

NORMANDEAU ASSOCIATES, INC.
SCOPE OF WORK
COMPENSATORY WETLAND MITIGATION MONITORING

NW Friberg Street and NE Goodwin Road Street Improvements
City of Camas, Washington

February 29, 2016

PROJECT UNDERSTANDING

The City of Camas (City) is undertaking compensatory wetland mitigation for impacts resulting from street improvements to NW Friberg Street and NE Goodwin Road. The compensatory mitigation for the project has been approved by the City and the U.S. Army Corps of Engineers (USACE). The mitigation is located immediately west of the Grass Valley Park (SE¼, Section 33, T2N, R3E, W.M.) and adjoins previously established wetland mitigation efforts by the City.

Normandeau Associates (Normandeau) has prepared this scope of services for field and reporting services to support the establishment of the mitigation site and meet the annual monitoring requirements for the Section 404 Clean Water Act permit issued by USACE and the critical area permit issued by the City. Although the monitoring period extends 10 years from initial establishment of the mitigation site (excavation in August 2014 through planting in February 2015), this scope covers monitoring only through Year 5 (2016-2020). This scope does not include maintenance, which the City will procure under a separate contract.

PROJECT SCOPE

Task 1: Project Mitigation Establishment (2016)

Establish Hydrologic Baseline and Monitoring Locations in Wetland Creation Area

Early 2016

Wetland hydrology in spring 2016 will be established through a qualitative assessment. The assessment will include a pedestrian survey and site photographs to establish the limits of surface inundation. The limits will be photo-documented and a sketch of the limits of inundation will be prepared. This sketch will be used as the basis for the installation of long-term hydrologic monitoring plots.

Late 2016

Based on the qualitative assessment from early 2016 and when weather and soil conditions permit, Normandeau staff will construct and install four hydrologic monitoring wells in the wetland creation area. The wells will be constructed and installed according to guidance provided by the USACE Wetlands Regulatory Assistance Program (2005)¹. Following the well installation a second field visit will be conducted to pump out the wells to make sure they are recharging. After installation coordinates of the wells will be established using a handheld GPS.

¹ USACE. 2005. Technical Standard for Water-Table Monitoring of Potential Wetland Sites, ERDC TN-WRAP-05-02. USACE Research and Development Center, Vicksburg, Miss.

If it is determined, based on the qualitative assessment, that staff gages are more appropriate than wells for this monitoring, event staff gages may be substituted for some or all wells as appropriate.

Establish Vegetation Transect Locations

Normandeau staff will establish four vegetation monitoring transect locations. Two transect lines will be located in the wetland creation area and two transects will be located in the wetland enhancement area. Each transect will be 100 feet long. Transect location will be permanently identified with a buried steel pin and wooden stake. Normandeau staff will collect GPS data points at the transect endpoints.

Establish Photo Point Locations

Permanent photo point locations will be established in the following locations:

- Site Overview Photographs: At five locations overlooking the site as identified in the mitigation plan;
- Vegetation/Cover Photographs: Eight from the endpoints of each permanent transect, looking along the transect;
- Hydrologic Monitoring Photographs: as appropriate based on well/staff location.

Permanent photo locations will be identified with a buried steel pin and wooden stake. Normandeau staff will collect GPS data points at the photo point locations. Site photographs taken during the pedestrian survey and at random pit excavation sites will not be permanently marked or surveyed, but will be geotagged to identify approximate location.

Mitigation Monitoring Report Template

Normandeau staff will prepare an annual Mitigation Monitoring Report template to document the site conditions for each monitoring year. The template will include the following sections:

- Introduction, including site location and permit numbers;
- Monitoring Schedule and Performance Standards;
- Data Collection Methods;
- Results, including a summary of the collected hydrologic and vegetation data;
- Conclusions, including discussion of maintenance needs, adaptive management requirements, and follow up actions;
- Appendices, including data forms for hydrology and vegetation monitoring, site photographs, and a map of all sample locations and permanent photo points.

Maintenance Contractor Review

The City plans to change maintenance contractors in April 2016. To assist with close-out of the warranty period, Normandeau staff will meet with the current contractor (G W Deal) to confirm the irrigation system is functional and the plant installation and survival. Normandeau will prepare a brief summary of findings.

Assumptions:

- Well construction and installation does not encounter problematic soil conditions and will be completed by two staff members in one field day.
- Well and sample locations will not be vandalized or require reinstallation.

- The field visit to develop the wells and ensure correct function will be completed by two staff members in one field day.
- The coordinates of hydrologic monitoring wells (or gages as appropriate) will be determined using a handheld GPS.
- The report template is anticipated to be approximately 10 pages in length, not including appendices, maps, and photographs.
- Field review of the maintenance contractor's irrigation system and plantings can be completed in two sequential days (16 hours).
- Maintenance contractor will supply tabulated list of plants installed and can quickly show locations of each plant in the field. Access to plants in the creation area may be precluded because of ponded water and may need to be estimated from the edges of the excavation, thus reducing confidence of identification and viability of plants.
- Findings of maintenance contractor will be no longer than a two-page memorandum, summarizing conformation the irrigation functions and the status of the plants installed.

Deliverables:

- Draft (one draft electronic copy for City review) and final template (one electronic copy).
- One-page summary of findings.

Task 2: Annual Mitigation Monitoring Years 1 through 5 (2016-2020)

Mitigation monitoring data collection will be conducted in the spring of the monitoring year and will include an assessment of site hydrology in the establishment/creation area, plant survival and cover, the presence and condition of habitat features, and site photographs to document these conditions.

Normandeau staff will collect annual hydrologic information in five weekly visits, approximately seven days apart. The monitoring will begin in late-February (depending on winter rainfall and site conditions) and continue to early-April (depending on site conditions and when monitoring starts). Water levels in the four wells will be measured from the top of the well casing using a standard tape measure. Data forms will be entered into an electronic spreadsheet for correlation with precipitation data collected at the nearest weather station.

Normandeau staff will collect the species and plant mortality data for planted specimens in each of the four previously established transects. The line intercept method (Bonham 1989²; Coulloudon et al. 1999³) will be used to determine plant cover. Plant survival and vigor will be determined using the belt-transect method (Stehman and Salzer 2000⁴). Data will be collected by identifying plant species, condition and location along a 100-foot tape measure, and then recording the data on a data form. A densitometer may be used to determine if plants intersect the transect line.

² Bonham, C. D. 1989. *Measurements for Terrestrial Vegetation*. John Wiley & Sons, New York, NY.

³ Coulloudon, B., K. Eshelman, J. Gianola, N. Habich, L. Hughes, C. Johnson, M. Pellant, P. Podborny, A. Rasmussen, B. Robles, P. Shaver, J. Spehar, J. Willoughby. 1999. *Sampling Vegetation Attributes*. BLM Technical Reference 1734-4, Denver, Colo.

⁴ Stehman, S. and D. Salzer. 2000. Estimating density from surveys employing unequal-area belt transects. *Wetlands*, Vol. 20, No. 3, pp. 512-519.

Normandeau staff will collect data on the presence and condition of installed habitat features.

Normandeau staff will also make observations of general site conditions, including the condition of the critical area signage, the presence of litter, presence of invasive species or noxious weeds, observed wildlife signs, etc.

Mitigation Monitoring Report

Normandeau staff will prepare an annual Mitigation Monitoring Report to document the site conditions for each monitoring year. The report will follow the template established in Task 1.

Assumptions:

- Hydrologic monitoring will consist of five visits approximately seven days apart, anticipated to take place between late-February and early-April. Time includes travel to and from the site, mobilization and demobilization.
- Vegetation data will be collected by a two-person team and the field effort is not expected to exceed one field day for each person.
- The Mitigation Monitoring Report is expected to be approximately 10 pages in length, not including appendices, maps, and photographs.

Deliverables:

- Draft Annual Monitoring Report (one draft electronic copy for the City and two bound hardcopies, Years 1-5).
- Final Annual Monitoring Report (one electronic copy for the City, Years 1-5).
- Four bound hardcopies for review by USACE for years 1, 2, 3, and 5).

Task 3: Project Planning and Coordination

Normandeau will support general project planning throughout the project via non-technical, internal project activities, such as invoicing, throughout the project.

Assumptions:

- Project involvement is March 2016 through December 2020.
- Level of effort is estimated as 1 hour per month for senior staff.
- Level of effort is estimated as 0.5 hour per month for administrative support staff.

Deliverables:

- Invoices and associated coordination.

Task 4: Annual Maintenance Coordination

Normandeau will coordinate with the maintenance contractor (procured by the City) to address questions and discuss issues.

Assumptions:

- Level of effort is estimated as 8 hour per year for senior staff.

- One project meeting each year between senior staff and contractor staff (not to exceed 6 hours preparation, travel, and meeting time).

Deliverables:

- One project meeting per year.

Task 5: Project Contingency Fund

Provide addition services, on an as-needed basis, when approved and authorized by the City. Authorization by the City shall be written, which may be an email notification.

Proposal/Project COST Breakdown

Friberg Road Wetland Mitigation Monitoring Task	Annual Monitoring Costs 2016-2020, by Task				
	2016	2017	2018	2019	2020
Task 1: Project Mitigation Establishment (2016)	\$ 8,586.99	\$ -	\$ -	\$ -	\$ -
Task 2: Annual Mitigation Monitoring Years 1 through 5 (2016-2020)	\$ 9,567.22	\$ 10,456.28	\$ 10,456.28	\$ 10,456.28	\$ 10,456.28
Task 3: Project Planning and Coordination	\$ 1,349.44	\$ 1,705.92	\$ 1,705.92	\$ 1,705.92	\$ 1,705.92
Task 4: Annual Maintenance Coordination	\$ 1,160.88	\$ 1,474.86	\$ 1,474.86	\$ 1,474.86	\$ 1,474.86
Annual Total	\$ 20,664.53	\$ 13,637.06	\$ 13,637.06	\$ 13,637.06	\$ 13,637.06

Total: Years 2016-2021 = \$75,212.77
Task 5: Project Contingency Fund = \$10,000.00
Contract Total: \$85,212.77 (includes Task 5 Project Contingency Fund to provide additional services, on an as needed basis, when approved and authorized by the City)