

Application Name: Luckiamute State Natural Area Floodplain Reconnection and Reforestation

Application Number: 216-8201-16521

By: Luckiamute WC

Offering Type: Willamette Mainstem Anchor Habitat Investments

Application Type: Restoration

OWEB Region: Willamette Basin

County: Polk

Coordinates: 44.736034,-123.152501

Applicant:

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Budget Summary:

OWEB Amount Requested: \$168,331
Total Project Amount: \$515,893

Administrative Information

Abstract

Provide an abstract statement for the project. Include the following information: 1) Identify the project location; 2) Briefly state the project need; 3) Describe the proposed work; 4) Identify project partners.

Luckiamute State Natural Area (LSNA) is located at the confluence of the Luckiamute and Willamette Rivers in Polk and Benton Counties. The proposed project location is in the two-year flood inundation zone of the middle Willamette River, on the lower Luckiamute River in LSNA's North Tract (Polk County) between Independence and Albany. Decades of regulated flow on the Willamette River have drastically reduced peak flows and the extent, frequency, and duration of inundation into the floodplain, reducing floodplain connectivity and access to off-channel winter rearing habitat for ESA listed Upper Willamette River spring Chinook and winter steelhead. Twenty acres of previously farmed land surrounding the proposed reconnection sites, is currently fallow and devoid of native species – it is in need of active restoration to reduce weeds and provide quality floodplain habitat. Luckiamute Watershed Council (LWC) and Oregon Parks and Recreation Department (OPRD) continue to partner for restoration at LSNA, building on eight years of successful revegetation at this site. River Design Group conducted data collection and analyses in support of arriving at the preferred project alternative and will continue to work on final designs and engineering. Implementation will result in 9.5 additional acres and from 13-28 additional days of surface water connected inundation during average annual flows. Current conditions provide an average of 39 days of inundation however, this is largely subsurface driven which reduces the off-channel access for fish. Revegetation will establish native floodplain forest across the 6.6 disturbed acres post-construction and another 18.3 acres of surrounding floodplain for a total of 25 revegetated acres. Monitoring will assess area and days of inundation through aerial imagery and pressure transducers; USGS and the Mainstem Anchor Habitat Working Group will be partners for sediment monitoring at the floodplain reconnection sites.

Location Information

What is the ownership of the project site(s)?

Public land (any lands owned by the Federal government, the State of Oregon, a city, county, district or municipal or public corporation in Oregon)

What agency(ies) are involved?

Oregon State Parks

Private (land owned by non-governmental entities)

This grant will take place in more than one county.

Permits

Other than the land-use form, do you need a permit, license or other regulatory approval of any of the proposed project activities?

- Yes
 No

For Details Go to Permit Page

Racial and Ethnic Impact Statement

Racial and Ethnic Impact Statement

- The proposed grant project policies or programs could have a disproportionate or unique POSITIVE impact on the following minority persons. (indicate all that apply)
- The proposed grant project policies or programs could have a disproportionate or unique NEGATIVE impact on the following minority persons. (indicate all that apply)
- The proposed grant project policies or programs WILL HAVE NO disproportionate or unique impact on minority persons.

Insurance Information

- Working with hazardous materials (not including materials used in the normal operation of equipment such as hydraulic fluid)
- Earth moving work around the footprint of a well
- Aerial application of chemicals
- Removal or alteration of structures that hold back water on land or instream including dams, levees, dikes, tidegates and other water control devices (this does not include temporary diversion dams used solely to divert water for irrigation)
- Applicant's staff or volunteers are working with kids related to this project (DAS Risk assessment tool not required, additional insurance is required)
- Applicant's staff are applying herbicides or pesticides (DAS Risk assessment tool not required, additional insurance is required)

Additional Information

This project affects Sage-Grouse.

Problem Statement

Describe the watershed problem(s) that this restoration project seeks to address.

Luckiamute State Natural Area (LSNA) is an Oregon State Parks property located entirely within the designated Luckiamute-Santiam-Willamette Confluence anchor habitat area on river left from Willamette river miles 108-111. The 925-acre property is split between the North and South Tracts and is made up of a mosaic of important habitats. A strong and productive partnership between Oregon Parks and Recreation Department (OPRD) and the Luckiamute Watershed Council (LWC) continues the enhancement and establishment of approximately 535 acres of riparian and floodplain forest supported by the Willamette Special Investment Partnership (SIP) (Attachment 1, Context Map). Through this effort, a combination of invasive species control and installation of 534,700 native trees and shrubs has transformed project areas and dramatically improved riparian and floodplain conditions in the two-year flood inundation zone.

While floodplain restoration efforts are well underway at LSNA, interaction between the floodplain and the Luckiamute and Willamette Rivers is greatly reduced from historical levels. The altered hydrograph of the Willamette River has resulted in elevated summer base flows and attenuated peak flows (River Design Group 2013 LSNA Hydrologic Analysis Technical Memo, Figure 2-1, pg. 4, available here: <http://www.luckiamutelwc.org/lсна-reconnection.html>). Attenuation of high flows limits the frequency and duration of inundation of floodplains. Lateral connectivity of a river to its floodplain shapes landforms, enhances exchange of nutrients and sediment, provides habitat and refugia for native fish, and enhances flood storage capacity and opportunities for groundwater recharge. Historically, the middle Willamette (Albany to Newberg) was a meandering river; during flooding, sediment aggradation and scour created a landscape of ridges and swales as the floodplain migrated laterally (R. Wallick, 2014). In the Willamette basin, flow management, including peak discharge, resides in the hands of the U.S. Army Corps of Engineers. As a result, the floodplain processes currently occurring at LSNA do not reflect the historical conditions under which native fish and wildlife evolved. In the context of a regulated Willamette and absence of a major flood event, creation and enhancement of beneficial floodplain habitat and functions provided by increased area and duration of surface water connections to the floodplain require human intervention. These types of interventions are not currently being conducted in the middle Willamette. Moreover, opportunities for Chinook and steelhead to access off-channel habitat in the middle Willamette are even more severely limited where much of the river is entrenched and most of the floodplain is private property.

Communications with ODFW staff and researchers confirm the presence of a variety of native species in the lower Luckiamute including juvenile Chinook during winter and early spring high flows, dace, sculpins, suckers, redbreast, shiners, steelhead, cutthroat, and lamprey. Schroeder et al. (2005) describe juvenile Chinook using multiple habitats for rearing, including the Willamette main stem and non-natal tributaries. Similar results have been found in several other studies across many major river systems which show the importance of downstream non-natal tributaries for rearing robust juvenile Chinook and for diversifying life-history strategies (Phillis et al. 2018).

Reduced flooding in the Willamette reduces the ability of juvenile salmonids - spring Chinook and winter steelhead in particular - to access complex winter rearing habitat through floodplain features such as old meandering swales, backwaters and sloughs. Off-channel habitat provides rich and abundant food resources, especially around plant material, not typically available in the main channel. An extensive body of research demonstrates that juvenile salmonids with greater access to floodplains and off-channel habitat have improved growth rates and more diversified life-history traits (Takata et al. 2017, Bellmore et al. 2016), likely increasing their chance of survival during out-migration and life in the open ocean (Cordoleani et al. 2018, Duffy and Beauchamp 2011). Reduced flooding in the Willamette due to flood control has reduced the spatial and temporal extent of access to floodplain habitat during winter rearing. This reduced access has likely contributed towards a reduction in fitness for out-migration and survival in the open ocean ultimately contributing towards declines in Willamette salmonid populations.

Annual flooding occurs throughout LSNA, albeit on a significantly reduced scale from pre-dam construction conditions. In winter 2014-2015, the LWC Project Manager observed the Willamette River overtopping its banks in isolated locations at a discharge at or near 50,000 cfs. An updated hydrologic analysis completed by River Design

Group (RDG) in 2017, shows that most flooding at the LSNA is driven by Willamette flows (2017 LSNA Floodplain Reconnection Alternatives Memo with Update, available for download). An exception to this is early in the season when the Willamette is still low and the Luckiamute River runs high. This patchwork of inundation creates multiple connections with the Luckiamute River throughout LSNA. Flooding at the site, although constrained, facilitates fluid access to high quality floodplain forest rearing habitat for spring Chinook and winter steelhead. At peak flows, the Willamette-Luckiamute-Santiam Anchor Habitat is a dynamic network of connected off-channel habitats. However, this network occurs much less often than previously. Hydrologic analysis shows that the regulated average annual peak discharge on the Willamette River (Albany gage) is 50% below, or half, the historical (pre-dams) annual peak discharge (2013 LSNA Hydrologic Analysis Technical Memo, pg. 5, Table 2-2). This has significant consequences on floodplain processes including major reductions in: normal scour and deposition of sediment, nutrient cycling, groundwater and hyporheic flow, and access to high quality rearing habitat. Additionally, high risks of fish stranding exist where water levels recede rapidly from attenuated peak flooding leaving islands of isolated swales, compared to previous large events that created large expanses of surface water connections and opportunities for fish to exit back to the mainstem during a longer duration of floodwater egress. Dynamic processes exist at the Willamette-Luckiamute-Santiam Anchor Habitat, but they are severely limited by the regulated flow regime of the Willamette. The goal for this project is to leverage the dynamism of this anchor habitat. Specifically, the project aims to enhance floodplain processes that are beneficial for juvenile salmonids in the two-year flood inundation zone by increasing surface water connections, flood surface area, flood frequency, flood duration, and extent and quality of floodplain forest habitat, and by reducing the potential for fish stranding.

This proposal seeks support to address limiting factors identified in the Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead (ODFW and NMFS 2011), including:

- Physical habitat quality – riparian area degradation and loss of floodplain connectivity and access to off-channel habitat;
- Hydrograph - reduced occurrence of peak flows that maintain and create habitat, resulting in decreased channel complexity and habitat diversity in lower subbasins and main stem Willamette River.

This project seeks to increase floodplain surface water connections in the Willamette-Santiam-Luckiamute Anchor Habitat and continue to restore and enhance the floodplain forest. As a result, this project will improve rearing habitat for threatened and endangered spring Chinook and winter steelhead in a section of the Willamette where opportunities to improve off-channel habitat have been severely limited.

How have past or current land management practices contributed to the problem?

Intensive flow management in the Willamette basin occurring at 13 federal dams has resulted in average peak flows that are about half that of pre-construction average peak flows as measured at the Albany gage. Floods expected to occur every year in the pre-dam era are now a “50-year” flood event. The extensive annual flooding that used to occur created a patchwork of wet off-channel features such as swales, side channels, and backwater sloughs. Historically, these areas would inundate regularly during even relatively mild flood events and create connections with off-channel areas. These connections provided salmonids access to refuge from swift velocities, cover from predation, and high quality food resources. By reducing access to off-channel habitat in a section of the Willamette, the attenuated peak flows created through flow management are having long-term negative consequences on salmonid populations in the Willamette. It is imperative to take action to enhance conditions in the context of current flow management. By lowering the elevation of existing isolated floodplain features and their connection points to the river and oxbow, the LWC and project partners expect an increase in inundation area and duration within the regulated Willamette flow regime.

In addition to the impacts of flow regulation, historical land uses and the introduction and spread of invasive weeds have also impacted the project area. Approximately 20 acres of previously farmed land surround the main floodplain features targeted for floodplain reconnection and enhancement. LWC and OPRD refer to this acreage as Unit N10 (Attachment 2, Project Elements Map). OPRD leased these acres for agricultural production, but the leasee abandoned the site due to poor production. The site was fallow, resulting in an area dominated by noxious herbaceous species and other invasive weeds. The area currently has minimal native cover and no woody stems

(see Photos, Figures 10 and 11). Through Phase III of the revegetation project at LSNA, the LWC and OPRD have invested in manual and chemical weed control in recent years to begin exhausting the seed bank in order to protect the surrounding restoration areas from encroaching weeds and to begin preparing the site for future restoration. This acreage floods periodically, but not as frequently as the areas targeted for the floodplain reconnection portion of the project. Having a structurally heterogeneous and diverse landscape for fish to access during intensive flooding would be much more desirable than having the homogenous one that exists now. Restoring the site to floodplain forest would reduce the need for ongoing weed control, create an additional source of large wood for the future, and put the site on a positive trajectory in line with the surrounding landscape for the benefit of fish and wildlife in the anchor habitat.

Does this project address one or both of the following:

- Habitat needs for one or more Endangered Species Act-listed species and/or species of concern*
- Concerns identified on 303(d) listed streams*
- No*

Project History

Continuation - Are you requesting funds to continue work on a project previously funded by OWEB where that work did not result in a completed project?

- Yes
- No

Provide OWEB Grant #(s)

Through the 2015 SIP grant cycle, the LWC was awarded a BPA Technical Assistance Grant, contract # 71779.

This application is referenced in OGMS with cancelled OWEB Grant # 214-3999-12259.

What was completed with previous OWEB grants?

The BPA Technical Assistance (TA) grant awarded through the SIP provided for an advanced hydrologic analysis of the site, including onsite monitoring in relation to the Albany and Salem gages on the Willamette and the Luckiamute Suver gage. The analysis led to draft alternatives at two Site Investigation Areas (SIAs), draft designs, and associated budget estimates. The analysis also led to the determination that the Willamette River primarily drives flooding at the selected SIAs. The LWC and OPRD requested additional alternatives for consideration, reviewed all alternatives and the cost-benefit analysis. The 2015 SIP reviewers did not want any funds in the TA grant to be used for developing permit-ready designs and instead focus on the cost-benefit analysis and exploration of area potential sites of interest.

Why is additional OWEB funding needed?

FIP funding is needed to get the finalize alternative selection and dimensions, conduct hydraulic modeling, finalize design sets for permitting, conduct the cultural resources determination, secure permits, and implement the chosen design alternative. Funding will also support revegetation on the surrounding floodplain acreage.

Resubmit - Have you submitted, but were not awarded an OWEB application for this project before?

- Yes
- No

Phased - Is proposed work in this application a phase of a comprehensive watershed restoration plan or project?

- Yes
- No

List the phases of the project.

Phase	Brief Description	Project Number
I - III	Riparian and floodplain forest revegetation	208-3090-8417, 212-3999-9483&9932, MMT & BPA funds
Alternatives Analysis	SIP TA grant for reconnection alternatives	BPA 71779
IV - Current proposal	Implement selected alternative and reveg 25 acres	TBD

Plans and Salmon

Is the proposed restoration activity(ies) identified in a local assessment or other plan?

- Yes
- No

Provide name of local plan, Watershed assessment or other locally relevant document.

- 1) LWC 2010 Action Plan – Luckiamute State Natural Area Action Plan Appendix
- 2) LWC 2004 Watershed Assessment
- 3) Luckiamute State Natural Area Master Plan, (OPRD 2009)
- 4) Natural Resource Assessment and Strategic Action Plan for Restoration and Stewardship of OPRD-Managed Properties in the Willamette Basin (OPRD 2017)

Will this project benefit salmon or steelhead?

- Yes
- No

- Upper Willamette River - Steelhead
- Upper Willamette River - Chinook Salmon

How will the resulting restoration project benefit salmon or steelhead or their habitat?

This project will benefit salmon and steelhead by providing greater access to complex floodplain rearing habitat and reducing the risk of fish stranding. Research (cited in Problem Statement) has shown that juveniles with greater access to floodplains and off-channel habitat have improved growth rates and more diversified life-history traits, likely increasing their chance of survival during out-migration and life in the ocean. Katz et al. (2017) found the largest recorded growth rates in California in Chinook that gained access to 5 acres of floodplain for about 6 weeks. This project would provide access to 9.5 acres (plus enhanced inundation to an 8-acre oxbow) for a total of approximately 4 weeks per year at each of SIA 7c and SIA 8a. Along the Methow River, WA, Bellmore et al. (2013) showed that both steelhead and Chinook had an order of magnitude greater food resources in connected off-channel floodplain habitats than in the main channel. This was largely attributed to higher levels of competition from non-salmonid fish in the main channel.

Confluence areas along the Willamette are recognized as important rearing and migration habitat for ESA-listed Chinook and steelhead (ODFW and NMFS 2011). Four years of rapid bio-assessment data (2008-2011) and recent observations at projects show that steelhead are rearing in the upper tributaries of the Luckiamute. USFWS staff observed juvenile Chinook on a tributary to the Luckiamute over 10 miles upstream from LSNA. Much work has been done showing the importance of non-natal streams for juvenile Chinook rearing and for diversifying life-history strategies (Phillis et al. 2018). Based on personal communications with ODFW staff and Dr. Stan Gregory,

Luckiamute and Willamette survey data, and research on Chinook and steelhead life-histories and habitat needs, it is clear that this floodplain project area is utilized by the target species and will be of high value.

The project is converting a series of isolated swales with fish stranding risk into a network of connected off-channel habitat surrounded by floodplain forest. Attachment 3 shows current elevations. The swales currently exist as low depressions surrounded by higher elevation floodplain. As floodwaters recede, the higher elevations present a risk of fish stranding. By connecting these swales with channels at the same low elevation of the swales, the project will reduce that risk of stranding and allow for proper ingress and egress of floodwaters. Additionally, implementing the selected 7c design will increase connected surface water area by 9 acres, add approximately 11-22 inundation days (total of 26-33 inundation days of connected surface water), and create three new flood connection pathways, including two new connections to an existing 8-acre oxbow. Implementing SIA 8a adds at least 0.5 acres of inundation and between 2-6 inundation days (total of 26-40 days of connected surface water).

The project will also establish 20 acres of floodplain forest. The surrounding forest will provide a rich source of food resources not available in the main channel and provide cover for rearing salmonids at high flows, both considered primary benefits of off-channel habitat (Sommer et al. 2001). Re-establishing and enhancing a structurally complex and species-rich floodplain forest will improve water quality through increased surface runoff filtering, trapping of fine sediments during flooding, and through recharging groundwater and subsurface flow which may serve as a source of cool water at low summer flows. Slow water refugia during flood events will be improved by modifying simplified habitats (e.g. invasive weed monocultures) into vegetated areas with complex structure, woody stems, and high plant diversity and resiliency. Finally, a restored floodplain forest will also contribute coarse organic material and large wood to the river creating opportunities to diversify the aquatic food web and improve channel complexity.

Does the project address a restoration action identified in a regional assessment or recovery plan?

- Yes
- No

Regional Assessments or Recovery Plans
Upper Willamette River Conservation and Recovery Plan for Chinook Salmon and Steelhead

For each plan chosen above, describe how your project is consistent with specific recovery/restoration actions cited in that plan.

The project addresses limiting factors of habitat access (access to off-channel rearing habitat) and altered hydrograph (ODFW and NMFS 2011, page 5-2). The project will not restore a pre-dam hydrograph; it is modifying to the landscape in order to enhance floodplain access in the context of an altered hydrograph. The project is designed to address key and secondary limiting factors and threats (LFTs), primarily 8a on the main stem Willamette above the falls (physical habitat quality (impaired complexity and diversity)), specifically the loss of floodplain connectivity and access to off-channel habitat (pages 5-27 to 5-31). The project proposes to implement general recovery strategy 2, "restore floodplain connectivity and function..." (Table 7-1, page 7-4) and Implement actions targeted to address LFT 8a, including:

- 92 - FW-ALL: "Maintain and restore the best available spawning, rearing, and migration habitats, and acquire reaches or management flexibility where ecological processes (function) and salmonid historical habitat are impaired or lost";
- 100 - FW-ALL "Restore natural riparian communities and their function";
- 113 – MST-AMO: "Increase overall channel complexity, floodplain connectivity, and flood storage to the mainstem Willamette River to increase and improve salmonid rearing and migration habitat, ;and
- 116 – MST-AMO: "Protect and restore aquatic habitat function at confluence areas of Willamette River tributaries" (pages 7-19 to 7-21).

Proposed Solution

Goal, Objectives, and Activities

State your project goal. A goal statement should articulate desired outcomes (the vision for desired future conditions) and the watershed benefit.

The goals of the project are:

- 1) Restore and enhance off-channel winter rearing habitat for ESA-listed Chinook and steelhead, and
- 2) Restore native floodplain forest with high species and structural diversity; restore natural forest regeneration processes.

Watershed benefits include

- 1) Increased flood frequency, duration, and area in the floodplain will increase access to an abundance of off-channel food resources for native fish in the newly established floodplain forest and provide refugia from high-velocity winter flows and from competing species in the main stem;
- 2) Reduced risk of fish stranding on the floodplain;
- 3) Improved water quality resulting from increased infiltration of surface water;
- 4) Increased nutrient retention;
- 5) Increased and enhanced food and cover for aquatic and terrestrial species.

List specific and measurable objectives. Objectives support and refine the goal by breaking it down into steps for achieving the goal. (NOTE: If you quantify your objectives, ensure all numbers match the metrics listed in your selected habitat types.) Provide up to 7 objectives.

Objective #1

Objective

Goal 1 Objectives:

- 1a) Increase connected surface area inundation during winter flows by 9.5 acres;
- 1b) Increase frequency and duration of inundation by 13-28 days
- 1c) Establish or enhance up to four floodplain-mainstem surface water connection points, including to an existing 8-acre oxbow.

Goal 2 Objectives:

- 2a) Control priority invasive species on 25 acres of floodplain (post-construction and revegetation areas)
- 2b) Establish or enhance approximately 25 acres of floodplain forest through aggressive weed control and establishment of a diverse mix of native woody trees and shrubs. Twenty of this 25 acres will be new floodplain forest acres.
- 2c) Reach target conditions by 2024 (project year 6) of a minimum of 2000 native stems per acre in floodplain areas and noxious weed cover of no more than 10% across all acres.

This is the final phase of floodplain restoration at LSNA, and following completion, the LWC and OPRD will apply lessons learned here to support restoration actions at other channel restoration sites in the middle Willamette reach. Project partners also hope to use the LSNA site as demonstration site for landowners, researchers, and other implementers who are interested in implementing channel restoration projects.

Describe the project activities. Activities explain how the objective will be implemented.

Goal 1

The LWC and partners selected two site investigation areas (SIAs) to improve inundation area, duration, frequency, and fish access to high quality off-channel habitat identified through extensive hydrologic analysis conducted by RDG (Attachment 2, Project Elements).

SIA7 is the downstream project site, located on river-left of the Luckiamute River. There are several existing swales that are primarily inundated without a surface water connection during higher stages (Attachment 3 - Annotated Aerial Imagery and Attachment 4 – Elevation Map). Elevated sediment deposits inhibit surface flow, which if removed would provide floodwater access to the swales. The current limiting invert elevation is 173.5 ft, which corresponds to averages of 15 to 18 and 18 to 22 days of inundation per year based on the Albany and Salem gages, respectively (2017 LSNA Floodplain Reconnection Alternatives Memo with Update – Table 3-2, page 22). This swale complex currently has potential to strand fish when high flows recede below the limiting invert elevation. Selected design SIA7c, connects the east, west, and north swales with the Luckiamute River and the existing oxbow. This alternative will grade to an elevation of 171.0 ft, which corresponds to 26 to 29 and 29 to 33 days of inundation per year based on the Albany and Salem gages, respectively. This design excavates 8,000 CY of material; 2,500 CY of the excavated material will be placed in the deeper portions of the east and west swales to bring their elevations to 171.0 ft and prevent stranding. The net removal is 5,500 CY. This alternative results in an estimated increase in inundation of 11 to 22 days per year using the combined Albany and Salem inundation record. The project excavation footprint for 7c is 5.4 acres; by connecting to the west swale, the area of inundation for implementing 7c is 9.0 acres.

SIA8 is the upstream project site, located on river-left of the Luckiamute River, downstream of the Buena Vista Road bridge. The selected design consists of enhancing the surface water connection to an existing floodplain swale. Surface flow to the existing swale is inhibited by two plugs, one along the bank of the Luckiamute River and the other approximately 200 ft landward. SIA8a, removes the first bank plug, which has a limiting invert elevation of 173.2 ft., corresponding to an average of 22 to 29 days of inundation per year from the Albany and Salem (2017 LSNA Floodplain Reconnection Alternatives Memo with Update – Table 3-4, page 25). SIA8a includes limited grading to remove the natural levee at the bank margin. The swale at the natural levee would be graded to an elevation of 171.5 ft., corresponding with 28 days and 39 days of inundation at the Albany and Salem gages, respectively. SIA 8a requires approximately 120 ft. of grading and a removal of 1,265 CY of material. The design results in an estimated increase in inundation of 2 to 6 days per year using the combined Albany and Salem inundation record. The impact area of this project is approximately 0.5 acres. A lower water gravel crossing is included in the budget to ensure OPRD and the agricultural leasee can continue to use the access road at this site for vehicle and equipment access during dry months. SIA8a was selected as a low-cost add-on project that can be implemented while equipment is on site for 7c.

Implementation of both SIAs is expected to generate around 6,765 cubic yards of fill material made up of Chehalis silty clay loam, a highly valued soil for agricultural production. LWC and OPRD aim to keep soil within LSNA to minimize hauling and grading costs, and we are exploring several locations at LSNA as possible disposal locations including the existing farm fields. If there is any remaining material that cannot be disposed of onsite, the LWC will work with nearby agricultural producers to find the lowest possible disposal costs. OPRD needs to evaluate risks to plants of concern, ground-nesting birds, turtles and other wildlife of concern, and cultural resources prior to approving onsite disposal. Project partners are pursuing this approach as a preference in order to minimize costs.

For each project alternative concept, the proposed connection surface is graded to the lowest elevation in each depression or swale to prevent stranding of aquatic species following high flow events. Each design channel has a zero percent gradient with a flat bottom in cross-section and 6:1 slopes on the banks, unless otherwise noted in the engineering designs. Native vegetation will be planted, and large wood will be placed in each design swale. Each project inlet would include the installation of large wood to stabilize the entrance to the swales. The placement of large wood would increase velocities and promote local scour during inundation, thereby increasing the longevity and performance of the design swales and decreasing maintenance costs. Conceptual designs and examples of large wood placements in the swale channel inlets are available in the RDG 2017 LSNA Floodplain Reconnection Alternatives Memo with Update document on the LWC's web site <http://www.luckiamutelwc.org/lсна>

reconnection.html.

Designs are 75% complete. Funds from this grant will go towards completing the designs on both SIAs and obtaining all necessary local, state, and federal permitting. Target timeline is to secure full funding and necessary permits for implementation in summer 2019 and planting in fall 2019 and early 2020. Project partners are aware that securing funding and processing grant agreements, completing a cultural resources determination, and completing all necessary permits may cause delays and push implementation into 2020. The project timeline can be adjusted if needed. The LWC and PM with assistance from River Design Group will follow a procurement process to select a contractor for construction.

Goal 2

Through Phase III funding, the LWC has been controlling weeds and preparing the 20 acres surrounding SIA 7c for conversion from abandoned agricultural field to floodplain forest. Next steps are to establish a native grass ground cover to help prevent new weed recruitment. About 1.7 acres of the 20-acre fallow field will be excavated as part of SIA 7c, leaving 18.3 for N10 revegetation. Funds from this grant will be used to plant 66,375 plants plus live cuttings across 25 total acres (18.3 acres of reveg and 6.6 acres of disturbed area) on an average density of 2500 stems/acre. The PM will use lessons learned from previous successful plantings at LSNA to guide the implementation strategy. 6.6 acres of planting will occur in the new off-channel network which will provide ideal conditions for a seasonally wet scrub-shrub wetland plant community. LWC contractors will install a combination of live cuttings and bareroot plants, primarily shrubs, at 3x3 spacing in most areas within swales and channels. Spacing will widen significantly in the bottom and lower elevation portions of the channel to facilitate sediment transport and some localized scour for added channel complexity. In the remaining 18.3 acres surrounding SIA 7c, contractors will install bareroot plants at 4x4 spacing using a mix of shrub and tree species appropriate for Willamette Valley floodplain forest. Shrub to tree ratios will be about 5 to 1. Planting areas will receive spring ring sprays and periodic, targeted spot spray treatments to control priority invasive weeds until plants are established. Contractors will interplant after one and/or two years to fill any gaps from plant mortality and adjust the species palate as necessary to better adapt to local conditions. The LWC will organize volunteer work parties to help with plant establishment weed control and installation of additional live cuttings. All acres will be monitored to ensure the site stays on a positive trajectory towards meeting the goal of establishing a structurally and species-diverse floodplain plant community.

List the major project activities and time schedule for each, including post project implementation.

Element	Start Date	End Date
Finalize Designs, Secure Permits	1/2019	6/2019
Pre-project monitoring	1/2019	3/2019
Bidding / contracting	6/2019	7/2019
Channel Excavation and woody debris installation	7/2019	9/2019
Seeding	9/2019	10/2019
Monitoring - install equipment	9/2019	10/2019
Monitoring - data collection	9/2019	12/2023
Live cuttings	10/2019	11/2019
Project Tour - during construction	8/2019	10/2019
Volunteer Activities	10/2019	11/2023
Outreach and Publicity	7/2019	12/2023
Plantings	1/2020	3/2020
Plant establishment	3/2020	11/2023
Inter-planting	1/2021	3/2021

Element	Q1 2019	Q2 2019	Q3 2019	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022	Q3 2022	Q4 2022	Q1 2023	Q2 2023	Q3 2023	Q4 2023
Finalize Designs, Secure Permits	■	■																		
Pre-project monitoring	■																			
Bidding / contracting		■	■																	
Channel Excavation and woody debris installation		■	■																	
Seeding			■	■																
Monitoring - install equipment			■	■																
Monitoring - data collection			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Live cuttings			■	■																
Project Tour - during construction			■	■																
Volunteer Activities			■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Outreach and Publicity		■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Plantings				■	■															
Plant establishment					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Inter-planting								■	■											

Habitat Types

In which habitat type(s) are you proposing to work?

- Instream Habitat: below the ordinary high water mark (includes in-channel habitat restoration, bank stabilization, flow, fish screening, and fish passage) -- Details will follow.*
- Riparian Habitat: above the ordinary high-water mark of the stream and within the stream's floodplain. -- Details will follow.*
- Upland Habitat: above the floodplain and improves native habitat and watershed function.*
- Wetland Habitat: land or areas covered, often intermittently, with shallow water or have soil saturated with moisture.*
- Estuarine Habitat: tidally influenced areas.*

Instream Habitat

Select all applicable Instream categories.

- Bank stabilization**
- Fish passage improvement**
- Fish screening project**
- Instream Flow**

Instream habitat restoration

Select all the actions you propose to implement to address the problem.

- Placement of materials in channel*
- Channel reconfiguration and connectivity, including alcoves and side channel reconnection*

What type(s) of change are you proposing to the channel configuration and connectivity?

At the two proposed locations, SIA 7c and SIA 8a, the project would grade the proposed connection surface to the lowest elevation of existing topography – or in the case of SIA 7c, use some of the removed material to raise the elevation in the east swale – in order to prevent stranding of aquatic species. Most of the grading will occur above the ordinary high water mark, but the work at the inlets will occur at and below the OHW at each site. Each project inlet will include the installation of large wood to stabilize the entrance to the swales – again occurring at or near the OHW. See Attachments 5 and 6 for the draft concept plan, profiles, and design sections for each site.

Acres off-channel or floodplain habitat connected
9.5

Number of pools created/added
0

- Spawning gravel placement*
- Beaver reintroduction*
- Non-native plant control*
- Nutrient enrichment*
- Animal species removal*

Is the primary purpose of the instream habitat restoration treatment(s) to address water quality limiting factors?

- Yes
- No

Total miles of stream to be treated with all instream habitat restoration treatments
0.1

Stockpiling logs

Riparian Habitat

Select all applicable Riparian categories.

Riparian road activities

Fencing and other materials for habitat protection

Vegetation establishment or management

Select all the actions you propose to implement to address the problem.

Planting

For Details Go to Plant Page

Non-native plant control

Specify species

Reed Canary Grass, Phalaris arundinacea

Canada thistle, Cirsium arvense

Common teasel, Dipsacus fullonum

Mullein, Verbascum thapsus

Himalayan blackberry, Rubus armeniacus

River tansy, Tanacetum vulgare

Poison hemlock, Conium maculatum

Dog fennel, Anthemis cotula

Treatment(s) to be applied

Mechanical (cutting, mowing, girdling, etc.)

Chemical (pesticides, fungicides, etc.)

Biological (predators, herbivores, pathogens, etc.)

Acres to be treated

25.0

Prescribed burnings, stand thinning, stand conversions, silviculture

Juniper treatment

Livestock management

Debris and Structure Removal

Is an objective of the riparian treatment(s) to address water quality limiting factors?

Yes

No

Total linear stream miles to be treated.

0.53

Total riparian acres to be treated.

25.0

Left streambank miles to be treated.

0.53

Right streambank miles to be treated.

0.0

Wrap-Up

Public Awareness

Does this proposed project include public awareness activities?

- Yes
 No

Describe these activities, as well as any related products, and explain how the proposed activities relate to the project's objectives.

The LWC and OPRD feel that informing and educating the public about the restoration activities and their ecological benefits is important, particularly because LSNA is a public natural area. Outreach activities will include communications with the adjacent landowner to the north. He is already aware and supportive of the project; communications would focus on keeping him informed of project activities.

Other activities will include a web page on the LWC's web site dedicated to the project. The LWC's Outreach Coordinator will also write articles for the LWC's quarterly newsletter and monthly "Behind the Scenes Bulletin" for Friends of the LWC. The LWC and OPRD will also schedule 1-2 project tours to provide opportunities for the public to visit the site and learn about the project goals, objectives, activities, and expected benefits. The LWC will also organize volunteer events in the project area to provide opportunities for planting live stakes and native plants, pulling weeds, and helping with spreading native seed. The LWC often receives requests for volunteer activities. The LWC has worked with SOLVE and other community partners to successfully organize volunteer events at LSNA in the past. For example, on Earth Day 2017, the LWC organized a volunteer planting event that drew about 35 participants from the surrounding community. During that event, volunteers planted 70 potted shrubs and trees in the Phase III project area, to fill in gaps at the edges of the planting area and farm field around the pond. LWC staff also trained volunteers how to cut and transplant live stakes from established native trees and shrubs and the plants and stakes are successfully establishing. Feedback obtained from participants afterward is that they look forward to more events like this, which not only provide a way to get involved in an outdoor community-oriented activity, but also make a tangible impact on local ecosystem health.

LSNA is an excellent site to provide opportunities for people to learn about native plants, invasive weeds, and participate in hands-on activities to contribute to watershed health. The budget provides for Outreach Coordinator time to organize and implement these outreach activities (web site, newsletter, tours, and volunteer activities). The activities relate to the project's objectives by informing and engaging the public and neighbors with the project. Information and engagement are extremely important to keep neighbors and the public aware of and supportive of restoration activities, particularly on public lands. The volunteer activities will contribute to the overall success of the project by using volunteer time to steward and enhance planting areas. Providing volunteer opportunities not only improves the planting efforts, it also contributes to the engagement aspect of the outreach activities.

Design

Were design alternatives considered?

- Yes
 No

Describe the design alternatives that were considered and why the preferred alternative was selected.

The LWC and OPRD have engaged in extensive consideration of alternatives. In 2013, the LWC retained River Design Group (RDG) for a preliminary analysis of inundation data and identification of Site Investigation Areas (SIAs) for further analysis. In 2015, the LWC was awarded a technical assistance (TA) grant through the Special Investment Partnership (SIP) that built upon guidance from the Technical Review Team to conduct a hydrologic analysis, develop conceptual designs, and complete a cost analysis for proposed design alternatives at two of the original SIAs – SIA 7 and SIA 8. RDG presented three alternatives for SIA 7 (7a, 7b, 7c) and four at SIA 8 (8a, 8b, 8c, 8d) of varying footprints, elevations, and associated costs. LWC and OPRD reviewed proposed alternatives in 2017 and requested additional alternatives from RDG that would realize additional ecological gains through increased inundation days (7d and 7e). See <http://www.luckiamutelwc.org/lzna-reconnection.html> for more background and the associated documents related to this process.

In the 2018 pre-proposal cycle, LWC proposed alternatives 7e and 8a for implementation. At the time, the goal was to maximize ecological benefit gained by the proposed activities. 7e would realize the most inundation days and acres, with three connection points to features of interest (swales and existing oxbow). Due to the lower elevation, SIA 7e had a large cost related to the amount of fill to be managed and disposed of. Based on review team feedback regarding concerns of total cost of the project and uncertainty of the long-term maintenance needs at SIA 7, LWC and OPRD have revised the approach and are proposing 7c instead of 7e. 7c has the same footprint as 7e, but is a higher elevation – resulting in less removal / fill and disposal costs, but also fewer inundation days. 7c will also bury some existing revegetated areas in the east swale in order to achieve the desire elevation. LWC and OPRD have seen success with revegetation work in this area, and are confident that restoring the plant communities post-disturbance can be achieved with relatively low-cost due to previous weed control efforts and existing plants in other restored areas that can provide an excellent, on-site source for live cuttings. Based on discussions at the site visit, LWC, OPRD, and RDG reviewed options for creating narrower but steeper channels to attempt to reduce the amount of spoils from excavation. RDG based the proposed design bank slopes on existing slopes and on tying the graded channel to the adjacent undisturbed contours. Narrower channels would result in less inundated area and would have less relationship to existing topography. Instead of working for artificially narrow channels and reducing the footprint, LWC and OPRD have selected alternative 7c. This will greatly reduce the project cost, but retain the area of inundation without narrowing the channels.

The LWC and OPRD considered dropping SIA 8a in another effort to reduce costs, but in consultation with review team members and RDG, decided to retain SIA 8a as a simple, relatively low-cost activity that takes advantage of on-site equipment and mobilization costs. By proposing 7c and 8a, the LWC and OPRD seek to retain the acres of inundation, the increased connection points, while reducing overall fill and cost. This increases the cost / benefit when examining acre-days / cost (\$) and provides a lower cost alternative with which to test predictions of ecological benefits. Simple sediment and aerial photography monitoring will aid LWC, OPRD, RDG and the Mainstem Anchor Habitat Working Group in evaluating this type of floodplain reconnection project in the context of the middle Willamette. LSNA provides an additional benefit of being public property, designated as a natural area with a focus on providing ecological benefit. Surrounding infrastructure is minimal and analyses indicate risk is low. The closest private landowner neighbor is aware of and supportive of the project and interested in examining future opportunities on his own site. Overall, the site location at a priority confluence area, public greenway with limited surrounding development, and well-examined site alternatives provides an excellent context in which to implement the project. The recovery plan specifically calls for restoration of floodplain connectivity and function and restored riparian condition, actions this project will implement. Floodplain reconnection at LSNA is the only middle Willamette project underway of this type and this project will address a known limiting factor. The project will serve as an example of how to develop a replicable approach, an affordable analysis, and a way to communicate outcomes so

that the LWC, OPRD, RDG, and other partners can apply what is learned at other future restoration sites.

Project partners seek to restore or enhance off-channel features that were historically active at very or moderately frequent floods. River regulation no longer allows floods of the magnitude that frequently used to inundate those areas. The project focuses on a design that will enhance river-floodplain processes, recognizing the constraints of the current flow regulation. This project will result in RDG conducting the final hydraulic analysis of the selected design alternatives and more thoroughly evaluating shear stress at the sites. The final design will ensure flow-through conditions by removing both the upstream and downstream natural or unnatural blockages, which should improve suspended sediment conveyance through the project area, with a focus on minimizing the need for future maintenance to the greatest extent possible. Sedimentation monitoring in partnership with the USGS and Anchor Habitat Working Group will provide data to assess the changes at the site post-excavation and inform future restoration designs in the middle Willamette.

In revising the proposed floodplain reconnection design, the LWC and OPRD revisited the interest in revegetating the surrounding floodplain. Dubbed Unit N10, OPRD historically leased the area surrounding the existing swale features for agricultural production (Attachment 2, Project Elements Map). In recent years, the producer abandoned the site mid-season due to poor farming quality, leaving it fallow. Invasive weeds were an issue at the site as result of the farming practices and the resulting lack of management when the farmer abandoned the site. As part of Phase III revegetation, the LWC has been managing weeds to protect surrounding restoration areas with the intention of working with OPRD to restore the N10 acres to desired condition. Previous restoration prescriptions completed in 2009 mapped this site as a future upland habitat unit. Upon further examination of existing native and non-native plants, elevation, and topography, the LWC Project Manager, in consultation with local experts, recommends the site be restored to floodplain forest. The LWC and OPRD are proposing including that acreage in this project, to be planted post-construction, to complete the floodplain-related activities in this unit and conduct comprehensive remediation and restoration post disturbance from the floodplain reconnection project element.

Select the appropriate level of design for your project.

- No design is required.
- 10-30%: Conceptual design (evaluation of alternatives, concept-level plans, design criteria for project elements, rough cost estimates).
- 30-85%: Preliminary design (selection of the preferred alternative, draft plans, draft design report, preliminary cost estimates).
- 85-100%: Final design (final design report, plans, and specifications, contracting and bidding documents, monitoring plan, final cost estimate).

If work remains on the project's design, describe the work that remains to be done and when you expect to have it completed. If no design is required put "N/A"

Remaining steps to reach permit-ready, final designs and bid documents are:

- 1) Finalize alternative selection
- 2) Modify selected alternative details (e.g., channel dimensions)
- 3) Complete hydraulic modeling
- 4) Update plan set to account for hydraulic modeling results (e.g., scour protection) and habitat goals
- 5) Prepare materials specifications and quantities
- 6) Finalize plan set with sheets for access, work area isolation, and other BMPs

We expect these tasks to be done by the end of January 2019.

Once plans are final, the next steps would be permitting and bid document preparation.

Describe the steps you will take to minimize adverse impacts to the site and adjacent lands during and after project implementation.

Construction Considerations:

The use of large equipment in riparian and floodplain areas disturbs soil and vegetation. The Luckiamute Watershed Council will work with River Design Group to develop and document erosion prevention and sediment control measures. Despite the operator's best prevention efforts, equipment can track in non-native seeds during construction, establishing new patches of non-natives or expanding existing ones at restoration sites. Open bare ground post-construction is also more highly erodible during flood events. The PM will use the lessons learned from previous restoration projects to ensure construction disturbance is minimized. This will include measures to prevent weed seed introduction and establishment and reduce erosion such as requiring contractors to clean all equipment thoroughly before entering at access locations and construction points, seeding of native grasses post-construction, spreading certified weed-free straw, and conducting a minimum of 4 years of post-project weed control through spot spray treatments, and planting a dense understory that naturally resists invasive plant encroachment.

Weed Management:

The LWC takes an integrated pest management approach to all noxious weed control. The project manager (PM) determines which weeds to monitor, has tolerance thresholds, and monitors the site to determine when action is needed. When herbicides are used, the use of backpack spot sprays enables treatment of the minimum area necessary to gain effective control. The purpose of spot sprays is to reduce the presence of various noxious weeds that will compete with and overtake project areas if left unchecked. Treatment timing is dependent on invasive plant phenology and is scheduled by the LWC PM to maximize effectiveness of treatments and reduce overall chemical use. Spot sprays may occur at any point during the growing season, spring through early fall. Active ingredients and adjuvants (surfactants) used are all permitted under the NOAA Programmatic and Biological Opinion for Aquatic Restoration Activities in the state of Oregon (NOAA ARBO II NWP-2013-9664, 2013). The primary chemicals used for herbicide application are commercial forms of aquatic approved triclopyr and glyphosate. In some cases, specific weeds may present persistent issues in which case other active ingredients may be considered. Treatments will be phased out when plants are free to grow and noxious weeds no longer present a threat of invasion (usually less than 10% cover). In addition to spot sprays, the PM, volunteers, and contractors will mechanically remove target weeds when appropriate to prevent seed drop or remove a heavy infestation without damaging native plants.

Precautions taken during herbicide use:

Licensed applicator crews follow all directions for application, mixing, and storage and disposal listed on product label. Crews mix the least amount of herbicide needed to achieve the desired result. Applicators take special care not to spill herbicide during mixing, do not mix near water, and ensure backpack sprayers are maintained and do not leak. The PM and crew leaders monitor and consider the effects of wind, humidity, temperature inversions, and heavy rainfall on herbicide effectiveness and risks. OPRD has a DEQ 2300A Pesticide General Permit for any applications of herbicides that take place within 3 feet of water. All active ingredients used have low vapor pressures and are not likely to volatilize under application conditions. Applications only occur when conditions (e.g. wind speed and precipitation) will minimize risk of drift. Contractor crews record and report weather conditions at the time of applications.

Project Management

List the key individuals, their roles, and qualifications relevant to project and post project implementation. At a minimum include the following: project management, project design, project implementation, and project inspection.

Role	Name	Affiliation	Qualifications	Email	Phone
Project Manager, permitting, contractor oversight, project inspection, monitoring	Jean-Paul Zagarola	Bonneville Environmental Foundation (BEF)	Jean-Paul has been the primary project manager for the LWC since 2013 and project manager in the Watersheds Department at BEF since 2015. Jean-Paul has 6 years of experience developing and implementing a diversity of restoration projects.	jpzagarola@b-e-f.org	(971) 832-9097
Engineering , Design, Construction oversight	Troy Brandt	River Design Group	River Design Group has been working with the LWC and OPRD on data collection and analysis at LSNA since 2012. RDG is very familiar with LSNA and the project goals. RDG has designed and implemented similar projects in the Willamette basin.	tbrandt@riverdesigngroup.net	(541) 738-2920
Executive Director - grant management, oversight of contracted PM, supervisor to Outreach Coordinator, partner communications / coordination.	Kristen Larson	Luckiamute Watershed Council	Kristen holds a B.S. in biology and a Master's in environmental science. She has been ED for over 5 years, starting in Sept. 2012. Since then, the LWC has secured funding for and successfully implemented a variety of restoration projects.	director@luckiamutelwc.org	(503) 837-0237
Landowner, representative coordinator of OPRD, match management and oversight, project inspection	Andrea Berkley	Oregon Parks and Recreation Department, Natural Resource Specialist - Columbia Gorge, Willamette Basin	Andrea has over 10 years experience managing habitat restoration projects in the Willamette Basin. She has a Masters of Environmental Science and Management, Conservation Planning from UC Santa Barbara.	andrea.berkley@oregon.gov	(503) 360-8656

Optional Monitoring

OPTIONAL: Restoration Project Monitoring

- Salmonid Monitoring*
- Non-salmonid biological monitoring*
- Water (quantity) flow monitoring*
- Water quality monitoring*
- Rangeland monitoring*
- Onsite*
- Downstream*
- Upstream*
- Upslope*

Will effectiveness monitoring will be conducted for this project?

- Yes
- No

Please describe the monitoring activities and any additional sources of funding (amount and source) to support this effort.

Monitoring will focus on assessing ecological outcomes and processes at the reconnection sites. Monitoring will evaluate days and area of inundation and will collect data on sedimentation in order to understand processes at the site. The LWC is requesting \$16,585 in FIP funding to support the monitoring activities, plus OPRD in-kind match.

In order to monitor duration and frequency of inundation at the project areas, the LWC proposes installing pressure transducers at the inlets of both channel excavation sites and an additional for barometric correction. To monitor changes to the total area of inundation, RDG would run replicated flight plans using an unmanned aerial vehicle (UAV) at pre-project, years 1 and 5. The flight imagery will be processed so that the pixels of inundation can be counted to calculate total area each year at the same or similar Willamette flows. The LWC would contract with RDG to assist with these activities.

To understand sedimentation processes, the LWC and OPRD will partner with USGS and the Mainstem Anchor Habitat Working Group to conduct sediment monitoring. Based on personal communications with USGS staff in developing this proposal, LSNA sediment monitoring will likely be included in future FIP Effectiveness Monitoring Program. Expertise from USGS and partners will help LWC and OPRD develop and adhere to protocols that will be outlined in the FIP Monitoring Framework. USGS will contribute analysis and reporting placed in the context of the Willamette. Monitoring will utilize a series of about six deposition pads located in and around the excavated swales. Site selection and design will be done in coordination with USGS and based on experience from sediment deposition pads at other locations, for example, Fall Creek. LWC staff and Project Manager will be available locally to check the pads and collect data from the pads. Data and lessons learned from monitoring at LSNA can help inform future work in the Middle Willamette.

Budget

Item	Unit Type	Unit Number	Unit Cost	OWEB Funds	External Cash	External In-Kind	Total Costs
Salaries, Wages and Benefits							
LWC Executive Director	Hours	210	\$40.00	\$8,400	\$0	\$0	\$8,400
LWC Outreach Coordinator	Hours	160	\$30.00	\$4,800	\$0	\$0	\$4,800
Oregon Parks and Recreation Staff - natural resources, park ranger/manager, archaeologist	Hours	240	\$55.00	\$0	\$0	\$13,200	\$13,200
Category Sub-total				\$13,200	\$0	\$13,200	\$26,400
Contracted Services							
Project Manager (Bonneville Environmental Foundation - BEF) - contracting, design, permitting, construction phase	Hours	195	\$46.00	\$8,970	\$0	\$0	\$8,970
Project Manager (BEF) - revegetation	Hours	85	\$46.00	\$3,910	\$0	\$0	\$3,910
Project Manager (BEF) - PE hours 2020 - 2024 (PE)	Hours	295	\$46.00	\$13,570	\$0	\$0	\$13,570
Project Manager (BEF) - monitoring coordination, data collection, sharing 2019 - 2024	Hours	195	\$46.00	\$0	\$8,970	\$0	\$8,970
River Design Group - additional surveying, finalize design	Hours	150	\$100.00	\$0	\$15,000	\$0	\$15,000
River Design Group - no rise analysis for county permitting / onsite disposal analysis	Hours	80	\$100.00	\$0	\$8,000	\$0	\$8,000
River Design Group - permitting assistance	Hours	20	\$100.00	\$0	\$2,000	\$0	\$2,000
River Design Group - Contracting, construction stakeout and oversight	Hours	100	\$100.00	\$0	\$10,000	\$0	\$10,000
Cultural Resources contractor - archeological survey	Each	1	\$5,000.00	\$0	\$5,000	\$0	\$5,000
Cultural Resources Contractor - presence / absence testing, probe testing, pedestrian survey	Each	1	\$15,000.00	\$0	\$15,000	\$0	\$15,000
SIA7c - mobilization	Each	1	\$1,500.00	\$0	\$1,500	\$0	\$1,500
SIA 7c - (Site Prep/Access) Develop Access Work Pad	Each	1	\$2,000.00	\$0	\$2,000	\$0	\$2,000
SIA 7c - (Site Prep/Access) Clear Veg to Access Stream	Each	1	\$800.00	\$0	\$800	\$0	\$800
SIA 7c - (Dewatering/Isolation) Temporary Erosion Control	Each	1	\$400.00	\$0	\$400	\$0	\$400
SIA 7c - (Excav./Disp./Haul) Bulk Excavation and Roughened Floodplain Construction (incl. small log and debris structures) - total cubic yards	Cubic yards	8000	\$8.00	\$0	\$64,000	\$0	\$64,000
SIA 7c - (Excav./Disp./Haul) Disposal - net cubic yards	Cubic yards	5500	\$9.25	\$0	\$50,875	\$0	\$50,875

SIA 7c - Erosion Control Native Grass Seeding (conducted by PM)	Acres	5.6	\$46.00	\$0	\$258	\$0	\$258
SIA 7c - Erosion Control Mulching / Straw	Acres	5.6	\$800.00	\$0	\$4,480	\$0	\$4,480
SIA 7c - Erosion Control Laborer	Hours	40	\$40.00	\$0	\$1,600	\$0	\$1,600
SIA 7c - Riparian Planting Labor	Acres	5.6	\$1,250.00	\$0	\$7,000	\$0	\$7,000
SIA7c Plant Establishment (PE), ~5.6 acres	Hours	390	\$39.00	\$15,210	\$0	\$0	\$15,210
SIA 8a - Mobilization of Equipment	Each	1	\$200.00	\$0	\$200	\$0	\$200
SIA 8a - (Site Prep/Access) Develop Access Work Pad	Each	1	\$500.00	\$0	\$500	\$0	\$500
SIA 8a - (Site Prep/Access) Clear Veg to Access Stream	Each	1	\$200.00	\$0	\$200	\$0	\$200
SIA 8a - (Dewatering/Isolation) Temporary Erosion Control	Each	1	\$400.00	\$0	\$400	\$0	\$400
SIA 8a - (Excav./Disp./Haul) Bulk Excavation and Roughened Floodplain Construction (incl. small log and debris structures)	Cubic yards	1265	\$8.00	\$0	\$10,120	\$0	\$10,120
SIA 8a - (Excav./Disp./Haul) Onsite Disposal	Cubic yards	1265	\$9.25	\$0	\$11,702	\$0	\$11,702
SIA 8a - Erosion Control Native Grass Seeding (conducted by PM)	Acres	1	\$46.00	\$0	\$46	\$0	\$46
SIA 8a - Erosion Control Mulching / Straw	Acres	1	\$800.00	\$0	\$800	\$0	\$800
SIA 8a - Erosion Control Laborer	Hours	25	\$40.00	\$0	\$1,000	\$0	\$1,000
SIA 8a - Low water crossing for access road	Each	1	\$2,000.00	\$0	\$2,000	\$0	\$2,000
SIA 8a - Riparian Planting	Acres	1	\$1,250.00	\$0	\$1,250	\$0	\$1,250
SIA 8a Plant Establishment (post-construction), ~1 - 1.5 acres, (PE)	Hours	70	\$39.00	\$2,730	\$0	\$0	\$2,730
Unit N10 Site Preparation Native Grass Seeding	Acres	18.3	\$46.00	\$0	\$842	\$0	\$842
Revegetation contractor - "N10" unit reforestation / planting and inter-planting time	Acres	18.3	\$1,350.00	\$24,705	\$0	\$0	\$24,705
Unit N10 Plant Establishment (~18.3 acres), 2020 - 2024, (PE)	Hours	1280	\$39.00	\$49,920	\$0	\$0	\$49,920
SIA 7c (Excav./Disp./Haul) Bulk Excavation and Roughened Floodplain Construction Contingency at 10%	Each	1	\$6,400.00	\$0	\$6,400	\$0	\$6,400
SIA 7c disposal contingency at 10%	Each	1	\$5,087.00	\$0	\$5,087	\$0	\$5,087

SIA 8a - (Excav./Disp./Haul) Bulk Excavation and Roughened Floodplain Construction Contingency at 10%	Each	1	\$1,012.00	\$0	\$1,012	\$0	\$1,012
SIA 8a disposal contingency at 10%	Each	1	\$1,170.00	\$0	\$1,170	\$0	\$1,170
Unit N10 Riparian Planting hours Contingency at 10%	Each	1	\$2,470.00	\$2,470	\$0	\$0	\$2,470
Unit 10 Revegetation Contractor Plant Establishment 2020 - 2024 (PE) Contingency at 5%	Each	1	\$2,496.00	\$2,496	\$0	\$0	\$2,496
River Design Group monitoring with UAV and pressure transducers	Each	1	\$8,185.00	\$0	\$7,465	\$720	\$8,185
Category Sub-total				\$123,981	\$247,077	\$720	\$371,778
Travel							
LWC staff mileage, 21 round trips at 18 miles / trip	Miles	378	\$0.55	\$207	\$0	\$0	\$207
Category Sub-total				\$207	\$0	\$0	\$207
Materials and Supplies							
Logs and Woody Debris	Each	1	\$5,000.00	\$0	\$0	\$5,000	\$5,000
Native Grass seed for SIA 7c and SIA 8a post-construction	Pounds	99	\$14.00	\$0	\$1,386	\$0	\$1,386
SIA 7c bare root plants	Each	17500	\$0.62	\$0	\$10,850	\$0	\$10,850
SIA 8a bare root plants	Each	3125	\$0.62	\$0	\$1,938	\$0	\$1,938
Unit N10 floodplain forest bare root plants	Each	61763	\$0.62	\$8,373	\$29,921	\$0	\$38,294
Unit N10 bare root plants contingency at 10%	Each	1	\$3,829.00	\$0	\$3,829	\$0	\$3,829
N10 Site Preparation - native seed	Pounds	290	\$14.00	\$0	\$4,060	\$0	\$4,060
Feldspar Clay (50lb bags) for deposition pads (sediment monitoring)	Each	6	\$25.00	\$0	\$150	\$0	\$150
Category Sub-total				\$8,373	\$52,134	\$5,000	\$65,507
Equipment and Software							
			\$0	\$0	\$0	\$0	\$0
Category Sub-total				\$0	\$0	\$0	\$0
Other							
State and Federal Permits, including DEQ 401 certification	Each	1	\$1,500.00	\$1,500	\$0	\$0	\$1,500
Polk County Floodplain Development, Management Plan, and Land Use Form	Each	1	\$540.00	\$540	\$0	\$0	\$540
Federally Accepted "de minimis" Indirect Cost Rate on FIP Partner funding	Each	1	\$29,431.00	\$0	\$29,431	\$0	\$29,431
Category Sub-total				\$2,040	\$29,431	\$0	\$31,471
Modified Total Direct Cost Amounts				\$147,801	\$328,642	\$18,920	\$495,363
Indirect Costs							
Federally Accepted 'de minimis' Indirect Cost Rate (up to 10%)	10%			Indirect Cost Total: \$14,780			
Post Grant							

Effectiveness Monitoring Amount	Effectiveness Monitoring	1	\$3,500.00	\$3,500	\$0	\$0	\$3,500
Plant Establishment Amount	Plant Establishment	1	\$0.00	\$0	\$0	\$0	\$0
Status Reporting Amount	Status Reporting	3	\$750.00	\$2,250	\$0	\$0	\$2,250
Total				\$168,331	\$328,642	\$18,920	\$515,893

If the budget includes unusually high costs and/or rates, provide justification for those costs and/or rates.

Budget Overview:

- 1) Staff costs represent projected loaded hourly rates for LWC staff during calendar years 2019 - 2024.
 - 2) Contracted Services and Materials & Supplies
 - a. PM: The LWC enjoys a contract with Bonneville Environmental Foundation (BEF) which allocates a portion of Jean-Paul Zagarola’s FTE to provide PM services for the LWC. BEF held the hourly rate steady for multiple years, but recently had to raise rates and add mileage as an itemized cost in the 2018-2019 contract. BEF expects they will continue to have to increase rates to cover rising costs. This rate reflects the recent increases and anticipated increases in future contracting through the end of 2024.
 - b. Construction Costs: The budget is presented with SIA 7c and SIA 8a estimated separately. RDG provided estimates for construction costs. Based on review of similar projects in the upper Willamette, discussions with other PMs, and a site visit with a contractor familiar with these types of projects, the PM provided updated costs per cubic yard for excavation and disposal. The values assume no more than 2 miles of haul distance for disposal. Costs could be reduced if all or most of the spoils can be deposited onsite at LSNA, but this is uncertain. OPRD has internal review, Counties will have permitting requirements, and the agricultural leasee has not committed to accepting the material – they are discussing internally. Given the uncertainties, the LWC and OPRD felt it wise to budget conservatively rather than leave the project underfunded.
- Revegetation: Contractor rates are based on extensive experience at LSNA. The PM estimated costs for labor and materials recognizing the site has already had significant weed control, but inundation brings new weed sources. Plant supply costs are based on a per-plant basis through the BEF managed contract. This collective grow-out contract helps manage supply and demand, provides high quality plants that meet specific criteria, and keep costs relative low and stable.

Monitoring budgets were developed in coordination with RDG and USGS. Post-construction monitoring will occur during the revegetation and plant establishment phases of the project.

The LWC works to implement projects efficiently. We strive to ensure projects are adequately funded to support quality work and ensure the project can be completed as proposed. Until designs are final, disposal sites are identified and approved, and permits are secured, some uncertainty remains.

If the budget identifies a contingency amount for specific line item(s) within the Contracted Services and Materials and Supplies budget categories, explain the specific reasons a contingency is needed for each line item. Contingencies are line-item specific and cannot be used for other costs.

The LWC has taken measures to clearly break out costs associated with each project activity: SIA 7c, SIA 8a, and Unit N10 revegetation. Contingency is identified for large line items, specifically excavation and disposal costs for each SIA 7c and SIA 8a and plant establishment at Unit N10. A contingency is also included for plant materials at N10.

The project is based on six year time frame, from early 2019 through the end of 2024. There is the potential that implementation may be delayed until 2020 due to permitting or other reasons, pushing out the project to the end of 2025. Fuel, plant materials, herbicides, and contracted labor costs all pose a risk of fluctuating over that 6 to 7 year

project timeline. For these reasons, the most significant line items warrant a contingency in order to buffer against uncertain costs (for example on or off-site disposal) and uncertain cost fluctuations over the life of the project.

Funding and Match

No Fund Source Contribution Amounts have been identified for this application.

Fund Sources and Amounts

Organization Type	Name	Source Note	Contribution Type	Amount	Description	Status
Private organization	Meyer Memorial Trust	Funding Partner	Cash	\$4,902	LSNA Phase 3 funding, for site prep seed and seeding	Secured
Private organization	Meyer Memorial Trust	Funding Partner	Cash	\$323,740	Pending FIP Partner Funding	Pending
State	Oregon Parks and Recreation Dept.	In-kind, staff time	In-Kind - Materials	\$5,000	Use of removed trees from onsite for woody debris	Pending
State	Oregon Parks and Recreation Dept.	In-kind, staff time	In-Kind - Labor	\$13,920	Staff time - ranger, manager, natural resources, archeologist, monitoring	Secured
Fund Source Cash Total				\$328,642	Fund Source In-Kind Total	\$18,920

Match

Contribution Source-Type: Description	Amount
OWEB-Indirect Cost Allocated as Match:	\$1
Meyer Memorial Trust-Cash: LSNA Phase 3 funding, for site prep seed and seeding	\$4,902
Meyer Memorial Trust-Cash: Pending FIP Partner Funding	\$55,000
Oregon Parks and Recreation Dept. -In-Kind - Materials: Use of removed trees from onsite for woody debris	\$5,000
Oregon Parks and Recreation Dept. -In-Kind - Labor: Staff time - ranger, manager, natural resources, archeologist, monitoring	\$13,920
Match Total	\$78,823

Do match funding sources have any restrictions on how funds are used, timelines or other limitations that would impact the portion of the project proposed for OWEB funding?

- Yes
 No

Do you need state OWEB dollars (not Federal) to match the requirements of any other federal funding you will be using to complete this project?

- Yes
 No

If yes, please provide the amount of state dollars needed out of your total request.
 \$168,331 (OWEB FIP Allocation)

Does the non-OWEB funding include NOAA/PCSRF funds?

- Yes
 No

Uploads

Map: [Attachment 1_ContextMap.pdf - Overall Context Map](#)

Map: [Attachment 2_ProjectElementsMap.pdf - Project Elements Map](#)

Map: [Attachment 3 LSNA_N10_Floodplain Elevation Map.pdf - Floodplain Elevations Map](#)

Figures and Tables: [Attachment 4_RDG Memo Figure 2-1 & ProjectVicinity&OverviewMaps.pdf - Annotated aerial imagery and RDG project vicinity and overview maps](#)

Project Design: [Attachment 5_SIA7c plan docs excerpts.pdf - SIA 7c Concept Plan and Profile; Design Sections](#)

Project Design: [Attachment 6_SIA8a plan docs excerpts.pdf - SIA 8a Concept Plan and Profile; Design Sections](#)

Support Letters: [Isna proposal_20180814_OPRD letter.pdf - Letter of Support from OPRD](#)

Photos: [Photos.pdf - Photos](#)

Planting Details: [PlantingLayout.pdf - PLanting Layout](#)

Figures and Tables: [References Cited.pdf - References Cited](#)

Secured Match Forms: [LWC Secured Match Form.pdf - Secured Match Form](#)

Figures and Tables: [LWC supplemental budget form.pdf - Supplemental Budget Form](#)

Figures and Tables: [Cover Letter.pdf - Evaluation Response](#)

Plant Page

Planting Questions

Relationship to other conservation programs

This project will use OWEB funds to increase the planting density on CREP acres.

Planting Activities

Describe the current condition of the site(s) to be planted.

A cycle of intensive farming and subsequent abandonment of 20 acres surrounding the swales and abandoned scrolls targeted for enhancement in this project has left a low diversity open field dominated by noxious herbaceous weeds and invasive species with little or no native cover. Termed Unit N10, these 20 acres do not flood as regularly as these focal floodplain features, they flood nevertheless and when that occurs new weed seeds are imported into the site. No native vegetation that can resist weed encroachment exists on the N10 field and as a result the site is in a perpetual degraded state. Through LSNA Floodplain Restoration Phase III funding and support from OPRD, the LWC has been investing resources to keep weed cover low and to prepare the site for the next stage of restoration. Work done to date has prevented weed encroachment into surrounding revegetation areas, aided in reducing the legacy of weed seeds in the soil and is prepared the site for planting.

6.6 acres, including 1.7 acres that overlap with N10 described above, are being excavated for floodplain reconnection are comprised of a mix of the the above conditions and areas that have been reforested through the LWC's previous phase 2 and phase 3 restoration efforts. Once construction is complete on the floodplain reconnection portion of the project, 6.6 acres of disturbed ground will remain. Movement of soil will likely expose germinating weed seeds currently lying dormant below the surface and will require intensive remediation to prevent new channels dominated by invasives.

Describe how you will prepare the site(s) prior to planting and how those activities are appropriate considering the site conditions described in the previous question.

Unit N10 is currently in the site preparation phase, funded through the Willamette Special Investment Partnership Floodplain Enhancement Phase III project and through support from OPRD. The LWC has completed three years of prep through mowing and broadcast spray treatments typically two to three times per year in order to reduce the weed seed bed and relieve weed pressures on the adjacent establishing Phase III plantings. The area will be seeded with a seed mix of low stature native grasses appropriate for floodplain conditions to establish a ground cover that will resist invasion of new invasive species and facilitates ideal planting and plant establishment conditions ahead of implementation of this project. The density of grasses will be maintained at a level that facilitates an ease of planting. If grasses become overly dense the project manager will consider conducting spray rows with a non-selective herbicide in the fall ahead of planting. N10 will be primed for planting by winter of 2020.

Floodplain reconnection occurring in this project will result in 6.6 acres of disturbed soil at site investigation areas (SIAs) 7c and 8a. We will seed all disturbance areas post-construction with a native riparian/floodplain mix in October/early November following earth moving. Live stakes will be installed November/December in case seasonal flooding begins earlier than bareroot planting can occur. Full planting will follow as soon as bareroot plants can be lifted and delivered

Fill out the table below. Identify the vegetation communities you plan on planting in, the acres each vegetation community encompasses, and the density of your planting.

Vegetation Community	Acres	Density
Willamette Valley Floodplain Forest and Forested Wetland	18.3	2500
Scrub-Shrub Wetland	6.6	2500

Fill out the table below for each vegetation community listed in the table above, provide the common and scientific names of up to five plants that will be planted, the form(tree, shrub, grass), type of plant (bare root, cutting, etc) and the planting timing.

Vegetation Community	Plants: Common Name	Plants: Scientific Name	Form	Type	Year	Month
Willamette Valley Floodplain Forest and Forested Wetland	Black Cottonwood	Populus trichocarpa	Tree	Bareroot	2020	February
Willamette Valley Floodplain Forest and Forested Wetland	Red Osier Dogwood	Cornus sericea	Shrub	Bareroot	2020	February
Willamette Valley Floodplain Forest and Forested Wetland	Oregon Ash	Fraxinus latifolia	Tree	Bareroot	2020	February
Willamette Valley Floodplain Forest and Forested Wetland	Snowberry	Symphoricarpos albus	Shrub	Bareroot	2020	February
Willamette Valley Floodplain Forest and Forested Wetland	Spiked bentgrass	Agrostis exarata	Grass	Seeds	2019	October
Scrub-Shrub Wetland	Douglas spirea	Spiraea douglasii	Shrub	Cutting	2020	February
Scrub-Shrub Wetland	Sitka willow	Salix sitchensis	Shrub	Cutting	2020	February
Scrub-Shrub Wetland	Twinberry	Lonicera involucrata	Shrub	Cutting	2020	February
Scrub-Shrub Wetland	Red osier dogwood	Cornus sericea	Shrub	Bareroot	2020	February
Scrub-Shrub Wetland	Swamp rose	Rosa pisocarpa	Shrub	Bareroot	2020	February
Scrub-Shrub Wetland	Hookers Willow	Salix hookeriana	Shrub	Cutting	2020	February

Plant Stewardship

After the plantings are installed, will you conduct plant stewardship (“free to grow”)?

- Yes
 No

Are you requesting OWEB funds for plant stewardship activities?

- Yes
 No

Fill out the table below to provide information on the proposed plant stewardship activities to be completed after the plantings are installed.

Vegetation Community	Years	Month	ActivityHeader
Willamette Valley Floodplain Forest and Forested Wetland	2020-2024	April - June	Backpack Conservation Ring Sprays
Scrub-Shrub Wetland	2020-2024	April - June	Backpack Conservation Ring Sprays
Willamette Valley Floodplain Forest and Forested Wetland	2020-2024	May, June, July, Sept/Oct	Backpack spot spray on target noxious weeds
Scrub-Shrub Wetland	2020-2024	May, June, July, Sept/Oct	Backpack spot spray on target noxious weeds
Willamette Valley Floodplain Forest and Forested Wetland	2020 - 2024	April - October	manual weed control by PM, staff, and volunteers
Scrub-Shrub Wetland	2020-2024	April - October	manual weed control by PM, staff, and volunteers

Measures of Planting Success

Use the table below to explain how you will document and determine success for the plantings.

Vegetation Community	Parameter	Percentages
Willamette Valley Floodplain Forest and Forested Wetland	Invasive Cover	Less than or equal to 10% invasive cover
Willamette Valley Floodplain Forest and Forested Wetland	Percent Cover	Greater than or equal to 90% diverse native cover.
Scrub-Shrub Wetland	Invasive Cover	Less than or equal to 10% invasive cover
Scrub-Shrub Wetland	Native Cover	Greater than or equal to 90% diverse cover

If, in the course of the 3-5 years following planting, the success rate falls below your standard, what is your plan?

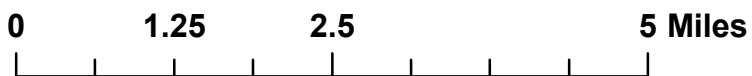
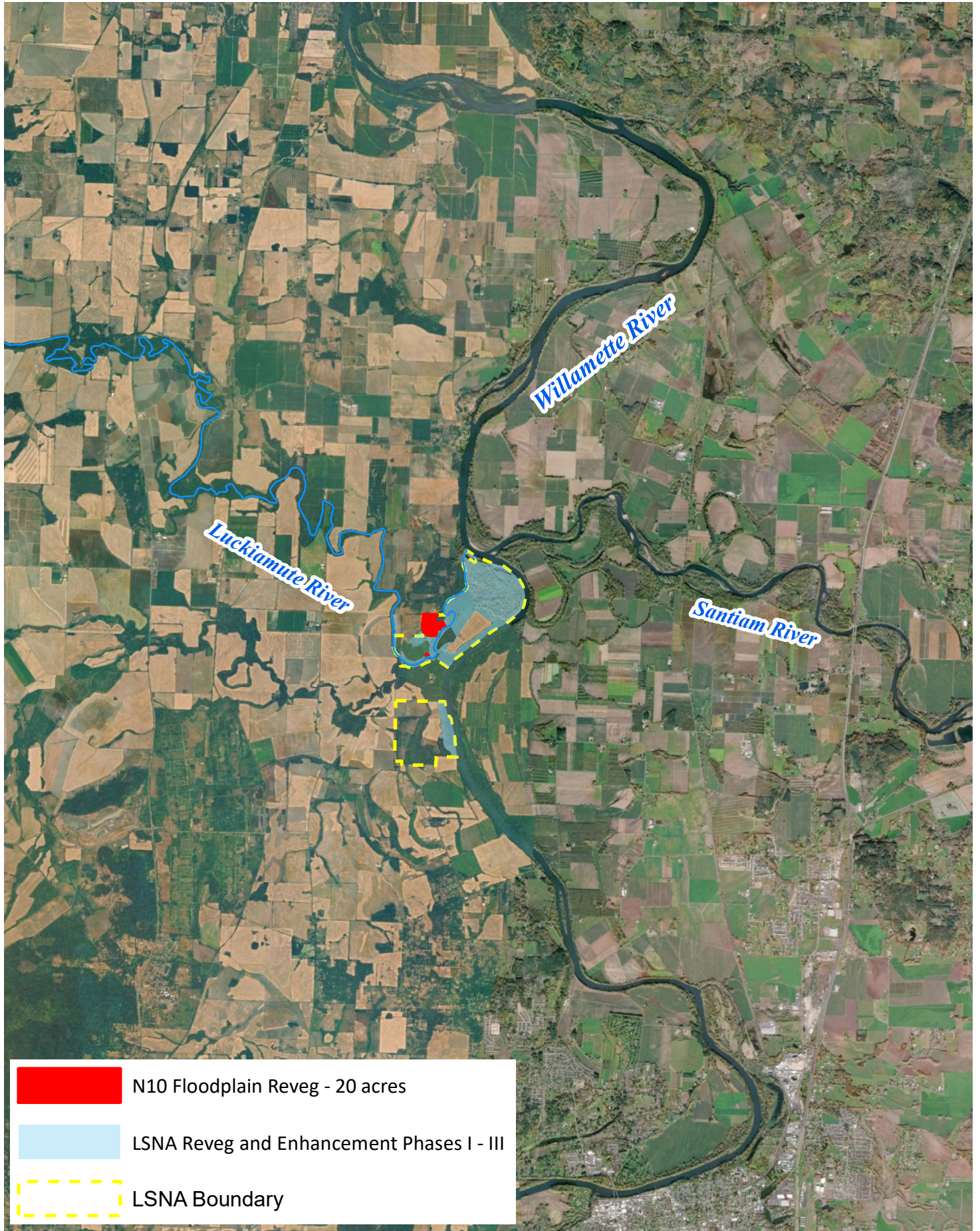
The LWC and PM (Bonneville Environmental Foundation - BEF) take an adaptive management approach to all floodplain/riparian revegetation. Primary measures of success will include the number of native stems per acre and percent cover of target noxious weeds. Sites are routinely inter-planted in years following initial planting to ensure that revegetation is on the appropriate trajectory for desired stem densities and species composition. The budget is developed to account for this type of adaptive management practice. Following this approach, failure of revegetation efforts as measured by the stated metrics is rare. Budgeting for inter-planting allows the Project Manager to supplement plantings based on species success in the first year or two of establishment. The PM has the ability to determine whether species composition is on track to achieving the desired multi-layered canopy found in floodplain forests and adjust as needed. Herbivory can be a problem in revegetation projects, however, adjusting

species and plant densities is typically sufficient to offset losses from herbivory at relatively low cost. No irrigation or plant protection tubes or cages will be used in this project. Tubes and cages are expensive, can restrict plant growth and even girdle plants, and often end up in the waterway during flooding. Irrigation is also expensive and not necessary in the moist conditions in the floodplain. The species selection of native plants are adapted to the summer dry conditions expected at the site. Lessons learned from prior phases at LSNA, previous LWC projects, and from other peers' experience in the area is also an important strategy for LWC staff and Project Manager. Through collaboratives such as the Willamette River Initiative, BEF's Model Watershed Program and the Willamette Mainstem Anchor Habitat Working Group, Willamette restoration practitioners are afforded unique opportunities to exchange ideas and discuss revegetation strategies. LWC staff and PM will continue to promote such peer to peer networking to raise the bar on riparian restoration.

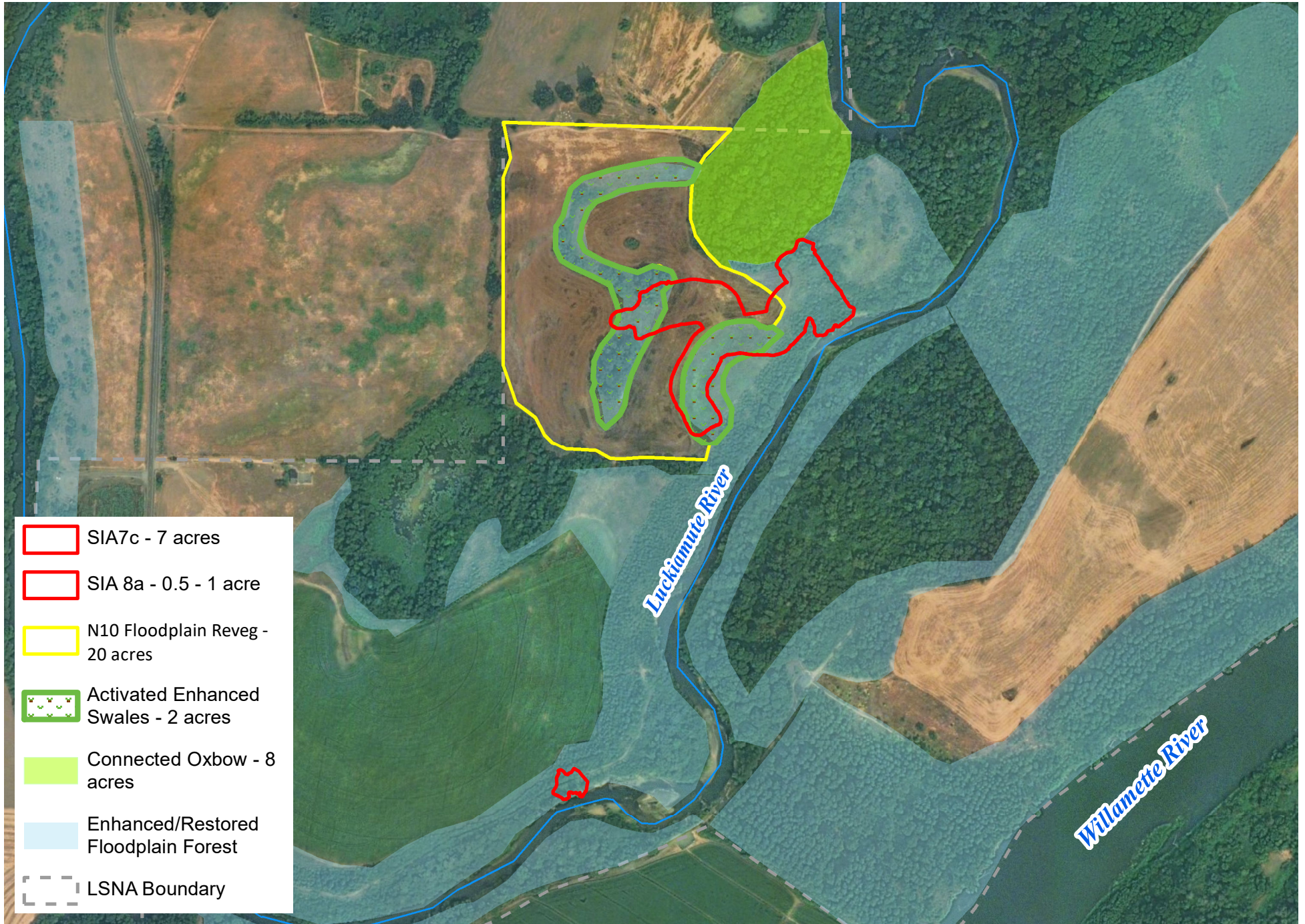
Permit Page

Project Activity Requiring a Permit or License	Name of Permit or License	Entity Issuing Permit or License	Status
Channel work & grading	Section 404 (NW permit, t/27 Habitat Restoration)	U.S. Army Corps of Engineers	to do
Channel work & grading	Fill / removal permit	Oregon Department of State Lands	to do
Channel work & grading (soil disturbance)	Nationwide 401 Water Quality Certification	Oregon Department of Environmental Quality	to do
All work within high water mark; spoils disposal	No-rise cert. (FEMA) / County Flood Development	Polk County Community Development Dept.	to do
Vegetation Removal	Approved Management Plan	Polk County Community Development Department	to do
All soil disturbance	Cultural Resources Inventory	Oregon State Historic Preservation Office	to do

Luckiamute State Natural Area Location Context



Luckiamute State Natural Floodplain Reconnection and Revegetation



0 375 750 1,500 Feet



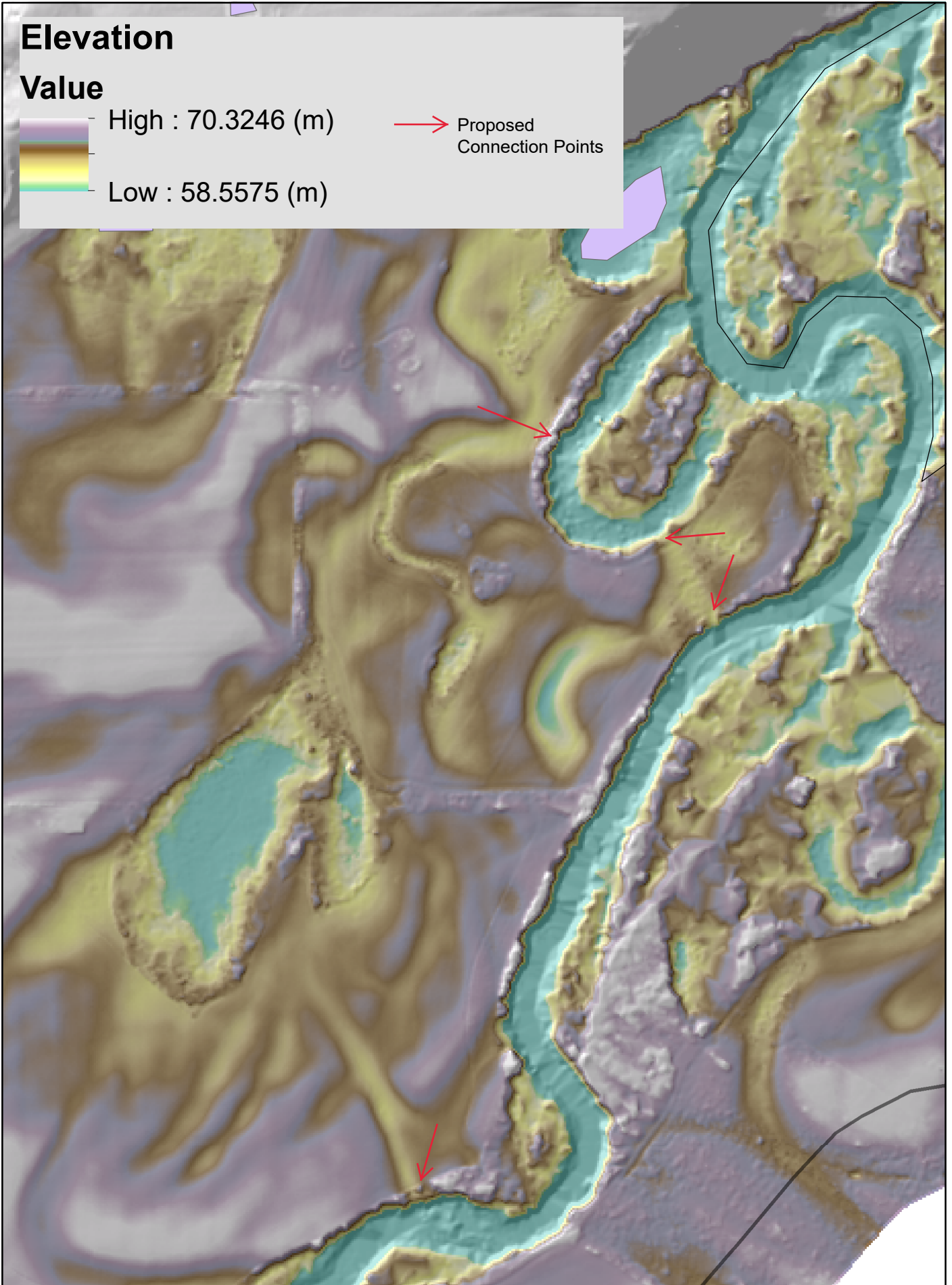
LSNA Floodplain Elevations

Elevation

Value



→ Proposed
Connection Points



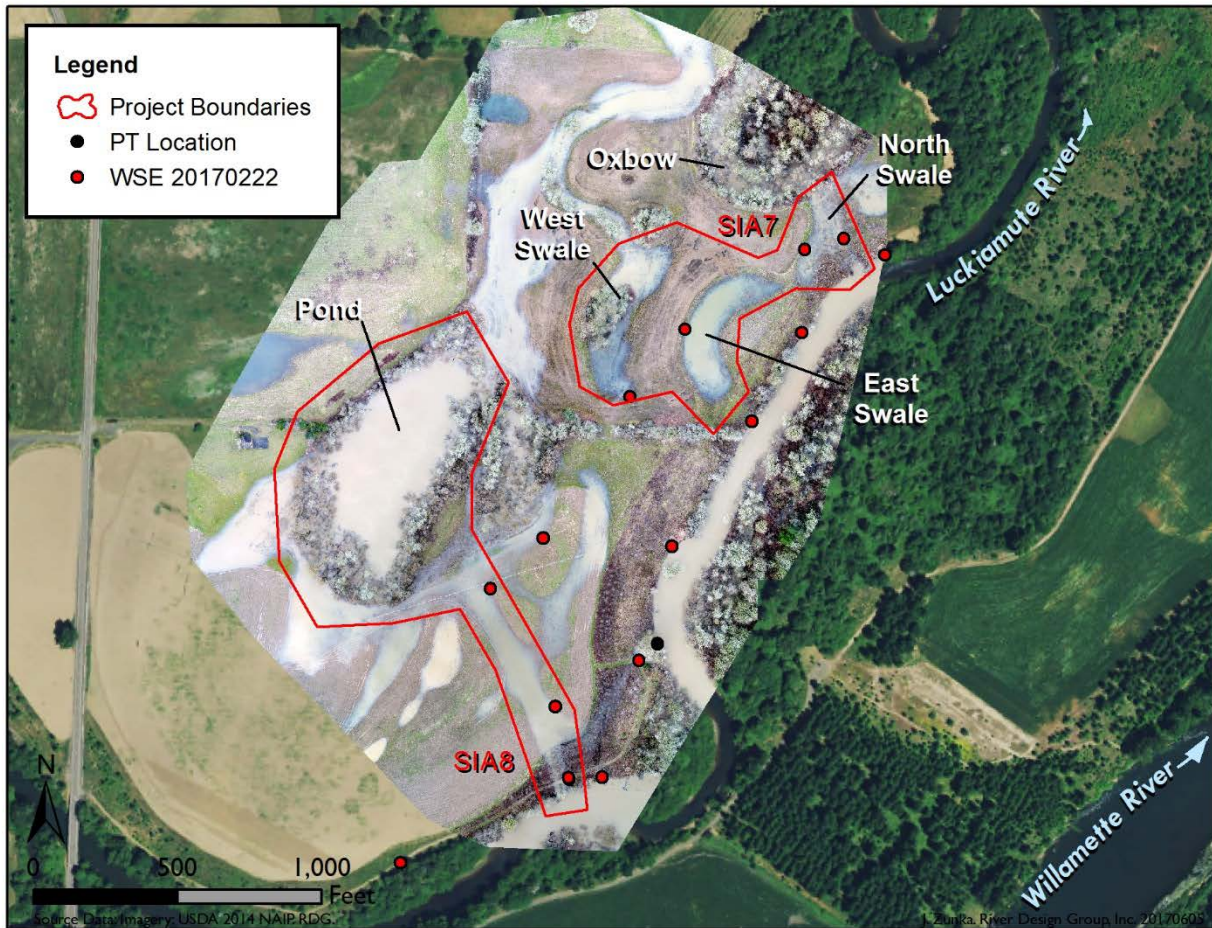


Figure 2-1. UAV acquired aerial imagery taken February 22, 2017 overlaid on the 2014 NAIP imagery. The discharge at the Suver gage was 4,900 cfs, 45,000 cfs at the Willamette River Albany gage, and 80,000 cfs at the Willamette River Salem gage. Locations of the pressure transducer, water surface elevation survey data, and pre-existing floodplain features are shown.

2.2 Hydrologic Analysis

The primary goals of the hydrologic analysis were to develop a stage-discharge relationship (i.e., rating curve) between the water surface elevation at the LSNA project sites and a nearby gage, and to use the rating curve in conjunction with a flow-duration analysis for the gages to estimate the frequency and duration of inundation at the two project sites under existing conditions and for the design concepts. Rating curves were built using 15-minute instantaneous stage and discharge data from the pressure transducer and the USGS gages, respectively. The flow duration analysis used daily average flow records to calculate the percentage of time a discharge of a given magnitude is exceeded on an annual basis. There are three USGS gages of note in the project vicinity: #14190500 Luckiamute River near Suver, OR (Suver gage), which is located approximately 12 miles upstream of the project site; #14174000 Willamette River at Albany, OR (Albany gage), which is located approximately 9 miles upstream of the Luckiamute River mouth; and #14191000 Willamette River at Salem, OR (Salem gage), which is located approximately 24

LUCKIAMUTE STATE NATURAL AREA FLOODPLAIN RECONNECTION

BUENA VISTA, OR

PROJECT PARTNERS



PROJECT DESCRIPTION

THIS PROJECT INTENDS TO RESTORE FLOODPLAIN PROCESSES TO A PORTION OF THE LUCKIAMUTE RIVER FLOODPLAIN AND TO ENHANCE WATER QUALITY AND HYDRAULIC CONNECTIVITY OF OFF-CHANNEL HABITATS. THE PROJECT AREA IS LOCATED ON THE RIVER LEFT BANK OF THE LUCKIAMUTE RIVER APPROXIMATELY 1.5 MILES UPSTREAM OF THE CONFLUENCE WITH THE WILLAMETTE RIVER AND INCLUDES MODIFYING TWO EXISTING SECONDARY CHANNELS.

AN EXISTING NATURAL LEVEE THAT PREVENTS WATER FROM ACCESSING THE FLOODPLAIN WILL BE LOWERED, AND PORTIONS OF THE FLOODPLAIN WILL BE GRADED TO ALLOW FLOODWATERS TO INUNDATE THE FLOODPLAIN WITH GREATER FREQUENCY AND DURATION. CONNECTION FREQUENCY WILL INCREASE FROM THE CURRENT CONDITION OF 2-3 WEEKS ANNUALLY.

SPATIAL REFERENCE

SURVEY CONTROL USED FOR THE PROJECT IS PROVIDED ON DRAWING 2.0 AND COORDINATES CORRESPOND TO THE TOP CENTER OF CONTROL MARKERS.

LIDAR, GPS RTK, AND TOTAL STATION:

HORIZONTAL PROJECTION: STATE PLANE NORTH
HORIZ DATUM: NAD 83 UNITS: US FT
VERT DATUM: NAVD 88 UNITS: US FT

SURVEY DATE: 04/11/17
LIDAR COLLECTED: 2008

STANDARD OF PRACTICE

RDG WORKS EXCLUSIVELY IN THE RIVER ENVIRONMENT AND EMPLOYS THE MOST CURRENT AND ACCEPTED PRACTICES AVAILABLE FOR PLANNING AND DESIGN OF THIS SIDE CHANNEL ENHANCEMENT PROJECT. ALL WORK WAS PERFORMED OR DIRECTED BY A REGISTERED PROFESSIONAL CIVIL ENGINEER WITH PAST EXPERIENCE IN THE DESIGN OF HABITAT ENHANCEMENT PROJECTS.

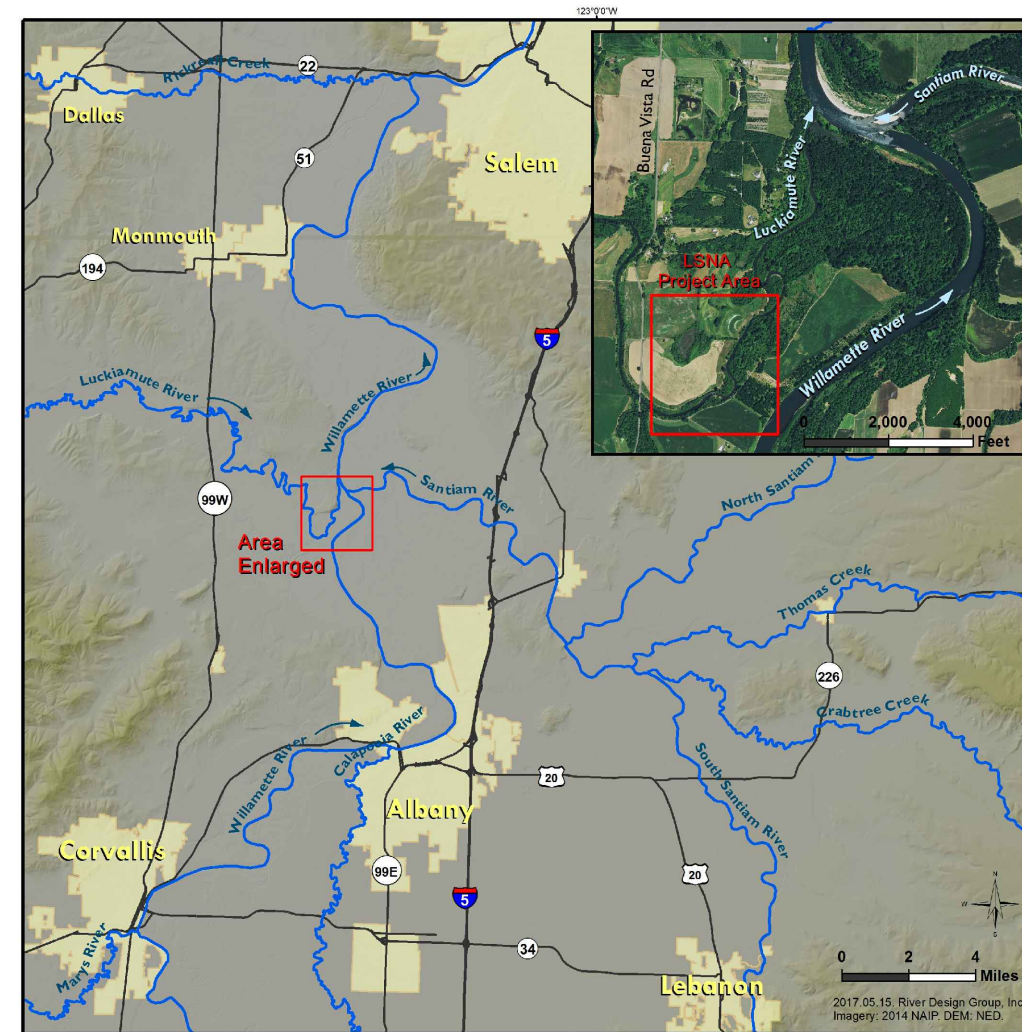
REUSE OF DRAWINGS

THESE DRAWINGS, THE IDEAS AND DESIGNS INCORPORATED HEREIN, AS AN INSTRUMENT OF PROFESSIONAL SERVICE, ARE THE PROPERTY OF RIVER DESIGN GROUP, INC. (RDG) AND ARE NOT TO BE USED, IN WHOLE OR IN PART, FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF RDG. LIKEWISE, THESE DRAWINGS MAY NOT BE ALTERED OR MODIFIED WITHOUT AUTHORIZATION OF RDG. DRAWING DUPLICATION IS ALLOWED IF THE ORIGINAL CONTENT IS NOT MODIFIED.

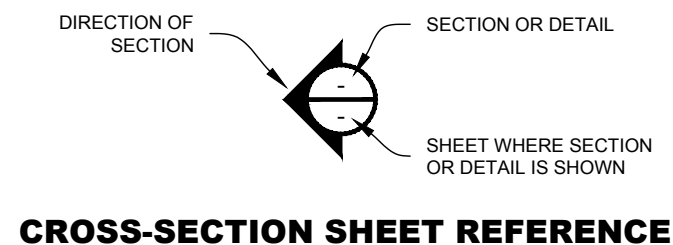
DRAWING INDEX

1.0	COVER SHEET AND NOTES	3.0	SITE 8A CONCEPT PLAN AND PROFILE
1.1	PROJECT OVERVIEW	3.1	SITE 8A DESIGN SECTIONS
2.0	SITE 7A CONCEPT PLAN AND PROFILE	3.2	SITE 8B CONCEPT PLAN AND PROFILE
2.1	SITE 7A DESIGN SECTIONS	3.3	SITE 8B DESIGN SECTIONS
2.2	SITE 7A DESIGN SECTIONS	3.2	SITE 8C CONCEPT PLAN AND PROFILE
2.3	SITE 7B CONCEPT PLAN AND PROFILE	3.3	SITE 8C DESIGN SECTIONS
2.4	SITE 7B DESIGN SECTIONS	3.4	SITE 8D CONCEPT PLAN AND PROFILE
2.5	SITE 7C CONCEPT PLAN	3.5	SITE 8D DESIGN SECTIONS
2.6	SITE 7C PROFILES	3.6	SITE 8D DESIGN SECTIONS
2.7	SITE 7C DESIGN SECTIONS	3.7	SITE 8D DESIGN SECTIONS
2.8	SITE 7C DESIGN SECTIONS	4.0	TYPICAL SWALE SECTION DETAIL
		4.1	SWALE ROUGHNESS DETAIL

PROJECT VICINITY MAP

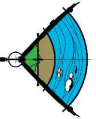


NW 1/4 OF SECTION 2 & NE 1/4 SECTION 3, T.10S., R.04W.,
WILLAMETTE MERIDIAN
POLK COUNTY, OREGON
USGS QUADRANGLE: LEWISBURG, OR



CROSS-SECTION SHEET REFERENCE

RDG
RIVER DESIGN GROUP



236 Wisconsin Avenue
Whitefish, MT 59937
406.862.4927

311 SW Jefferson Avenue
Corvallis, OR 97333
541.738.2920

COVER SHEET AND NOTES

LSNA FLOODPLAIN RECONNECTION

BUENA VISTA, OR

NO.	DATE	BY	DESCRIPTION	CHK	
				SW	
*	09/06/17	TF	CONCEPTS		

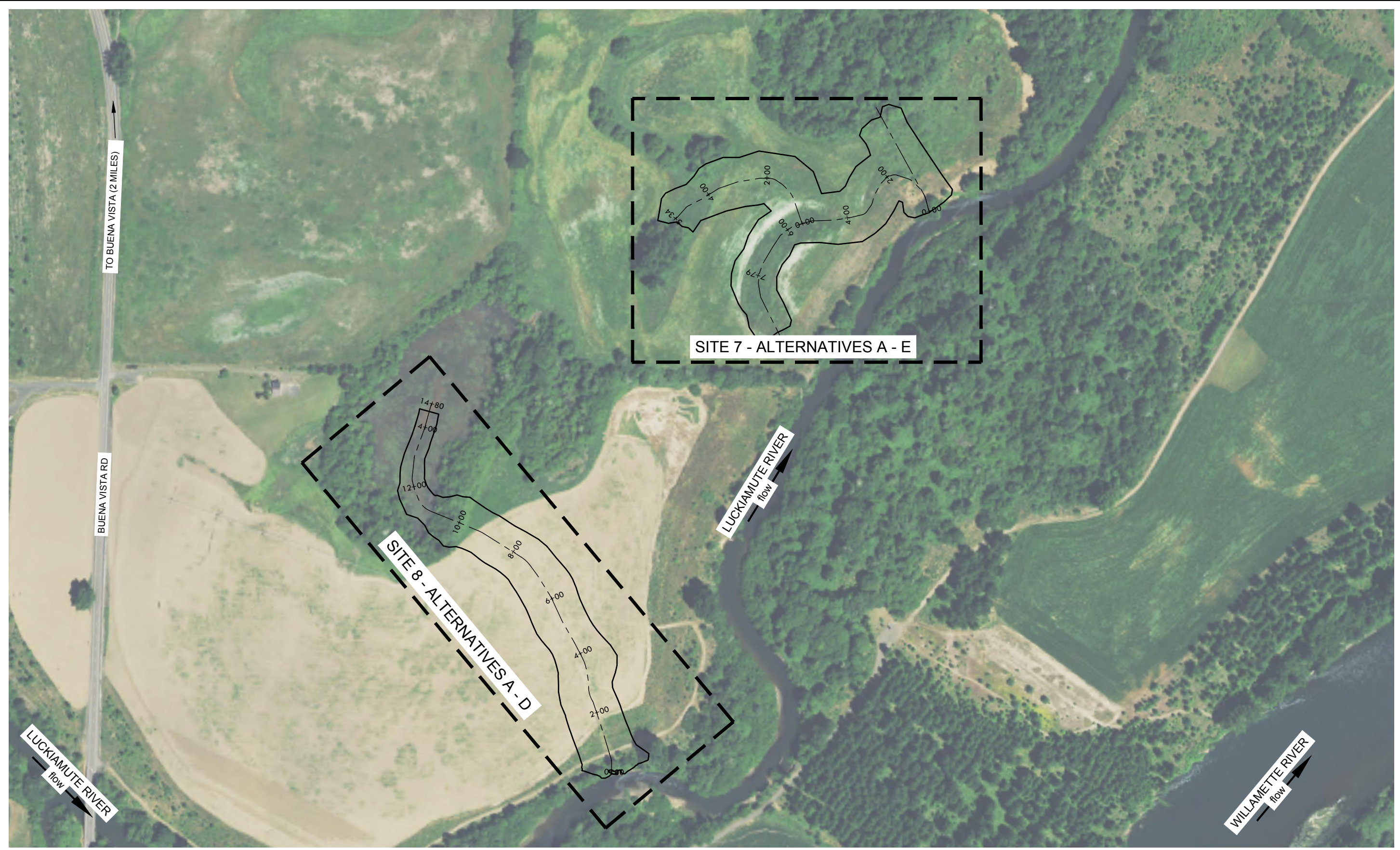
PROJECT NUMBER
RDG-17-013

DRAWING NUMBER

1.0

Drawing 1 of 23

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1 PROJECT OVERVIEW

1" = 300'



NO.	DATE	BY	DESCRIPTION	CHK
*	09/27/17	TF	CONCEPTS	SW

PROJECT NUMBER
RDG-17-009

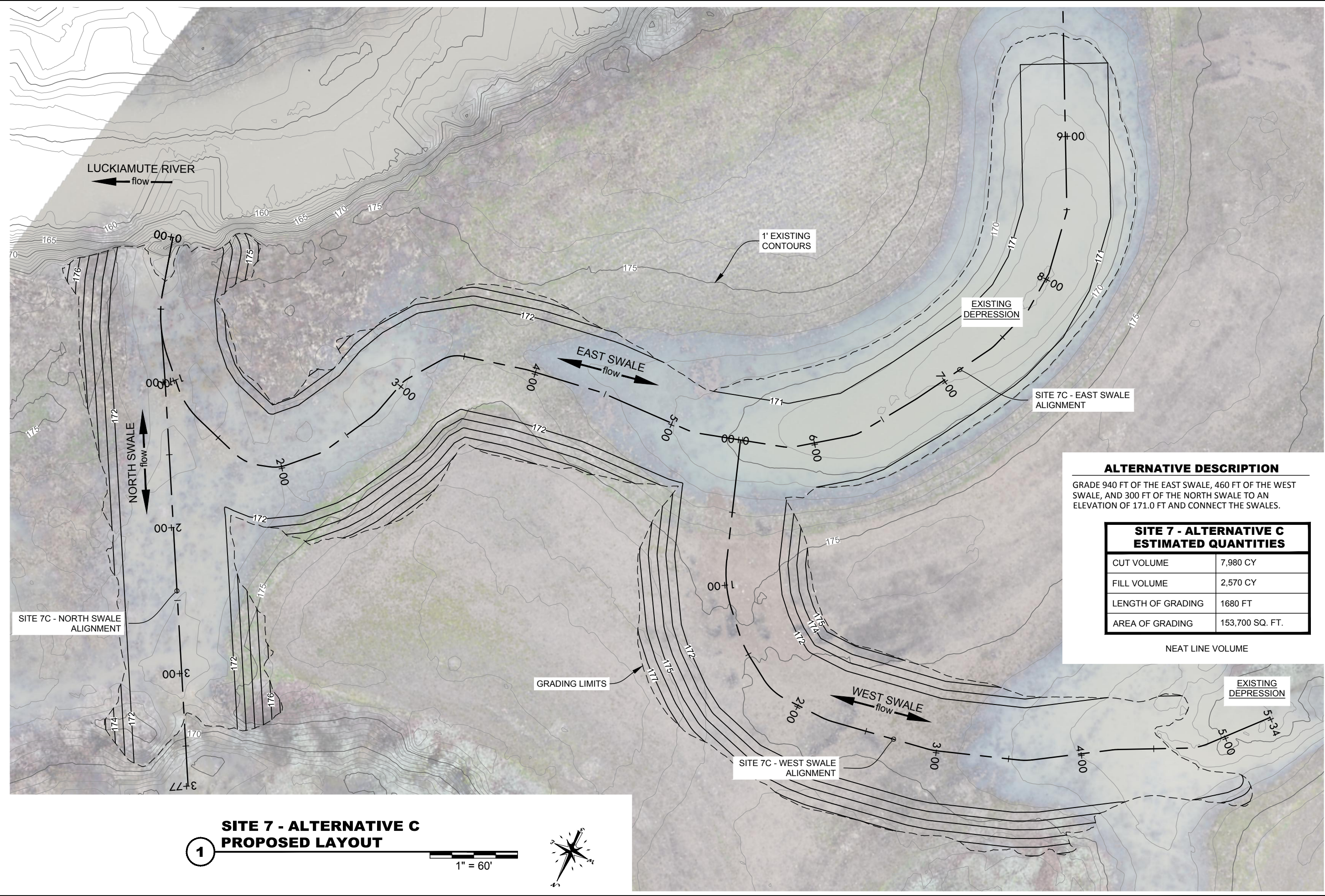
DRAWING NUMBER
1.1

Drawing 2 of 33

PROJECT OVERVIEW
LSNA FLOODPLAIN RECONNECTION
BUENA VISTA, OR

RDG
RIVER DESIGN GROUP
236 Wisconsin Avenue
Whitefish, MT 59937
406.862.4927
311 SW Jefferson Avenue
Corvallis, OR 97333
541.738.2920

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1 SITE 7 - ALTERNATIVE C PROPOSED LAYOUT
 1" = 60'



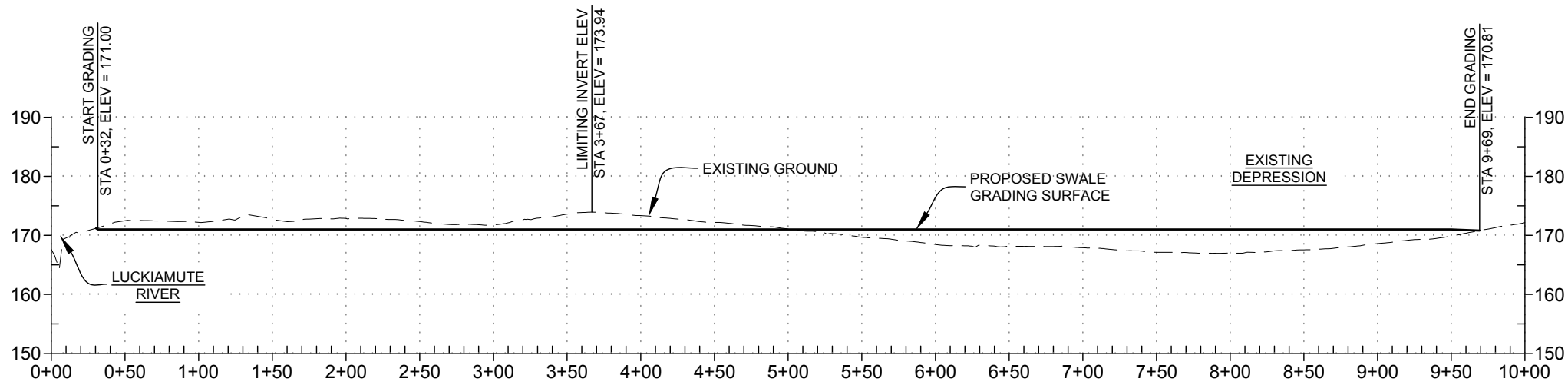
ALTERNATIVE DESCRIPTION
 GRADE 940 FT OF THE EAST SWALE, 460 FT OF THE WEST SWALE, AND 300 FT OF THE NORTH SWALE TO AN ELEVATION OF 171.0 FT AND CONNECT THE SWALES.

SITE 7 - ALTERNATIVE C ESTIMATED QUANTITIES	
CUT VOLUME	7,980 CY
FILL VOLUME	2,570 CY
LENGTH OF GRADING	1680 FT
AREA OF GRADING	153,700 SQ. FT.

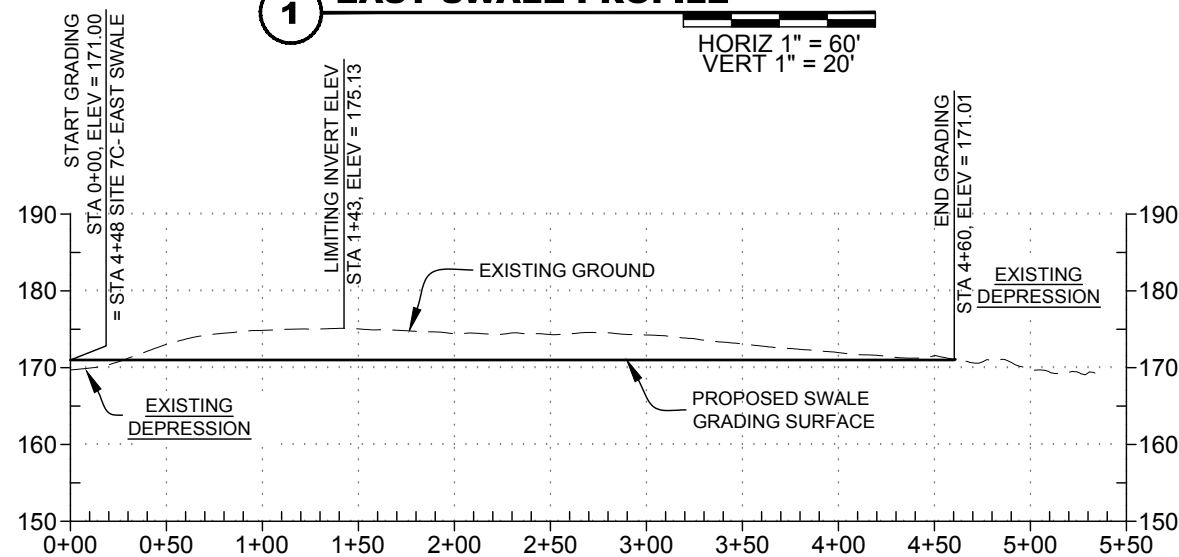
NEAT LINE VOLUME

SITE 7 - ALTERNATIVE C PLAN
 LSNA FLOODPLAIN RECONNECTION
 BUENA VISTA, OR

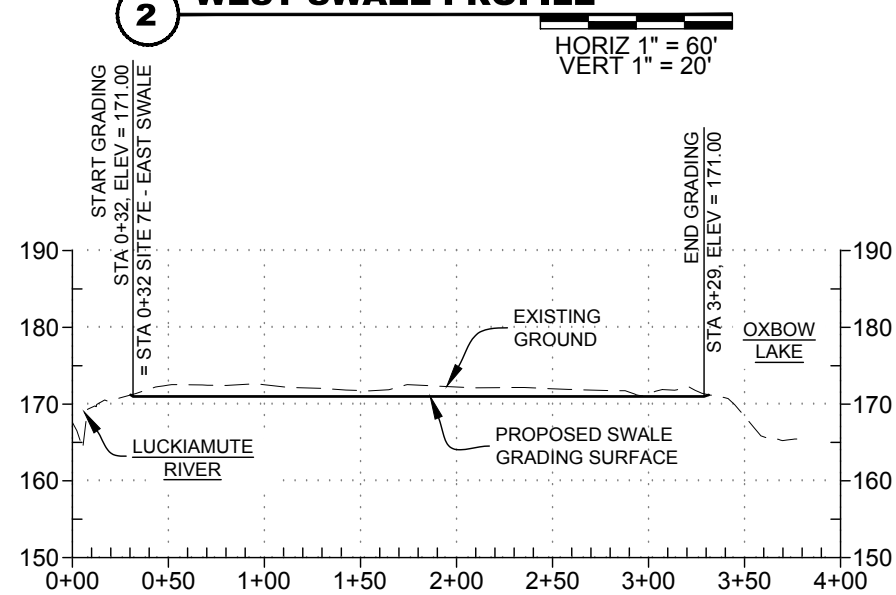
NO.	DATE	BY	DESCRIPTION	CHK	
				SW	
*	09/27/17	TF	CONCEPTS		



**SITE 7 - ALTERNATIVE C
EAST SWALE PROFILE**



**SITE 7 - ALTERNATIVE C
WEST SWALE PROFILE**



**SITE 7 - ALTERNATIVE C
NORTH SWALE PROFILE**

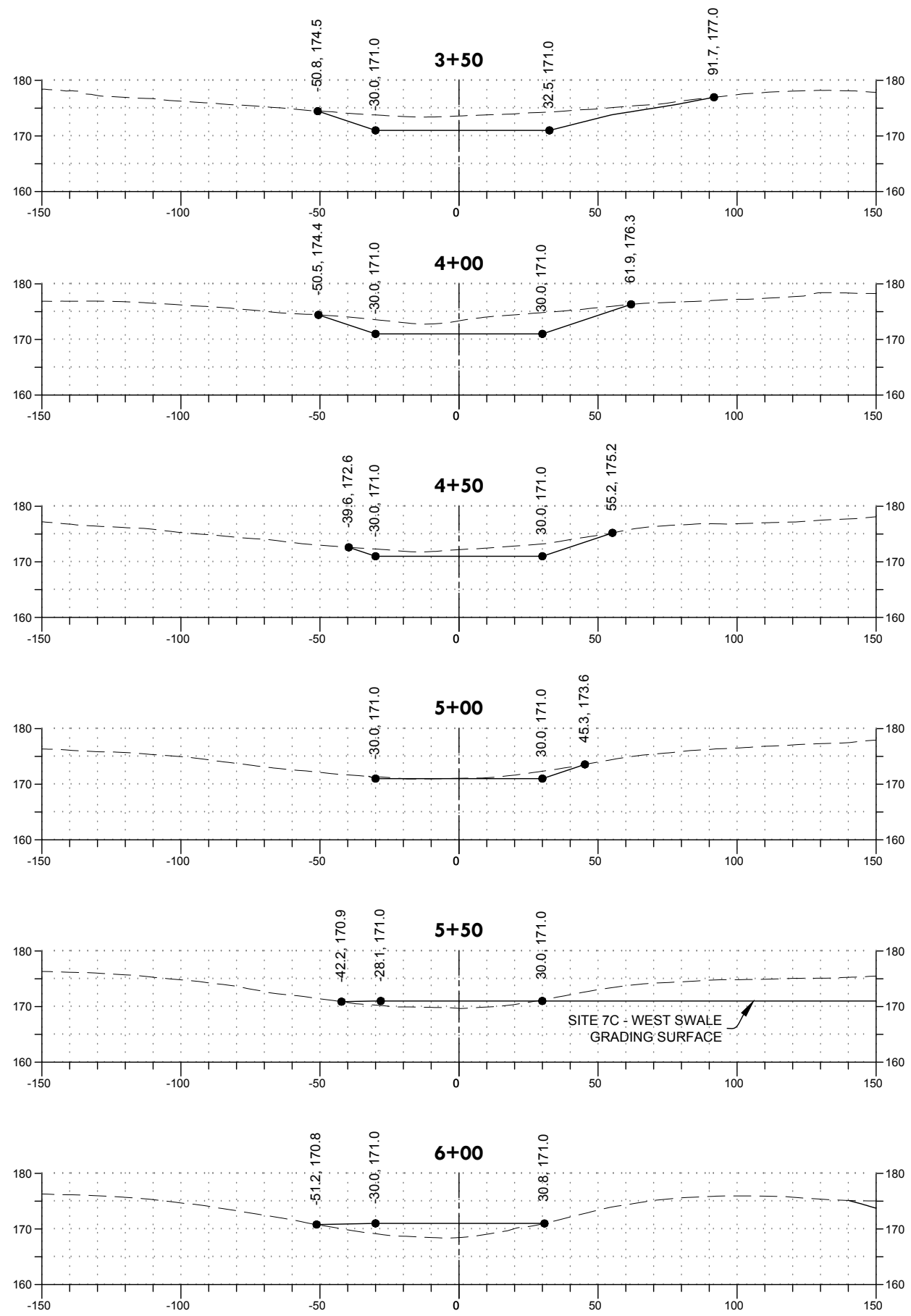
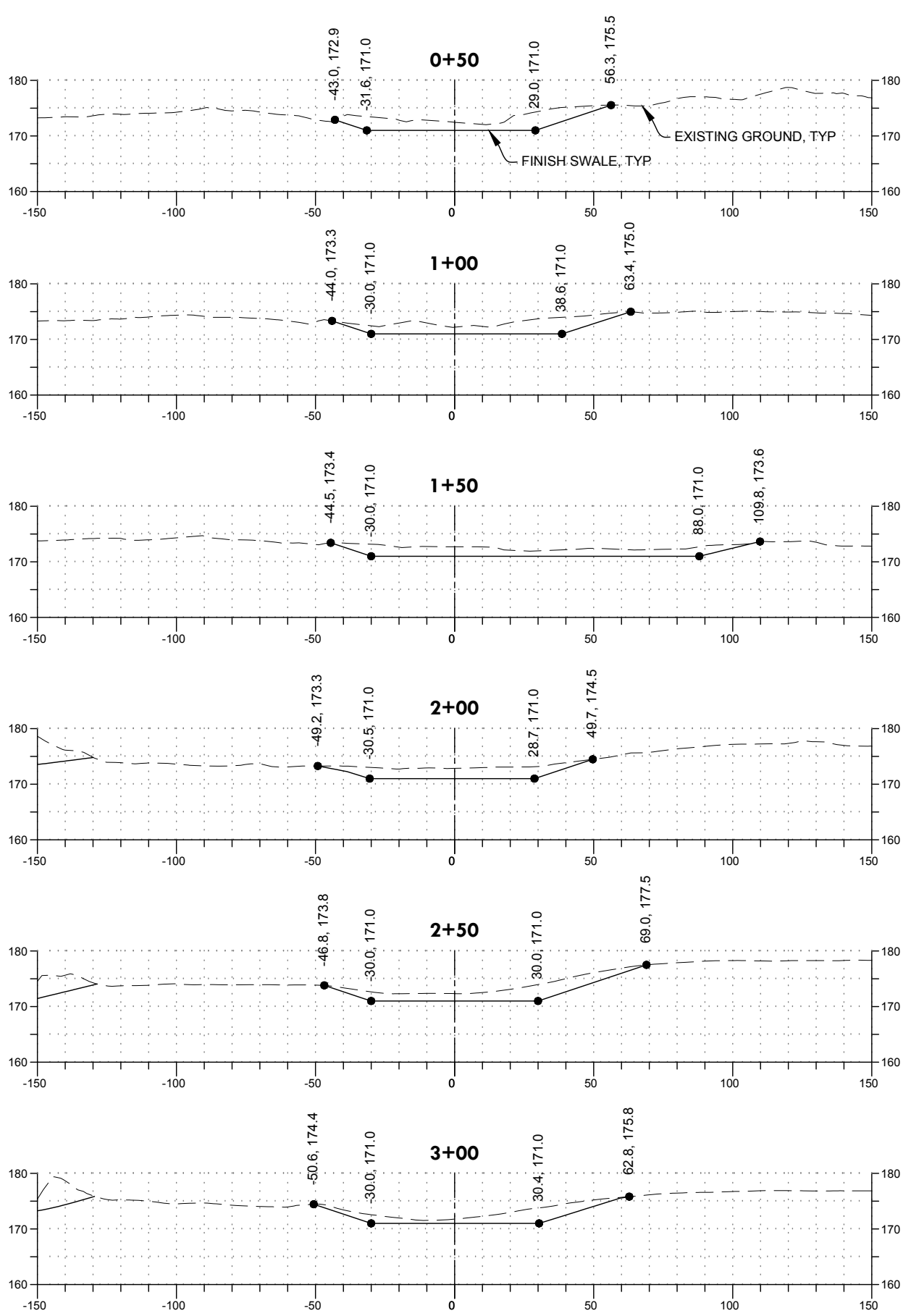
**SITE 7 - ALTERNATIVE C
PROFILES**
LSNA FLOODPLAIN RECONNECTION
BUENA VISTA, OR

NO.	DATE	BY	DESCRIPTION	CHK	
				SW	
*	09/27/17	TF	CONCEPTS		

PROJECT NUMBER RDG-17-009
DRAWING NUMBER 2.6
Drawing 9 of 33

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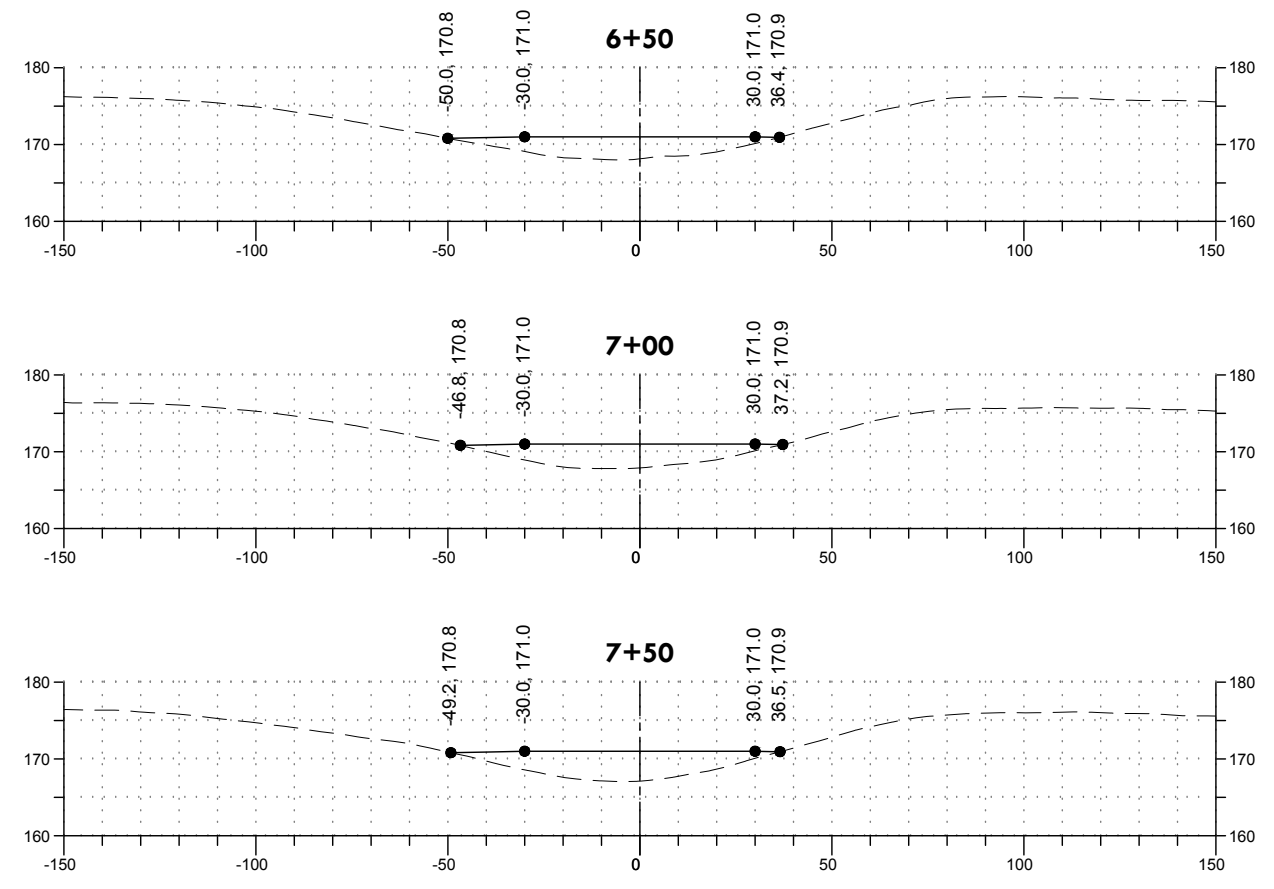


1 **SITE 7 - ALTERNATIVE C**
EAST SWALE DESIGN SECTIONS
 HORIZ 1" = 50'
 VERT 1" = 25'

SITE 7 - ALTERNATIVE C EAST
SWALE DESIGN SECTIONS
 LSNA FLOODPLAIN RECONNECTION
 BUENA VISTA, OR

NO.	DATE	BY	DESCRIPTION	CHK	
				SW	
*	09/27/17	TF	CONCEPTS		

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1 **SITE 7 - ALTERNATIVE C**
EAST SWALE DESIGN SECTIONS
 HORIZ 1" = 50'
 VERT 1" = 25'

SITE 7 - ALTERNATIVE C EAST
SWALE DESIGN SECTIONS
 LSNA FLOODPLAIN RECONNECTION
 BUENA VISTA, OR

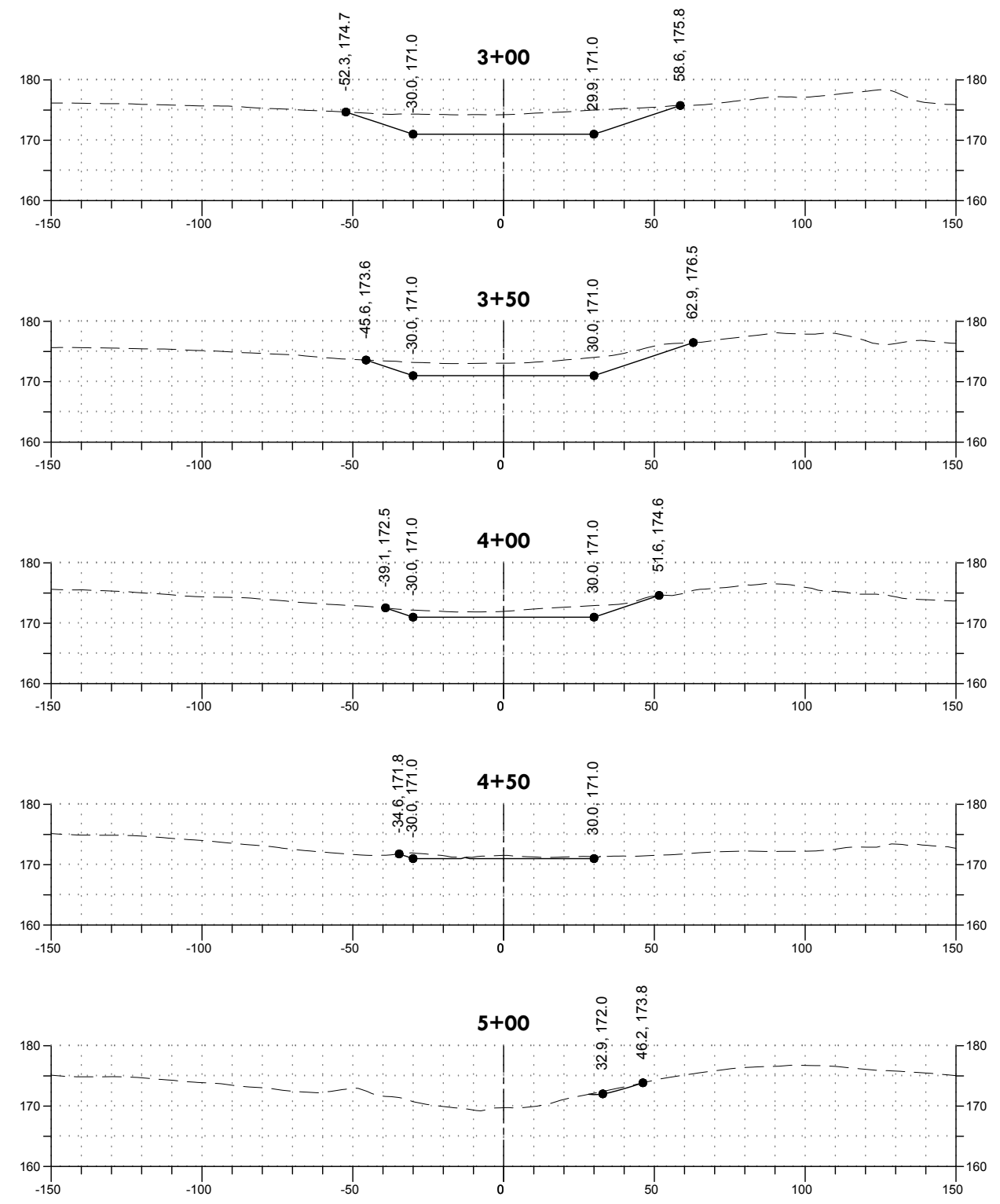
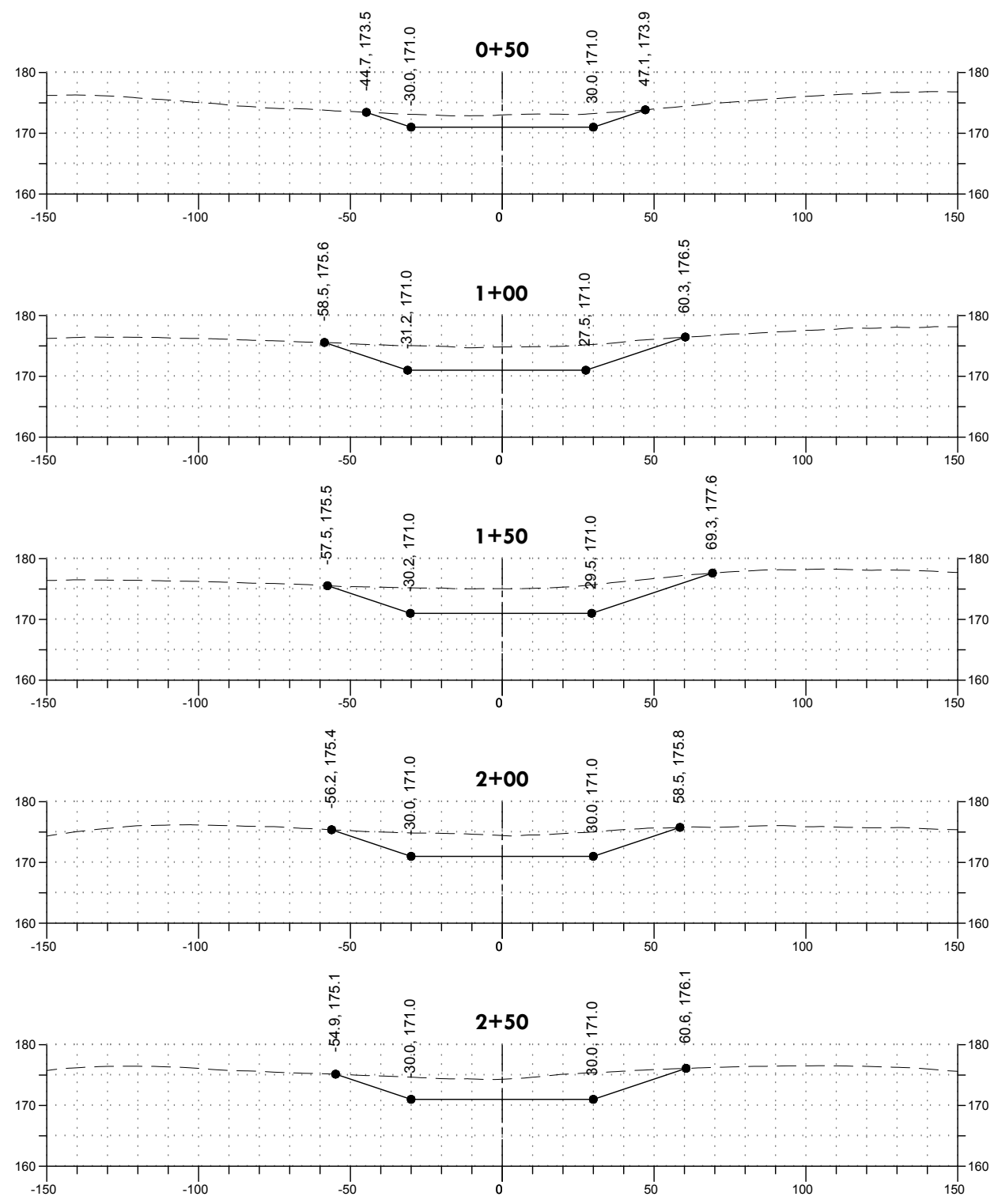
NO.	DATE	BY	DESCRIPTION	CHK
*	09/27/17	TF	CONCEPTS	SW

PROJECT NUMBER
RDG-17-009

DRAWING NUMBER
2.8

Drawing 11 of 33

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1 SITE 7 - ALTERNATIVE C
WEST SWALE DESIGN SECTIONS

HORIZ 1" = 50'
VERT 1" = 25'

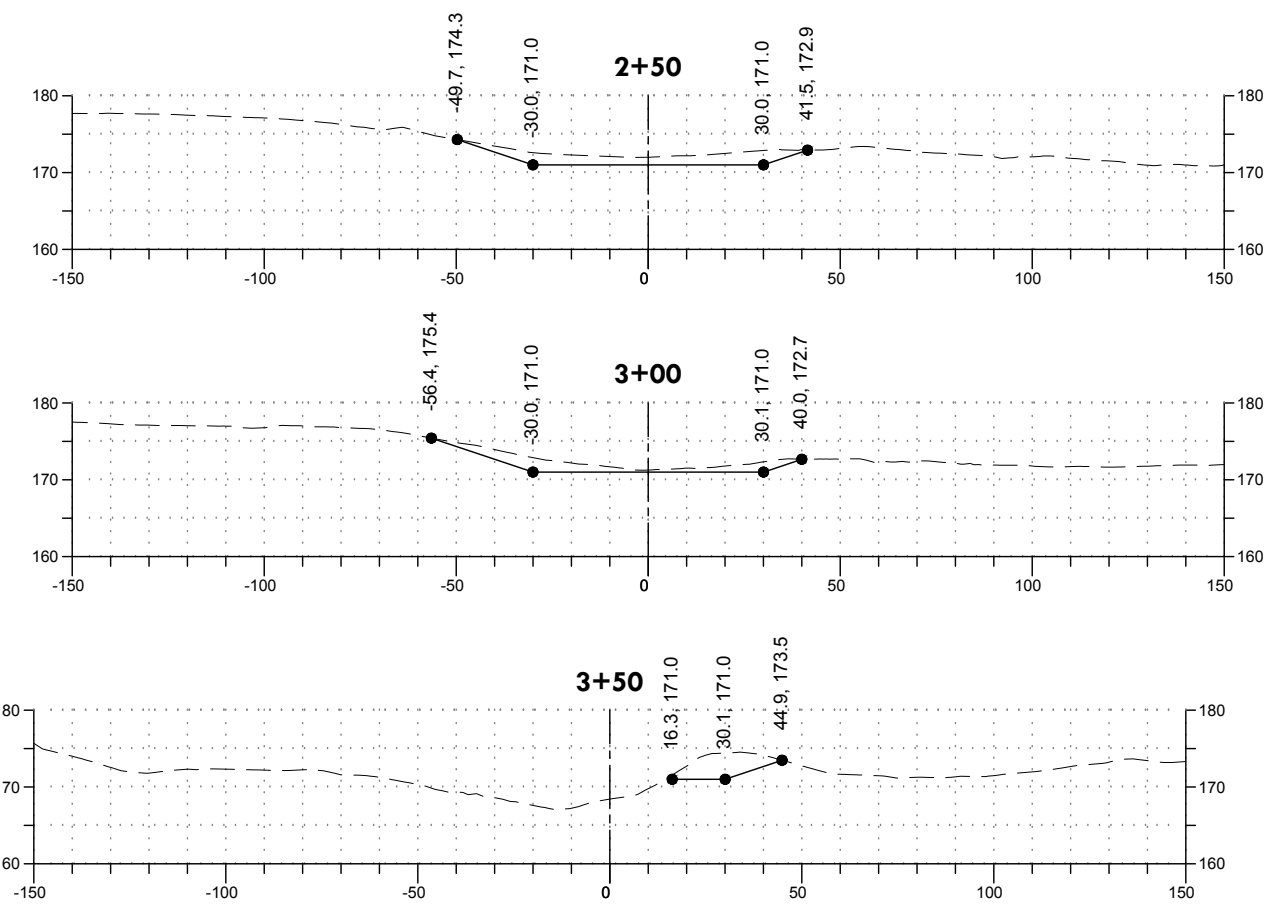
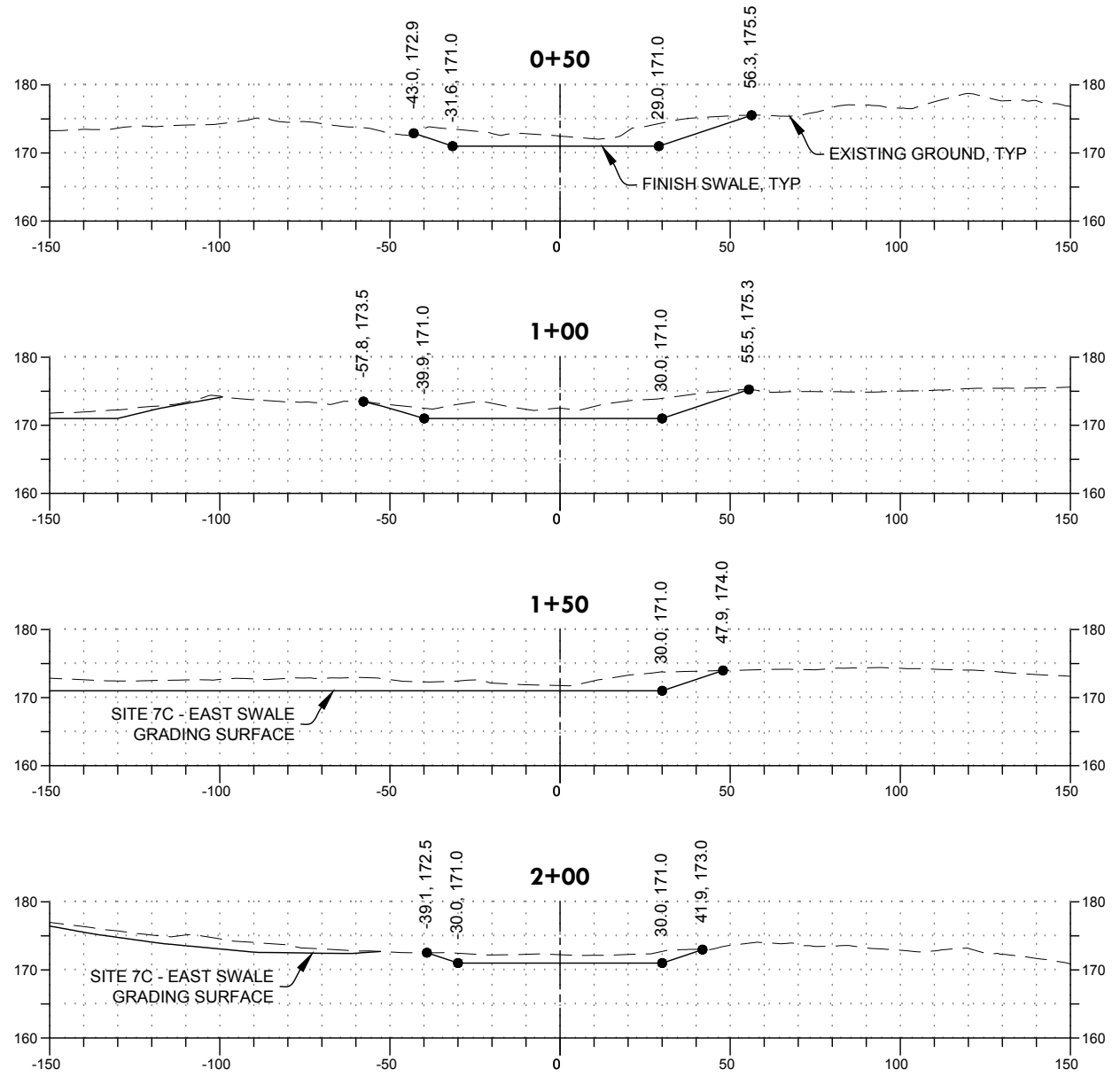
**SITE 7 - ALTERNATIVE C WEST
SWALE DESIGN SECTIONS**
LSNA FLOODPLAIN RECONNECTION
BUENA VISTA, OR

NO.	DATE	BY	DESCRIPTION	CHK
				SW
*	09/27/17	TF	CONCEPTS	

PROJECT NUMBER
RDG-17-009

DRAWING NUMBER
2.9
Drawing 12 of 33

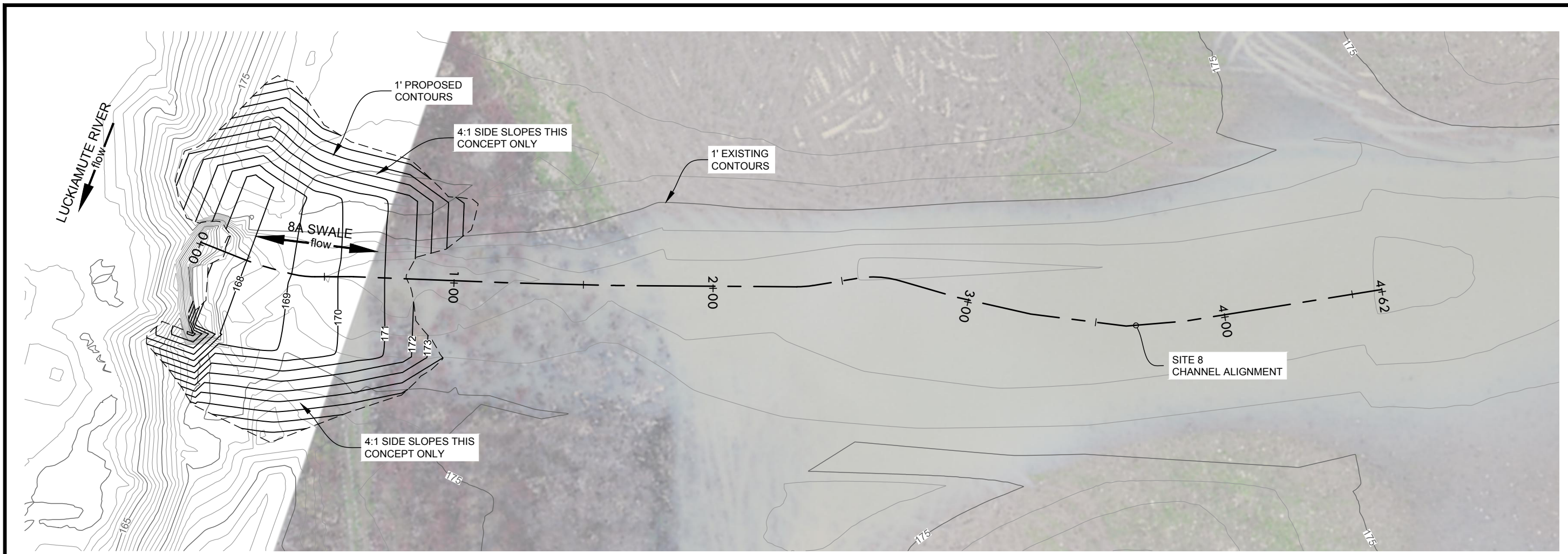
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1 **SITE 7 - ALTERNATIVE C**
NORTH SWALE DESIGN SECTIONS
 HORIZ 1" = 50'
 VERT 1" = 25'

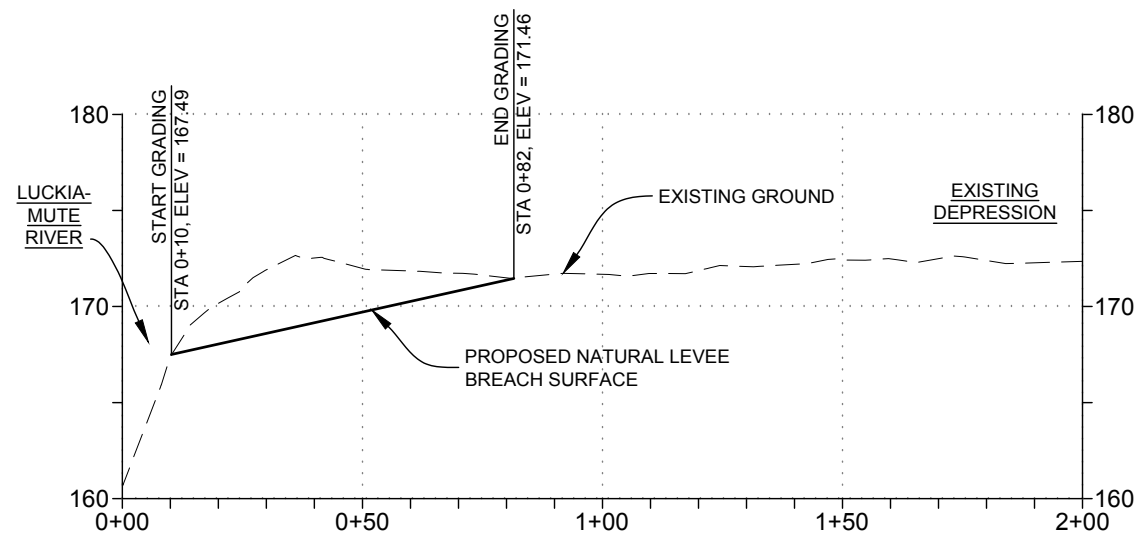
SITE 7 - ALTERNATIVE C NORTH
SWALE DESIGN SECTIONS
 LSNA FLOODPLAIN RECONNECTION
 BUENA VISTA, OR

NO.	DATE	BY	DESCRIPTION	CHK
				SW
*	09/27/17	TF	CONCEPTS	
PROJECT NUMBER				
RDG-17-009				
DRAWING NUMBER				
2.10				
Drawing 13 of 33				



1 SITE 8A PROPOSED LAYOUT

1" = 40'



2 SITE 8A PROFILE VIEW

HORIZ 1" = 40'
VERT 1" = 10'

SITE 8A ESTIMATED QUANTITIES	
CUT VOLUME	1,265 CY
LENGTH OF REMOVAL	72 FT
AREA OF REMOVAL	10,557 SQ. FT.

NEAT LINE VOLUME

**SITE 8A CONCEPT
PLAN AND PROFILE**
LSNA FLOODPLAIN RECONNECTION
BUENA VISTA, OR

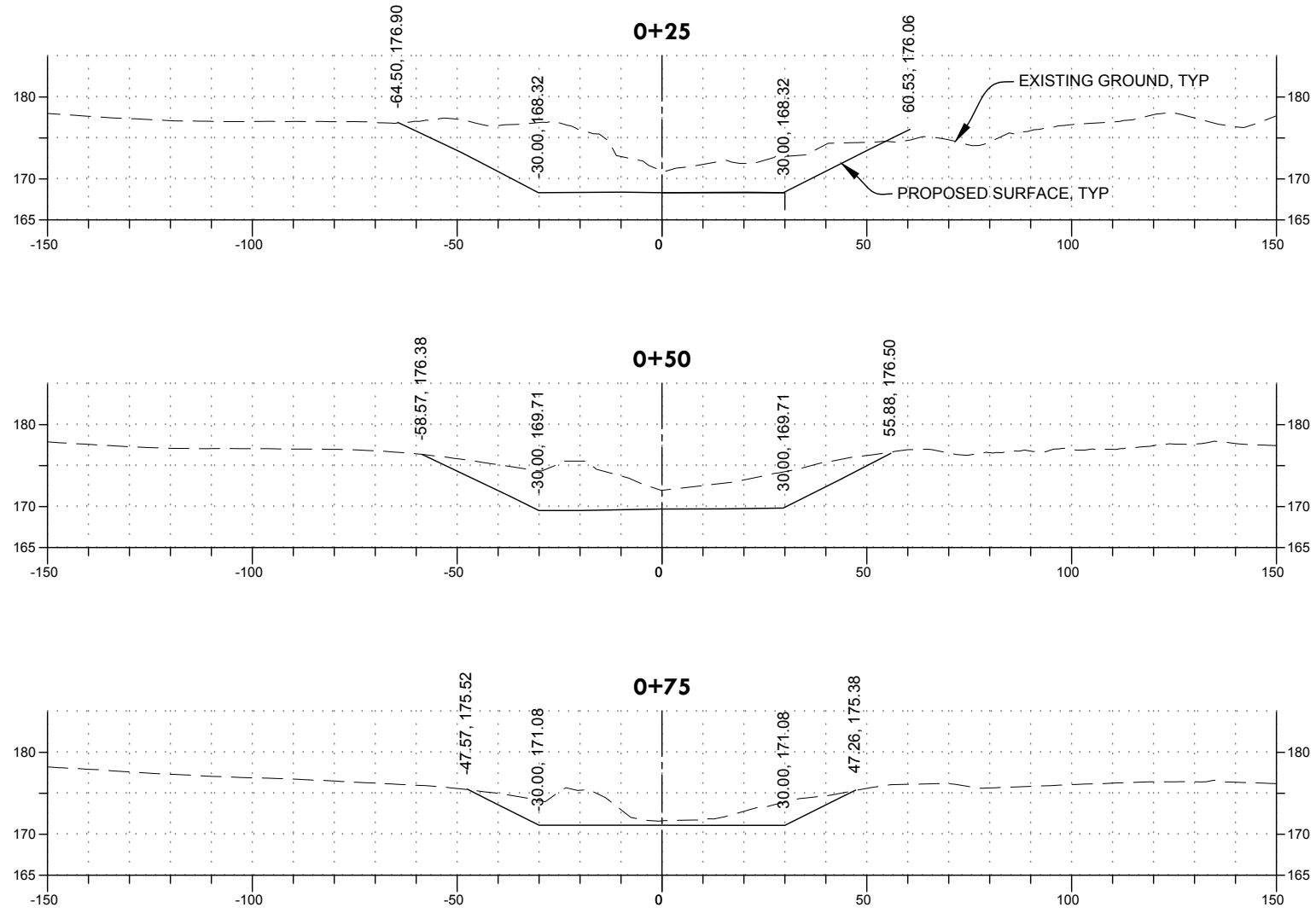
NO.	DATE	BY	DESCRIPTION	CHK
*	09/06/17	TF	CONCEPTS	SW

PROJECT NUMBER
RDG-17-013

DRAWING NUMBER
3.0

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1 SITE 8A DESIGN SECTIONS
 HORIZ 1" = 40'
 VERT 1" = 20'

SITE 8A DESIGN SECTIONS
 LSNA FLOODPLAIN RECONNECTION
 BUENA VISTA, OR

NO.	DATE	BY	DESCRIPTION	CHK
*	09/06/17	TF	CONCEPTS	SW

PROJECT NUMBER
RDG-17-013

DRAWING NUMBER
3.1

Drawing 13 of 23



Oregon

Kate Brown, Governor

Parks and Recreation Department

725 Summer St. NE, Suite C

Salem, OR 97301-1271

(503) 986-0980

Fax (503) 986-0794

www.oregonstateparks.org



August 10, 2018

Andrew Dutterer
Partnerships Coordinator
Oregon Watershed Enhancement Board
775 Summer St. NE, Suite 360
Salem, OR 97301

RE: Luckiamute Watershed Council proposal at Luckiamute State Natural Area

Dear Project Reviewers,

Oregon Parks and Recreation Department (OPRD) and the Luckiamute Watershed Council (LWC) have worked closely since 2010 to implement priority habitat restoration projects at Luckiamute State Natural Area (LSNA). We have spent the last few years scoping and planning the proposed project at LSNA, which will increase and enhance off-channel winter fish habitat and restore floodplain vegetation communities.

We are excited to work with LWC on this newer project, while continuing to collaborate to steward past floodplain vegetation restoration areas within LSNA. The previously implemented revegetation work has been extremely successful and reflects on LWC's attention to detail and commitment to ensuring positive outcomes for the projects it leads.

Luckiamute State Natural Area is home to several Oregon Conservation Strategy species, including listed anadromous fish, willow flycatcher, red-legged frog, bald eagle, and Western pond turtle. LSNA contains a variety of Oregon Conservation Strategy habitats, including wetlands, riparian forest, flowing water, oak woodland, and grasslands. As a state natural area, LSNA is designated and managed to protect high quality native ecosystems and rare plant and animal species.

In 2017, OPRD completed an assessment of the Natural Resource Function and Value of its properties in the Willamette Basin, looking at 19 criteria to evaluate sites. LSNA ranked #7 out of 134 sites and is a high priority for restoration and stewardship investment. OPRD's 10-year workplan for LSNA includes the proposed restoration project, stewardship of cottonwood gallery forest and planted riparian forest, removal of a road to allow the Luckiamute River to naturally meander, continued control of a small population of *Ludwigia*, and oak habitat restoration.

OPRD will contribute \$13,920.00 of in-kind staff time to the project. We thank you for considering this worthwhile project.

Sincerely,

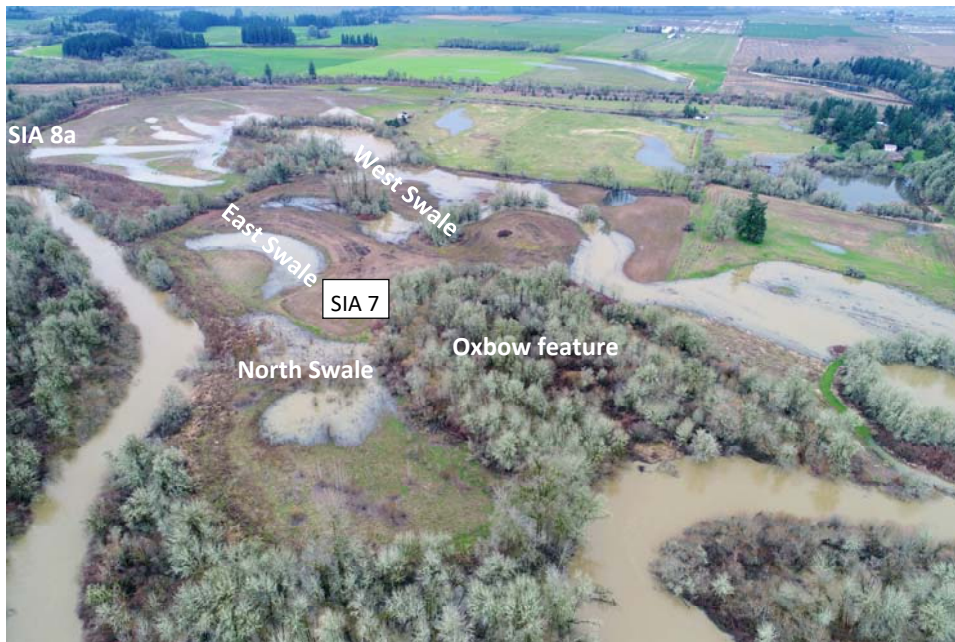
Kevin Strandberg
Park Manager

Photos



UAV acquired aerial imagery taken by River Design Group, February 22, 2017. Arrows indicate approximate North.

Discharge on February 22, 2017: Luckiamute River at Suver gage—4,900 cfs; Willamette River at Albany gage—45,000 cfs and Salem gage—80,000 cfs



Figures 3 and 4: Same images as Figures 1 and 2 with annotations of key features.



Figures 5, 6, and 7: Various features of the SIA 7c site. Above left, the east swale looking south. Above center, north swale. Above right, north end of west swale looking towards north swale. Forested oxbow is to the left.



SIA 8, January 18, 2016.

Figure 8 (left): Looking inland from Luckiamute River along access road.

Figure 9 (right): Same location, looking at the Luckiamute River.





Figures 10 and 11: Unit N10, proposed for floodplain forest revegetation, looking towards west swale. Previously farmed, now fallow, ongoing mechanical and chemical weed control has prepared the site for reforestation. LWC and OPRD will seed the site in fall 2018 as part of site preparation.



Figure 12: UAV acquired aerial imagery taken by River Design Group, February 22, 2017. Image showing the confluence of the Luckiamute, Santiam and Willamette Rivers. Luckiamute State Natural Area Gallery Forest on the right (south) of the Luckiamute River.

Discharge on February 22, 2017:
Luckiamute River at Suver gage—4,900 cfs,
Willamette River at Albany gage—45,000 cfs,
Salem gage—80,000 cfs.

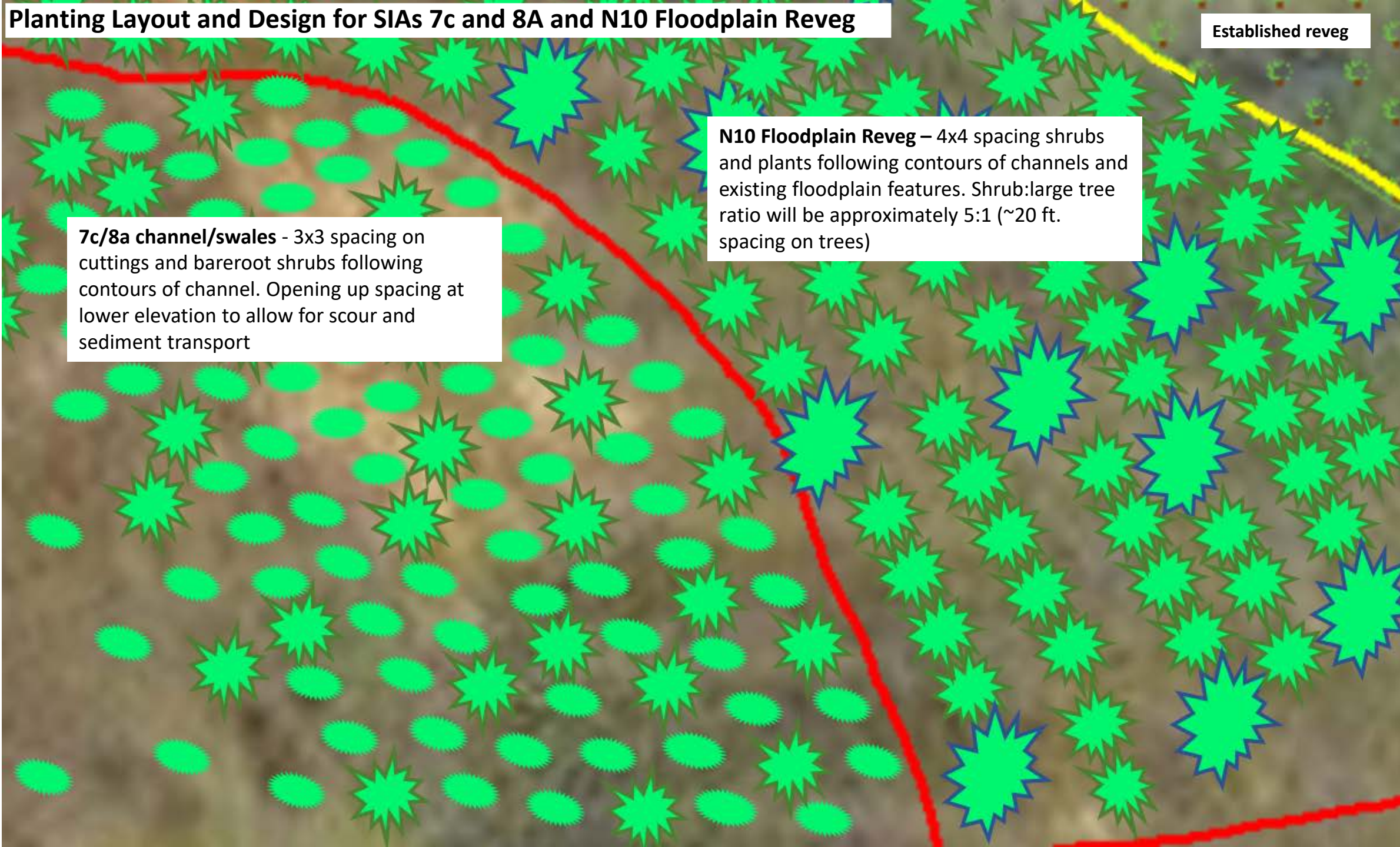


Planting Layout and Design for SIAs 7c and 8A and N10 Floodplain Reveg

Established reveg

7c/8a channel/swales - 3x3 spacing on cuttings and bareroot shrubs following contours of channel. Opening up spacing at lower elevation to allow for scour and sediment transport

N10 Floodplain Reveg – 4x4 spacing shrubs and plants following contours of channels and existing floodplain features. Shrub:large tree ratio will be approximately 5:1 (~20 ft. spacing on trees)



References:

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- Phillis, C. C., Sturrock, A. M., Johnson, R. C., & Weber, P. K. (2017). Endangered winter-run Chinook salmon rely on diverse rearing habitats in a highly altered landscape. <https://doi.org/10.1016/j.biocon.2017.10.023>
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- Sommer, T. R., Nobriga, M. L., Harrell, W. C., Batham, W., & Kimmerer, W. J. (2001). Floodplain rearing of juvenile chinook salmon: evidence of enhanced growth and survival. <https://doi.org/10.1139/cjfas-58-2-325>

Takata, L., Sommer, T. R., Louise Conrad, J., & Schreier, B. M. (2017). Rearing and migration of juvenile Chinook salmon (*Oncorhynchus tshawytscha*) in a large river floodplain. *Environmental Biology of Fishes*, 100(9), 1105–1120. <https://doi.org/10.1007/s10641-017-0631-0>

Wallick, R.J. (2014). "Our Evolving Understanding of the Willamette River Floodplain." Within Our Reach. Oregon State University, Corvallis, Oregon. December 11, 2014.
<http://willametteinitiative.org/tools-resources/our-evolving-understanding-willamette-river-floodplain>. Accessed 8/10/2015.



MATCH FUNDING FORM

Document here the match funding shown on the budget page of your grant application

OWEB accepts all non-OWEB funds as match. An applicant may not use *another OWEB grant* to match an OWEB grant; this includes ODA Weed Board projects because they are funded through OWEB grants. However, an applicant who benefits from a pass-through OWEB agreement with another state agency, by receiving either staff expertise or a grant from that state agency, may use those benefits as match for an OWEB grant. (Example: A grantee may use as match the effort provided by ODFW restoration biologists because OWEB funding for those positions is the result of a pass-through agreement).

At the time of application, match funding for OWEB funds requested does not have to be *secured*, but you must show that at least 25% of match funding has been sought. On this form, you do not necessarily need to show authorized signatures (“secured match”), but the more match that is secured, the stronger the application. Identify the type of match (cash or in-kind), the status of the match (secured or pending), and either a dollar amount or a dollar value (based on local market rates) of the in-kind contribution.

If you have questions about whether your proposed match is eligible or not, see Allowable Match document in OGMS <http://apps.wrd.state.or.us/apps/oweb/fiscal/nologin.aspx> under Technical Assistance application or contact your local OWEB regional program representative (contact information available in the instructions to this application).

Project Name: LSNA Floodplain Reconnection and Reconnection Applicant: Luckiamute Watershed Council

Match Funding Source	Type (√ one)	Status (√ one)*	Dollar Value	Match Funding Source Signature/Date*
Oregon Parks and Rec Dept - staff time	<input type="checkbox"/> cash <input checked="" type="checkbox"/> in kind	<input checked="" type="checkbox"/> secured <input type="checkbox"/> pending	\$13,920.00	see letter of support
Meyer Memorial Trust Ph. 3 funding	<input checked="" type="checkbox"/> cash <input type="checkbox"/> in kind	<input checked="" type="checkbox"/> secured <input type="checkbox"/> pending	\$4,902.00	grant agreement available
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		
	<input type="checkbox"/> cash <input type="checkbox"/> in kind	<input type="checkbox"/> secured <input type="checkbox"/> pending		

* **IMPORTANT:** If you checked the “Secured” box in the Status Column for any match funding source, you must provide either the signature of an authorized representative of the match source in the final Column, or attach a letter of support from the match funding source that specifically mentions the dollar amount you show in the Dollar Value Column.

BUDGET

<i>Itemize projected costs under each of the following categories:</i>	Unit Type	Unit Number	Unit Cost	OWEB Funds	MMT/BPA Funds	Cash Match	In-Kind Match	Total Costs
		(e.g., # of hours)	(e.g., hourly rate)					(add columns D, E, F)
SALARIES, WAGES AND BENEFITS. List position titles, include only costs of employees charged to this grant.								
Natural Resource Specialist, OPRD	Hours	40	\$ 55.00				\$ 2,200.00	\$ 2,200.00
Park Manager, OPRD	Hours	120	\$ 55.00				\$ 6,600.00	\$ 6,600.00
Parks Ranger II	Hours	40	\$ 55.00				\$ 2,200.00	\$ 2,200.00
Archeologist, OPRD	Hours	40	\$ 55.00				\$ 2,200.00	\$ 2,200.00
LWC Executive Director	Hours	210	\$ 40.00	\$ 8,400.00			0	\$ 8,400.00
LWC Outreach Coordinator	Hours	160	\$ 30.00	\$ 4,800.00				\$ 4,800.00
SUBTOTAL (1)				13,200	0	0	13,200	26,400
CONTRACTED SERVICES. Labor, supplies, and materials to be provided by <i>non-staff</i> for project implementation.								
LWC Project Management - Permitting, communications with project partners, construction oversight / management	Hours	195	\$ 46.00	\$ 8,970.00				\$ 8,970.00
LWC PM revegetation hours, 2020-2024	Hours	85	\$ 46.00	\$ 3,910.00				\$ 3,910.00
LWC PM PE Hours, 2020 - 2024 (PE)	Hours	295	\$ 46.00	\$ 13,570.00				\$ 13,570.00
LWC PM - monitoring and sharing results	Hours	195	\$ 46.00	\$ -	\$ 8,970.00			\$ 8,970.00
Design - Additional design (pre-permit); Additional Surveying; Final engineering design - River Design Group	Hours	150	\$ 100.00	\$ -	\$ 15,000.00			\$ 15,000.00
Design - No Rise Analysis for onsite fill disposal - River Design Group	Hours	80	\$ 100.00	\$ -	\$ 8,000.00			\$ 8,000.00
Permitting Assistance - River Design Group	Hours	20	\$ 100.00	\$ -	\$ 2,000.00			\$ 2,000.00
Contracting, construction stakeout & oversight - River Design Group	Hours	100	\$ 100.00	\$ -	\$ 10,000.00			\$ 10,000.00
Cultural Resources - Archeological Surveying	Each	1	\$ 5,000.00	\$ -	\$ 5,000.00			\$ 5,000.00
Cultural Resources - Presence/Absence Testing	Each	1	\$ 15,000.00	\$ -	\$ 15,000.00			\$ 15,000.00
SIA7c								
Mobilization of Equipment	Each	1	\$ 1,500.00	\$ -	\$ 1,500.00			\$ 1,500.00
(Site Prep/Access) Develop Access Work Pad	Each	1	\$ 2,000.00	\$ -	\$ 2,000.00			\$ 2,000.00
(Site Prep/Access) Clear Veg to Access Stream	Each	1	\$ 800.00	\$ -	\$ 800.00			\$ 800.00
(Dewatering/Isolation) Temporary Erosion Cont.	Each	1	\$ 400.00	\$ -	\$ 400.00			\$ 400.00
(Excav./Disp./Haul) Bulk Excavation and Roughened Floodplain Construction (incl. small log and debris structures)	yd^3	8000	\$ 8.00	\$ -	\$ 64,000.00			\$ 64,000.00

(Excav./Disp./Haul) Disposal	yd^3	5500	\$ 9.25	\$ -	\$ 50,875.00			\$ 50,875.00
Erosion Control Native Grass Seeding (conducted by PM)	Acres	5.6	\$ 46.00	\$ -	\$ 258.00			\$ 258.00
Erosion Control Mulching/Straw	Acres	5.6	\$ 800.00	\$ -	\$ 4,480.00			\$ 4,480.00
Erosion Control Laborer	Hours	40	\$ 40.00	\$ -	\$ 1,600.00			\$ 1,600.00
Riparian Planting Labor 7c	Acres	5.6	\$ 1,250.00	\$ -	\$ 7,000.00			\$ 7,000.00
SIA 7c Plant Establishment (PE)	hours	390	\$ 39.00	\$ 15,210.00	\$ -			\$ 15,210.00
SIA8a								
Mobilization of Equipment	Each	1	\$ 200.00	\$ -	\$ 200.00			\$ 200.00
(Site Prep/Access) Develop Access Work Pad	Each	1	\$ 500.00	\$ -	\$ 500.00			\$ 500.00
(Site Prep/Access) Clear Veg to Access Stream	Each	1	\$ 200.00	\$ -	\$ 200.00			\$ 200.00
(Dewatering/Isolation) Temporary Erosion Cont.	Each	1	\$ 400.00	\$ -	\$ 400.00			\$ 400.00
Floodplain Construction (incl. small log and debris structures)	yd^3	1265	\$ 8.00	\$ -	\$ 10,120.00			\$ 10,120.00
(Excav./Disp./Haul) Onsite Disposal	yd^3	1265	\$ 9.25	\$ -	\$ 11,702.00			\$ 11,702.00
Erosion Control Native Grass Seeding (conducted by PM)	Acres	1	\$ 46.00	\$ -	\$ 46.00			\$ 46.00
Erosion Control Mulching/Straw	Acres	1	\$ 800.00	\$ -	\$ 800.00			\$ 800.00
Erosion Control Laborer	Hours	25	\$ 40.00	\$ -	\$ 1,000.00			\$ 1,000.00
Low water crossing for access road	Each	1	\$ 2,000.00	\$ -	\$ 2,000.00			\$ 2,000.00
8a Riparian Planting	Acres	1	\$ 1,250.00	\$ -	\$ 1,250.00			\$ 1,250.00
SIA 8a Plant Establishment (PE)	hours	70	\$ 39.00	\$ 2,730.00				\$ 2,730.00
N10 Site Preparation Native Grass Seeding (conducted by PM)	Acres	18.3	\$ 46.00	\$ 0.00	\$ -	\$ 842.00		\$ 842.00
Unit N10 Riparian Planting Labor	Acres	18.3	\$ 1,350.00	\$ 24,705.00	\$ -			\$ 24,705.00
N10 Plant Establishment (PE)	hours	1280	\$ 39.00	\$ 49,920.00				\$ 49,920.00
SIA 7c construction contingency at 10%	Each	1	\$ 6,400.00	\$ -	\$ 6,400.00			\$ 6,400.00
SIA 7c disposal contingency at 10%	Each	1	\$ 5,087.00	\$ -	\$ 5,087.00			\$ 5,087.00
8a Construction Contingency @ 10%	Each	1	\$ 1,012.00	\$ -	\$ 1,012.00			\$ 1,012.00
8a disposal Contingency @ 10%	Each	1	\$ 1,170.00	\$ -	\$ 1,170.00			\$ 1,170.00
Unit N10 Riparian Planting @ 10%	Each	1	\$ 2,470.00	\$ 2,470.00	\$ -			\$ 2,470.00

N10 Reveg PE @ 5%	Each	1	\$ 2,496.00	\$ 2,496.00				\$ 2,496.00
RDG Assistance with UAV and Pressure Transducer Monitoring	Each	\$ 1.00	\$ 7,465.00	\$ -	\$ 7,465.00		\$ 720.00	\$ 8,185.00
SUBTOTAL (1)				123,981	246,235	842	720	371,778
TRAVEL								
LWC Staff Mileage (21 round trips at 18 miles / trip)	Miles	378	\$ 0.545	\$ 207.00				\$ 207.00
SUBTOTAL (1)				207.00	0.00	0	0	207
MATERIALS/SUPPLIES. Refers to items that are "used up" in the course of the project. Costs to OWEB must be directly related to the implementation of this grant.								
Logs and Woody Debris	Each	1	\$ 5,000.00				\$ 5,000.00	\$ 5,000.00
Depositino pad feldspar clay 50lb bags	each	6.00	\$ 25.00	\$ -	\$ 150.00	\$ -		\$ 150.00
Native Grass Seed disturbance areas	lbs	99.00	\$ 14.00	\$ -	\$ 1,386.00			\$ 1,386.00
Native Grass Seed N10 site preparation	lbs	290	\$ 14.00	\$ -		\$ 4,060.00		\$ 4,060.00
7c Plants	Ea.	17,500	\$ 0.62	\$ -	\$ 10,850.00			\$ 10,850.00
8a Plants	Ea.	3,125	\$ 0.62	\$ -	\$ 1,938.00			\$ 1,938.00
N10 Plants	Ea.	61,763	\$ 0.62	\$ 8,373.00	\$ 29,921.00			\$ 38,294.00
N10 Plants contingency	Ea.	1	\$ 3,828.00	\$ -	\$ 3,829.00			\$ 3,829.00
SUBTOTAL (1)				8,373	48,074	4,060	5,000	65,507
OTHER. Costs must be necessary and reasonable for successful completion of this grant.								
Permitting fees DEQ Water Quality Cert., USACE (NOAA Consultation) DSL, Cultural Resources	Each	1	1,500	1,500				1,500
Polk+A60:D61 County (Floodplain Development and Management Plan and Land Use Fee)	Each	1	540	540				540
SUBTOTAL (1)				2,040	0	0	0	2,040
[Add subtotals above] MODIFIED TOTAL DIRECT COSTS (7)				147,801	294,309	4,902	18,920	465,932

GRANT ADMIN. Select one of the methods below. Fill in the requested rate. Compute by multiplying MTDC (7) line by this rate.								
Federally Negotiated Indirect Cost Rate		<input type="checkbox"/>						0
Federally Accepted 10% <i>de minimis</i>		<input checked="" type="checkbox"/>		14,780	29,431			44211
OWEB Negotiated Indirect Cost Rate		<input type="checkbox"/>		0				0
SUBTOTAL (8)				14780	29431	0	0	44211
POST-GRANT. Pre-paid costs (\$3,500 or less) that are associated with either post implementation status reporting or effectiveness monitoring or plant establishment costs. List each separately.								
Post-Implementation Status Reporting (\$3,500 or less)	Each	3	750	2,250				2,250
Effectiveness Monitoring (\$3,500 or less)				3,500				3,500
Plant Establishment (\$3,500 or less)		/yr		0				0
SUBTOTAL (9)				5,750	0	0	0	5,750

RESTORATION BUDGET TOTAL Totals automatically round to the nearest dollar

RESTORATION BUDGET TOTAL (10)								
[Add Category Totals (7), Subtotals (8) and (9)]				168,331	323,740	4,902	18,920	515,893



Luckiamute Watershed Council

Board of Directors

Patrick Melendy, President
Independence

Dan Farnworth, Treasurer
Monmouth

Kathy Farnworth, Secretary
Monmouth

Gail Oberst
Independence

Karin Stutzman
Monmouth

Dave Ehlers
Kings Valley/Hoskins

Mark Hazelton
Kings Valley/Hoskins

Wendy Hudson
Monmouth

Staff

Kristen Larson
Executive Director

Suzanne Teller
Outreach Coordinator

Caleb Price
Monitoring Coordinator

Project Manager

Jean-Paul Zagarola
*Bonneville Environmental
Foundation*

August 17, 2018

Willamette FIP Technical Review Team and OWEB Staff

Re: 2018 Technical Review Evaluation

Dear Andrew and the Technical Review Team Members,

Thank you for the opportunity to submit a full proposal in the Willamette Anchor Habitat Investments 2018 Solicitation Cycle. The Luckiamute Watershed Council (LWC) and Oregon Parks and Recreation Department (OPRD) appreciate working with the funding partners and technical review team to create the strongest project and proposal possible. Based on review team feedback, we modified the scope of the proposed project. We also tried to address your comments, questions, and recommendations from the pre-proposal and site visit in the full proposal submitted August 17, 2018.

Below is a list of the identified concerns, questions, and recommendations from the evaluation and some guidance as to where in the full proposal you can find where we addressed those items. Please feel free to contact us with any further questions or requests for information.

Concerns

- Cost-benefit
 - LWC and partners have selected a different design alternative which focuses more on flood extent vs. duration and add 18.3 acres of floodplain reforestation. This has resulted in a reduction of cost from the alternative proposed in the preproposal by almost half. This is discussed throughout the application but explained in detail under section **Design**, question 2, paragraph 2.
 - Use of Chinook at the project location / question about Luckiamute steelhead at not on NMFS focus list
 - The LWC and project partners consider the project area of significant importance to spring Chinook. This is discussed throughout the application but explained in detail under section **Plans and Salmon**, question 3 Risk of swales refilling
- Risk of swales refilling
 - Possible future maintenance of the channels are discussed in **section Goal, Objectives, and Activities**, under Describe the project activities. Activities explain how the objective will be implemented; and under section **Design**, question 2, paragraph 2.
 - We also added a sediment monitoring element to help us better understand these processes and inform future designs in the middle Willamette
- Expense of spoils / permitting
 - Total spoils for disposal have been reduced from over 30,000 cubic yards to 6,765 cubic yards with the new selected design alternative. This change is

discussed throughout the application but explained in detail under section **Design**, question 2, paragraph 2

- OPRD will work through internal approval process and work with leasee farmer to find a location for disposal on site
- LWC has been in touch with both Polk and Benton Counties and regarding floodplain development and feel the disposal will be manageable

Questions / Recommendations for Full Proposal

- Cost and disposal options – see above
- Fish ingress / egress
 - Fish ingress/egress for the selected designs is discussed in **Problem Statement**, paragraph 5
- Disposal options
 - Disposal options are discussed in section **Proposed Solution** under Describe the project activities. **Activities** explain how the objective will be implemented., paragraph 4
- Fish use at the site
 - Regional fish use and expected fish use is discussed in detail under **Plans and Salmon**, question 3.
- Impact on temperature
 - No data is currently available to address this question that we are aware of
- Potential for impacts to vegetation and floodplain plantings
 - See **Design**, design alternatives

Thank you,



Kristen Larson
Executive Director