



Towey Ecological Services

24211 S. Harmony Rd.
Cheney, WA 99004
509-939-5203

Mr. Scott Kuhta
City of Spokane Valley

RE: Centennial Property Shoreline Assessment

Scott- Attached you will find the shoreline assessment which was authorized by Centennial Property Management to determine the current ecological condition of three separate properties (Trentwood, Mirabeau and Mission Flora) located on the Spokane River. I understand from our last discussions that the information contained within this report will serve as supplementary information to the *City of Spokane Valley Shoreline Master Plan Update-Shoreline Inventory and Characterization Report (SMP)*. As you know, the shoreline assessment was conducted to determine opportunities for shoreline rehabilitation or other mitigation options (within the context of a long-term shoreline plan, property development plan, shoreline access opportunities, wildlife viewing stations and educational signage) and ecological condition and connectivity to adjacent properties.

Please feel free to contact me if you have any questions. Thank you.

William T. Towey

**Shoreline Assessment
Spokane River
Trentwood, Mirabeau and Mission/Flora Properties**

August 6, 2010

Prepared for

Centennial Property Management

Prepared by:



Towey Ecological Services

24211 S. Harmony Rd.

Cheney, WA 99004

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Introduction

This Shoreline Assessment was authorized by Centennial Property Management to determine the current ecological condition of three separate properties (Trentwood, Mirabeau and Mission Flora) located on the Spokane River (see attached location and parcel map). The information contained within this report will serve as supplementary information to the *City of Spokane Valley Shoreline Master Plan Update-Shoreline Inventory and Characterization Report (SMP)*. The information contained within the SMP, for the segments assessed in this report, was accurate and is consistent with the field observations. In addition, the shoreline assessment was conducted to determine opportunities for shoreline rehabilitation or other mitigation options (within the context of a long-term shoreline plan, property development plan, shoreline access opportunities, wildlife viewing stations and educational signage) and ecological condition and connectivity to adjacent properties. It should be noted that additional site specific assessments (engineering, geo-technical, etc.) may be required for the properties in the course of developing future site plans. The specific shoreline assessments were conducted within the Spokane River Study Segment 2 (SR-2) - identified in the SMP.

The field assessments were conducted in May 7 and 11, 2010. The primary investigator was William T. Towey, a qualified biologist with Towey Ecological Services.

Methods

The field investigation consisted of assessing the current conditions within each of the three identified properties. Information was collected by traversing the shoreline of each property-documenting: 1) existing vegetative communities; 2) relative distances of intact riparian habitat areas; 3) potential for habitat restoration opportunities; and 4) general recommendations relative to the protection of shoreline function and values. In addition to the field assessment, the investigation was guided by the use of aerial photographs, Natural Resources Conservation Service Soil Survey (see attachment), the *City of Spokane Valley Shoreline Master Plan Update* and the *Spokane County Shoreline Master Plan Update*.

Field data points were taken using a hip chain and a Garmin GPSmap-60. Data points were downloaded to a USGS topographic map (see attachment).

Results and Discussion

Site Description/Analysis

MIRABEAU

This specific reach of the Spokane River is adjacent to the Centennial Trail (trail). The shoreline is located on the left bank of the Spokane River. The riparian area waterward of the trail is contiguous and intact, whereas the area upland of the riparian area consists of fragmented habitat and disturbed habitat-including the trail. The area is heavily utilized for recreational purposes such as biking, walking, jogging and rollerblading. The majority of the shoreline habitat is protected by moderately steep topography and vegetated upland areas.

Location 1- This area is immediately east of the Centennial trailhead and is accessible to the Spokane River. The area is relatively flat with steeper topography to the east. The intact buffer width in this area is approximately 125'. The shoreline habitat structure is diverse with large woody debris, side-channels and boulders. The dominate vegetation within this area is cottonwood (*Populus balsamifera*), serviceberry (*Amelanchier alnifolia*), Oregon grape (*Mahonia spp.*), dogwood (*Cornus stolonifera*) and wild rose (*Rosa spp.*). The riparian area transitions to upland grasses, serviceberry and the trail. Habitat above the trail (south) consists of open field habitat with sparse pine, serviceberry, and juniper. This area has potential for restoration through native plant (or other appropriate species that provides proper function and value) installation.

Location 2- This area is characterized by steep shoreline topography. The dominate vegetation includes a continuation of Location 1 and pine tree (*Pinus ponderosa*), snowberry (*Symphoricarpos albus*), hawthorn (*Crataegus douglasii*), choke cherry (*Prunus virginiana*) and juniper (*Prunus virginiana*). The riparian area transitions to upland grasses, serviceberry, pine trees and the trail.

Habitat above the trail (south) consists of open field habitat with sparse pine, serviceberry, and juniper. This shoreline area has potential for habitat restoration.

Location 3- This area is characterized by a continuation of vegetation found in locations 1 and 2 with the addition of douglas fir (*Pseudotsuga menziesii*). The riparian buffer area waterward of the trail is greatly reduced to 59'. The shoreline slopes are fairly steep and lacks the diversity of downstream shoreline. The riparian area transitions to upland grasses, serviceberry and the trail.

Habitat above the trail (south) consists of open field habitat with sparse pine, serviceberry, and juniper. This shoreline area has potential for habitat restoration.

Location 4- The riparian area is bisected by the trail in this location. This location is the end of the contiguous band of cottonwood. The vegetation is a continuation of locations 1, 2 and 3 with an increased presence of currant (*Ribes spp.*) and lupine (*Lupinus spp.*). The shoreline topography is steep with the upland above the trail relatively flat.

Location 5- This location marks the beginning of pine trees, upland grasses and arrow-leaved balsamroot (*Balsamorhiza sagittata*) above the trail. The riparian vegetation is similar to location 4. The shoreline topography is steep with the upland above the trail relatively flat.

Location 6- This marks the location of a transition from steep topography to moderately steep topography.

Location 7- This area is characterized by relatively flat topography with the presence of a walking trail. This area has restoration potential due to its sparse habitat and human disturbance (trail). Restoration measures would include native plant (or other appropriate species that provides proper function and value) installation and reclamation of the trail footprint.

Location 8- This marks the end of the potential restoration area and relatively flat topography. The shoreline area upstream transitions to steep topography.

Location 9- This marks the beginning of a narrower band of shoreline riparian next to the trail. This area requires greater protection due to the narrow buffer and proximity to the trail.

Location 10- This marks the end of the assessment and the train trestle. There is a restoration opportunity southwest of the trestle-south of the trail. This area is sparsely vegetated with pine and is optimal for habitat restoration measures.

Location 11- This marks the beginning of thick pine trees, juniper, mullein (*Verbascum thapsus*), serviceberry and wild rose. This area requires thinning of pine tree for forest health.

Location 12- End of thick stand of pine trees.

Summary- This shoreline segment is characterized by contiguous riparian vegetation in close proximity to high recreational use. Due to the varying widths of riparian habitat in this segment relative to the Centennial trail- and the potential areas for habitat restoration- the opportunity to maximize protection of the shoreline function and value through a buffer management plan exists. The dominant soils in the river segment consist of Garrison very stony loam which is conducive to native plant (or other appropriate species that provides proper function and value) restoration efforts.

A combination of plant restoration, pine tree thinning, buffer averaging (no net loss of riparian habitat buffer protection) and establishment of a future buffer width would

preserve and protect the integrity of the shoreline habitat. Protection of the existing habitat-including plant restoration when necessary- is critical to the maintenance of a Properly Functioning Condition¹ designation for this segment. Due to the fragmentation of wildlife corridors by commercial development to the southwest, heavy recreational use, Centennial Trail, and the train trestle to the east, the riparian area is mostly benefiting localized populations of wildlife-including waterfowl breeding.

MISSION/FLORA

This specific reach of the Spokane River is adjacent to the Centennial Trail (trail). The shoreline is located on the left bank of the Spokane River. The riparian area waterward of the trail is contiguous and intact, whereas the area upland of the riparian area consists of fragmented habitat and disturbed habitat-including the trail. The area is heavily utilized for recreational purposes such as biking, walking, jogging and rollerblading. The majority of the shoreline riparian habitat is at least 250' from the ordinary high water mark.

Location 1- This shoreline area is characterized by large boulders, large wood debris and flat topography adjacent to the Spokane River. The dominant vegetation consists of willow (*Salix spp.*), pine trees, currant, dogwood, oregon grape and serviceberry. The intact riparian area is approximately 360' in width from the ordinary high water mark to a disturbed area (parking lot and commercial building). The riparian area is protected from the development by a berm vegetated with serviceberry, pine, wild rose and mock orange (*Philadelphus lewisii*) The Centennial trail is approximately 240' from the ordinary high water mark.

Location 2- This marks the end of the boulder-large woody debris complex. The area is devoid of adequate vegetation and is a potential habitat restoration area (17,400 sq.ft). The habitat consists of serviceberry, pine, hawthorn, Oregon grape and lomatium (*Lomatium spp.*). The shoreline riparian area is at least 250' wide at this location.

Location 3- This marks the end of the potential habitat restoration area.

Location 4- This marks the end of dense pine and riparian vegetation. Shoreline habitat is contiguous with locations 1 and 2. South of the Centennial trail the habitat opens up to pine, lupine and serviceberry. The shoreline riparian area is intact for 250' from the ordinary high water mark to the property boundary fencing (Location 5).

¹ Properly Functioning Condition- When adequate vegetation, landform, or large woody debris is present to: dissipate stream energy associated with high waterflow, thereby reducing erosion and improving water quality; filter sediments, captures bedload, and aids in floodplain development; improve flood-water retention and ground-water recharge; develop root masses that stabilize streambanks against cutting action; develop diverse ponding and channel characteristics to provide the habitat and the water depth, duration and temperature necessary for fish production, waterfowl breeding, and other uses; and supports greater biodiversity.

Location 6- The shoreline habitat area begins to become steeper in this area and closer to the Centennial trail. The upland areas have potential for habitat restoration and currently consist of sparse vegetation (pine trees, knapweed (*Centaurea maculosa*) and mullein (*Verbascum thapsus*)).

Location 7- This marks the end of the potential habitat restoration area.

Location 8- This marks the area adjacent to a house with thinned vegetation immediately upland of the riparian area. The Centennial trail is very close to the Spokane River in this location. Very little habitat restoration potential given the residence/trail located near the riparian area.

Location 9- This marks the end of the thinned area-start of riparian vegetation.

Summary- This shoreline segment is characterized by contiguous riparian vegetation in close proximity to high recreational-residential and commercial use. Due to the varying widths of riparian habitat in this segment relative to the Centennial trail- and the potential areas for habitat restoration- the opportunity to maximize protection of the shoreline function and value through a buffer management plan exists. The dominant soils in this river segment is riverwash which is conducive to native plant restoration efforts. A combination of habitat restoration, buffer averaging (no net loss of riparian habitat buffer protection) and future establishment of the required riparian habitat area would preserve and protect the integrity of the shoreline habitat. The majority of intact riparian habitat is less than the required riparian buffer area and would need to include portions of the upland areas.

Protection of the existing habitat-including habitat restoration when necessary- is critical to the maintenance of a Properly Functioning Condition designation for this segment. Due to the fragmentation of wildlife corridors by commercial development to the southwest, heavy recreational use, Centennial Trail, and single family dwellings, the riparian area is mostly benefiting localized populations of wildlife-including waterfowl breeding. There is connectivity of intact shoreline habitat (wildlife corridor) along the left bank of the Spokane River that provides access to migrating wildlife.

TRENTWOOD

The shoreline is located on the right bank of the Spokane River. The riparian area waterward of the trail is contiguous and intact-but is very narrow in width. The upland area is moderately sloped devoid of habitat diversity. The dominant vegetation in the upland areas are knapweed, arrow-leaved balsamroot, lilac (*Syringa spp.*). The width of the riparian habitat in this shoreline segment ranges between 50'-60'.

Location 1- This portion of the shoreline is immediately adjacent to a train trestle which provides a distinct fragmentation of the shoreline habitat. The relatively narrow width of

the shoreline habitat consists of spirea (*Spiraea douglasii*), cottonwood, hawthorn, dogwood and snowberry (*Symphoricarpos albus*). Potential for habitat restoration exists in the upland areas.

Location 2- This marks the beginning of pine trees, Oregon grape and currant-along with the vegetation described in location 1- in the riparian habitat area. The shoreline is moderately steep with a narrow riparian area (55'). Potential for habitat restoration exists in the upland areas.

Location 3- This location is a potential habitat restoration area (approximately 3,000 sq. ft.). The area has been previously disturbed and the vegetation removed. The shoreline area is dominated by knapweed and has very strong potential for restoration to provide for habitat continuity with the shoreline segment. Potential for habitat restoration also exists in the upland areas.

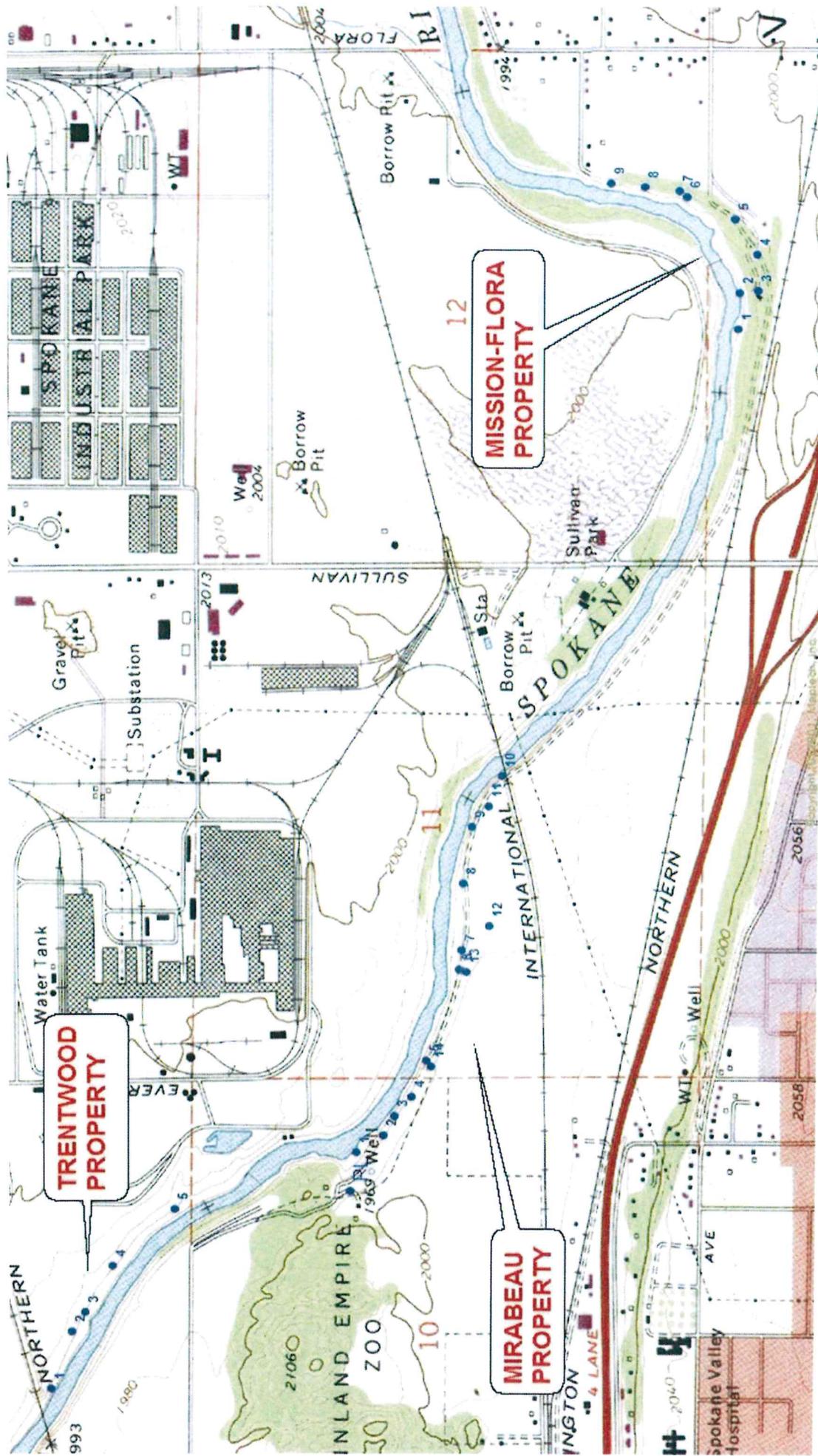
Location 4- This marks the beginning of a relatively dense stand of cottonwoods for the remainder of the shoreline segment (to end of assessment at location 5). The shoreline topography gets noticeably steeper in for the remainder of the shoreline segment. Potential for habitat restoration exists in the upland areas.

Location 5- End of assessment.

Summary- This shoreline segment is characterized by a narrow band of contiguous riparian vegetation. The dominant soil type is a Garrison gravelly loam/riverwash which is conducive to shoreline restoration work. Due to the varying steepness of the topography-it is probable that a buffer averaging plan-which would include habitat restoration-would provide the necessary protection of the functions and values of the shoreline environment. The upland areas, immediately adjacent to the outer extent of the riparian vegetation, are conducive for native plant (or other appropriate species that provides proper function and value) restoration.

Protection of the existing habitat and increasing the width of the overall riparian habitat areas through habitat restoration is necessary to the maintenance of a Properly Functioning Condition designation for this segment. Large woody debris recruitment and wildlife use would increase with the development of a much wider riparian habitat area. Due to the fragmentation of wildlife corridors by a train trestle to the west, lack of habitat to the north and fencing to the east, the riparian area is mostly benefiting localized populations of wildlife-including waterfowl breeding.

PROJECT MAP

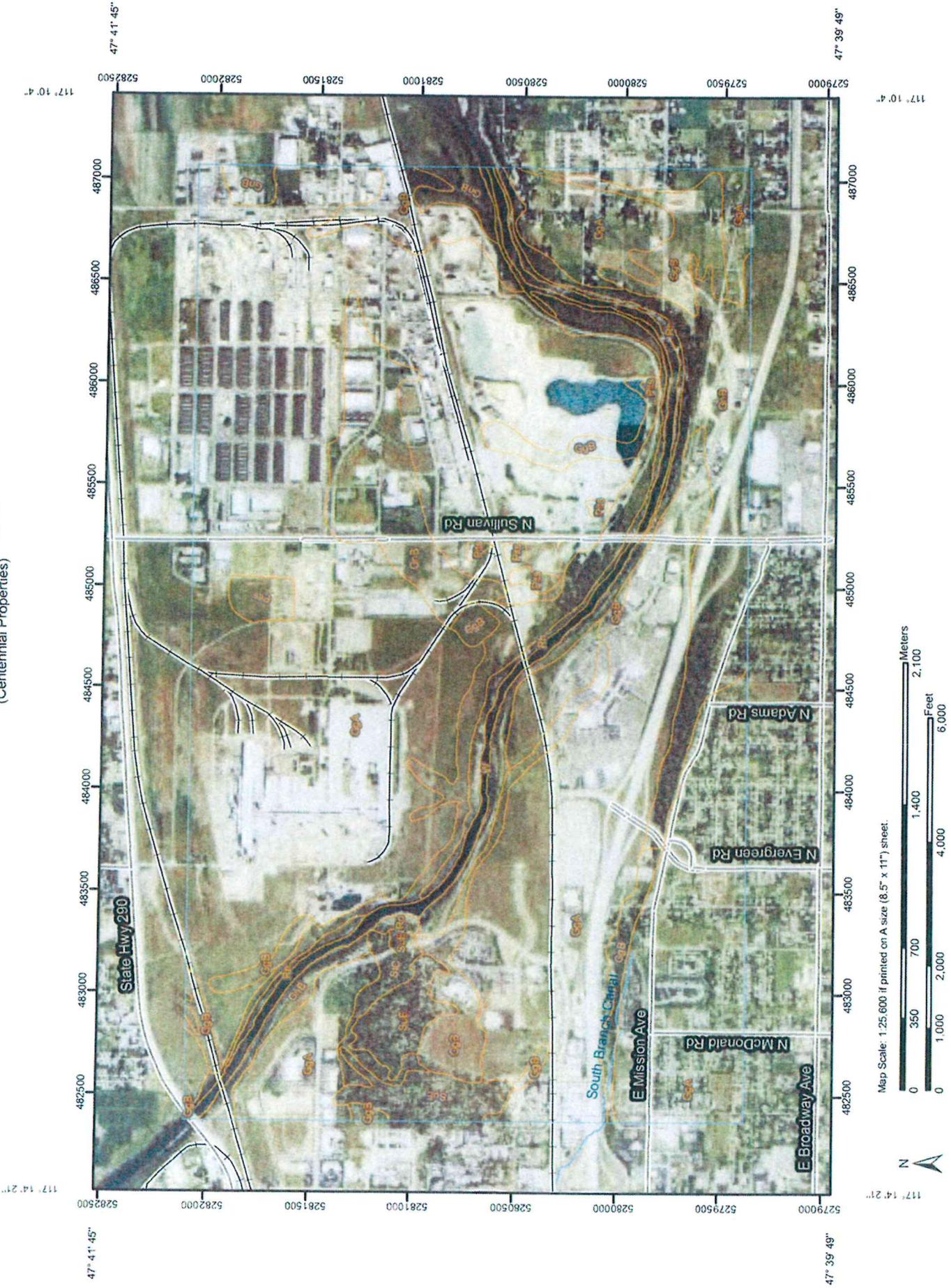


AERIAL PHOTOGRAPH



NRCS SOIL SURVEY

Soil Map—Spokane County, Washington
(Centennial Properties)



Map Unit Legend

Spokane County, Washington (WA063)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
GgA	Garrison gravelly loam, 0 to 5 percent slopes	2,167.0	68.4%
GgB	Garrison gravelly loam, 5 to 20 percent slopes	248.5	7.8%
GnB	Garrison very stony loam, 0 to 20 percent slopes	499.6	15.8%
Pits	Pits	27.4	0.9%
Rh	Riverwash	55.3	1.7%
Ro	Rock outcrop	3.9	0.1%
StC	Spokane very rocky complex, 0 to 30 percent slopes	25.7	0.8%
SuE	Spokane extremely rocky complex, 20 to 70 percent slopes	74.8	2.4%
W	Water	64.1	2.0%
Totals for Area of Interest		3,166.1	100.0%

MAP LEGEND

 Area of Interest (AOI)	 Very Stony Spot
 Soils	 Wet Spot
 Special Point Features	 Other
 Blowout	Special Line Features
 Borrow Pit	 Gully
 Clay Spot	 Short Steep Slope
 Closed Depression	 Other
 Gravel Pit	Political Features
 Gravelly Spot	 Cities
 Landfill	Water Features
 Lava Flow	 Oceans
 Marsh or swamp	 Streams and Canals
 Mine or Quarry	Transportation
 Miscellaneous Water	 Rails
 Perennial Water	 Interstate Highways
 Rock Outcrop	 US Routes
 Saline Spot	 Major Roads
 Sandy Spot	 Local Roads
 Severely Eroded Spot	
 Sinkhole	
 Slide or Slip	
 Sodic Spot	
 Spoil Area	
 Stony Spot	

MAP INFORMATION

Map Scale: 1:25,600 if printed on A size (8.5" x 11") sheet.

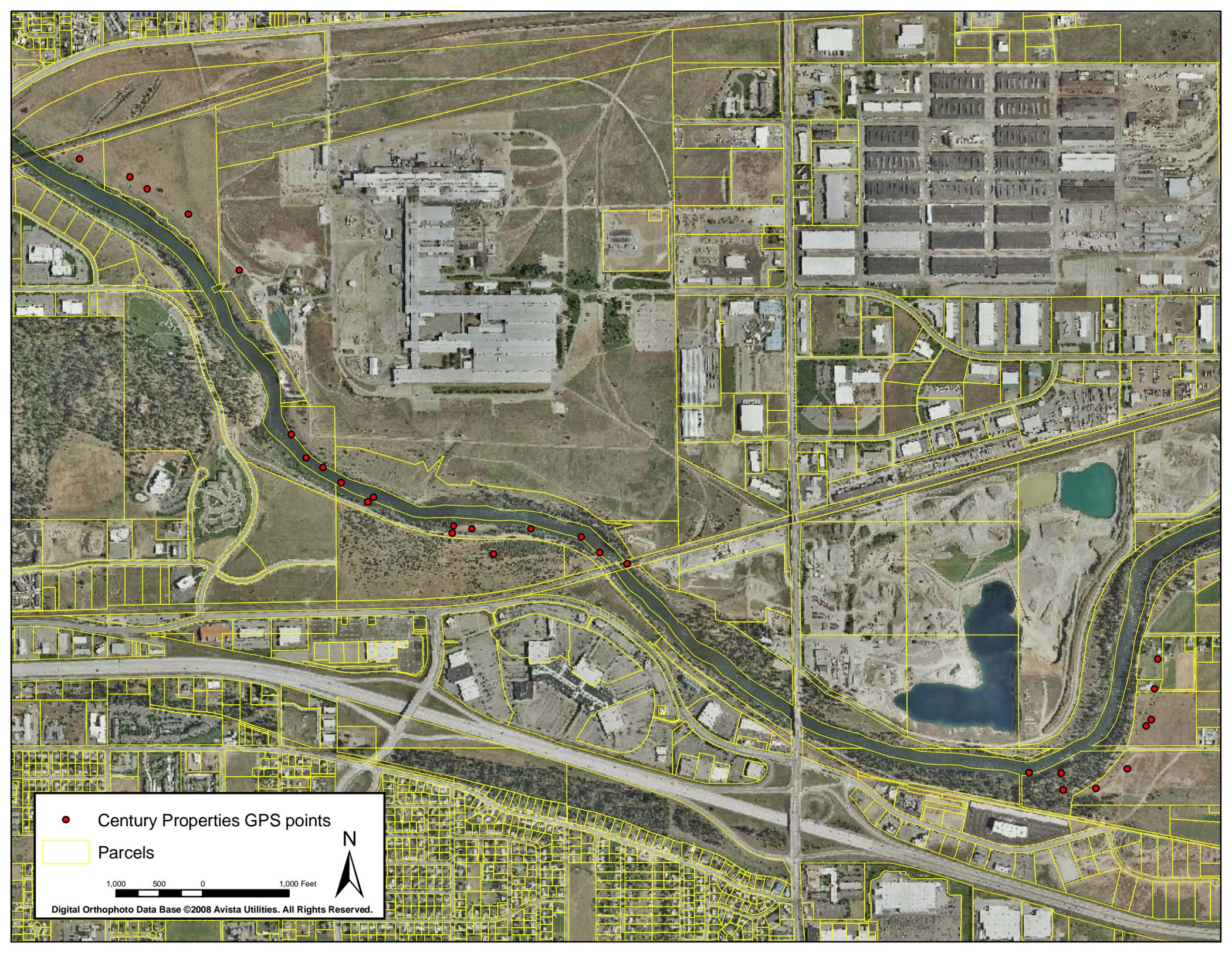
The soil surveys that comprise your AOI were mapped at 1:20,000. Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
 Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
 Coordinate System: UTM Zone 11N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Spokane County, Washington
 Survey Area Data: Version 2, Jun 9, 2009
 Date(s) aerial images were photographed: 7/2/2006

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



● Century Properties GPS points

▭ Parcels

1,000 500 0 1,000 Feet



Digital Orthophoto Data Base ©2008 Avista Utilities. All Rights Reserved.

Markers

Name: 634

Short Name: 634

Coordinates: 047° 40' 15.10" N, 117° 10' 51.73" W

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