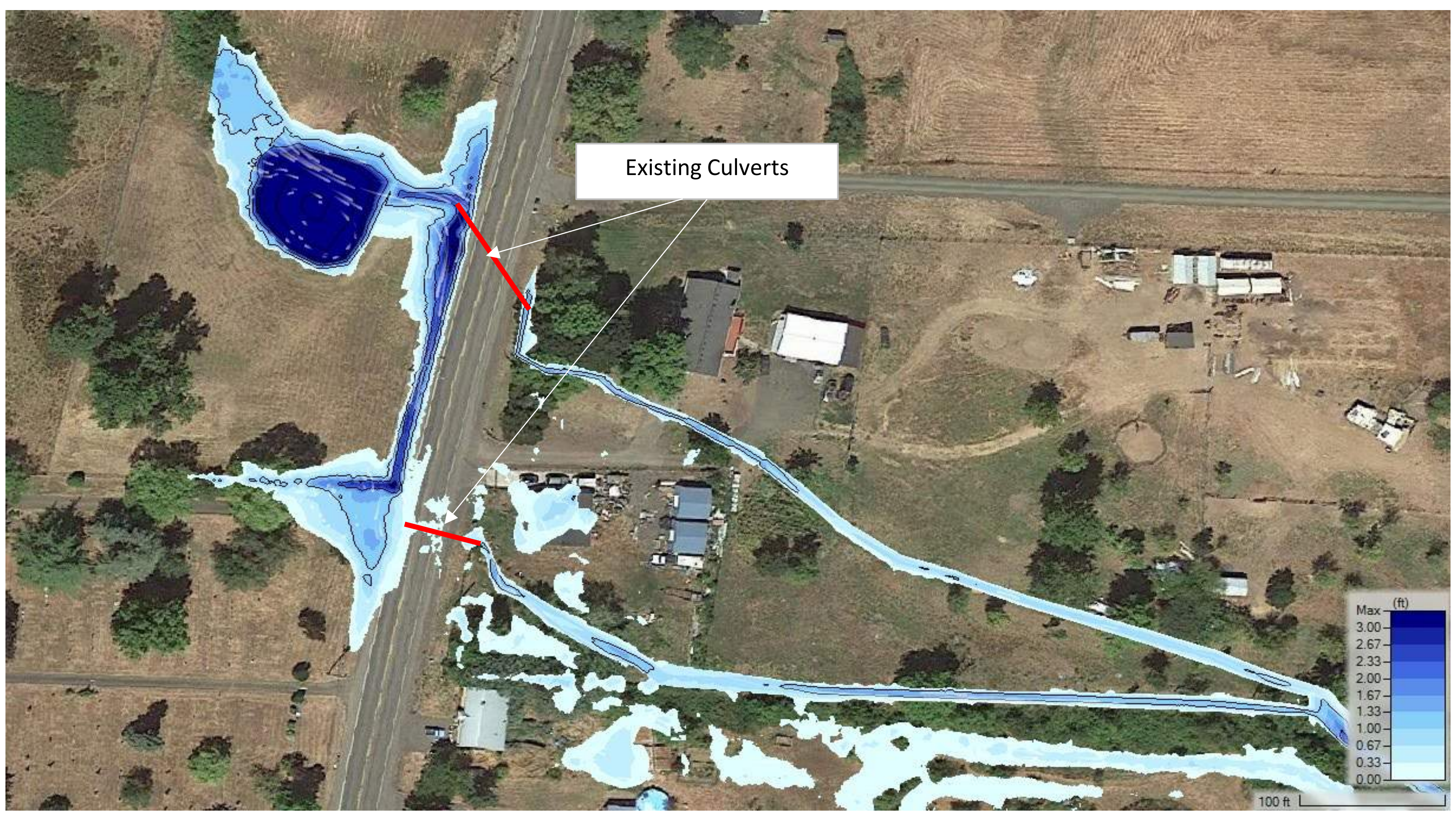
Item	Unit	Quantity	Unit Price	Total Price	Notes
2' x 4' concrete box culvert, 64 ft length	EA	1			Assume 3' of cover
2' x 4' concrete box culvert, 75 ft length	EA	2			Assume 3' of cover

Misc Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Traffic Control	days	?			assume road will remain open during construction

Assumptions

-Road will be trenched to replace the culverts
- new culverts will be on the same alignment as existing culverts



Existing culvert

	Components									
	Industrial Property							Lumber Laydown Area		
Alternative	**Replace Main St. Bridge (in place)**	**Replace and Relocate Main St. Bridge**	**Replace Culverts**	**Daylight Channel in Place**	**Daylight and Meander to the South**	**Replace Uglow Bridge in Place**	**Replace and Relocate Uglow Bridge**	**Excavate and reconnect Floodplain**	**Total Alternative Cost**	
~~Alt 3d. Replace Main St Bridge and existing industrial culverts~~	~~X~~		~~X~~			~~X~~				*Not currently costing this alternative, but may be used in future iterations
Alt 3ei. Replace Main St Bridge and Daylight Channel in Place	X			X		X				
Alt 3eiii. Replace Main St Bridge and Daylight Channel to South		X			X		X	X		
Total Component Costs										
Replace Main Street Bridge (in place)										
Replace and Relocate Main Street Bridge										
Replace Industrial Culverts										
Daylight Channel in Place										
Daylight and Meander to the South										
Replace Uglow Bridge in Place										
Repalce and Relocate Uglow Bridge										
Excavate and Reconnect Floodplain										

Daylight Channel in Place

Demolition Quantities

Item	Unit	Total Amount	Unit Price	Total Price	Notes
Demo asphalt	SF	106700			Unknown thickness of the concerete
Remove Existing Culverts (Upstream Open Area)	LF	1540			Two 7' corrugated metal culverts, assume average of 1.5' of cover
Remove Existing Culvert (Downstream Open Area)	LF	670			One 7' corrugate metal culverts, assume average of 1.5' cover
Remove Timber Bridge Structure	EA	1			Falling apart timber bridge (approx. 14 ft wide and 54 ft long)
		highlighted cells updated 4/19/23			

Assumptions

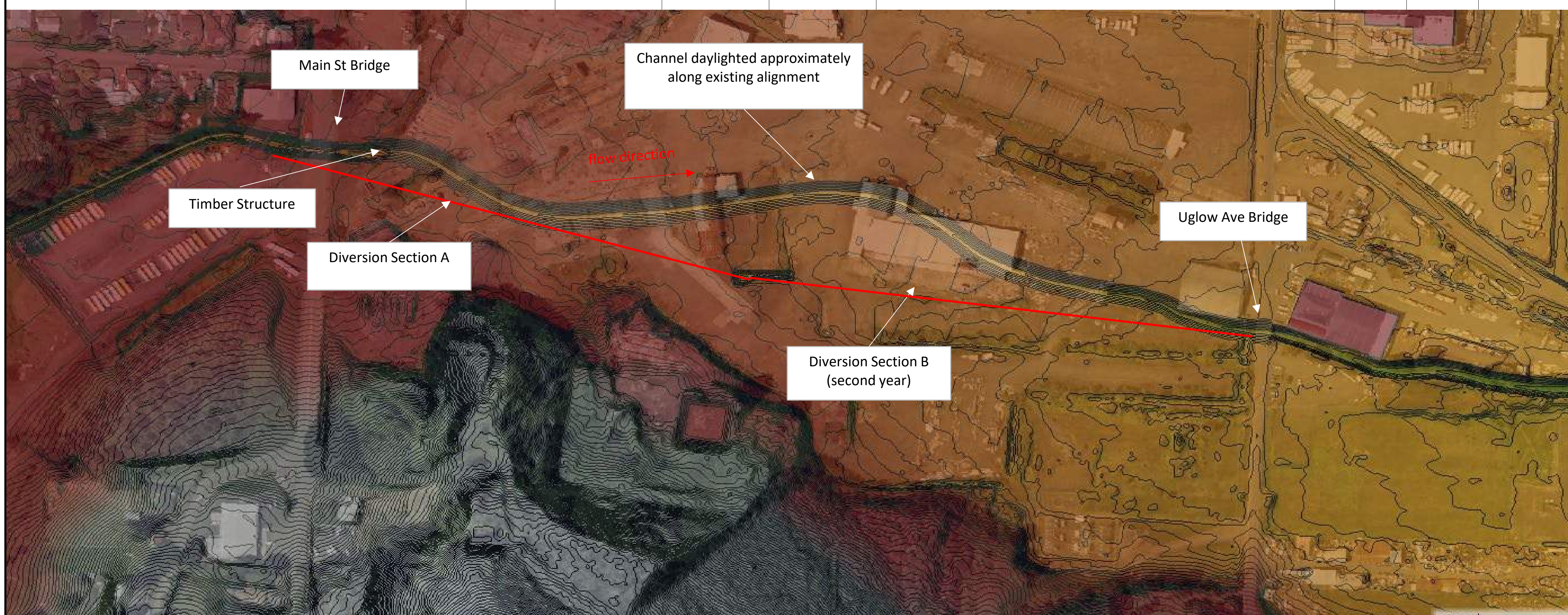
- Material removed from site cannot be re-used
- in channel work will require fish salvage and a temporary diversion
- assume building demolition on the industrial site will be part of a separate project

constructed during one season (avoiding current culvert alignment)

- assume that the far downstream and upstream sections can be constructed concurrently in one season

Construction Quantities

Item	Unit	Total Amount	Unit Price	Total Price	Notes
Cut	CY	17100			Starts just upstream of Main St Bridge and ends just DS of Uglow Ave
Bed Material	CY	410			Assume 50% streambed sediment mix and 50% 8" streambed cobbles mix (see screenshots below for specifications of each mix)
Bank stabilization (large woody material and re-vegetation)	SF	45600			Area to be re-vegetated and stabilized - assume on flood benches
Hauling	CY	17100			same as cut, needs expansion coefficient
Water Diversion	per day	120			In water work window July 1st - October 31st, typical flow = 10 cfs
Pumping for water diversion					assume three 3" diameter outlet, 5,000 gpm centrifugal pumps (one as backup)
Length of diversion piping (48" flexible PVC) -from upstream of Main St t	LF	2200			from upstream of Main St to downstream of Uglow
Fish Screen for diversion piping	EA	1			For US end of diversion pipe
Cofferdam	EA	1			Temporary cofferdam structure at upstream end of diversion to isolate work area
Fish salvage	days	40			Assume 3 people, 10 hour days (assumption that they are not needed on site every day)



construct middle section independetly?
now exactly where existing culvert alignment is
ie-ins concurrently during the dry period
ivert Main st to Uglow

9-03.11(1) Streambed Sediment

Streambed sediment shall meet the following requirements for grading when placed in hauling vehicles for delivery to the project or during manufacture and placement into temporary stockpile. Alternate gradations may be used if proposed by the Contractor and accepted by the Engineer. The Contractor shall submit a Type 2 Working Drawing consisting of 0.45 power maximum density curve of the proposed gradation. The alternate gradation shall closely follow the maximum density line and have Nominal Aggregate Size of no less than 1½ inches or no greater than 3 inches. The exact point of acceptance will be determined by the Engineer.

Sieve Size	Percent Passing
2½″	99-100
2″	65-95
1″	50-85
No. 4	26-44
No. 40	16 max.
No. 200	5.0-9.0

All percentages are by weight.

The portion of sediment retained on No. 4 sieve shall not contain more than 0.2 percent wood waste.

9-03.11(2) Streambed Cobbles

Streambed cobbles shall be clean, naturally occurring water rounded gravel material. Streambed cobbles shall have a well-graded distribution of cobble sizes and conform to one or more of the following gradings as shown in the Plans:

Approximate Size[1]	Percent Passing 4″ Cobbles	6″ Cobbles	8″ Cobbles	10″ Cobbles	12″ Cobbles
12″					99-100
10″				99-100	70-90
8″			99-100	70-90	
6″		99-100	70-90		
5″		70-90			30-60
4″	99-100			30-60	
3″	70-90		30-60		
2″		30-60			
1½″	20-50				
¾″	10 max.	10 max.	10 max.	10 max.	10 max.

Timber Structure

Left Upstream Culvert

Example of stream diversion

Daylight Channel to South (from Main St to Uglow)

Demolition Quantities

Item	Unit	Total Amount	Unit Price	Total Price	Notes
Demo asphalt	SF	1200			along new channel - assume any other demo would be part of a separate site development project
Remove Existing Culverts (Upstream Open Area)	LF	1540			Two 7' corrugated metal culverts, assume average of 1.5' of cover
Remove Existing Culvert (Downstream Open Area)	LF	670			One 7' corrugate metal culverts, assume average of 1.5' cover
Remove Timber Bridge Structure	EA	1			Falling apart timber bridge (approx. 14 ft wide and 54 ft long)

Construction Quantities

Item	Unit	Total Amount	Unit Price	Total Price	Notes
Cut	CY	54657			
Bed Material	CY	406			Assume 50% streambed sediment mix and 50% 8" streambed cobbles mix (see screenshots on previous tab for specifications of each mix)
Bank stabilization (large woody material and re-vegetation)	SF	52544			Area to be re-vegetated and stabilized
Hauling	CY	54657			same as cut, needs expansion factor
Coffer Dam (upstream end)	EA	1			
Fill existing channel	CY	11200			
Aggregate base parking lot	CY	1516			assuming 1 ft depth of gravel

Assumptions

- Material removed from site cannot be re-used
- existing channel and culverts can stay in place during the duration of the work period
- no pumping / diversions required

Replace Main St. Bridge (in Place)

Demolition Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Existing Bridge	EA	1			40 ft wide, 13 ft long, 5.5 ft to channel bottom - concrete open bottom culvert

Assumptions

- Existing bridge deck will be demolished
- all debris will be removed off site
- Abutments will need to be widened

Construction Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
New Bridge	EA	1			40 ft wide, 55 ft long, 9 ft to channel bottom
Road Conforming					
Road Fill	CY	358			
Surface to Pave	SF	5440			136 ft, 40 ft wide road
Water Diversion	per day	90			In water work window July 1st - October 31st, typical flow = 10 cfs
Pumping for water diversion					assume three 3" outlet, 5,000 gpm centrifugal pumps (one as backup)
Length of diversion piping (48" flexible PVC)	LF	200			
Fish Screen for diversion piping	EA	1			For US end of diversion pipe
Cofferdam	EA	1			Temporary cofferdam structure at upstream end of diversion to isolate work area
Fish salvage	days	10			Assume 3 people, 10 hour days (assumption that they are not needed on site every day)

Misc Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Traffic Control	days	?			assume road will remain open during construction


Diversion

Existing Main St Bridge / Culvert

Replace and Remove Main St. Bridge (Move)

Demolition Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Existing Bridge (assume it will be filled in)	EA	1			40 ft wide, 13 ft long, 5.5 ft to channel bottom - concrete open bottom culvert

Assumptions

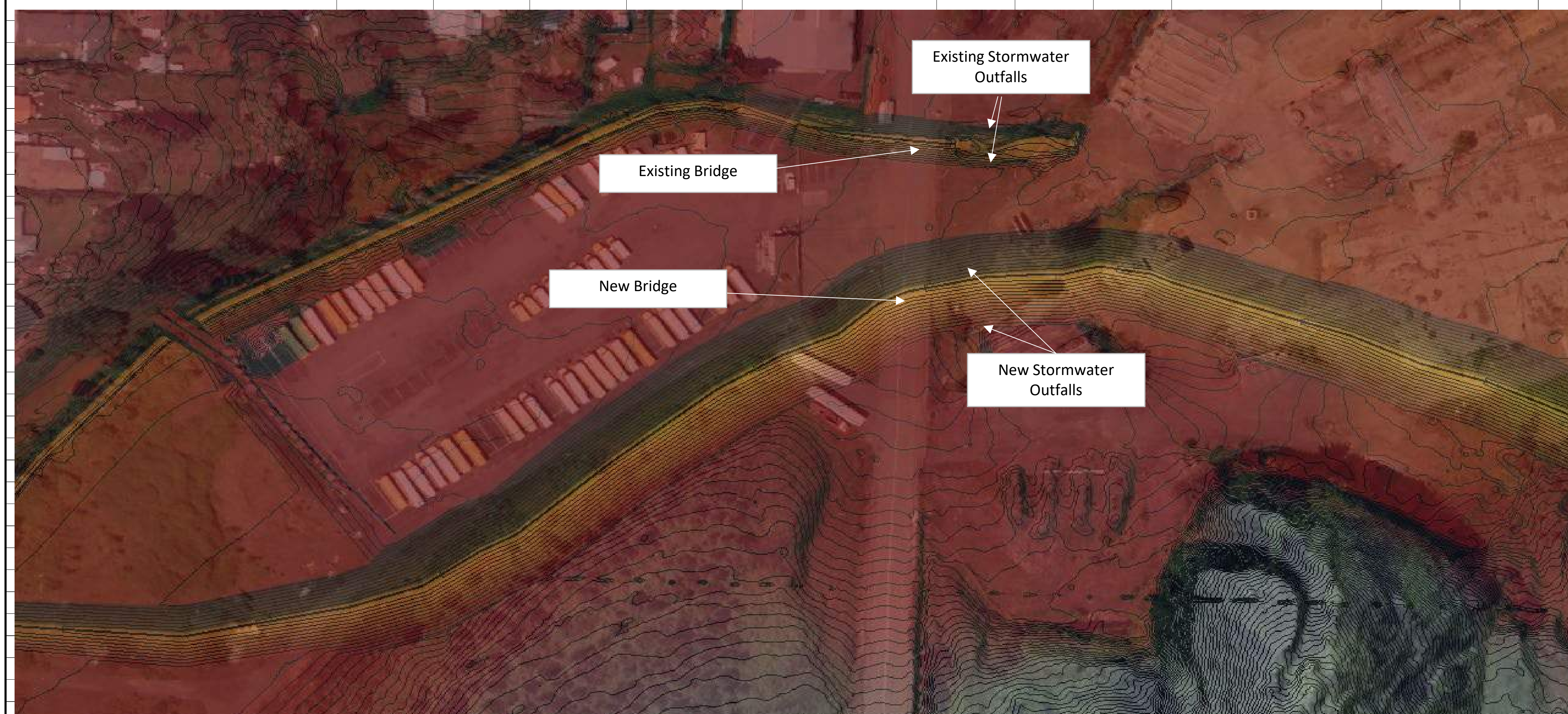
- Existing bridge deck will be demolished
- all debris will be removed off site
- Abutments will need to be widened

Construction Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
New Bridge	EA	1			40 ft wide, 110 ft long, 13 ft to channel bottom

Misc Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Re-route stormwater outfall (north)	LF	140			12" PVC pipe, extend to new channel
Re-route sotrmwater outfall (south)	LF	160			12" PVC pipe, cut down to new channel
Traffic Control	days	?			assume road will remain open during construction



Existing Main St Bridge

Replace Uglow Bridge (in Place)

Demolition Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Existing Bridge (assume it will be filled in)	EA	1			18.5 ft diameter arch culvert, 22 ft long 6.5 ft to channel bottom - corrugated metal

Assumptions

- Existing bridge deck will be demolished
- all debris will be removed off site
- Abutments will need to be widened

Construction Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
New Bridge	EA	1			25 ft wide, 80 ft long, 11 ft to channel bottom
Road Conforming					
Road Fill	CY	430.5			
Surface to Pave	SF	3800			152 ft, 25 ft wide road
Water Diversion	per day	90			In water work window July 1st - October 31st, typical flow = 10 cfs
Pumping for water diversion					assume three 3" outlet, 5,000 gpm centrifugal pumps (one as backup)
Length of diversion piping (48" flexible PVC)	LF	200			
Fish Screen for diversion piping	EA	1			For US end of diversion pipe
Cofferdam	EA	1			Temporary cofferdam structure at upstream end of diversion to isolate work area
Fish salvage	days	10			Assume 3 people, 10 hour days (assumption that they are not needed on site every day)

Misc Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Traffic Control	days	?			assume road will remain open during construction


Diversion

Existing Uglow Culvert

Replace and Remove Uglow Bridge (Move)

Demolition Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Existing Bridge (assume it will be filled in)	EA	1			18.5 ft diameter arch culvert, 22 ft long 6.5 ft to channel bottom - corrugated metal

Assumptions

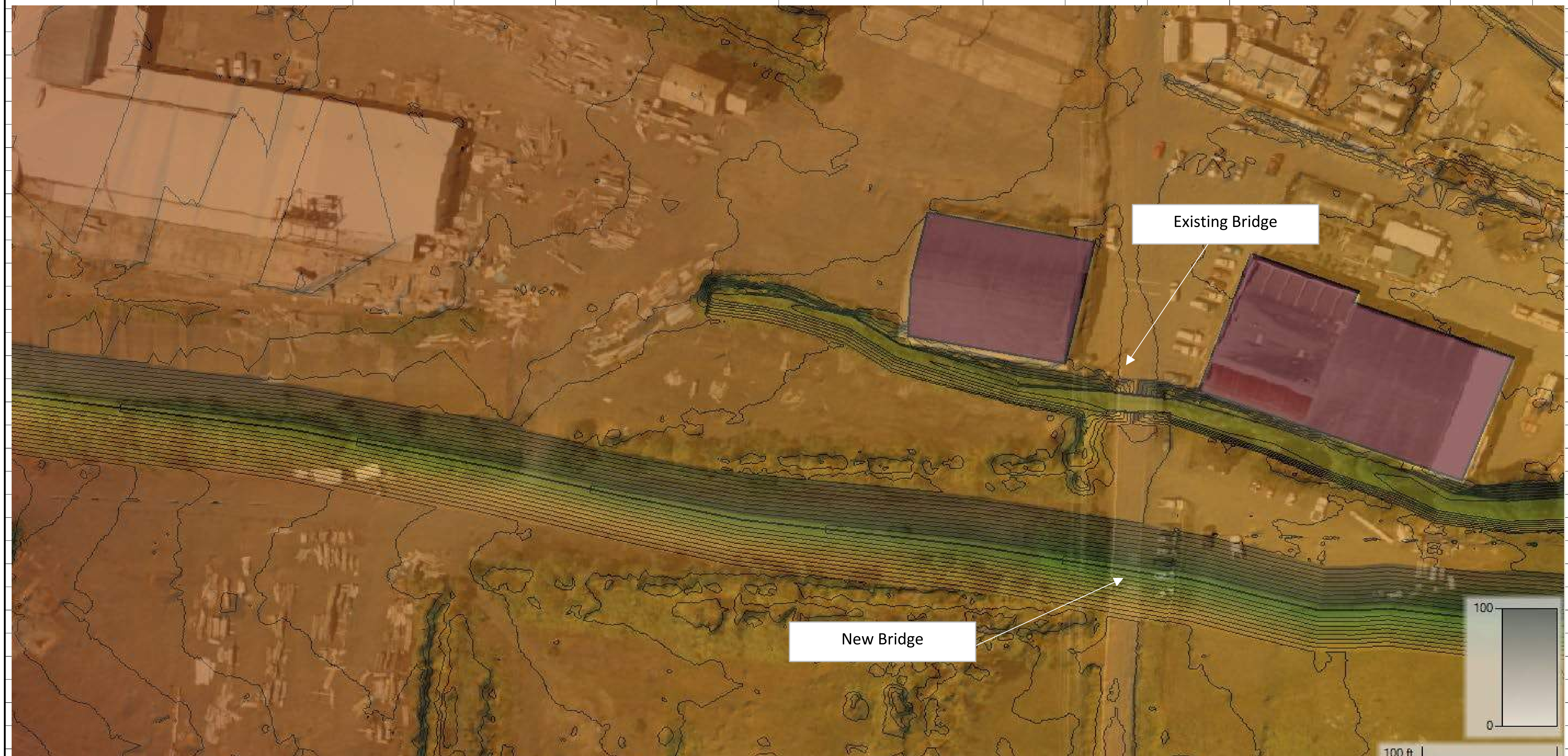
- Existing bridge deck will be demolished
- all debris will be removed off site
- Abutments will need to be widened

Construction Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
New Bridge	EA	1			25 ft wide, 92 ft long, 10 ft to channel bottom
Road Conforming					
Road Fill	CY	56.5			
Surface to Pave	SF	1375			55 ft, 25 ft wide road

Misc Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Traffic Control	days	?			assume road will remain open during construction


Existing Bridge
New Bridge
100
0
100 ft

Existing Culvert

Excavating Floodplain - from beginning of new channel to Main St Bridge

Demolition Quantities

Item	Unit	Total Amount	Unit Price	Total Price	Notes
Invasive species removal (clearing and grubbing)	SF	94250			Thick blackberries and willows
Bus Yard Bridge removal	EA	1			52.5 ft wide, 50 ft long, 7 ft to channel bottom

Assumpt
-Assume si
- will need
- assume a
-assume so

Construction Quantities

Item	Unit	Total Amount	Unit Price	Total Price	Notes
Cut	CY	19662			
Fill (existing channel)	CY	3481			
Hauling	CY	23143			same as cut + fill - probably needs expansion factor
Plantings	SF	111962			grasses, shrubs - planted along new floodplain benches and graded portion of the lumber laydown area
Pave over old Bus Yard Bridge	SF	2500			
Area to grade (work area)	SF	200595			Old channel area + new channel area + new floodplain grading

Replace Industrial Culverts

Demolition Quantities

Item	Unit	Total Amount	Unit Price	Total Price	Notes
Remove Existing Culverts (Upstream Open Area)	LF	1540			Two 7' corrugated metal culverts, assume average of 1.5' of cover
Remove Existing Culvert (Downstream Open Area)	LF	670			One 7' corrugate metal culverts, assume average of 1.5' cover
Remove Timber Bridge Structure	EA	1			Falling apart timber bridge (approx. 14 ft wide and 54 ft long)

Construction Quantities

Item	Unit	Total Amount	Unit Price	Total Price	Notes
New Culvert (Upstream open area)	LF	770			40' x 6' reinforced concrete box culvert
New Culvert (Downstream of an including open area)	LF	784			
Culvert Installation	LF	1554			Assume 2' of cover
Water Diversion	per day	240			In water work window July 1st - October 31st, typical flow = 10 cfs
Pumping for water diversion					assume three 3" outlet, 5,000 gpm centrifugal pumps (one as backup)
Length of diversion piping (48" flexible PVC) -Section A	LF	800			Section A from Main St to Open Area
Length of diversion piping (48" flexible PVC) -Section B	LF	700			Section B from Open Area to Uglow
Fish Screen for diversion piping	EA	1			For US end of diversion pipe
Cofferdam	EA	1			Temporary cofferdam structure at upstream end of diversion to isolate work area
Fish salvage	days	50			Assume 3 people, 10 hour days (assumption that they are not needed on site every day)

Assumptions

- Material removed from site may be contaminated
- Don't know exact alignment of the existing culverts
- Assume work will be done in two seasons
- First season will be for Section A from Main St to the open area
- Second season will be for Section B from the open area to Uglow
- Assume similar pumping requirements for each diversion period

Example picture of a bypass

Left Upstream Culvert

Open Area on Industrial Site

Timber Structure

Reach 4 - Alternative 1 Widen Channel Downstream

Widen channel to provide sufficient conveyance downstream. Replace existing structures

Demolition Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
Existing Monmouth Cutoff Bridge (NF Ash Creek)	EA	1			140 ft span, 40 ft wide bridge, 1.4 ft deck thickness, 6.7 ft to channel bottom
Existing Holman Ave Bridge	EA	1			100 ft span, 30 ft wide, arch culvert, 7.5 to channel bottom - corrugated metal
Existing Monmouth Cutoff Culverts (NF Trib)	EA	1			two 4 ft x 6 ft concrete box culverts, ~3 ft of cover
Existing Godsey Rd Bridge	EA	1			85 ft span, 25 ft wide bridge, 6 to channel bottom
Existing Diversion Structure / Bridge	EA	1			Concrete diversion structure with a wooden bridge over the top (see picture). 60 ft span and 11 ft width
Grubbing / Vegetation removal (blackberries) for widened channel	**SF**	**339250**			total length of widened channel x 25 ft on each side
Segment 2 (Holman to Trib Confluence)	SF	42750			
Segment 3 (Trib Confluence to Godsey)	SF	97000			
Segment 4 (Godsey to Diversion Structure)	SF	141500			
Segment 5 (Diversion Structure to G-Way)	SF	58000			

Assumptions

- does not include any property access acquisition / easements costs
- 3 in water work windows will be required for the channel widening

Construction Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
New Monmouth Cutoff and Holman Bridge	EA	1			150 ft span, 40 ft wide bridge, 2 ft deck thickness, 8.5 ft to channel bottom
Road Conforming					
Road Fill	CY	93			
Surface to Pave	SF	2800			70 ft, 40 ft wide road
New Monmouth Cutoff Culverts (NF Trib)	EA	2			4' x 8' concrete box culverts. Assume 3ft of cover
New Godsey Rd Bridge	EA	1			200 ft span, 30 ft wide bridge, 2 ft deck thickness, 7.5 ft to channel bottom
Road Conforming					
Road Fill	CY	85.5			
Surface to Pave	SF	1980			66 ft, 30 ft wide road
New Pre-cast pre-fab bridge at diversion site	EA	1			85 ft span, 15 ft wide, 2 ft bridge thickness, 8 ft to channel bottom
Channel Widening					
Segment 2 (Holman to Trib Confluence)					
Cut	CY	2185			
Bed Material	CY	106			Assume 50% streambed sediment mix and 50% 8" streambed cobbles mix (see Bed Material tab for specifications)
Bank stabilization (re-vegetation planting)	SF	13680			
Hauling	CY	2185			
Segment 3 (Trib Confluence to Godsey)					
Cut	CY	8335			
Bed Material	CY	240			Assume 50% streambed sediment mix and 50% 8" streambed cobbles mix (see Bed Material tab for specifications)
Bank stabilization (re-vegetation planting)	SF	31040			
Hauling	CY	8335			

Segment 4 (Godsey to Diversion Structure)					
Cut	CY	18867			
Bed Material	CY	349			Assume 50% streambed sediment mix and 50% 8" streambed cobbles mix (see Bed Material tab for specifications)
Bank stabilization (re-vegetation planting)	SF	45280			
Hauling	CY	18867			
Segment 5 (Diversion Structure to G-Way)					
Cut	CY	10311			
Bed Material	CY	143			Assume 50% streambed sediment mix and 50% 8" streambed cobbles mix (see Bed Material tab for specifications)
Bank stabilization (re-vegetation planting)	SF	18560			
Hauling	CY	10311			
Total Cut	CY	39698			
Total Bed Material	CY	838			Assume 8" depth, Assume 50% streambed sediment mix and 50% 8" streambed cobbles mix (see Bed Material tab for specifications)
Total Bank Stabilization	SF	108560			Area to be re-vegetated and stabilized (width of floodplain benches x channel length)
Total Hauling	CY	39698			same as cut times an expansion factor
Re-route / Extend Exsiting Outfalls					
Re-route Outfall at Holman Bridge	LF	100			Extend existing outfall south (12" PVC)
Move two existing on stream outfalls back (downstream of Godsey)	LF	50			Move back 25 ft each (12" PVC)

Misc Quantities

Item	**Unit**	**Quantity**	**Unit Price**	**Total Price**	**Notes**
New Monmouth and Holman Bridge					**ASSUME ROAD MUST BE OPEN DURING WORK**
Traffic Control	days	?			
Pumping for water diversion	days				assume three 3" outlet, 5,000 gpm centrifugal pumps (one as backup)
length of diversion piping	LF	750			48" flexible PVC
fish screen for diversion piping	EA	1			For US end of diversion pipe
coffer dam	EA	1			Temporary cofferdam structure at upstream end of diversion to isolate work area
fish salvage	days	2			Assume 3 people, 10 hour days (assumption that they are not needed on site every day)
New Monmouth Cutoff Trib Culverts					**ASSUME ROAD MUST BE OPEN DURING WORK**
Traffic Control	days	?			
Pumping for water diversion	days				assume three 3" outlet, 5,000 gpm centrifugal pumps (one as backup)
length of diversion piping	LF	200			48" flexible PVC
fish screen for diversion piping	EA	1			For US end of diversion pipe
coffer dam	EA	1			Temporary cofferdam structure at upstream end of diversion to isolate work area
fish salvage	days	2			Assume 3 people, 10 hour days (assumption that they are not needed on site every day)
New Godsey Rd Bridge					**ASSUME ROAD MUST BE OPEN DURING WORK**
Traffic Control	days	?			
Pumping for water diversion	days				assume three 3" outlet, 5,000 gpm centrifugal pumps (one as backup)
length of diversion piping	LF	200			48" flexible PVC
fish screen for diversion piping	EA	1			For US end of diversion pipe
coffer dam	EA	1			Temporary cofferdam structure at upstream end of diversion to isolate work area
fish salvage	days	2			Assume 3 people, 10 hour days (assumption that they are not needed on site every day)

New Diversion Structure Bridge			
Pumping for water diversion	days		assume three 3" outlet, 5,000 gpm centrifugal pumps (one as backup)
length of diversion piping	LF	200	48" flexible PVC
fish screen for diversion piping	EA	1	For US end of diversion pipe
coffer dam	EA	1	Temporary cofferdam structure at upstream end of diversion to isolate work area
fish salvage	days	2	Assume 3 people, 10 hour days (assumption that they are not needed on site every day)
Segment 2 (Holman to Trib Confluence)			
Coffer dam	LF	855	
Pumping to dry out work area	days		assume three 3" outlet, 5,000 gpm centrifugal pumps (one as backup)
fish salvage	days	2	
Segment 3 (Trib Confluence to Godsey)			
Coffer dam	LF	1940	
Pumping to dry out work area	days		assume three 3" outlet, 5,000 gpm centrifugal pumps (one as backup)
fish salvage	days	2	
Segment 4 (Godsey to Diversion Structure)			
Coffer dam	LF	2830	
Pumping to dry out work area	days		assume three 3" outlet, 5,000 gpm centrifugal pumps (one as backup)
fish salvage	days	2	
Segment 5 (Diversion Structure to Godsey)			
Coffer dam	LF	1160	
Pumping to dry out work area	days		assume three 3" outlet, 5,000 gpm centrifugal pumps (one as backup)
fish salvage	days	2	

Diversion structure (concrete with wooden bridge)

Reach 4 - Alternative 2 Stormwater Detention Pond

Construct an off-stream stormwater detention pond to provide detention

Demolition Quantities

Item	Unit	Total Amount	Unit Price	Total Price	Notes
Existing Monmouth Cutoff Culverts (NF Trib)	EA	2			4 ft x 6 ft concrete box culverts, ~3 ft of cover
Existing Godsey Rd Bridge	EA	1			85 ft span, 25 ft wide bridge, 6 to channel bottom
Existing driveway culvert	EA	1			24" RCP pipe, 2 ft of cover

Assumptions

-native material is not adequate for use as berm material, however it is not contaminated

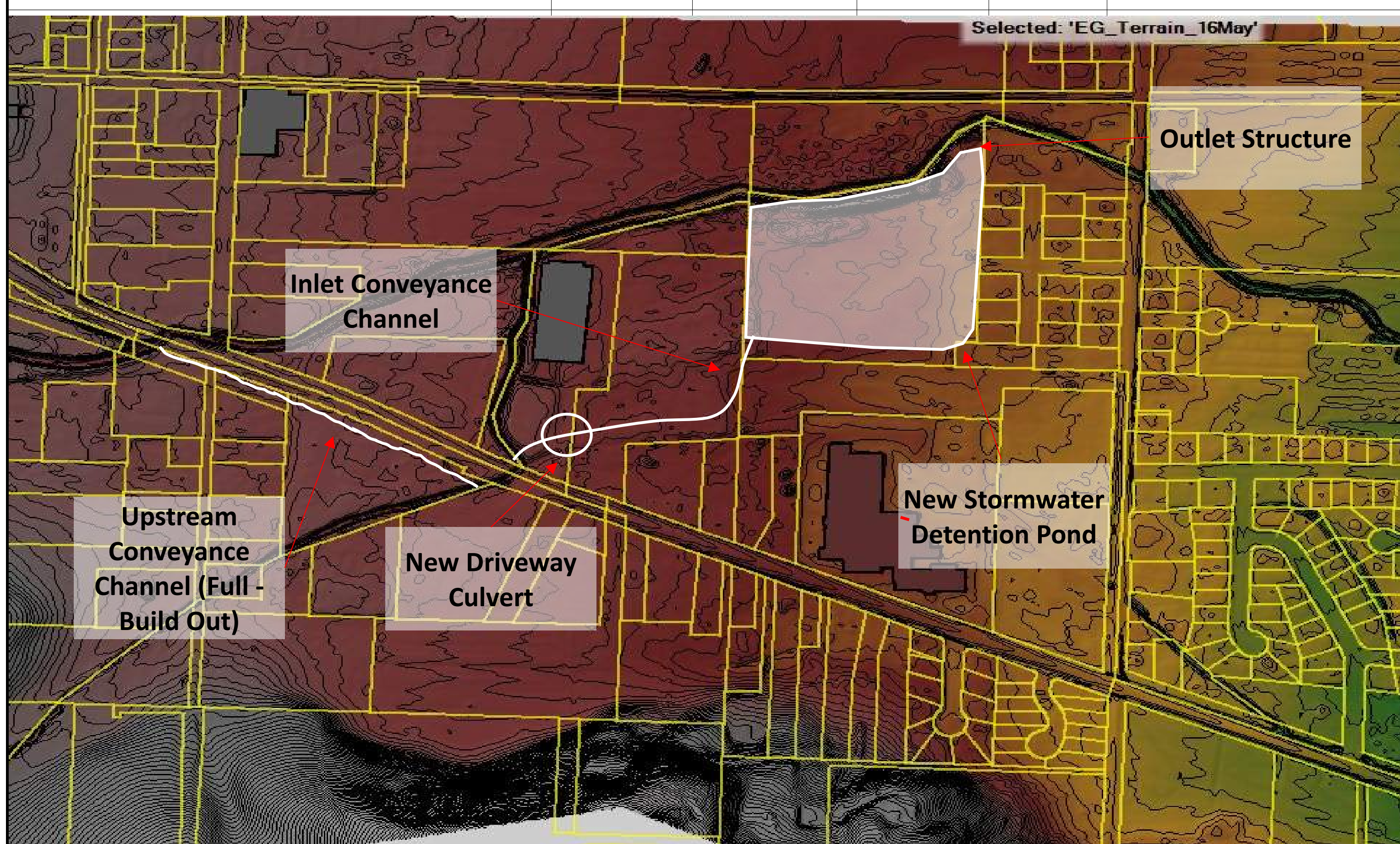
Construction Quantities

Item	Unit	Total Amount	Unit Price	Total Price	Notes
New Monmouth Cutoff Culverts (NF Trib)	EA	2			4 ft x 8 ft concrete box culverts. Assumed 3 ft of cover
New Godsey Rd Bridge	EA	1			110 ft span, 30 ft wide bridge, 2 ft deck thickness, 9.5 ft to channel bottom
Road Conforming					
Road Fill	CY	184			
Surface to Pave	SF	2940			98 ft, 30 ft wide road
New driveway culvert	EA	1			36" RCP pipe, 2 ft of cover
Detention Pond					
Cut	CY	46588			
Fill (Berms)	CY	7721.25			assuming berms at 1.5:1 slope, 5 ft top width
Re-vegetation	SF	387771			Assume grass
Hauling	CY	46588			same as cut times an expansion factor
Inlet Conveyance Channel					
Cut	CY	4500			
Bed Material	CY	281			assume 1 ft of bed armoring rock
Hauling	CY	4500			same as cut times expansion factor
Ditch inlet headwall	CY	2			cast in place concrete
Outlet Conveyance Channel / Structure					
overflow weir - armored spillway	EA	1			20 ft wide, weir returning flow back to NFAC
low level conduit	LF	25			24" RCP w/ valve to control opening and closing (or head gate)

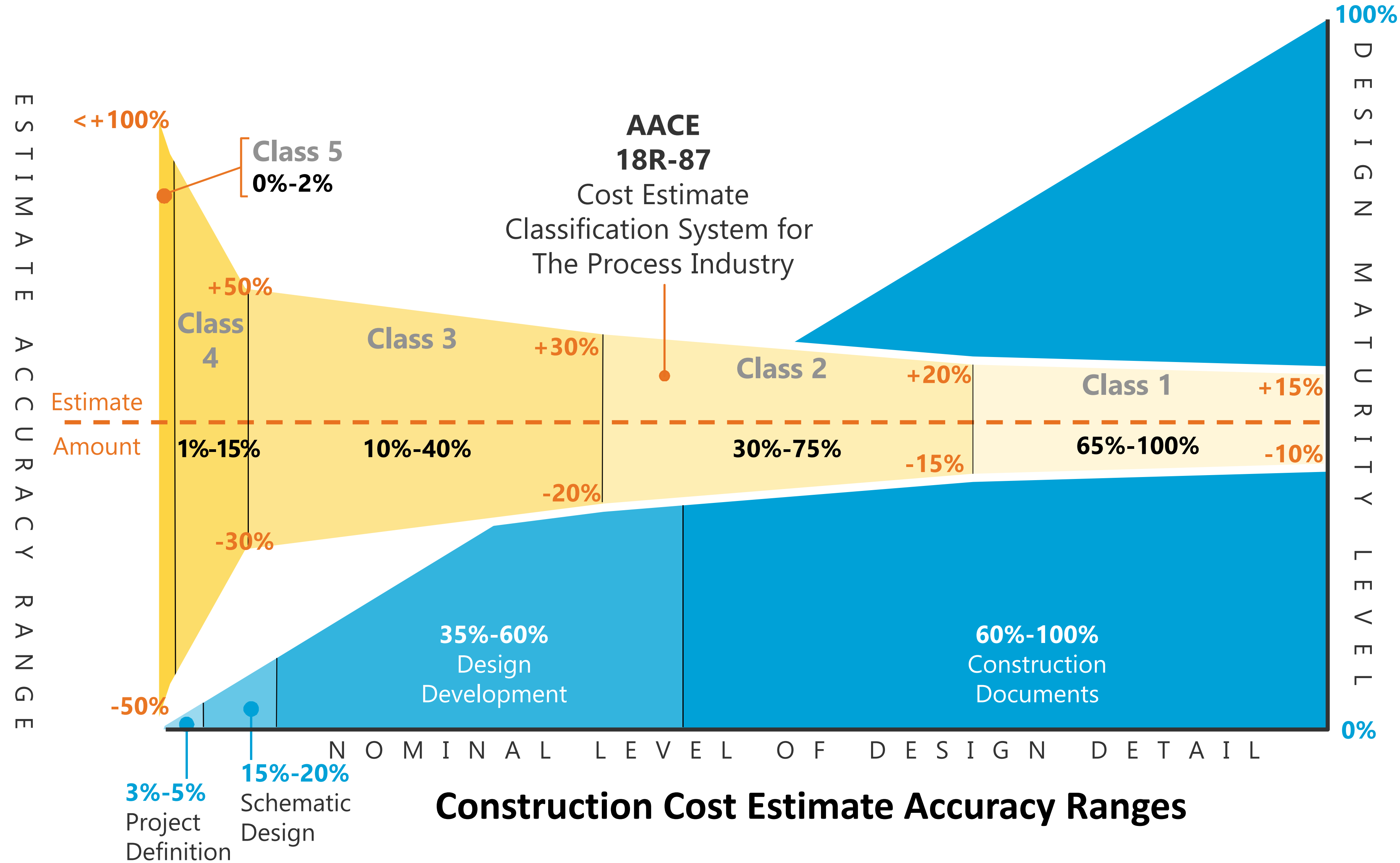
Upstream Conveyance Channel (Full Build Out)					
Cut	CY	1726			
Hauling	CY	1726			same as cut times expansion factor

Misc Quantities

Item	Unit	Quantity	Unit Price	Total Price	Notes
New Monmouth Cutoff Culverts					**ASSUME ROAD MUST BE OPEN DURING WORK**
Traffic Control	days	?			
Pumping for water diversion	days				assume three 3" outlet, 5,000 gpm centrifugal pumps (one as backup)
length of diversion piping	LF	750			48" flexible PVC
fish screen for diversion piping	EA	1			For US end of diversion pipe
coffer dam	EA	1			Temporary cofferdam structure at upstream end of diversion to isolate work area
fish salvage	days	2			Assume 3 people, 10 hour days (assumption that they are not needed on site every day)
New Godsey Rd Bridge					**ASSUME ROAD MUST BE OPEN DURING WORK**
Traffic Control	days	?			
Pumping for water diversion	days				assume three 3" outlet, 5,000 gpm centrifugal pumps (one as backup)
length of diversion piping	LF	750			48" flexible PVC
fish screen for diversion piping	EA	1			For US end of diversion pipe
coffer dam	EA	1			Temporary cofferdam structure at upstream end of diversion to isolate work area
fish salvage	days	2			Assume 3 people, 10 hour days (assumption that they are not needed on site every day)



AACE Information



Construction Cost Estimate Accuracy Ranges

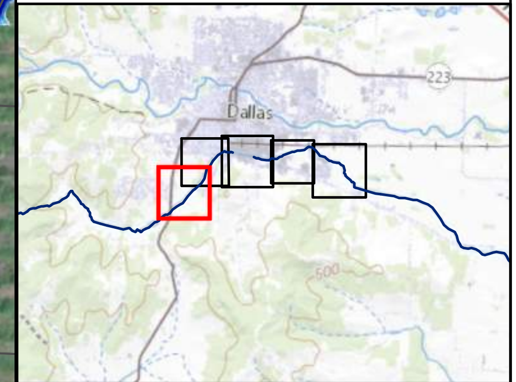
Estimate Class	Class 5	Class 4	Class 3	Class 2	Class 1
LEVEL OF PROJECT DEFINITION Expressed as a % of complete definition	**0% to 2%**	**1% to 15%**	**10% to 40%**	**30% to 70%**	**50% to 100%**
END USAGE Typical Purpose of Estimate	**Concept Screening**	**Study or Feasibility**	**Budget Authorization, or Control**	**Control or Bid / Tender**	**Check Estimate or Bid / Tender**
METHODOLOGY Typical estimating method	**Capacity Factored, Parametric Models, Judgment, or Analogy**	**Equipment Factored or Parametric Models**	**Semi-Detailed Unit Costs with Assembly Level Line Items**	**Detailed Unit Cost with Forced Detailed Take-Off**	**Detailed Unit Cost with Detailed Take-Off**
EXPECTED ACCURACY RANGE Typical variation in low and high ranges [a]	**L: -20% to -50%** **H: +30% to +100%**	**L: -15% to -30%** **H: +20% to +50%**	**L: -10% to -20%** **H: +10% to +30%**	**L: -5% to -15%** **H: +5% to +20%**	**L: -3% to -10%** **H: +3% to +15%**
PREPARATION EFFORT Typical degree of effort relative to least cost index of 1 [b]	**1**	**2 to 4**	**3 to 10**	**4 to 20**	**5 to 100**
REFINED CLASS DEFINITION	Class 5 estimates are generally prepared based on very limited information, and subsequently have very wide accuracy ranges. As such, some companies and organizations have elected to determine that due to the inherent inaccuracies, such estimates cannot be classified in a conventional and systematic manner. Class 5 estimates, due to the requirements of end use, may be prepared within a very limited amount of time and with very little effort expended - sometimes requiring less than 1 hour to prepare. Often, little more than proposed plant type, location, and capacity are known at the time of estimate preparation.	Class 4 estimates are generally prepared based on very limited information, and subsequently have very wide accuracy ranges. They are typically used for project screening, determination of feasibility, concept evaluation, and preliminary budget approval. Typically, engineering is from 1% to 5% complete, and would comprise at a minimum the following: plant capacity, block schematics, indicated layout, process flow diagrams (PFDs) for main process systems and preliminary engineered process and utility equipment lists. Level of Project Definition Required: 1% to 15% of full project definition.	Class 3 estimates are generally prepared to form the basis for budget authorization, appropriation, and/or funding. As such, they typically form the initial control estimate against which all actual costs and resources will be monitored. Typically, engineering is from 10% to 40% complete, and would comprise at a minimum the following: process flow diagrams, utility flow diagrams, preliminary piping and instrument diagrams, utility flow diagrams, preliminary piping and instrument diagrams, plot plan, developed layout drawings, and essentially complete engineering process and utility equipment lists. Level Of Project Definition Required: 10% to 40% of full project definition.	Class 2 estimates are generally prepared to form a detailed control baseline against which all project work is monitored in terms of cost and progress control. For contractors, this class of estimate is often used as the "bid" estimate to establish contract value. Typically, engineering is from 30% to 70% complete, and would comprise at a minimum the following: Process flow diagrams, utility flow diagrams, piping and instrument flow diagrams, heat and material balances, final plot plan, final layout drawings, complete engineered process and utility equipment lists, single line diagrams for electrical, electrical equipment and motor schedules, vendor quotations, detailed project execution plans, resourcing and work force plans, etc.	Class 1 estimates are generally prepared for discrete parts or sections of the total project rather than generating this level of detail for the entire project. The parts of the project estimated at this level of detail will typically be used by subcontractors for bids, or by owners for check estimates. The updated estimate is often referred to as the current control estimate and becomes the new baseline for cost/schedule control of the project. Class 1 estimates may be prepared for parts of the project to comprise a fair price estimate or bid check estimate to compare against a contractor's bid estimate, or to evaluate/dispute claims. Typically, engineering is from 50% to 100% complete, and would comprise virtually all engineering and design documentation of the project, and complete project execution and commissioning plans. Level for Project Definition Required: 50% to 100% of full project definition.
END USAGE DEFINED	Class 5 estimates are prepared for any number of strategic business planning purposes, such as but not limited to market studies, assessment of initial viability, evaluation of alternate schemes, project screening, project location studies, evaluation of resource needs and budgeting, long-range capital planning, etc.	Class 4 estimates are prepared for a number of purposes, such as but not limited to, detailed strategic planning, business development, project screening at more developed stages, alternative scheme analysis, confirmation of economic and/or technical feasibility, and preliminary budget approval or approval to proceed to next stage.	Class 3 estimates are typically prepared to support full project funding requests, and become the first of the project phase "control estimate" against which all actual costs and resources will be monitored for variations to the budget. They are used as the project budget until replaced by more detailed estimates. In many owner organizations, a Class 3 estimate may be the last estimate required and could well form the only basis for cost/schedule control.	Class 2 estimates are typically prepared as the detailed control baseline against which all actual costs an resources will now be monitored for variation to the budget, and form a part of the change/variation control program.	Class 1 estimates are typically prepared to form a current control estimate to be used as the final control baseline against which all actual coasts and resources will now be monitored for variations to the budget, and form a part of the change/variation control program. They may be used to evaluate bid checking, to support vendor/contractor negotiations, or for claim evaluations and dispute resolution.
ESTIMATING METHODS USED	Class 5 estimates virtually always use stochastic estimating methods such as cost/capacity curves and factors, scale of operations factors, Lang factors, Hand factors, Chilton factors, Peters-Timmerhaus factors, Guthrie factors, and other parametric and modeling techniques.	Class 4 estimates virtually always use stochastic estimating methods such as cost/capacity curves and factors, scale of operations factors, Lang factors, Hand factors, Chilton factors, Peters-Timmerhaus factors, Guthrie factors, the Miller method, gross unit costs/ratios, and other parametric and modeling techniques.	Class 3 estimates usually involve more deterministic estimating methods that stochastic methods. They usually involve a high degree of unit cost line items, although these may be at an assembly level of detail rather than individual components. Factoring and other stochastic methods may be used to estimate less-significant areas of the project.	Class 2 estimates always involve a high degree of deterministic estimating methods. Class 2 estimates are prepared in great detail, and often involve tens of thousands of unit cost line items. For those areas of the project still undefined, an assumed level of detailed takeoff (forced detail) may be developed to use as line items in the estimate instead of relying on factoring methods.	Class 1 estimates involve the highest degree of deterministic estimating methods, and require a great amount of effort. Class 1 estimates are prepared in great detail, and thus are usually performed on only the most important or critical areas of the project. All items in the estimate are usually unit cost line items based on actual design quantities.
EXPECTED ACCURACY RANGE	Typical accuracy ranges for Class 5 estimates are -20% to -50% on the low side, and +30% to +100% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.	Typical accuracy ranges for Class 4 estimates are -15% to -30% on the low side, and +20% to +50% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.	Typical accuracy ranges for Class 3 estimates are -10% to -20% on the low side, and +10% to +30% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.	Typical accuracy ranges for Class 2 estimates are -5% to -15% on the low side, and +5% to +20% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.	Typical accuracy ranges for Class 1 estimates are -3% to -10% on the low side, and +3% to +15% on the high side, depending on the technological complexity of the project, appropriate reference information, and the inclusion of an appropriate contingency determination. Ranges could exceed those shown in unusual circumstances.
EFFORT TO PREPARE (for US$20MM project):	As little as 1 hour or less to prepare to perhaps more than 200 hours, depending on the project and the estimating methodology used.	Typically, as little as 20 hours or less to perhaps more than 300 hours, depending on the project and the estimating methodology used.	Typically, as little as 150 hours or less to perhaps more than 1500 hours, depending on the project and the estimating methodology used.	Typically, as little as 300 hours or less to perhaps more than 3000 hours, depending on the project and the estimating methodology used. Bid Estimates typically require more effort than estimates used for funding or control purposes	Class 1 estimates require the most effort to create, and as such are generally developed for only selected areas of the project, or for bidding purposes. A complete Class 1 estimate may involve as little as 600 hours or less, to perhaps more than 6,000 hours, depending on the project and the estimating methodology used. Bid estimate typically require more effort than estimates used for funding or control purposes.
ANSI Standard Reference Z94.2-1989 name; Alternate Estimate Names, Terms, Expressions, Synonyms:	Order of Magnitude Estimate; Ratio, ballpark, blue sky, seat-of-pants, ROM, idea study, prospect estimate, concession license estimate, guesstimate, rule-of thumb.	Budget Estimate; Screening, top-down, feasibility, authorization, factored, pre-design, pre-study.	Budget Estimate; Budget, scope, sanction, semi-detailed, authorization, preliminary control, concept study, development, basic engineering phase estimate, target estimate.	Definitive Estimate; Detailed Control, forced detail, execution phase, master control, engineering, bid, tender, change order estimate.	Definitive Estimate; Full detail, release, fall-out, tender, firm price, bottoms-up, final, detailed control, forced detail, execution phase, master control, fair price, definitive, change order estimate.

Estimate Class	Class 5	Class 4	Class 3	Class 2	Class 1
Estimate Input Checklist and Maturity Index	Class 5	Class 4	Class 3	Class 2	Class 1
GENERAL PROJECT DATA					
Project Scope Description	General	Preliminary	Defined	Defined	Defined
Plant Production / Facility Capacity	Assumed	Preliminary	Defined	Defined	Defined
Plant Location	General	Approximate	Specific	Specific	Specific
Soils & Hydrology	None	Preliminary	Defined	Defined	Defined
Integrated Project Plan	None	Preliminary	Defined	Defined	Defined
Project Master Schedule	None	Preliminary	Defined	Defined	Defined
Escalation Strategy	None	Preliminary	Defined	Defined	Defined
Work Breakdown Structure	None	Preliminary	Defined	Defined	Defined
Project Code of Accounts	None	Preliminary	Defined	Defined	Defined
Contracting Strategy	Assumed	Assumed	Preliminary	Defined	Defined

ENGINEERING DELIVERABLES:	Class 5	Class 4	Class 3	Class 2	Class 1
Block Flow Diagrams	Started / Preliminary	Preliminary / Complete	Complete	Complete	Complete
Plot Plans		Started	Preliminary / Complete	Complete	Complete
Process Flow Diagrams (PFDs)		Started / Preliminary	Preliminary / Complete	Complete	Complete
Utility Flow Diagrams (UFDs)		Started / Preliminary	Preliminary / Complete	Complete	Complete
Piping & Instrument Diagrams (P&IDS)		Started	Preliminary / Complete	Complete	Complete
Heat and Material Balances		Started	Preliminary / Complete	Complete	Complete
Process Equipment List		Started / Preliminary	Preliminary / Complete	Complete	Complete
Utility Equipment List		Started / Preliminary	Preliminary / Complete	Complete	Complete
Electrical One Line Drawings		Started / Preliminary	Preliminary / Complete	Complete	Complete
Specifications and Datasheets		Started	Preliminary / Complete	Complete	Complete
General Equipment Arrangement Drawings		Started	Preliminary / Complete	Complete	Complete
Spare Parts Lists			Started / Preliminary	Preliminary	Complete
Architectural Details / Schedules		Started	Preliminary / Complete	Complete	Complete
Structural Details		Started	Preliminary / Complete	Complete	Complete
Mechanical Discipline Drawings			Started	Preliminary	Preliminary / Complete
Electrical Discipline Drawings			Started	Preliminary	Preliminary / Complete
System Discipline Drawings			Started	Preliminary	Preliminary / Complete
Civil/Site Discipline Drawings			Started	Preliminary	Preliminary / Complete
Demolition Details		Started	Preliminary / Complete	Complete	Complete

Appendix E
Existing Conditions Model Results Map Book

VICINITY MAP



LEGEND

X Rivermile

Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

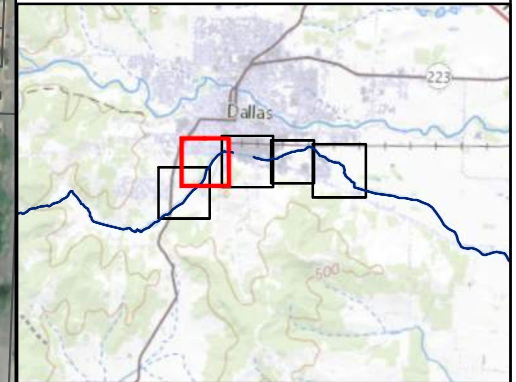
N

0 387.5 775 Feet

Mapbook 1a. Existing Conditions
10-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs

VICINITY MAP



LEGEND

× Rivermile

Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

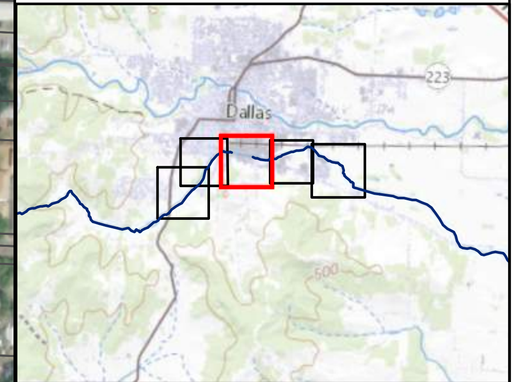
N

0 360 720 Feet

Mapbook 1b. Existing Conditions
10-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs

UNK E:\TBEDFORD\NF_ASHCREEK\NF_ASH_CREEK_GIS\REPORT_MAPFILES\MAPBOOK_1_EC_10YR_DEPTH.MXD TB028345 6/15/2023 8:21:23 AM



LEGEND

- × Rivermile
- Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

N

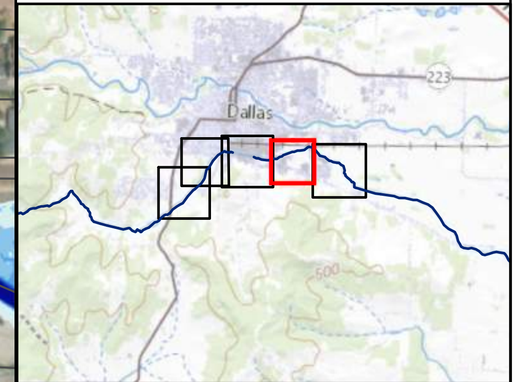
0 385 770 Feet

Mapbook 1c. Existing Conditions
10-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs

UNK E:\TBEDFORD\NF_ASHCREEK\NF_ASH_CREEK_GIS\REPORT_MAPFILES\MAPBOOK_1_EC_10YR_DEPTH.MXD TB028345 6/15/2023 8:21:23 AM

VICINITY MAP



LEGEND

× Rivermile

Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:

1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

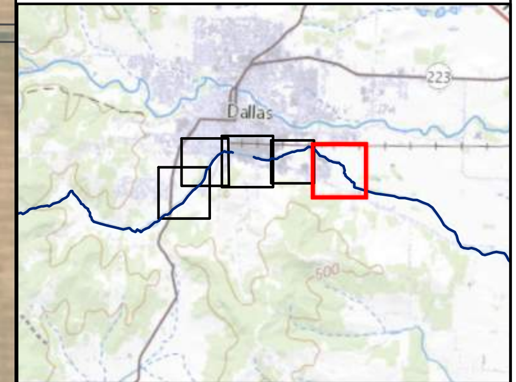
N

0 325 650 Feet

Mapbook 1d. Existing Conditions
10-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs

VICINITY MAP



LEGEND

- × Rivermile
- ☐ Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

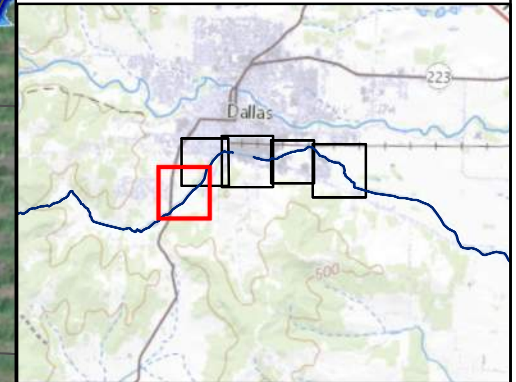
N

0 400 800 Feet

Mapbook 1e. Existing Conditions
10-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs

VICINITY MAP



LEGEND

X Rivermile

Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

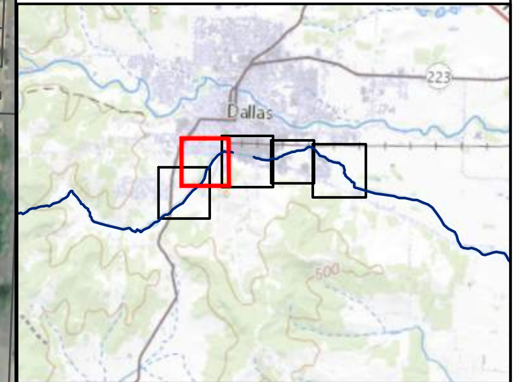
N

0 387.5 775 Feet

Mapbook 2a. Existing Conditions
50-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs

VICINITY MAP



LEGEND

- × Rivermile
- ☐ Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

N

0 360 720 Feet

Mapbook 2b. Existing Conditions
50-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs

LEGEND

× Rivermile

Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

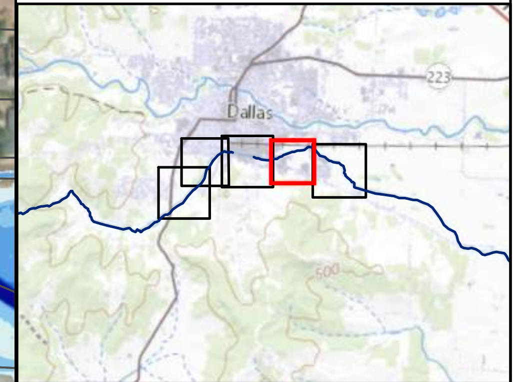
N

0 385 770 Feet

Mapbook 2c. Existing Conditions 50-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs

VICINITY MAP



LEGEND

× Rivermile

Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:

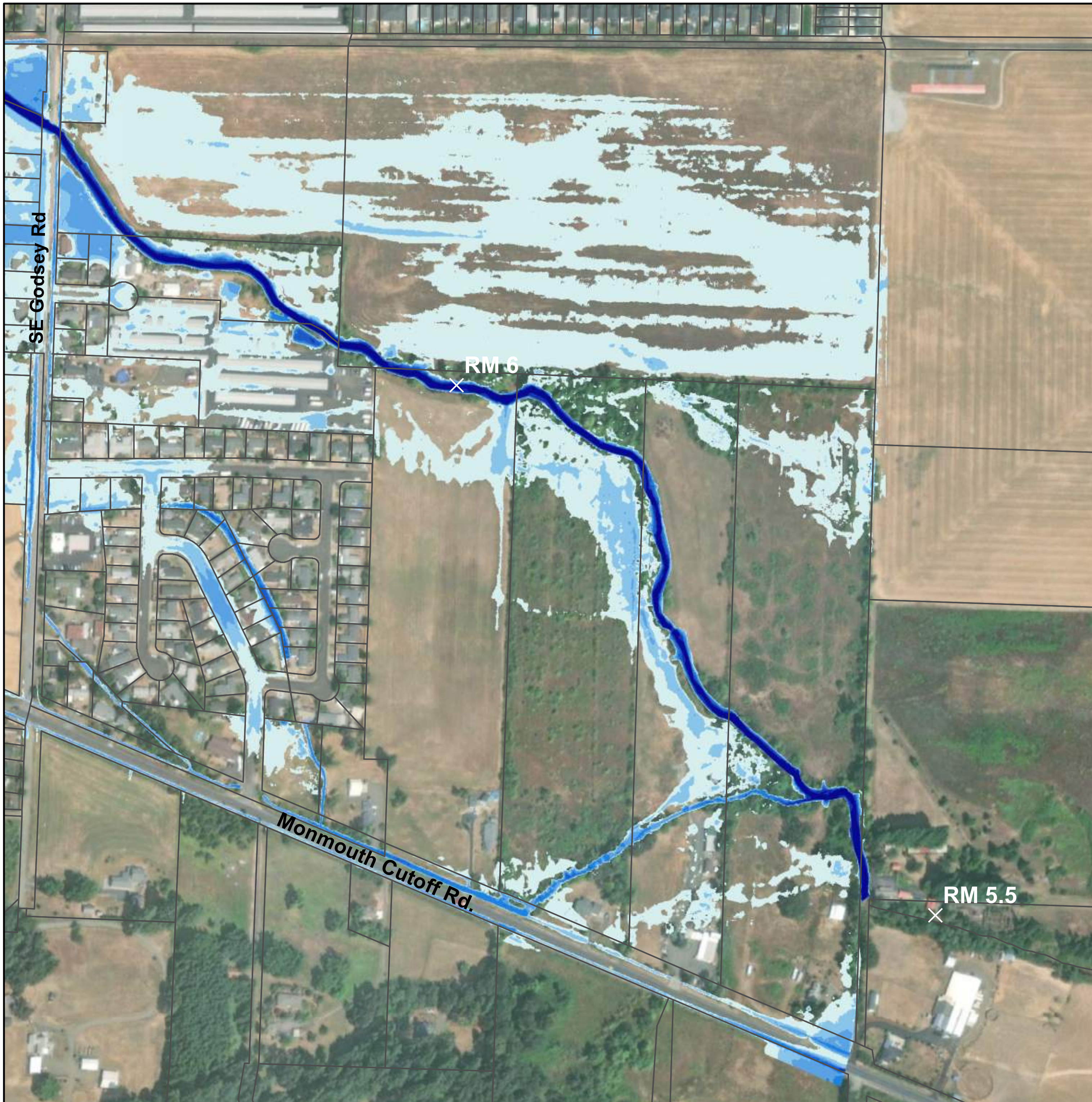
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

N

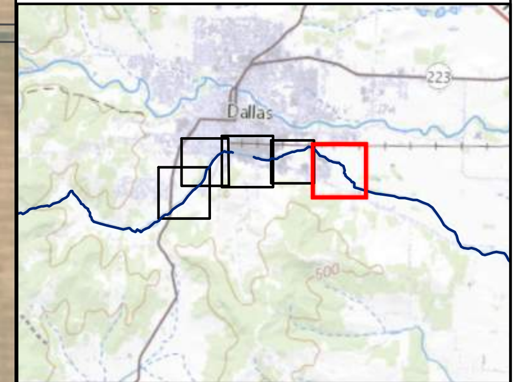
0 325 650 Feet

Mapbook 2d. Existing Conditions
50-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs



VICINITY MAP



LEGEND

- X Rivermile
- Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

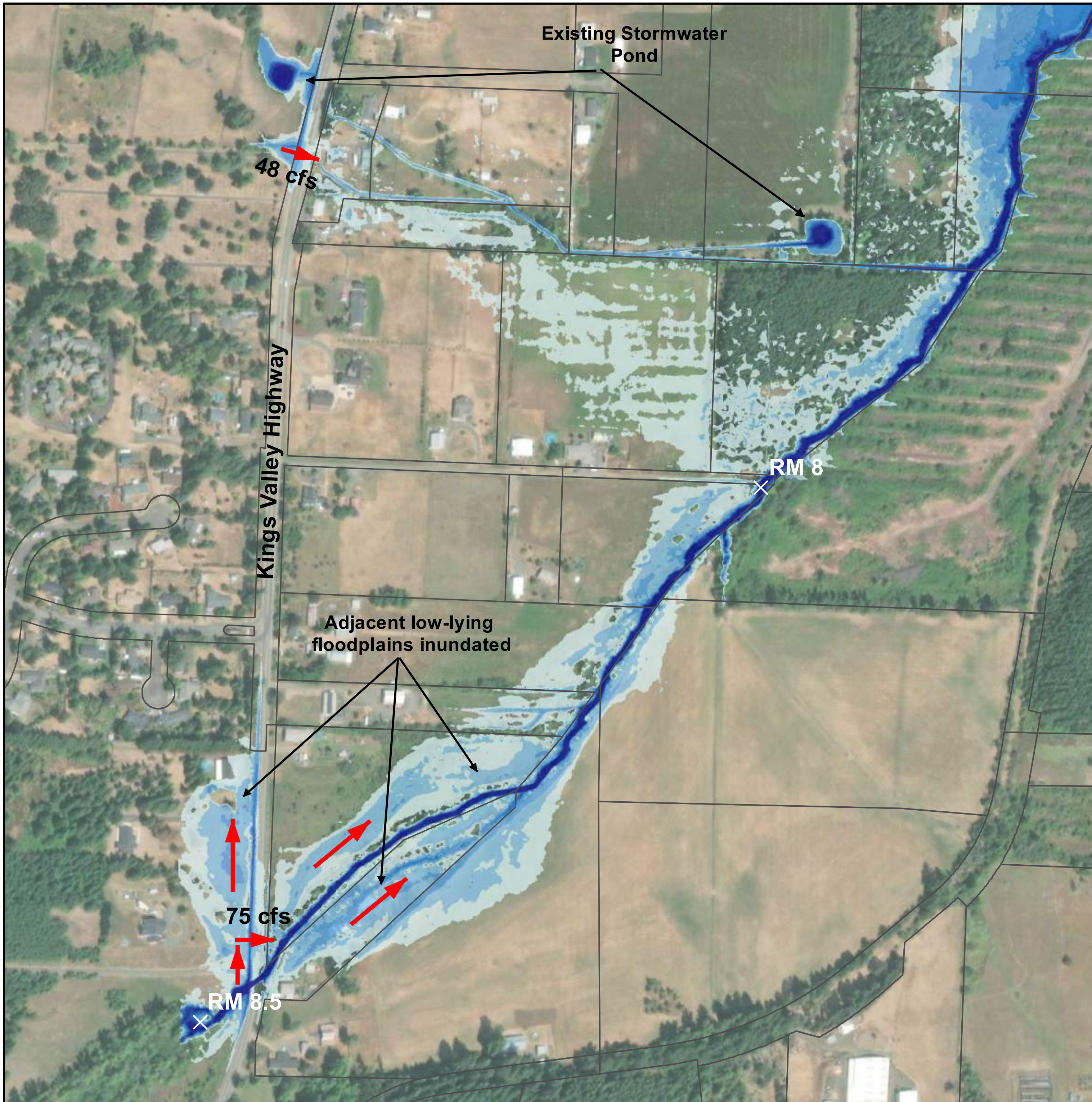
Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

N

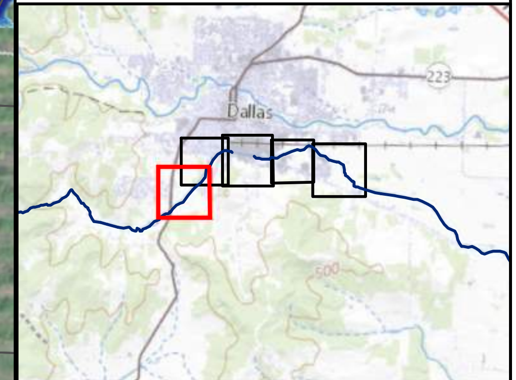
0 400 800 Feet

Mapbook 2e. Existing Conditions
50-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs



VICINITY MAP



LEGEND

X Rivermile

Tax Lots

Existing Conditions 100-year Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Flow Arrows

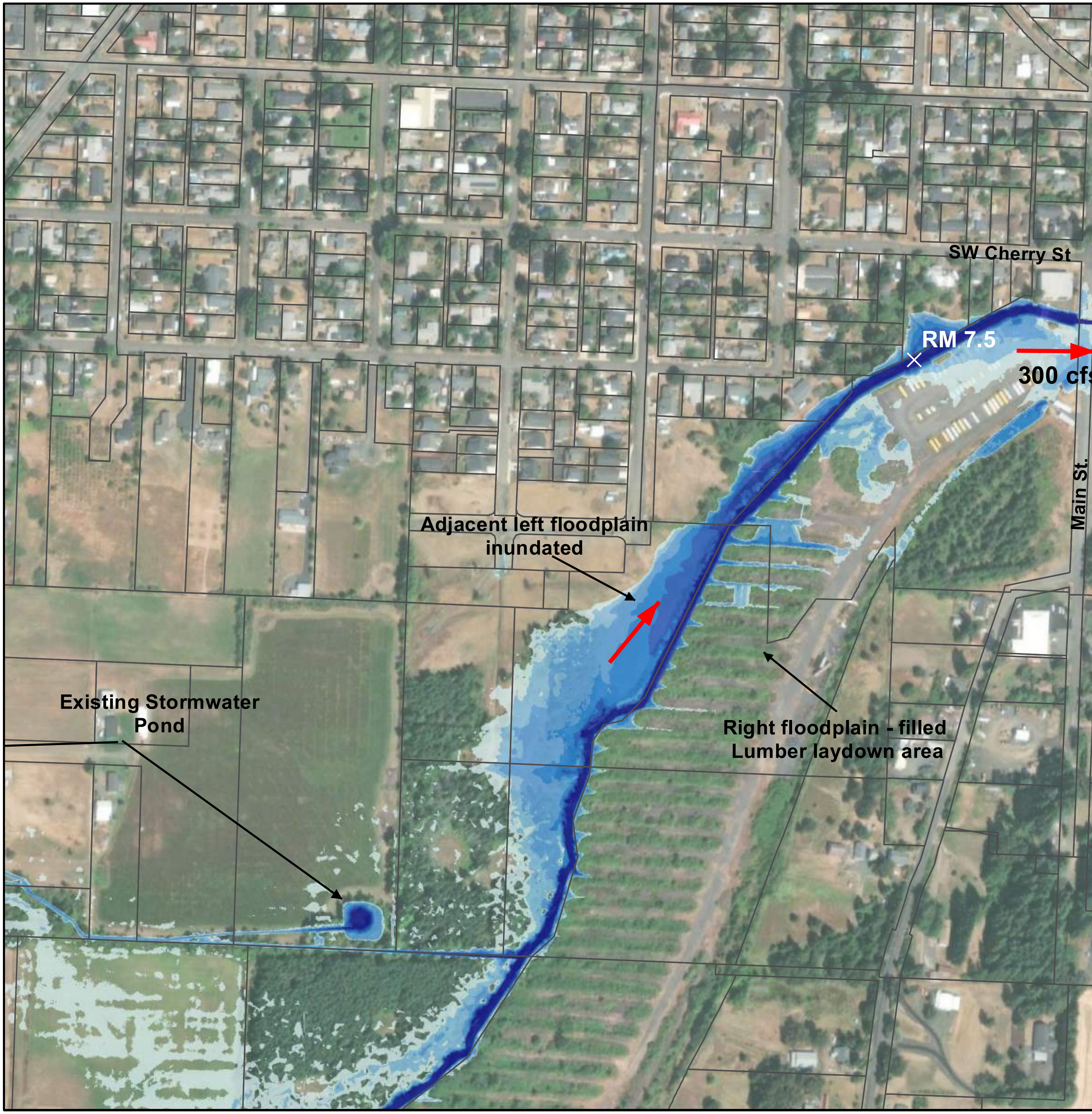
Notes:
Tax lot boundaries downloaded from Polk County GIS database April 2023

N

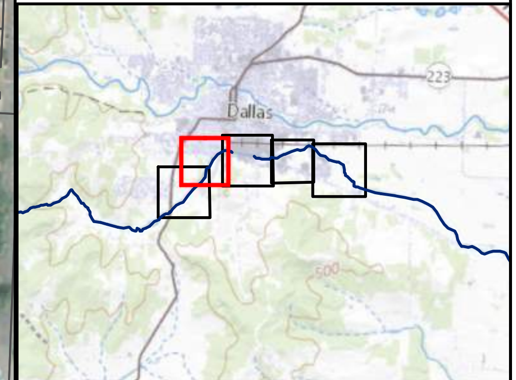
0 400 800 Feet

Mapbook 3a. Existing Conditions 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs



VICINITY MAP



LEGEND

X Rivermile

Tax Lots

Existing Conditions 100-year Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Flow Arrows

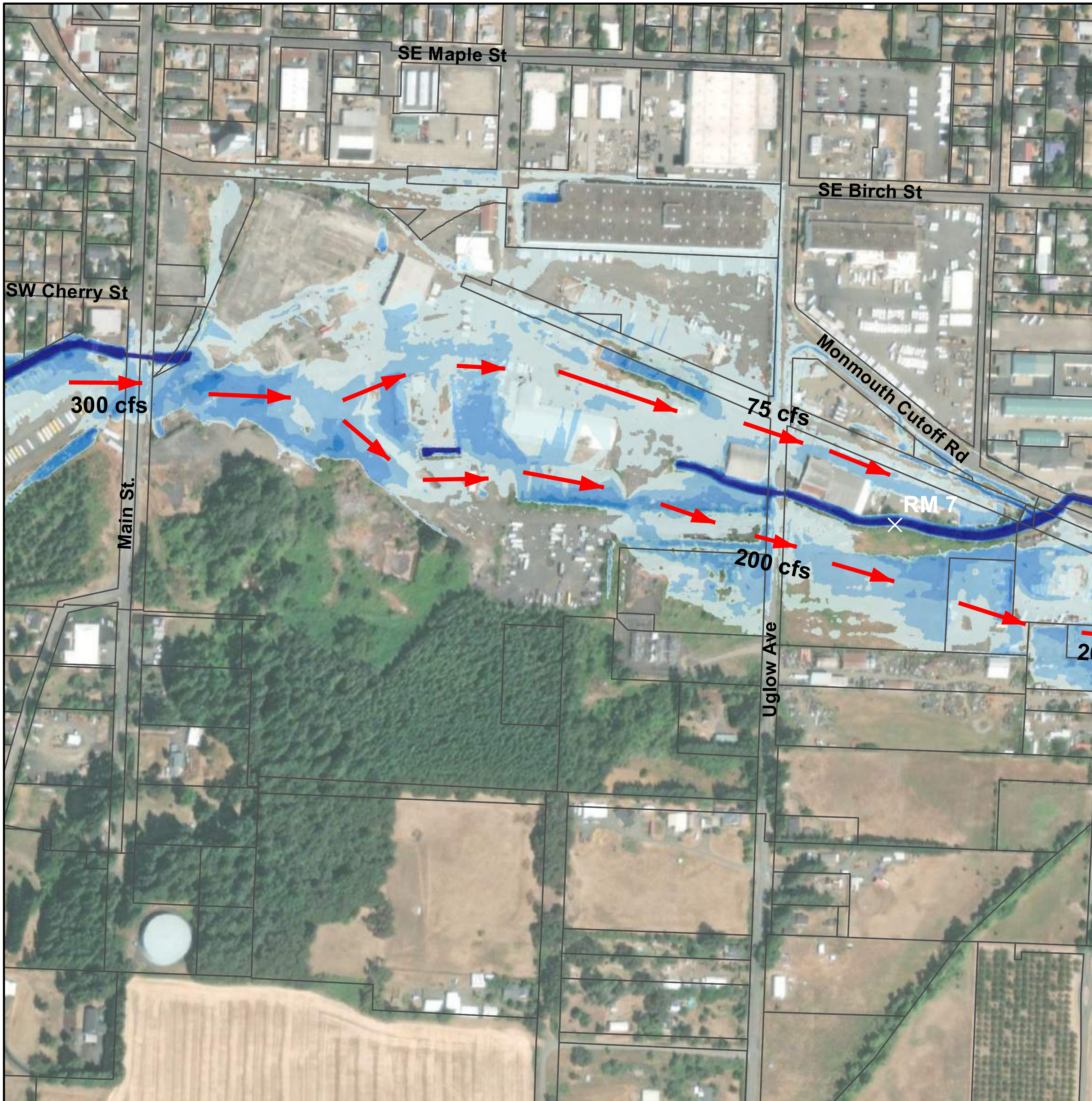
Notes:
Tax lot boundaries downloaded from Polk County GIS database April 2023

N

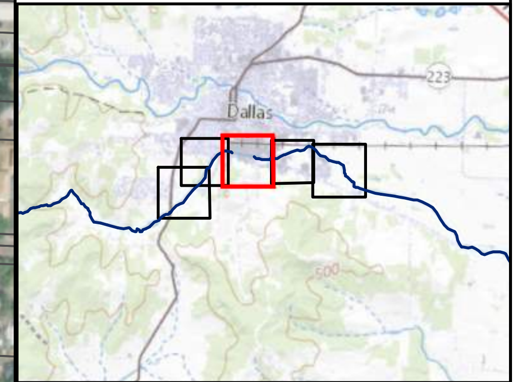
0 370 740 Feet

Mapbook 3b. Existing Conditions 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs



VICINITY MAP



LEGEND

- X Rivermile
- Tax Lots

Existing Conditions 100-year Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0
- Flow Arrows

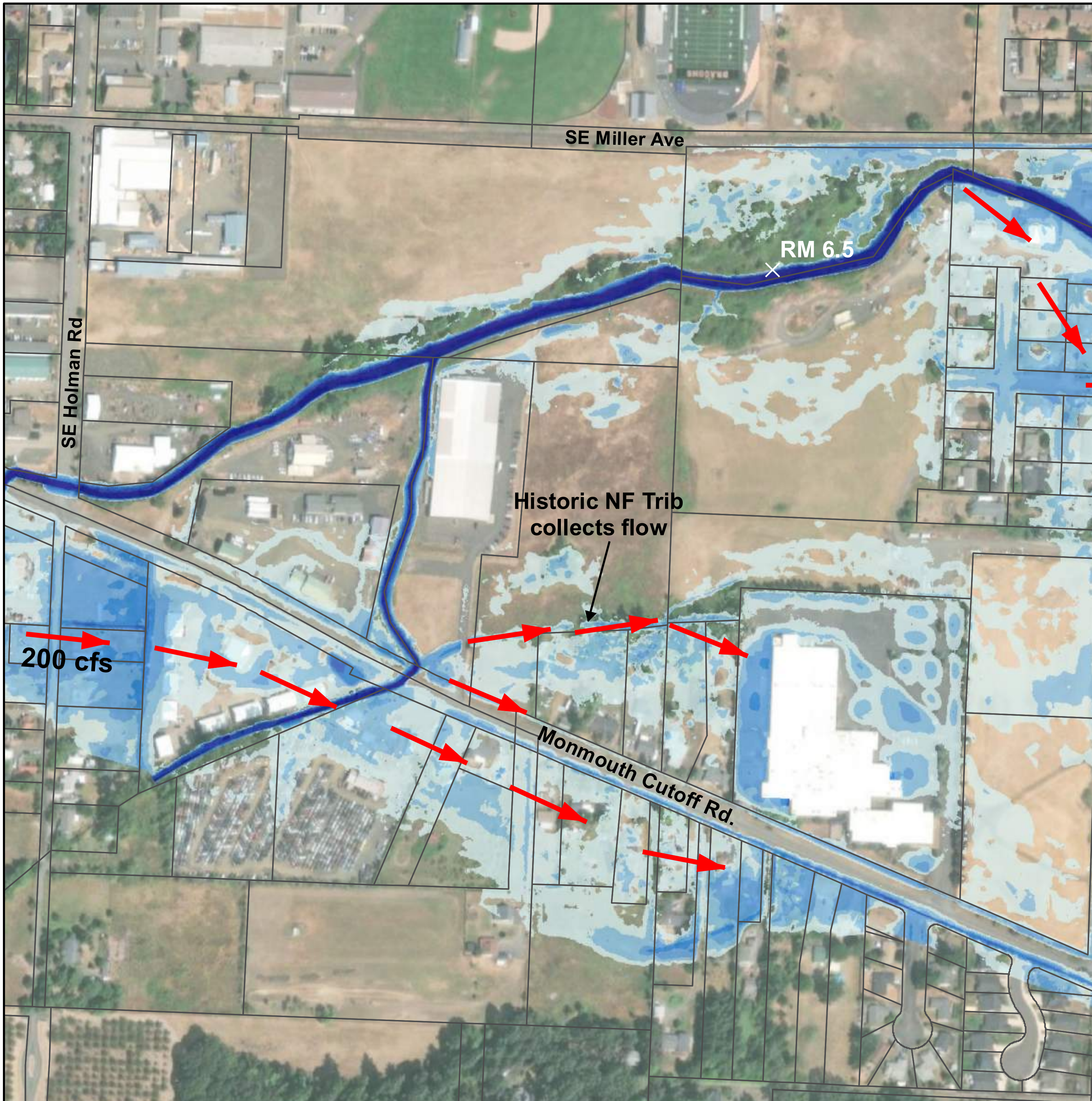
Notes:
Tax lot boundaries downloaded from Polk County GIS database April 2023

N

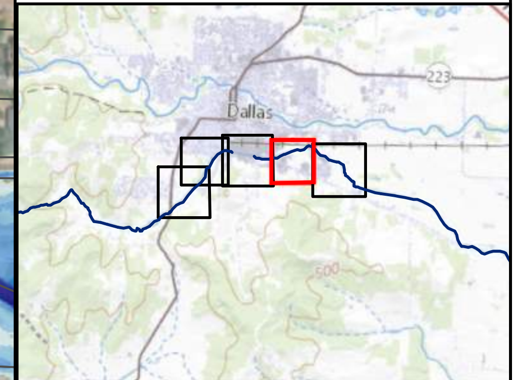
0 400 800 Feet

Mapbook 3c. Existing Conditions 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs



VICINITY MAP



LEGEND

X Rivermile

Tax Lots

Existing Conditions 100-year Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Flow Arrows

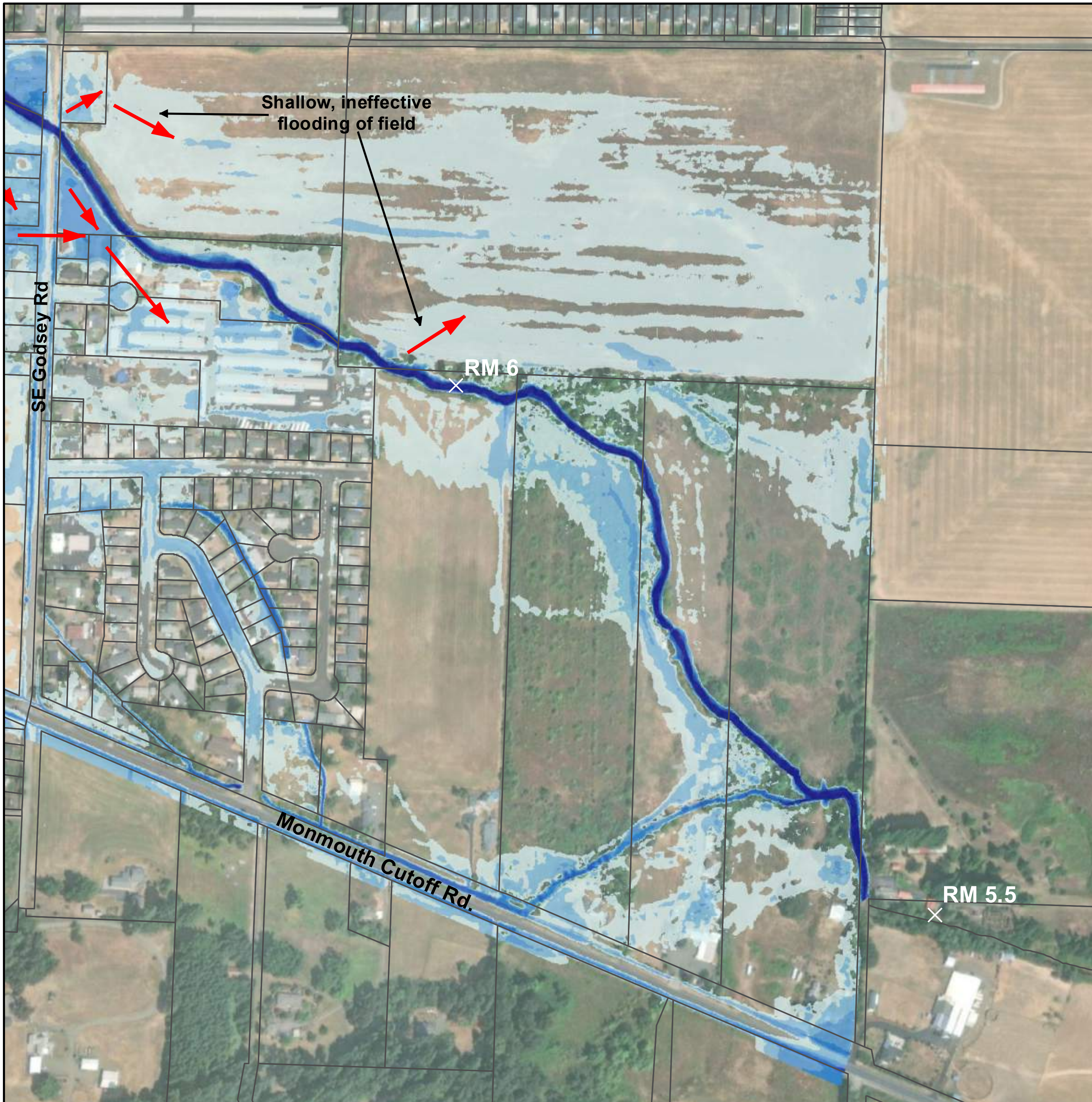
Notes:
Tax lot boundaries downloaded from Polk County GIS database April 2023

N

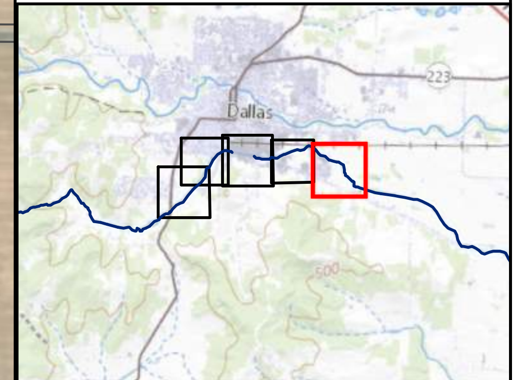
0 335 670 Feet

Mapbook 3d. Existing Conditions 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs



VICINITY MAP



LEGEND

X Rivermile

Tax Lots

Existing Conditions 100-year Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Flow Arrows

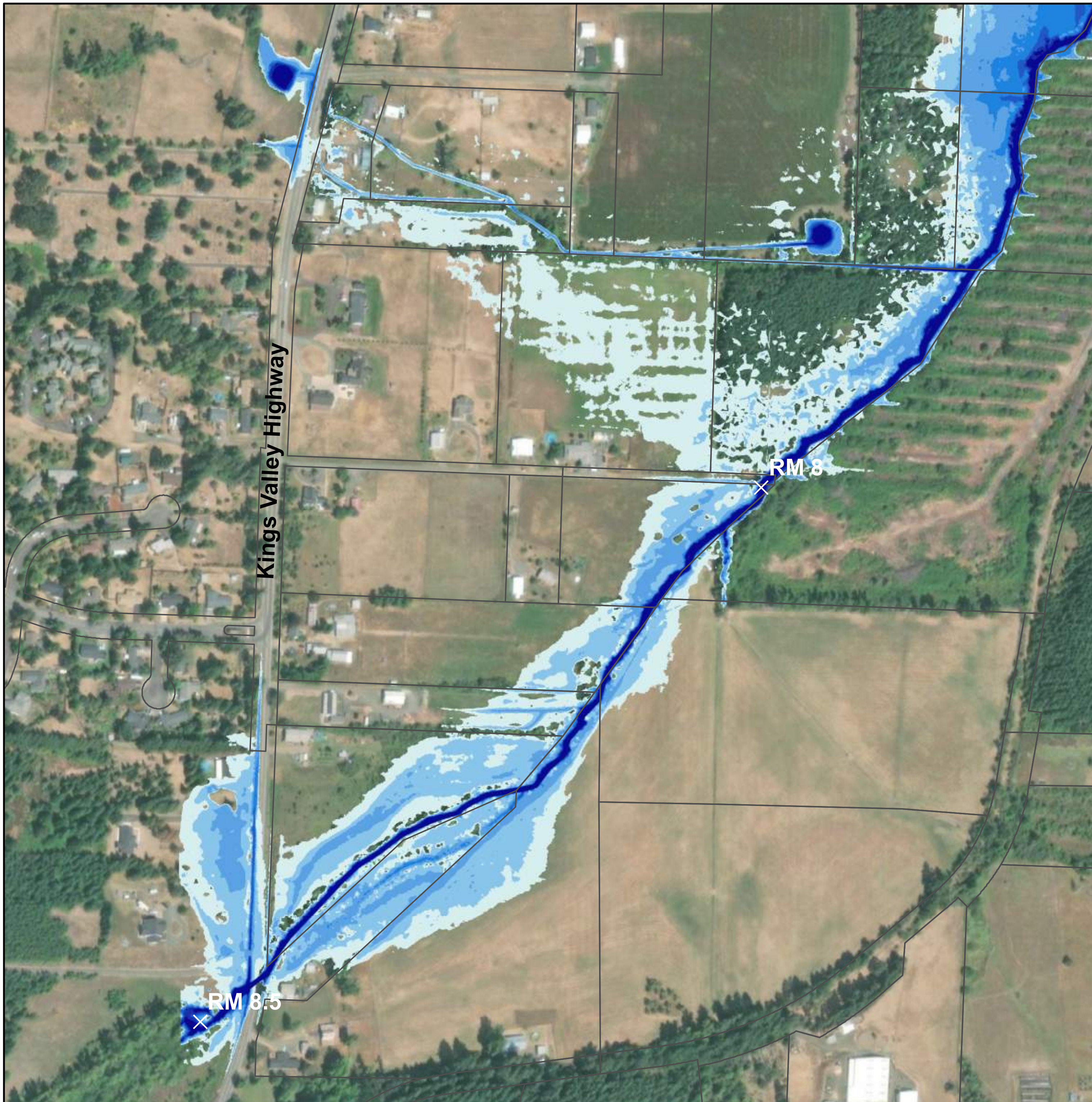
Notes:
Tax lot boundaries downloaded from Polk County GIS database April 2023

N

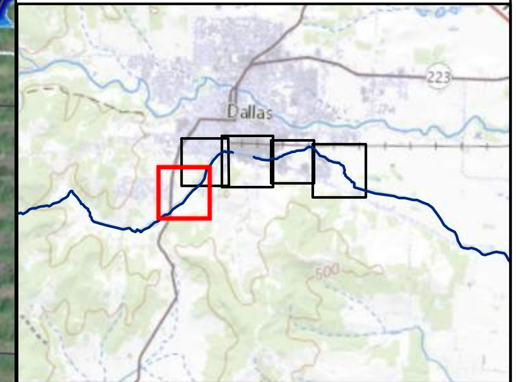
0 412.5 825 Feet

Mapbook 3e. Existing Conditions 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs



VICINITY MAP



LEGEND

- ✕ Rivermile
- Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

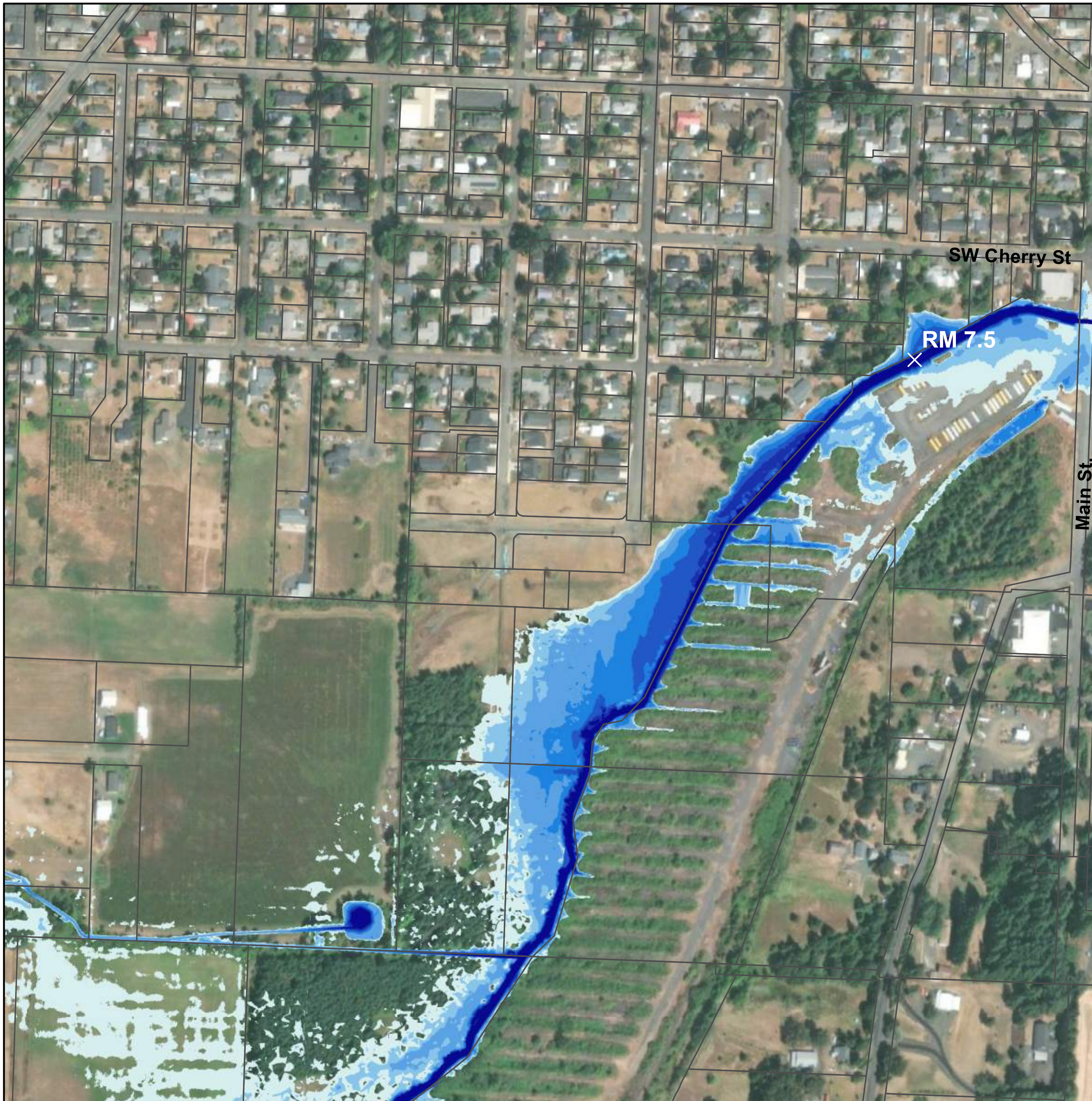
Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

N

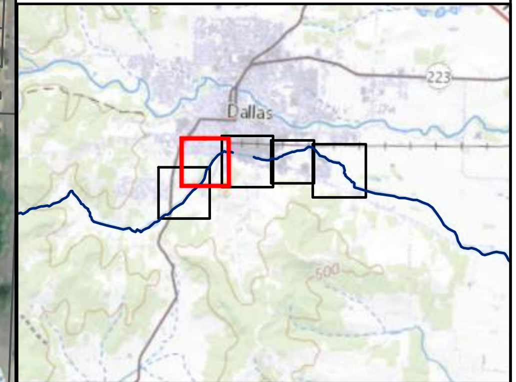
0 387.5 775 Feet

Mapbook 4a. Existing Conditions 2080 Expected 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs



VICINITY MAP



LEGEND

× Rivermile

☐ Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

N

0 360 720 Feet

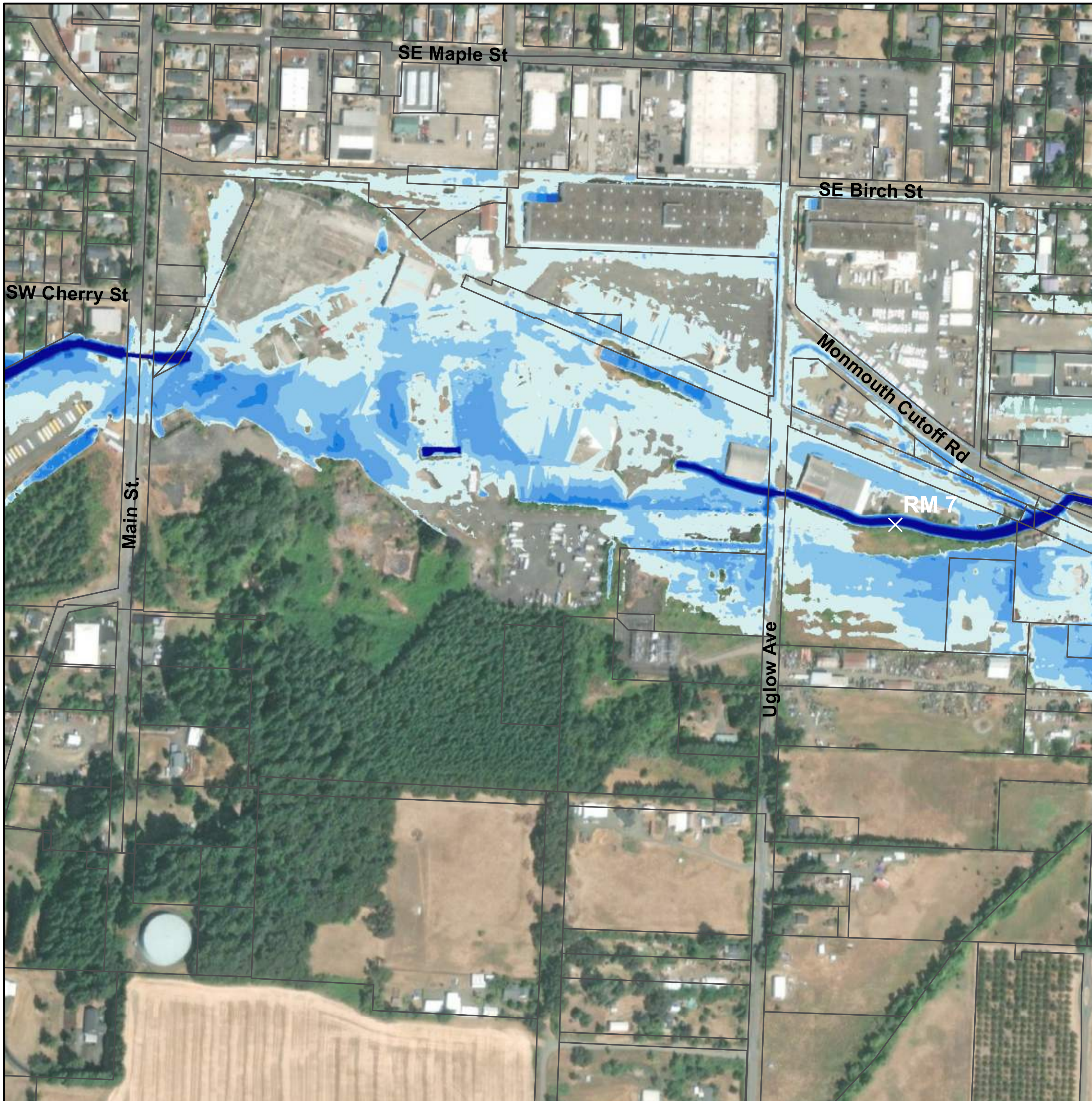
Mapbook 4b. Existing Conditions 2080 Expected 100-year Modeled Flow Depth (ft)

Flood Mitigation Feasibility Study

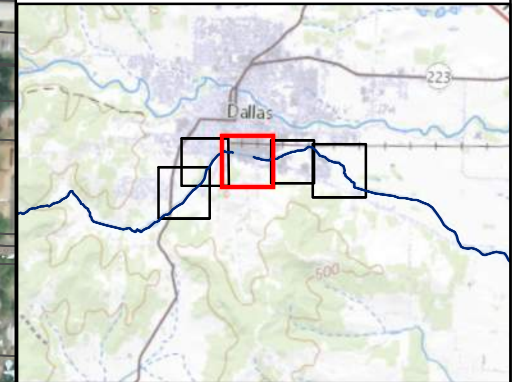
City of Dallas, OR

Jacobs

UNK E:\TBEDFORD\NF_ASHCREEK\NF_ASH_CREEK_GIS\REPORT_MAPFILES\MAPBOOK_4_EC_2080_100YR_DEPTH.MXD TB028345 6/15/2023 9:32:54 AM



VICINITY MAP



LEGEND

- × Rivermile
- ☐ Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

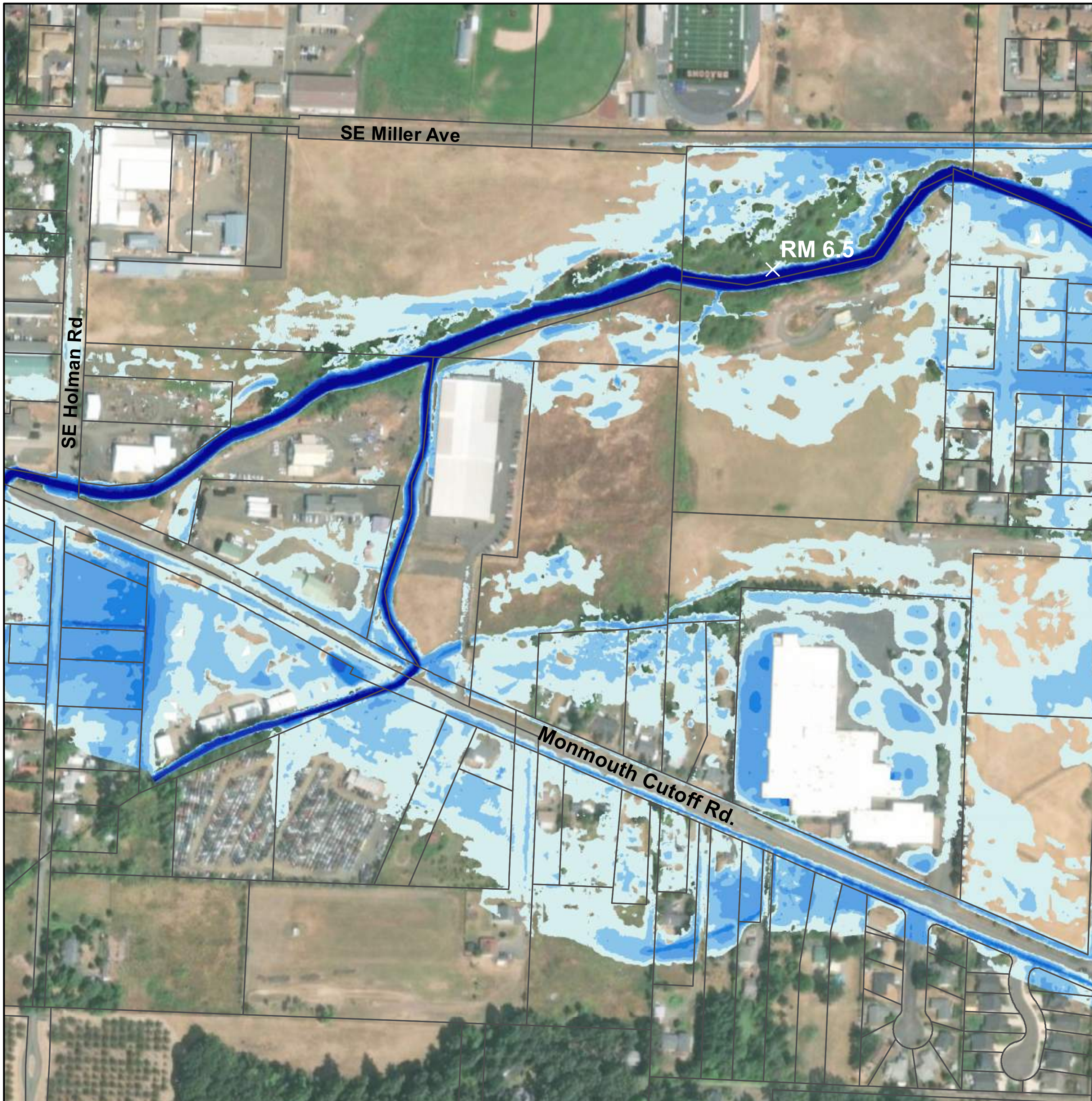
Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

N

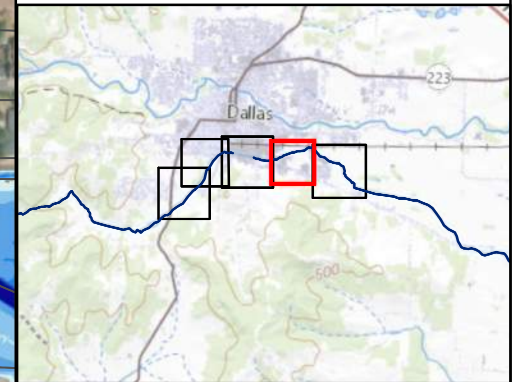
0 385 770 Feet

Mapbook 4c. Existing Conditions 2080 Expected 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs



VICINITY MAP



LEGEND

× Rivermile

Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

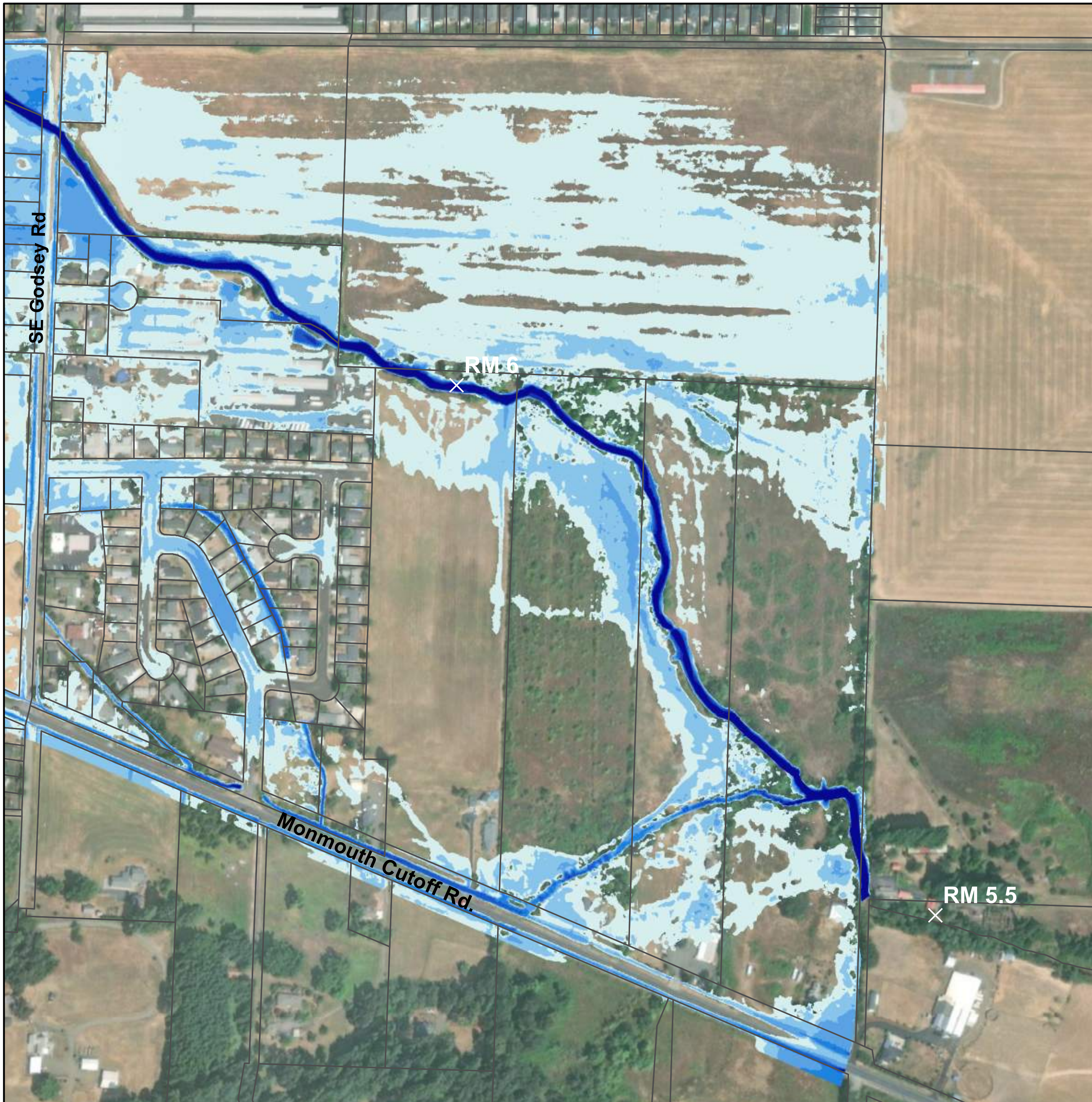
N

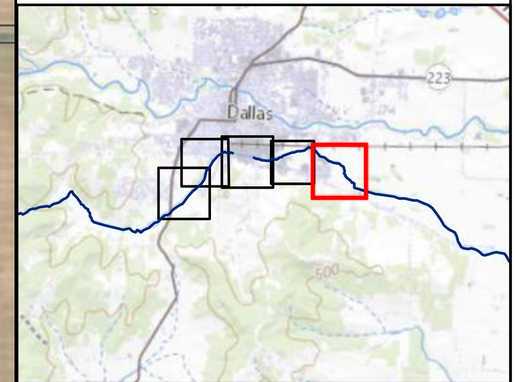
0 325 650 Feet

Mapbook 4d. Existing Conditions 2080 Expected 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs

UNK E:\TBEDFORD\NF_ASHCREEK\NF_ASH_CREEK_GIS\REPORT_MAPFILES\MAPBOOK_4_EC_2080_100YR_DEPTH.MXD TB028345 6/15/2023 9:32:54 AM





LEGEND

- × Rivermile
- Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

N

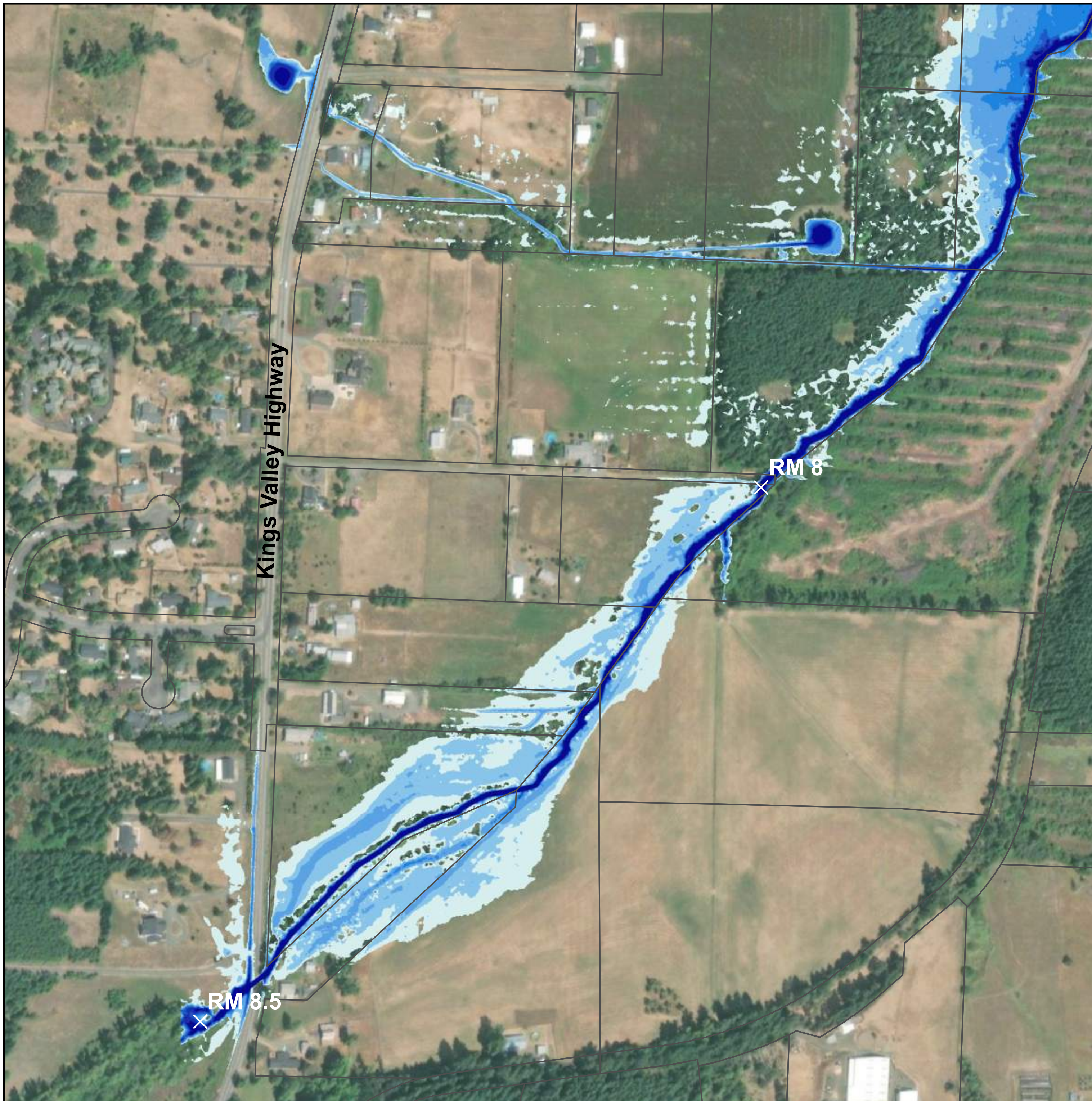
0 400 800 Feet

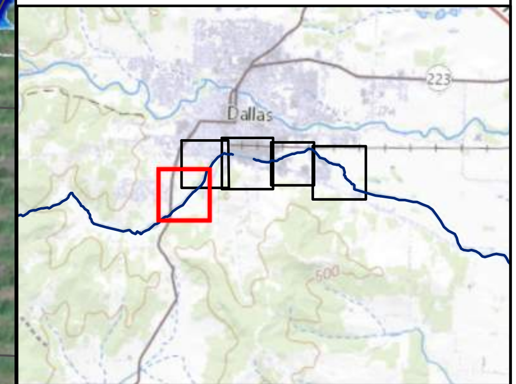
Mapbook 4e. Existing Conditions 2080 Expected 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs

UNK E:\TBEDFORD\NF_ASHCREEK\NF_ASH_CREEK_GIS\REPORT_MAPFILES\MAPBOOK_4_EC_2080_100YR_DEPTH.MXD TB028345 6/15/2023 9:32:54 AM

Appendix F
Proposed Conditions Model Results Map Book





LEGEND

X Rivermile

Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

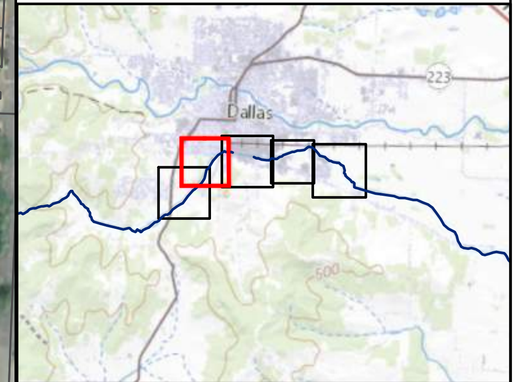
N

0 387.5 775 Feet

Mapbook 5a. Proposed Comprehensive Solution 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs

VICINITY MAP



LEGEND

X Rivermile

Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

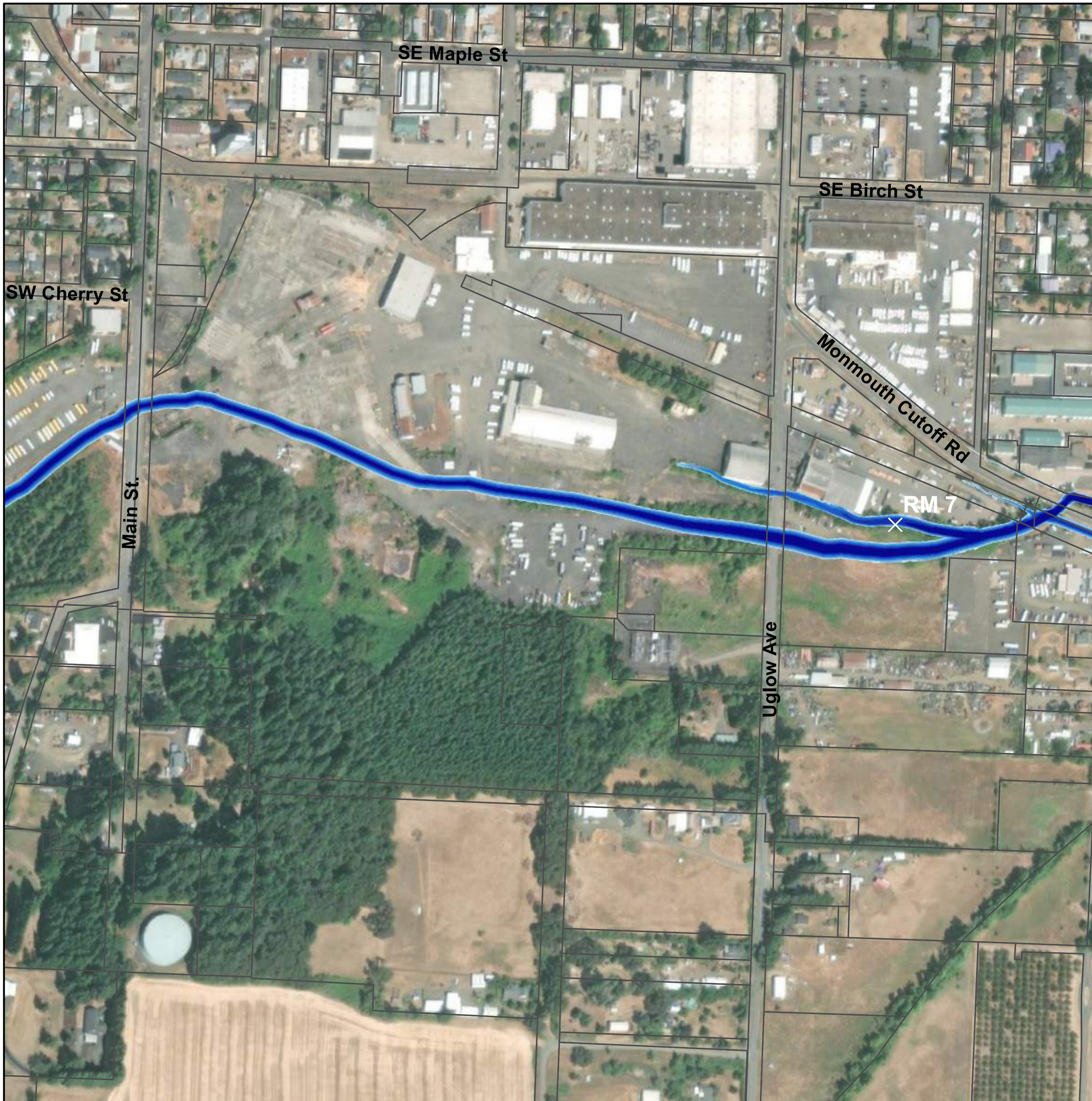
Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

N

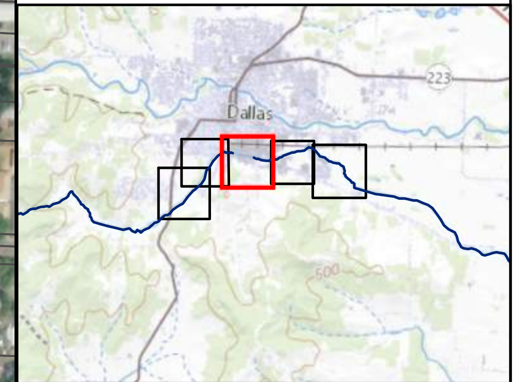
0 360 720 Feet

Mapbook 5b. Proposed Comprehensive Solution 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs



VICINITY MAP



LEGEND

- Rivermile
- Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

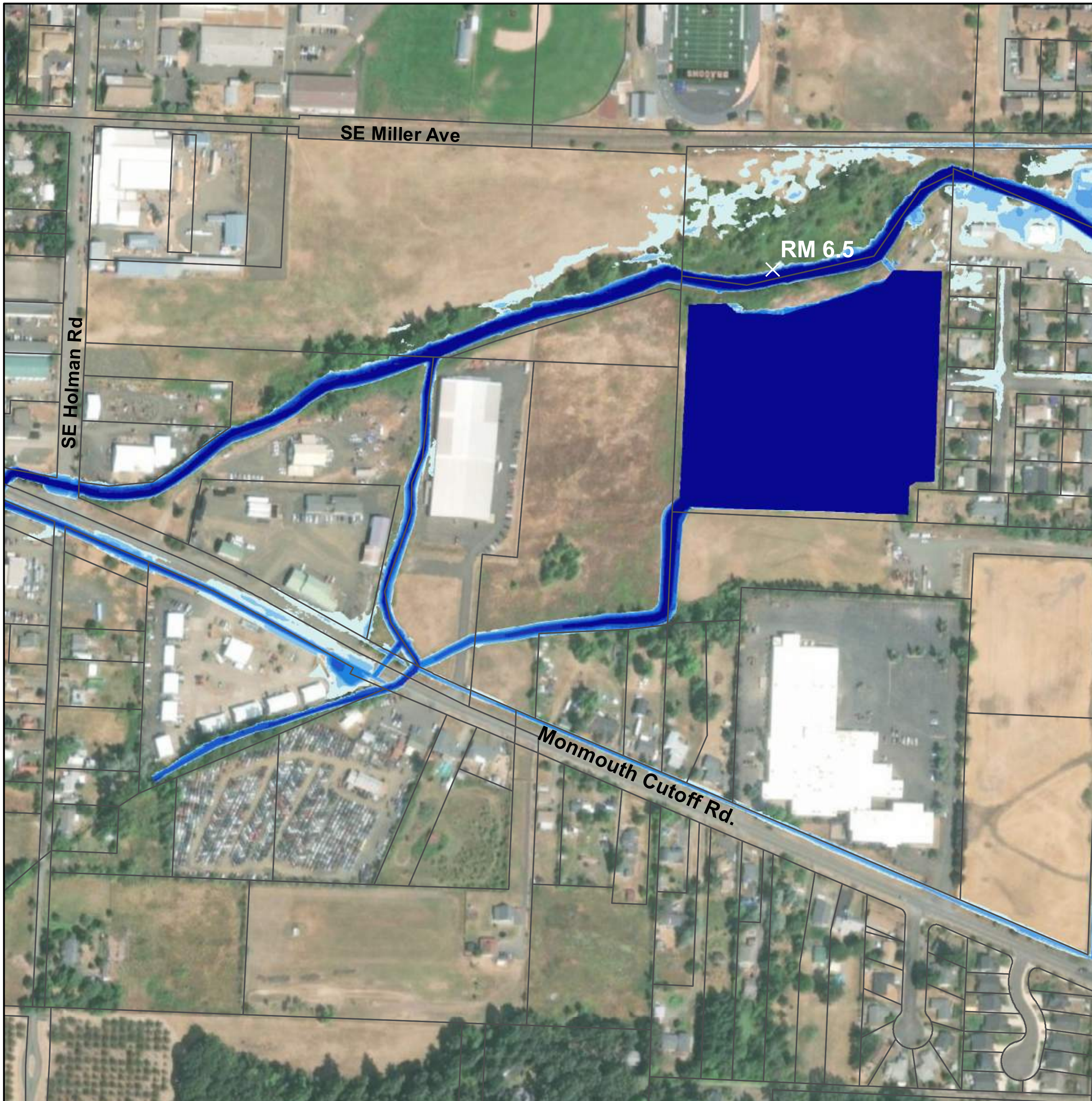
N

0 385 770 Feet

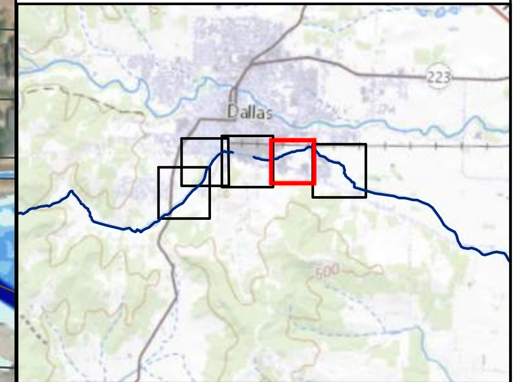
Mapbook 5c. Proposed Comprehensive Solution 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs

UNK E:\TBEDFORD\NF_ASHCREEK\NF_ASH_CREEK_GIS\REPORT_MAPFILES\MAPBOOK_5_PR_100YR_DEPTH.MXD TB028345 6/15/2023 9:47:09 AM



VICINITY MAP



LEGEND

× Rivermile

Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

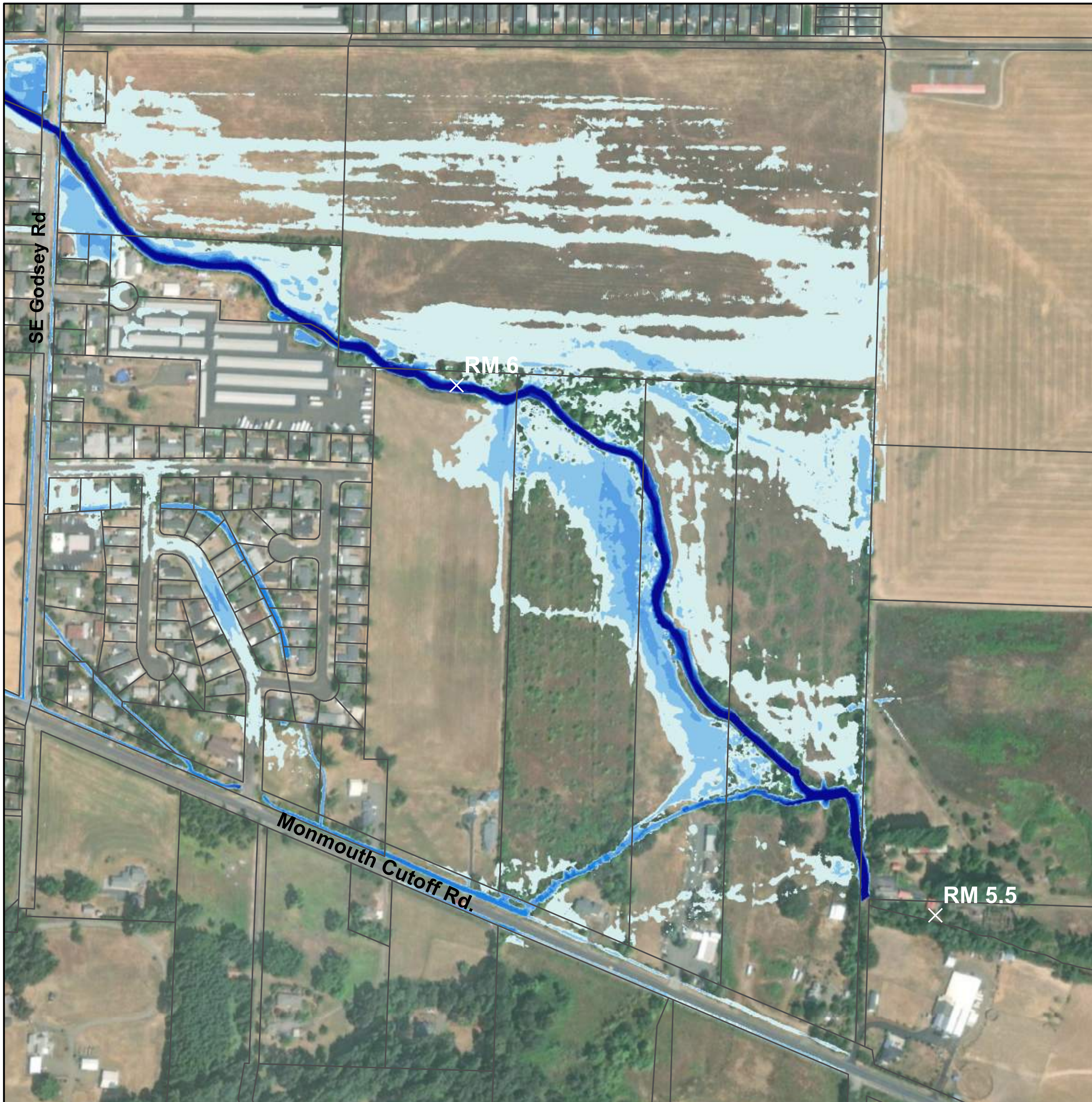
Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

N

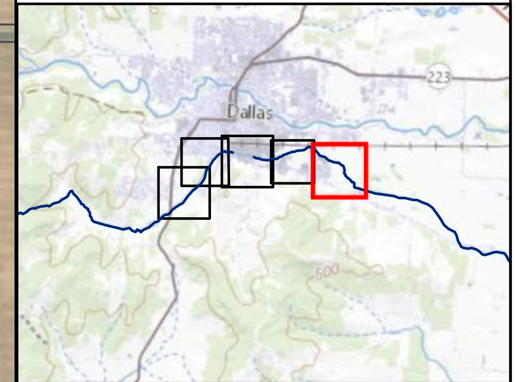
0 325 650 Feet

Mapbook 5d. Proposed Comprehensive Solution 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs



VICINITY MAP



LEGEND

- X Rivermile
- Tax Lots

Depth (ft)

- < 0.5
- 0.5 - 1
- 1.01 - 2
- 2.01 - 3
- 3.01 - 4
- 4.01 - 5
- > 5.0

Notes:
1. Tax llot boundaries downloaded from Polk County GIS database April 2023.

N

0 400 800 Feet

Mapbook 5e. Proposed Comprehensive Solution 100-year Modeled Flow Depth (ft)
Flood Mitigation Feasibility Study
City of Dallas, OR

Jacobs