

South Santiam Wetland Mitigation Bank Post- Construction Report

DSL Permit No. 60771-RF

USACE Permit No. NWP-2017-362

Prepared by:

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List of Attachments:

**Attachment 1: Site plan
Attachment 2: As-built topography survey
Attachment 3: Photo point location map
Attachment 4: Post construction photos**

December 2019

Introduction

This post-construction report was compiled as required to discuss wetland creation, restoration, and enhancement progress, illustrate post construction site conditions via photo points, and demonstrate as-built conditions with finished contours survey. Initiation of the South Santiam wetland mitigation work plan began in April 2019 with eradication of the existing non-native vegetation on the site as conditions allowed. Removal of fence line vegetation between old tax lots and clearing of surveyed tax lot boundary in Southeast quadrant followed. Within existing farmed wetland ponds, Poplar trees and existing infrastructure were removed. Site grading began in August as soon as all permits were secured and was completed in late August. Seeding was completed as conditions permitted once sections reached final grade with topsoil placements and seed bed preparation. Site construction followed specifications outlined in mitigation work plan with only minor adjustments highlighted below. Table 1 highlights the construction activities and completion dates.

Table 1: Construction Schedule 2019

| Activity | Start Date | Completion Date |
|-------------------------------|-------------------|------------------------|
| Herbicide treatment | 4/1/19 | 11/15/19 |
| Rough grading | 8/5/19 | 8/22/19 |
| Fine grading/soil preparation | 8/20/19 | 8/25/19 |
| As-built survey | 9/27/19 | 12/12/19 |
| Seeding (wetland) | 9/15/19 | 10/31/19 |
| Seeding (upland) | 10/30/19 | 11/2/19 |
| Woody Planting (scheduled) | 2/1/20 | 2/28/20 |
| As-built report | 12/1/19 | 12/23/19 |

Site Preparation

To initiate the restoration efforts, the existing vegetation was eliminated on the site beginning in fall of 2017 and continued as needed through the 2018 and 2019 growing seasons with final treatments approximately 2 weeks after each area was seeded. Herbicide applications were utilized to eliminate all existing non-native vegetation in farmed areas, with spot treatments utilized within existing upland forest and along property boundaries. The old fence line that separated tax lot 101 from 401 was removed up to the first large, open grown oak tree to create a contiguous prairie. Also, farming activities over the years had jumped back and forth over the Southern property line of tax lot 401 heading east from the large Oak tree. Based on surveyed boundary, this line was re-established, removing existing vegetation and planted accordingly. Within the farmed wetland ponds, all volunteer trees were removed which was mostly Poplars, and the infrastructure was also removed which consisted of irrigation pipes, culverts and duck blinds.

Grading

Site grading began in early August with the removal of the existing sod layer within vernal pools and footprint of new berms. The upper-most layer was stockpiled along toe of new berms, to be placed on top of fill material after grading. The next layer of topsoil was stockpiled adjacent to work areas to be replaced after grading work. With concerns over non-native seed bank within the constructed levees of the farmed ponds, the majority of that material was placed as a base layer in filled areas to preclude germination. Once the topsoil and discarded soils were removed, mass grading began in the center of the site, working out from there. The scrapers and tractors worked on the majority of the topography alterations, filling ditches, building berms, and generally increasing the topographic diversity. Excavators, dozers, and dump trucks focused on mobilizing fill material. Following topsoil placement, finished areas were disked, harrowed and cultipacked to break up compaction and establish a suitable seed bed. In addition, the harrow and roller were utilized to create a gently undulating soil surface to increase topographic variation and diversify hydrology to ultimately increase diversity of plant communities. Final grading was completed in late September. The grading plan is included in attachment 1 and final grading as-built survey is included in Attachment 2 with 0.5-foot contour elevations.

With extensive field recognizance prior to compilation of final grading plan, deviations were minor. During site layout and associated fine scale topography surveying, several minor changes were made. The East berm was moved down slightly in the landscape to provide a greater buffer from swale entering in from East side of site. The small berm was moved from the 372' contour, to the 371' contour, and corresponding top elevation was reduced from 373' to 372', with all dimensions following original design. Due to larger than anticipated topographic variations within the footprint of vernal pool #2, it was broken into 3 separate vernal pools, encompassing approximately the same proposed footprint. Several small, slightly elevated areas were left between the pools to further diversify hydroperiods. Much of the vernal pool creation along the upland boundary on South end of site was based on observed soils. The clay layer was encountered quickly, and with elimination of the extensive drainage system, this area saturated quickly and its anticipated that post construction delineation will show a significantly reduced upland area.

Seeding and Planting

The first round of seeding took place in late-September as soon as seed was available. The graminoid areas, historic drainage ditches and all berms were the first areas seeded due to erosion concerns. Once the site dried out, the herbaceous layer in the scrub/shrub and forested areas was seeded. The wet prairie areas were seeded next, following germination of existing seedbank. Once the site dried as much as possible and before the next round of forecasted rain, the deeper portions of the vernal pools were seeded, immediately followed by the shallower vernal pools to ensure every area was seeded that was anticipated to be inundated through the winter months. Several acres of vernal pools were hand seeded due to shallow inundation and thus were inaccessible with seeding

equipment. The upland areas were seeded last, as a combination of fog, freeze cycles, removal of drainage system and shade line provided little opportunities for dry down. Several seep areas were hand seeded in areas inaccessible with seed drill within upland prairie.

Overall species composition was very similar to planting tables with only a few significant deviations. Due to wet weather during harvest, Hall's aster was not available at the time of seeding, so it will be hand seeded in strategic locations once seed is available. Oregon saxifrage was not available due to crop loss, this species will be hand collected next summer and hand seeded in strategic locations. U.S. Fish and Wildlife Service (USFWS) was able to provide 0.69 lbs. of Willamette Daisey and 13 lbs. of Bradshaw's lomatium to include in the wet prairie seeding mixes. Older stocks were utilized from their inventory, so seeding rates were adjusted slightly to accommodate decreased viability. Approximately 10 oz of Nelson's checkermallow was hand harvested from the existing population in the NE fence line of the site and included in the wet prairie seed mix as well.

Seeding methods varied based on species composition of each mix. Overall, graminoid mixes were no-till seeded through the large seed box on 7" rows at a target depth of 1/2". Vernal pool mixes were no-till seeded through the small seed box, with every other row (14" spacing) planted at target depth of 1/4" with the rows in between (7") dropped on the soil surface. The upland prairie mix was no-till seeded through the large seed box on 7" rows with target seed depth of 1/4". Both the large and the small seed boxes were utilized for the wet prairie seed mix. Seed was separated out to large and more, aggressive species and smaller, less aggressive species. The large seed was planted on 21" rows through the large seed box with a target depth of 1/4". The small seed was planted through the small seed box and dropped on the soil surface on 7" rows between the large seed rows. All hand seeding was completed with a belly crank hand seeder in areas inaccessible with seed drill.

Rows for tree and shrub planting were marked in the field, with pin flags utilized in areas that will likely have shallow inundation through the winter. Planting area was laid out to have rows on ~ first 2 acres run parallel to Lacombe dr. to expedite the screening effect with remaining rows set up perpendicular. Woody planting is scheduled for mid-February when reserved materials will be available from Seven Oaks native nursery.

Overall, the site is in good condition, responding well to the restored hydrology and native vegetation is germinating in all areas. Germination rates are slightly lower than the Marys site with generally colder soil temperatures and many days with persistent fog. Grass species germinated quickly in all areas and are providing significant cover. At least 10 native forbs species have germinated and have their first true leaves in the wet prairie areas with adequate space for slower germinating species to occupy next spring and summer. Very little has germinated within the vernal pools, which is thankful with the dry fall as we were concerned about losing the fast germinators with a dry fall followed by inundation. The upland prairie seed mix is behind with the late seeding date and persistent freeze/thaw cycle, but it gave us an extended window to control non-

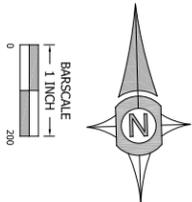
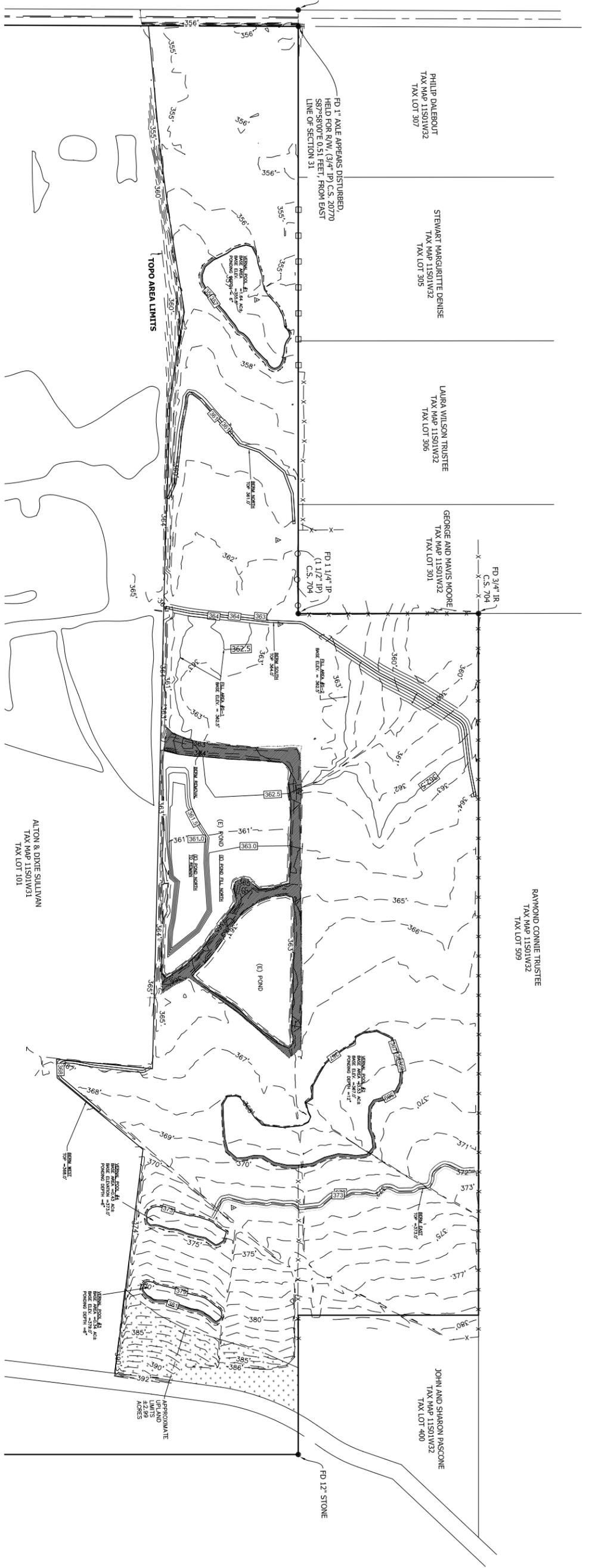
natives, and is now germinating well with Roemer's fescue, large flowered Collomia, and common fiddleneck the dominants thus far. It's worth noting that frost heaving has been affecting some of the early germinating species, especially lupine's, but not likely to have a long-term adverse effect.

Photo Points

The photo points location map is included in attachment 3. Photos were taken on October 28, 2019 and illustrated in Attachment 4. Three to four photos were taken from each point, representing the best aspects for viewing overall site conditions and labeled accordingly. These photos will represent initial baseline conditions and will be replicated with each monitoring cycle. Despite well below normal precipitation this fall, photos give a good glimpse of restored hydrology.

Conclusion

The South Santiam Wetland Mitigation Bank is performing well. Grading work provided a good diversity of small topographic variations that will provide for a diverse assemblage of native plants and eliminated the existing drainage system. As evident in the photo point photos, hydrology is recognizable despite below normal precipitation. Native species have germinated in most areas but will remain small through the winter with ample space for slower germinating species next spring. The site will be monitored closely to address any short comings that may arise, but currently is performing well.



| PLAN REVISIONS | DATE |
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Sheet **C1.0**
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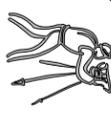
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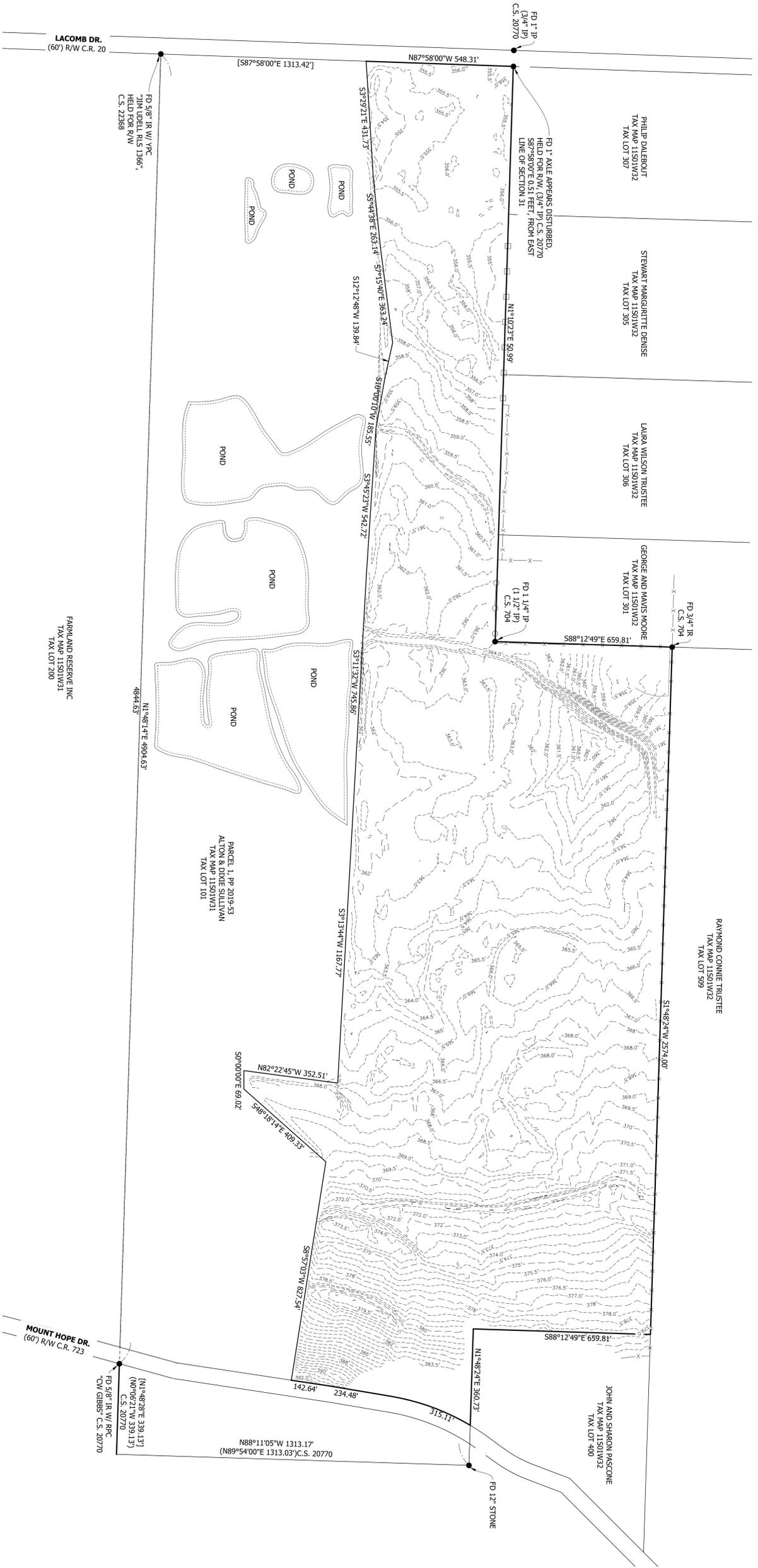
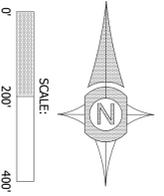
DATE:
APRIL 11, 2019
PROJECT:
17-260 OR WETLANDS SULLIVAN
DRAWN BY:
ECH
CHECKED BY:
BSV

SITE PLAN
**SOUTH SANTIAM
MITIGATION BANK
LEBANON, OREGON**

**UDELL ENGINEERING
AND
LAND SURVEYING, LLC**
63 EAST ASH ST.
LEBANON, OREGON 97355
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ABBREVIATIONS LEGEND
 C.R. - COUNTY ROAD
 C.S. - COUNTY SURVEY
 (E) - EXISTING

HORIZONTAL DATUM - NAD 83 OREGON SPC (NORTH ZONE)
PROJECT VERTICAL DATUM - NAVD 88

FARMLAND RESERVE INC
 TAX MAP 11S01W31
 TAX LOT 200

PARCEL 1, PP 2019-53
 ALTON & DIXIE SULLIVAN
 TAX MAP 11S01W31
 TAX LOT 101

RAYMOND CONNIE TRUSTEE
 TAX MAP 11S01W32
 TAX LOT 309

JOHN AND SHARON PASCOE
 TAX MAP 11S01W32
 TAX LOT 400

Sheet **1**
 SCALE: SEE BARSCALE

REGISTERED
**PROFESSIONAL
 LAND SURVEYOR**
Kyle W. Lattimer
 OREGON
 JUNE 12, 2013
 KYLE W. LATTIMER
 #80442
 EXPIRES 12-31-2020

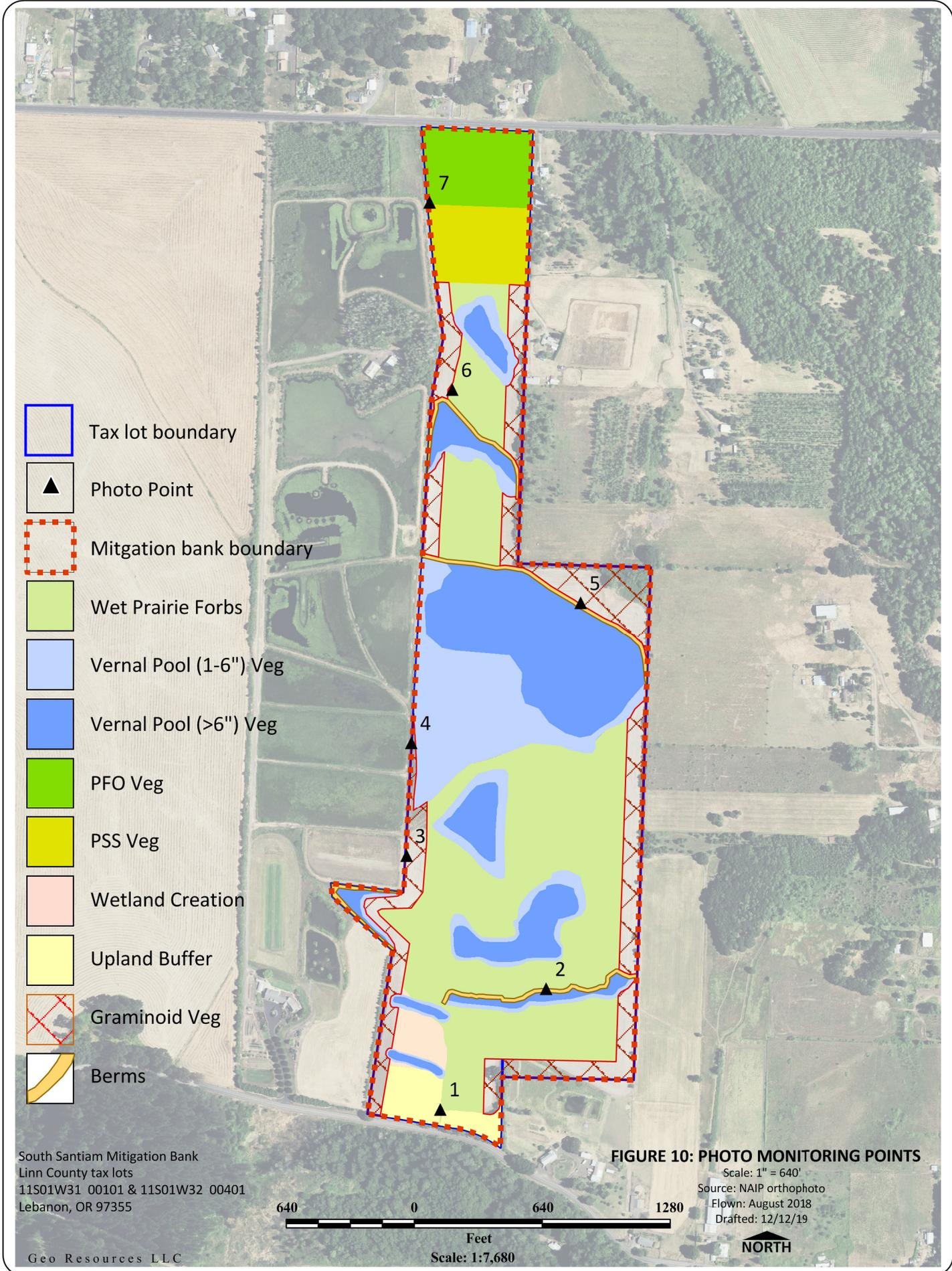
DATE:
 12/12/2019
 PROJECT:
 17-260 SANTIAM SITE
 DRAWN BY:
 BWP/KWL
 CHECKED BY:
 KWL

'AS-BUILT' TOPOGRAPHY MAP
PARCEL 2, PP 2019-53
TAX LOT 401, MAP 11.1W.32
LEBANON, OREGON

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 AND
 LAND SURVEYING, LLC**
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Attachment 3: Photo point location map



South Santiam Mitigation Bank 2019 Post-Construction Photos

Photo Point 1 North



Photo Point 1 East



Photo Point 1 South



Photo Point 1 West



Photo Point 2 North



Photo Point 2 East



Photo Point 2 South



Photo Point 2 West



Photo Point 3 Northeast



Photo Point 3 East



Photo Point 3 Southeast



Attachment 4: Post construction photos

Photo Point 4 North

Photo Point 4 Northwest

Photo Point 4 Southeast



Photo Point 5 North

Photo Point 5 West

Photo Point 5 South

Photo Point 5 East



Photo Point 6 North

Photo Point 6 East

Photo Point 6 South

Photo Point 6 West



Attachment 4: Post construction photos

Photo Point 7 Northeast

Photo Point 7 East

Photo Point 7 Southeast

