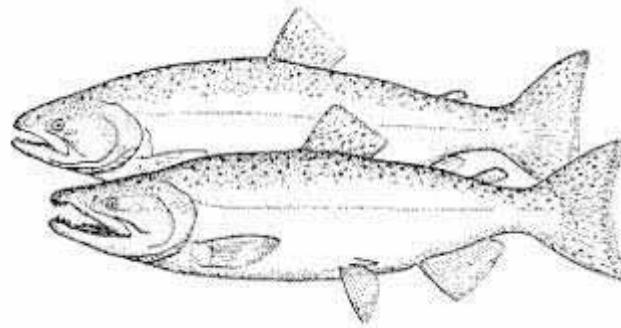

Myricks Fork Inventory

FINAL Report



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1 INTRODUCTION

Myricks Fork is a first order tributary to Cemetery Creek that is almost entirely located within the City of Snohomish. Myricks Fork begins just north of the City of Snohomish near the interchange of U.S. Highway 2 (US2) and State Route 9 (SR9). Based on topography information, it is apparent that the source of Myricks Fork was historically located just north of US2 and west of SR9; however, the construction of US2 cutoff this historic connection. As such, Myricks Fork flow currently initiates from headwater wetlands located just south of US2 and west of SR9. Myricks Fork terminates at its confluence with Cemetery Creek near the SR9 overpass of 16th Street SE. Myricks Fork is a seasonal stream that flows most of the year but tends to dry up during the late summer months. Migratory fish use of Myricks Fork is blocked at its mouth as it flows through two buried 12 inch pipes for several hundred feet before discharging to Cemetery Creek. Because much of Myricks Fork has been significantly altered (e.g., piped underground for great distances, undersized culverts, etc.) in the past, its current ability to provide significant amounts of habitat for migratory or resident fish has diminished, even if migration barriers were removed in the Cemetery Creek watershed or at its mouth. Myricks Fork does continue to provide an excellent source of clean, cool water to Cemetery Creek and provides essential wildlife habitat in associated wetland and riparian habitats along its course.

1.1 Purpose and Objectives

The City of Snohomish contracted Steward and Associates to inventory the full length of Myricks Fork. The City has made it evident that an exact understanding of the Myricks Fork course and properties will allow them to adequately protect Myricks Fork habitat through implementation of the City's adopted Critical Areas Ordinance (SMC 14.255). The purpose of this inventory is to provide information to the City related to the course and habitat characteristics of Myricks Fork. Inventory objectives include:

1. Determining the source or headwaters of Myricks Fork;
2. Determining where Myricks Fork is a seasonal versus perennial stream;
3. Determining where Myricks Fork is daylighted versus piped or culverted;
4. Determining what fish passage barriers exist;
5. Determining where wetlands are associated with Myricks Fork; and
6. Determining where Myricks Fork joins Cemetery Creek.

1.2 Study Area

The study area for this inventory project begins just northwest of the US2/SR9 interchange, near the historic location of the Myricks Fork headwaters, and continues in a southerly direction approximately 1.5 miles to where Myricks Fork joins Cemetery Creek, approximately 325 feet south of where SR9 passes over 16th Street (Figure 1).



US Highway 2

■ Culvert to Stormwater Pond

Myricks Fork Headwater wetlands

52nd Street SE

Myricks Fork Enters Catchbasin

Small tributary, not Myricks Fork

Spring water flows through Bickford culvert

Bickford Ave

62nd Place SE

State Route 9

20th Street

16th Street

Myricks Fork confluence with Cemetery Creek

Myricks Fork Inventory

- Landmarks
- Culvert Locations
- Parcel boundaries (numbers labeled)

Myricks Fork Reach

- Myricks Reach
- Historical Reach
- Existing Piped
- Future Stream Location
- Future Piped Stream



0 250 500 1,000 1,500 Feet

Map Courtesy of Steward and Associates March 2007



2 METHODS

2.1 Land Owner Participation

Steward and Associates teamed with the City of Snohomish to acquire the required legal permission needed to access private property. The City's attorney prepared a Right of Entry (ROE) document for property owners to sign, and Steward and Associates, with the City's guidance, prepared a letter to introduce property owners to the inventory project. On November 16th, 2006, mailings were sent to Snohomish County property owners within the study area. Of the resulting 45 requested ROE documents, 14 (31 %) were returned with signed permission for property access. Although a return rate of 31% seems low, we determined that we had received permission to access several key properties along Myricks Fork that would allow our work to commence. Once in the field, we knocked on property owner doors to ensure that permission to access was granted before proceeding onto private property.

2.2 Field Work

In December 2006 and early January 2007, Steward and Associates staff conducted the field inventory of Myricks Fork. Virtually the entire length of the creek was walked, from the Myricks Fork confluence with Cemetery Creek to the headwaters north of 52nd Street SE near the US2/SR9 interchange. Steward and Associates staff divided Myricks Fork into 16 different stream reaches to ease data collection, organization, and interpretation. Stream reach breaks were generally located at breaks in natural flow, such as culverts or road crossings. Within each stream reach, Steward and Associates staff collected qualitative and observational data, including stream channel presence, depth, and width; substrate type; culvert size, type, and location; composition of dominant vegetation; and adjacent land use. Additional data was collected in the form of photographs, GPS data, and landowner communication.



3 RESULTS

3.1 Inventory of Myricks Fork

Steward and Associates staff began the inventory of Myricks Fork at the confluence of Myricks Fork and Cemetery Creek. In general, field personnel worked in an upstream direction until eventually reaching the Myricks Fork headwaters. The following sections contain reach-specific information collected during the Myricks Fork inventory. Results are reported in order from the headwater reach (Reach 16) to the mouth reach (Reach 1). From our experience, describing stream conditions in the direction of stream flow is easiest for readers to follow.

The second objective of our study, to determine where seasonal and perennial reaches of Myricks Fork exist, is not described in each reach narrative that follows. It is our understanding, based on local citizen comments and our own multiyear observation of Myricks Fork, that the stream is entirely seasonal or intermittent. The extent to which the Myricks Fork channel runs dry differs with location and year of observation. Our simple one-time field inventory of Myricks Fork (during the winter) was not enough to adequately determine the reach-by-reach seasonality of the stream.

Reach 16: North of 52nd Street SE

Based on field observation and topography information, it is apparent that Myricks Fork historically began north of US2 and west of SR9. The historic construction of US2 interrupted the north to south flow of Myricks Fork. At present, Myricks Fork waters that begin north of US2 flow south to the westbound US2 on-ramp where they are conveyed through a 24 inch circular concrete culvert to the northern right-of-way of US2 (Figure 2). From here, Myricks Fork flow is conveyed to the east through an open ditch that flows beneath the SR9 overpass to the Bunk Foss watershed.

At present, an extensive network of wetlands (Photo 1) located north of 52nd Street SE, south of US2, and west of SR9, represents the headwaters of Myricks Fork. Based on observed conditions and communication with Snohomish County public works staff, Myricks Fork historically flowed south from its headwater wetlands, past what is now 52nd Street SE, and through an area that is now a mobile home park and a residential subdivision (see Reach 15 below). Residential development and the construction of roads and driveways have changed the conveyance of Myricks Fork through this reach.

Myricks Fork currently flows southeast from its headwater wetland complex through a mud-bottom channel approximately 2 ft in width. Deciduous vegetation, including red alder, salmonberry, and Himalayan blackberry surround the channel before it enters an artificial pond on parcel number 29053600403000 just upstream of 52nd Street SE (Photo 2). This pond was created by the property owner to “relieve chronic flooding on the property”. The property owner would not indicate when this alteration occurred but did indicate that Myricks Fork waters are piped from the first artificial pond across the driveway easement of two properties (parcel numbers 29053600403700 & 29053600401700) and into another artificial pond on parcel number 29053600401500. The size and type of pipe that conveys Myricks Fork from one pond to the other remains unknown since both ends of the pipe were submerged at the time of our field visit. From the second pond, Myricks Fork is piped



(unknown size due to submergence) to the southeast under the remainder of the property and into a stormwater catch basin on the north side of 52nd Street SE, near the driveway entrance to parcel number 29053600401500.

From the catchbasin near the driveway entrance to parcel number 29053600401500, Myricks Fork water mixes with 52nd Street SE stormwater and is conveyed through a 12 inch stormwater pipe along the north side of 52nd Street SE to the east for over 400 feet before discharging to the western SR9 right-of-way (Figure 2). From here, the combined stormwater and Myricks Fork water seems to infiltrate or move slightly north during higher flows to eventually empty into a 24 inch corrugated metal culvert that carries water under the eastbound US2 off-ramp and into a stormwater pond north of the eastbound off-ramp, south of US2, and west of SR9 (Photo 3). The most recent Snohomish County Drainage Inventory map (2006) and further conversations with County Public Works staff were not able to provide information as to when this Myricks diversion occurred. County Public Works staff indicated that the 52nd Street SE catchbasin was likely installed at a time when records were kept by hand and thus does not show up in the County drainage inventory records. Regardless of when the catchbasin and subsequent diversion of Myricks Fork water occurred, it is apparent that the diversion robs the existing Myricks Fork channel of surface waters that historically flowed south to the Cemetery Creek watershed.





Figure 2. Map of Reach 16





Photo 1. Reach 16. A portion of the wetland complex at the Myricks Fork headwaters.





Photo 2. Reach 16. Myricks Fork enters pond on parcel 29053600403000.





Photo 3. Reach 16. Myrick Fork, along with stormwater from SR9 and US2, enters 24 inch corrugated metal culvert leading under eastbound US2 off-ramp to stormwater pond.



Reach 15: 52nd Street SE to 30th Street.

Historically, Myricks Fork flowed south between 52nd Street SE and 30th Street for at least part of the year. Due to the hydrological modification described in Reach 16, Reach 15 receives no water from the wetlands located north of 52nd Street SE. Since the only source of water to this Reach 15 is precipitation during larger rain events, most of the historic Myricks Fork channel between 52nd Street SE and 56th Street SE is non-existent and remains dry through much of the year. There are times when some water pools in parts of the reach, but Myricks Fork does not flow through the reach with any substantial volume due to the presence of forested land cover that is able to capture and infiltrate all but the heaviest storms.

The upper section of the reach, just south of 52nd Street SE, contains a partial forest canopy with a Himalayan blackberry dominated understory. This area was found to be moist in several places during our field visit but at no point did we find evidence of a Myricks Fork stream channel (i.e., bed and bank). The former channel is overgrown with vegetation and has disappeared due to the absence of flow. Approximately 200 feet south of 52nd Street SE, what used to be the Myricks Fork stream bed, when flow did occur, has been filled and developed into the Plantation Mobile Home Park (parcel number 28050100102400). To the west of the mobile home park there is steep topography rising sharply towards the 93rd Drive SE subdivision. We assume that considerable grading occurred to flatten the area where the mobile home park is located, which subsequently filled the historic stream channel.

South of the mobile home park some semblance of a stream channel returns and is presumably fed at times by localized stormwater and the perched groundwater table. Approximately 200 feet to the north of 56th Street SE, Steward and Associates staff encountered a very short reach of surface water (Photo 4). A resident of the household on parcel number 00704100001300 indicated that they observe at least some surface water in the channel every year but that it rarely flows. During the field visit, we did encounter a 20 ft by 2 ft section of standing surface water on a bed of fine substrate. The water was not flowing due to former mobile home grading activities. Surrounding vegetation at this location included coniferous trees, deciduous trees, and ferns.

Just north of 30th Street we observed a wide ravine that is the obvious historic location of the Myricks Fork channel. Although water was absent from the ravine during our site visit, we presume that surface water does periodically flow due to the presence of a very faint stream bed and streambanks. We surmise that this surface flow is likely localized stormwater and perched groundwater. The ravine is almost entirely covered with Himalayan blackberry brambles and also contains a patchy forested canopy. A flow control device has been installed in the ravine just north of 30th Street to control the downstream stormwater discharge from the 93rd Drive SE subdivision. The device was apparently installed to detain stormwater from 93rd Drive SE during high flow events.





Figure 3. Map of Reach 15.





Photo 4. Reach 15. Short reach of surface water on parcel 00704100001300.



Reach 14: Snohomish Station

Prior to upstream diversions and development described in Reach 15 and 16, Myricks Fork likely flowed through Reach 14 during most of the year. However, because of upstream diversions, most of the water that reached the Reach 14 channel, even before the recent Snohomish Station – Phase I development began in 2006, was due to localized precipitation and stormwater. Before the Snohomish Station project began, Reach 14 properties were utilized as a sand and gravel mining operation where the faint Myricks Fork stream channel existed in a ravine at the east end of the property (parcel numbers # 28050100404000 & 28050100103800). Faint evidence of a stream bed and stream banks were apparent just south of the 18 inch circular concrete culvert crossing beneath 30th Street prior to initiation of the Snohomish Station development project. To facilitate development of the Snohomish Station – Phase I project, a 25 inch circular black plastic pipe was fit to the existing 18 inch concrete culvert beneath 30th Street and routed south to the southeastern portion Phase I project site (end of reach 14). Figure 4 shows the approximate location of the historic Myricks Fork channel and the location of the existing tightlined section of the stream.

Steward and Associates staff found evidence of springs or groundwater emerging from the newly seeded embankment in the northeastern portion of the Snohomish Station – Phase I development site. Upon descending the steep grass bank, south from the blue Myricks Fork sign on 30th Street, we found the slope to be very saturated. Additionally, in the northeast corner of the development site we observed a light, continuous flow of groundwater emerging from an area covered with rocks and a black tarp (Photo 5). We observed no other flow along the east end of the project site until we reached the southeast corner, where we observed the end of the black 25 inch pipe containing the tightlined Myricks Fork flows described in the Reach 13 section below.

At the west end of the Snohomish Station site we observed water flowing through a catchbasin and into a 24 inch metal pipe leading west under Bickford Avenue and into wetlands associated with Cemetery Creek (Photo 6). Judging from the flow volume and recent precipitation events at the time of our field visits, the flow under Bickford Avenue likely included existing stormwater and Snohomish Station project stormwater. At times of heavy flow, a generator-powered pump sucks water from the Bickford Avenue catchbasin (Photo 7) and pipes it through an 8 inch plastic pipe to the east end of the Phase I site where it can be infiltrated to groundwater rather than passing to Cemetery Creek as surface water. Steward and Associates staff were told by the project engineer that all spring flows that emerged as a result of the Snohomish Station development were infiltrated back to groundwater rather than transferred to surface water in an effort to maintain existing site conditions, as required by the Department of Ecology.

It is important to note that near the intersection of 30th Street and Bickford Avenue runs another small tributary to Cemetery Creek (Figure 1). This small tributary flows from headwaters located east of Bickford Avenue, south of 52nd Street SE (where it is essentially just a dirt road), and west of 91st Avenue SE. The tributary flows southwest and crosses under Bickford Avenue and Fobes Avenue in an 18 inch circular concrete culvert before flowing into the wetlands on the west side of Bickford Avenue associated with Cemetery Creek.



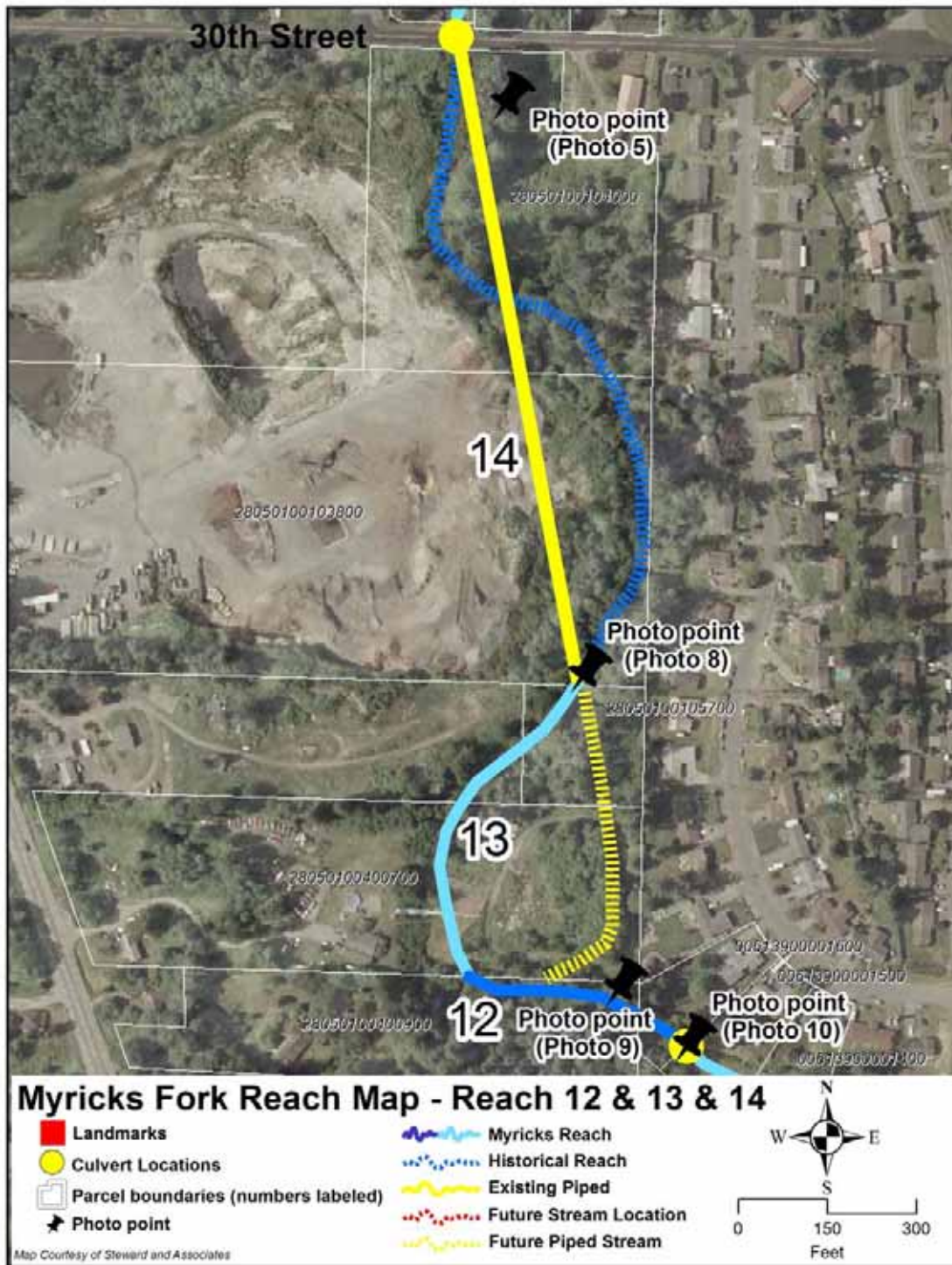


Figure 4. Map of Reaches 12, 13, and 14.





Photo 5. Reach 14. Crew works at northeast corner of development. Black tarp has been removed. Steward and Associates staff observed continuous groundwater flow emerging from the area one week prior to the date this picture was taken.





Photo 6. Reach 14. Water flowing under Bickford Avenue and into wetlands associated with Cemetery Creek.





Photo 7. Reach 14. Eight inch plastic pipe pumping Snohomish Station project stormwater from the west to east end of the project site to infiltrate as groundwater.



Reach 13: South of Snohomish Station

In the southeast corner of the Snohomish Station project (parcel number 28050100103800) there exists a 25 inch black plastic pipe (described in previous section) that is connected at its north end to the Myricks Fork culvert beneath 30th Street. Steward and Associates staff observed very minimal flow emerging from the pipe and out into a silt-bottomed channel leading southwest (Photo 8). Approximately 50 feet southwest of the piped discharge, the Myricks Fork channel is replaced by non-channelized sheet flow, which enters a small wetland approximately 275 feet southeast of the pipe discharge. This wetland was very saturated with pockets of standing water during the time of the field visit. The small wetland continues in a southwesterly direction until it ceases along the north edge of parcel 28050100400700. It appears that the stream and wetland complex have been filled for quite some time. The fill material has added at least one foot of material at the bottom of the historic Myricks Fork ravine to a point where evidence of stream bed or bank does not exist.

The Snohomish Station – Phase II development has been proposed for Reach 13 and would result in the continuation of Myricks Fork waters being piped along the eastern edge of the property (Figure 4). Flows would be controlled through a level-spreader and discharged into the wetland that exists immediately downstream of Reach 13.



Photo 8. Reach 13. Black plastic pipe, 25 inches in diameter, at the southeast corner of Snohomish Station project.



Reach 12: Middle Wetland Reach

The filled area described above in Reach 13 ends very abruptly at the interface between parcel 28050100400700 and 28050100400900. Reach 12 contains approximately 400 feet of low gradient, inundated wetlands spanning parcels 28050100400900 and 00613900001600 (Photo 9; Figure 4). There is no defined stream channel present at this point due to the onsite wetland. Standing water in the wetland area reached a maximum width of approximately 35 feet and depth of approximately one foot. Vegetation present in the wetland included salmonberry, skunk cabbage, and duckweed; upland vegetation surrounding the wetland included sword fern, western red cedar, western hemlock, and red alder.



Photo 9. Reach 12. Standing water in a wetland area.



Reach 11: Parcel 00613900001500

The wetland described in Reach 12 feeds to a 3 ft wide, soft-bottom channel with minimal habitat features (e.g., large woody debris) on parcel 00613900001500 (Figure 5). Residential properties surround Myricks Fork at this point and homeowners have cleared riparian vegetation to the streambank (Photo 10). Mowed lawns dominate the streamside vegetation and limit the ability of the stream channel to maintain cool water temperatures during hot summer months. The stream channel is almost entirely overgrown with emergent grass species, which do help maintain water quality through the reach. Immediately downstream of this ditched reach Myricks Fork becomes associated with another wetland reach, which contains a more diverse array of wetland vegetation species.





Figure 5. Map of Reaches 10 and 11.





Photo 10. Reach 11. Myricks Fork in channelized ditch on residential property.



Reach 10: North of 62nd Place SE

To the south of the ditched reach described in Reach 11 above, Myricks Fork flows through three residential properties (parcel numbers 00405100000100, 00613900001100 & 00613900001400), which we did not receive permission to access. We were able to observe Reach 10 from adjacent upstream and downstream reaches and from aerial photographs (Figure 5).

Our observations indicate that Myricks Fork is again associated with a wetland complex throughout Reach 10; however, a stream channel is evident throughout the portions we could visually inspect (Photo 11). Tall coniferous tree species, which are evident in the background of Photo 11, occur throughout parcels 00613900001100 & 00613900001400. Once Myricks Fork enters parcel 00405100000100 it appears to be dominated by invasive vegetation, including Himalayan blackberry and reed canary grass. At the downstream end of Reach 10, Myricks Fork flows due south and approaches 62nd Place SE where it flows into a 24 inch circular cement culvert to Reach 9.



Photo 11. Reach 10. Myricks Fork just north of 62nd Place SE. Fence can be seen in background.



Reach 9: South of 62nd Place SE

Myricks Fork crosses beneath 62nd Street SE in a 24 inch circular cement culvert and enters a residential property (parcel number 00405100003000) (Figure 6). Myricks Fork is ditched through the property in an approximate 2 ft wide channel (Photo 12). Ornamental vegetation and lawn grasses dominate the riparian area and are mowed to the streambank. The 2 ft wide channel is almost entirely comprised of fine substrates. It is also very likely that Myricks Fork receives stormwater inputs from 62nd Place SE at this location.



Photo 12. Reach 9. Myricks Fork in a ditch through residential property south of 62nd Street SE.



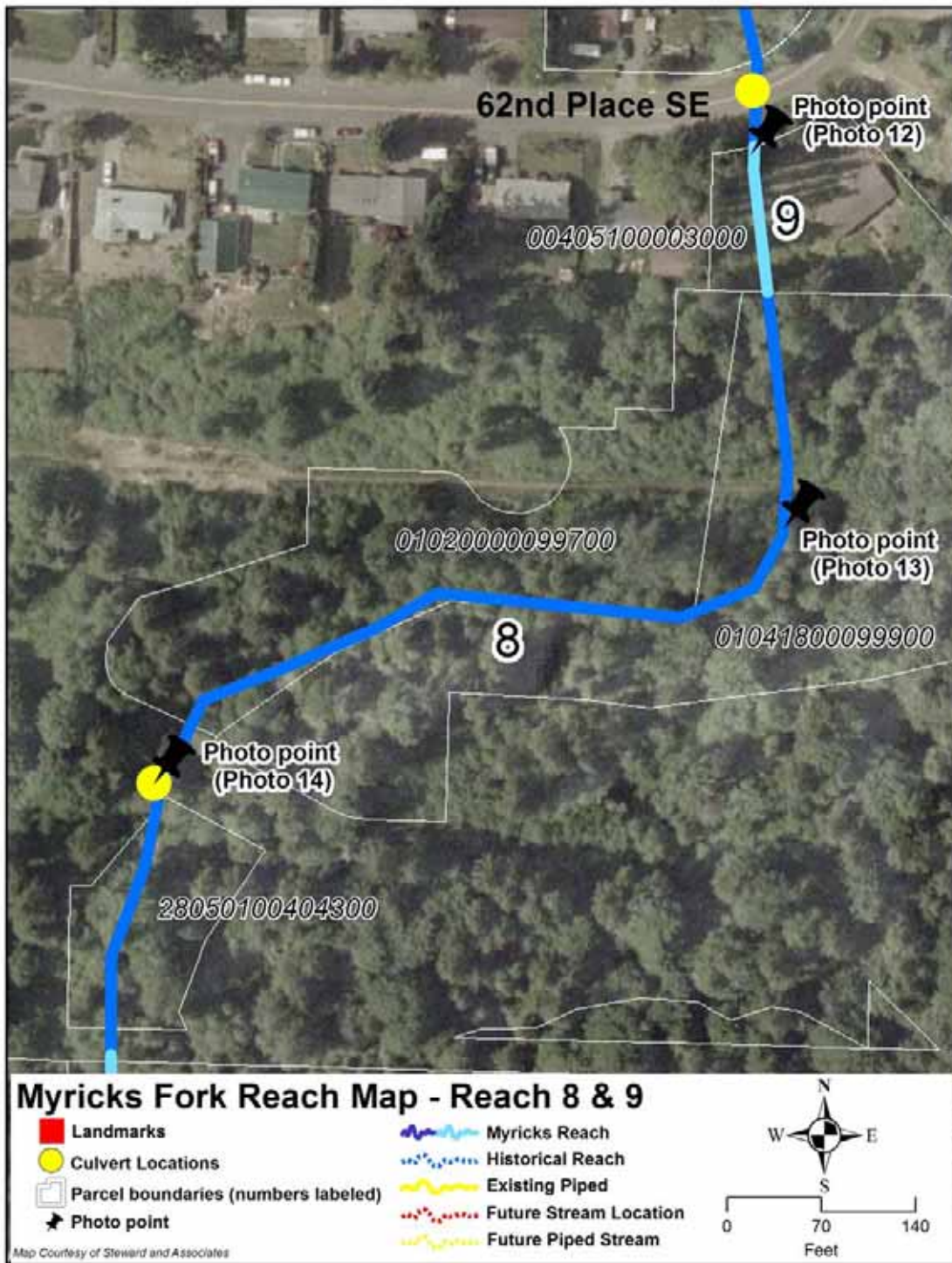


Figure 6. Map of Reaches 8 and 9.



Reach 8: Weaver Way Development.

South of parcel number 00405100003000 and north of parcel number 00538902900002, Myricks Fork enters Reach 8, the Weaver Way Development reach (Figure 6). Reach 8 has been developed as a single family residential community; however, a Native Growth Protection Easement (NGPE) has been established to buffer Myricks Fork from potential adverse impacts (Photo 13).

Myricks Fork leaves the ditch on parcel number 00405100003000 and emerges into an approximate 7 ft wide channel. Stream bed substrates in this reach are dominated by sand and gravel, with pockets of silt and clay material in pooled, low gradient sections. A narrow band of stream-associated wetland exists throughout Reach 8, which results in a 15 ft average width for the stream and wetland complex. Vegetation throughout the NGPE was enhanced as part of the residential development onsite and is comprised of native species dominated by red alder and salmonberry.

Approximately 200 feet north of parcel number 00538902900002, Myricks Fork flows beneath Weaver Way through a 12 ft arch culvert. The culvert is constructed from corrugated metal and allows Myricks Fork to maintain some semblance of a natural channel (Photo 14). Land cover in the area includes forested canopy immediately to the south in addition to natural vegetation and native plantings in the preserved NGPE. The stream channel and associated wetlands continue south of the arch culvert to Reach 7.



Photo 13. Reach 8. Myricks Fork in Native Protection Growth Easement in Weaver Development.





Photo 14. Reach 8. Myricks Fork through 12 ft culvert.



Reach 7: Between the Weaver Way Development and 20th Street.

Myricks Fork winds through two properties in this reach (parcel numbers 00538902900002 & 00538902800000) (Figure 7). Both properties contain private residences; however the land remains almost entirely forested. From the Weaver Development (Reach 8), Myricks Fork flows south before quickly turning to the east for approximately 500 feet and then making a wide turn back to the south and eventually southeast for approximately 600 additional feet before making its way to 20th Street. Myricks Fork flows through a well defined channel throughout this reach and is again associated with wetlands and ponds for most of its length (Photo 15).

Parts of Reach 7 are narrowed by a steep-sloped ravine containing healthy stands of coniferous vegetation; however, stream gradient remains gentle throughout the reach. Snohomish property owner Robert Heirman (known as Bob) (owner of parcel number 00538902800000) toured the site with Steward and Associates field biologists and informed the crew that this reach shows water in the channel 11 months of the year. We believe that this reach is the most preserved of all reaches we visited and likely best represents the historic conditions of the Myricks Fork drainage and other similar small drainages throughout the Puget Sound lowland region.



Photo 15. Reach 7. Myricks Fork and associated pond.





Figure 7. Map of Reaches 6 and 7.



Reach 6: Between 20th Street and Bickford Avenue.

Myricks Fork crosses beneath 20th Street in a 24 inch circular concrete culvert, emerging briefly north of parcel 00538902200000 (Figure 7). Myricks Fork then sheet flows over sand and small gravel substrate and through an overgrown field of Himalayan blackberry, where a distinct channel was absent. Myricks Fork flow presumably infiltrates at some point for a short distance as it traverses the blackberry thicket on parcels 00538902100000 and 00538902200000 (Photo 16). We come to this conclusion from the fact that water once again emerges into the ditch on the east side of Bickford Avenue (see Photo 17 in the Reach 5 description) near a blue sign bearing the creek's name.

Based on our field observations it seems very likely that during times of extreme flow excess water from Myricks Fork flows west along the north side of 20th Street SE to Bickford Avenue without passing through Reach 6 parcels. These excess flow volumes would flow south along the east side of Bickford Avenue to join with Myricks Fork flows emerging as spring waters from embankment as described above.



Photo 16. Reach 6. Properties traversed by Myricks Fork, south of 20th Street. Presumably, Myricks Fork flows subterranean through at least part of these properties.



Reach 5: Bickford Avenue

Myricks Fork appears to emerge from the Himalayan blackberry covered embankment facing the east side of Bickford Avenue, south of 20th Street (Figure 8). After Myricks Fork emerges into the Bickford Avenue ditch, it flows south for approximately 20 feet before entering a 12 inch circular concrete culvert that conveys flow west beneath Bickford Avenue.

Based on discussions with City officials and local citizens, Myricks Fork used to flow from the west end of the Bickford Avenue culvert further to the west for several hundred feet before heading south to eventually join up with Cemetery Creek (Figure 8). Now, in a catch basin on the west side of Bickford Avenue, the Myricks Fork flow is combined with piped Bickford Avenue stormwater. This was confirmed in the field with City staff by lifting a catch basin grate on the west side of Bickford Avenue in the location of the cross culvert and observing the culvert entering the catch basin from the east and joining piped stormwater moving south along Bickford Avenue. Myricks Fork and the stormwater continue to flow south through the Bickford Avenue stormwater system to eventually cross beneath the business park entrance (19th Place) before emptying to Reach 4, a property that is currently being developed as the Bickford Business Park.



Photo 17. Reach 5. Myricks Fork emerging from embankment on east side of Bickford Avenue.



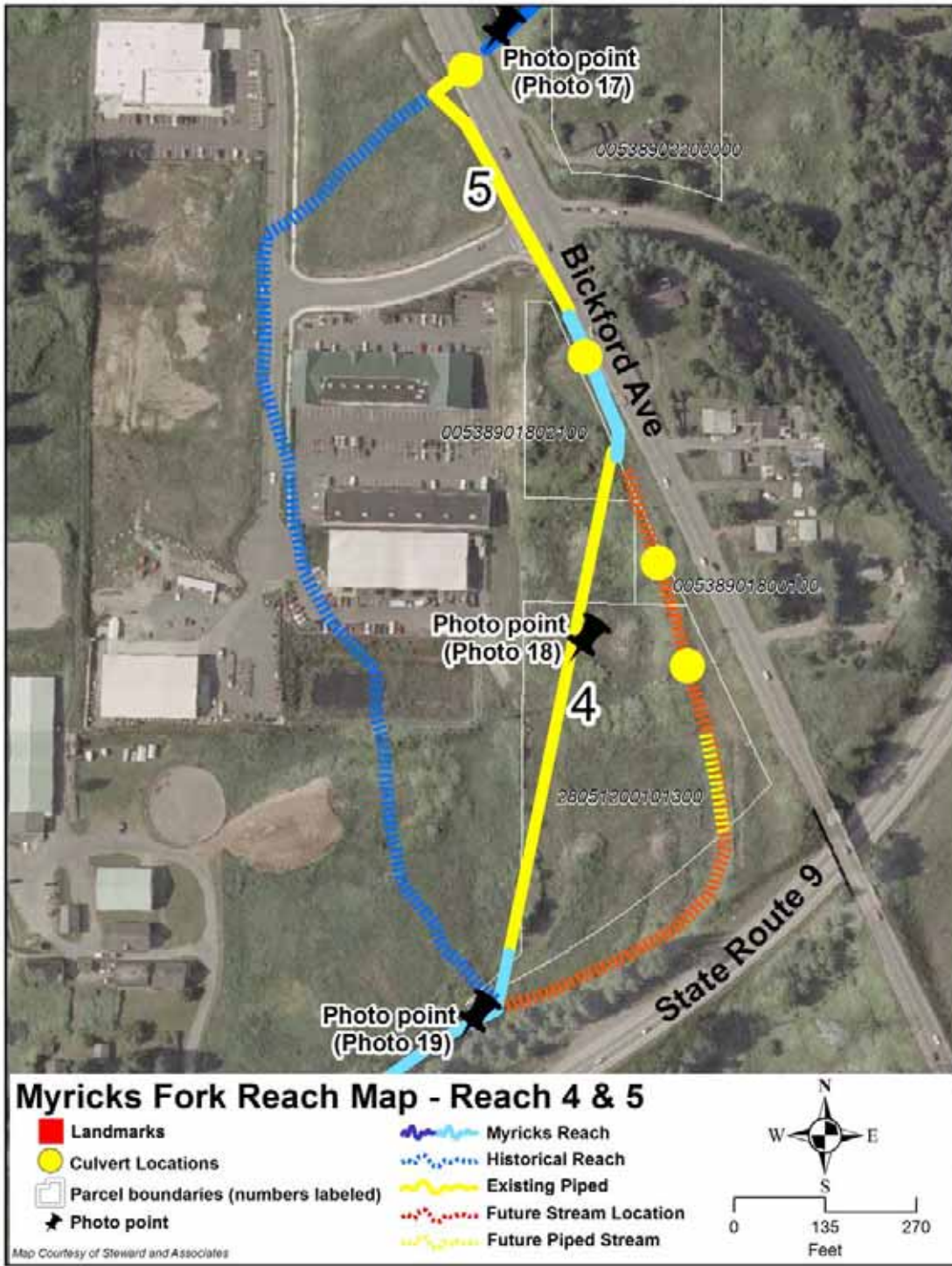


Figure 8. Map of Reaches 4 and 5.



Reach 4: Bickford Business Park

Figure 8 identifies the historic, current existing, and future location of Myricks Fork as it flows through Reach 4. As indicated in the Reach 5 narrative, the historic Myricks Fork channel existed further west from where the stream flows currently. Myricks Fork currently flows from Reach 5 to Reach 4 through a cross culvert beneath the Snohomish Business Park entrance. Since the time of the Snohomish Business Park development Myricks Fork has apparently been sheet flowing across the undeveloped Reach 4 property. More recently, plans were submitted to the City of Snohomish to develop the Bickford Business Park on the Reach 4 property. To facilitate development of the site, the applicant is proposing to create a channel for Myricks Fork that would, at a minimum, protect water quality functions of the stream. At the time of our field investigation, the stream/stormwater combination flowed through a 6 inch temporary bypass pipe to allow grading and site preparation to occur (Photo 18). The new Myricks Fork channel is currently being constructed along the west side of Bickford Avenue and will contain vegetation that is particularly suitable to adsorb nutrients and filter contaminants from Myricks Fork and the stormwater. Three large arch culverts, per WDFW specifications, will be installed to facilitate vehicle traffic across the stream from Bickford Avenue to the business park. In addition, a longer culvert will be installed at the downstream end of Reach 4 to facilitate the movement of Myricks Fork flow down a significant grade to the SR9 right-of-way (Reach 3).



Photo 18. Reach 4. Myricks Fork in 6 inch pipe.



Reach 3: State Route 9 Reach

Myricks Fork currently exits Reach 4 through the 6 inch corrugated black pipe described in the Reach 4 section above and enters the SR9 right-of-way, where it turns and flows to the southwest parallel to the highway. Reach 3 continues to flow along the northwest side SR9 for approximately 500 feet before spilling into the ditch along the north side of 16th Street (see Reach 2). Reach 3 contains some wetland vegetation but is dominated by growths of Himalayan blackberry and reed canary grass (Photo 19). In Reach 3, Myricks Fork flows through a low-gradient open channel and associated overbank wetland areas. Reach 3 channel substrate is dominated by sand and small gravel, with pockets of silt and clay. Once development of the Bickford Business Park is complete, Myricks Fork will be taken from its temporary bypass pipe and placed into the constructed Reach 4 channel. As described above, Myricks Fork will discharge from the constructed Reach 4 channel to the SR 9 right-of-way about 500 ft northeast of its current discharge location (Figure 9).



Photo 19. Reach 3. Myricks Fork near Highway 9 right-of-way.





Figure 9. Map of Reach 3.



Reach 2: 16th Street

Myricks Fork leaves the SR9 right-of-way (Reach 3) and makes an abrupt turn to the east where it is conveyed in a roadside ditch for approximately 250 feet along 16th Street (Photo 20; Figure 10). This 250 ft section of ditch is approximately 2.5 ft wide and is dominated by sand, gravel, and small cobble substrate. At the time of our field inventory Myricks Fork flowed at a maximum depth of 8 inches through Reach 2. Myricks Fork passes under the SR9 overpass in an open ditch (see SR9 pile in Photo 20) and continues east along the north side of 16th Street to a 24 inch circular cement culvert, which conveys Myricks Fork to the south under 16th Street (Reach 1).



Photo 20. Reach 2. Myricks Fork along 16th Street.



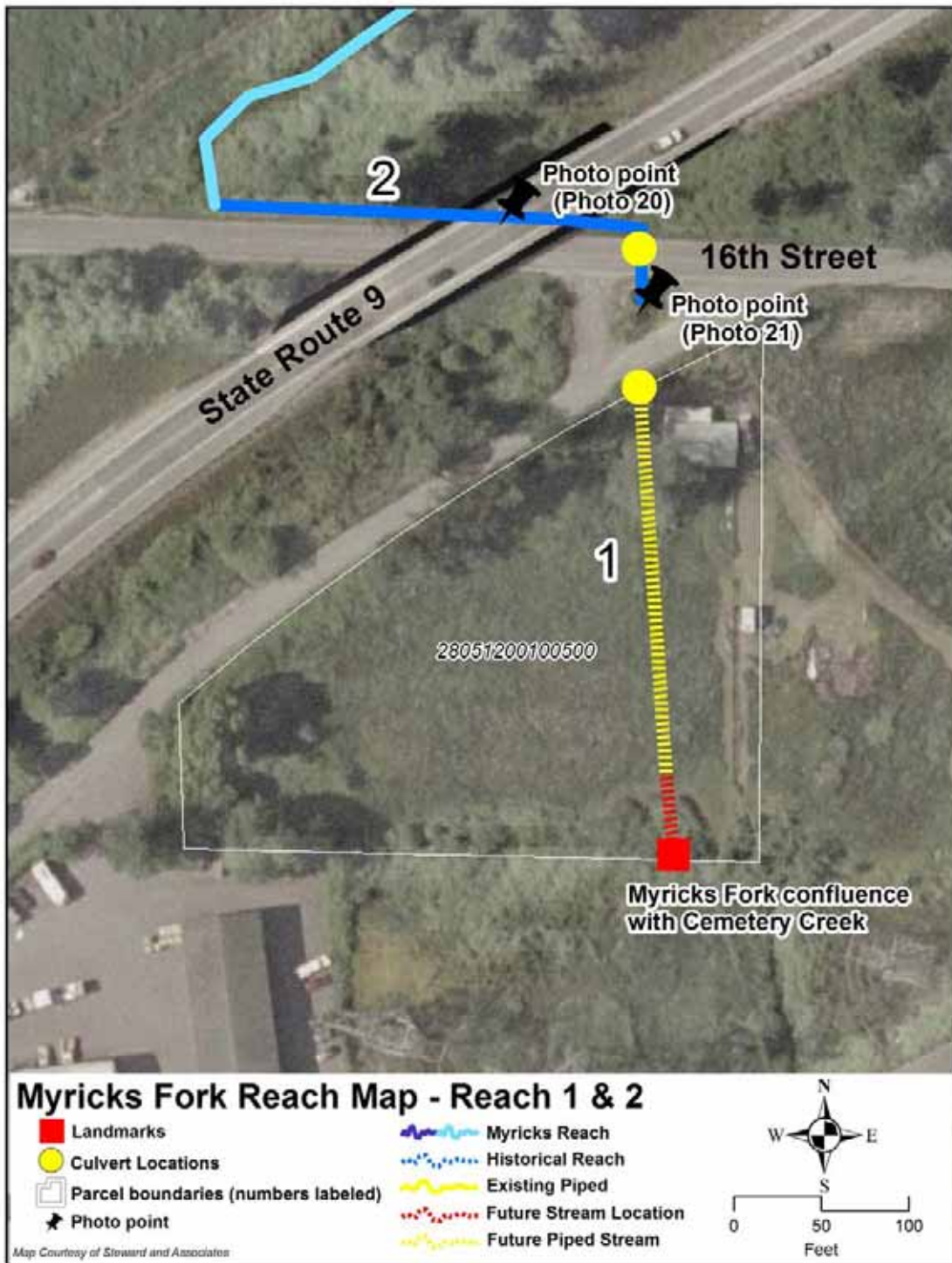


Figure 10. Map of Reaches 1 and 2.



Reach 1: Mouth of Myricks Fork (1502 Bonneville Ave).

Myricks Fork leaves the ditch on the north side of 16th Street (Reach 2) through a 24 inch circular concrete cross culvert that conveys water to the south under 16th Street (Figure 10). Myricks Fork emerges from the 24 inch culvert for approximately 25 ft before flowing into a 26 inch circular concrete culvert that conveys the stream beneath the driveway of the Plant Mulch property. The 25 ft section of daylighted stream between the culverts is overgrown with invasive vegetation, including Himalayan blackberry and reed canary grass. Flow through the approximately 3 ft wide, sand and gravel dominated channel is manually monitored by Snohomish County with a rudimentary flow gage (Photo 21). Upon discharging from the Plant Mulch driveway culvert, Myricks Fork enters parcel 28051200100500 (1502 Bonneville) into a 24 x 24 inch cement catchbasin. From the catchbasin, Myricks Fork is piped to the south for 250 ft in two vertically stacked 12 inch plastic pipes. Myricks Fork exits the 250 ft pipes along the south edge of the property and immediately joins Cemetery Creek, which is flowing from west to east along the south property line. The confluence occurs approximately 325 feet south of where Highway 9 passes over 72nd Street SE. Land use near the confluence is commercial, industrial, and vacant.

The owner of the Reach 1 parcel has recently submitted a development application to the City of Snohomish, which would include removal of the two 12 inch pipes, installation of a 60 inch wide, 147 ft long arch culvert for the upstream section of Reach 1, and restoration of approximately 80 ft of daylighted Myricks Fork at the downstream end of Reach 1. The changes proposed for Reach 1 of Myricks Fork would improve water quality and allow salmonid fish passage should existing downstream barriers on Cemetery Creek be removed.



Photo 21. Reach 1. Myricks Fork flowing through 25 ft daylighted section between 16th Street and commercial property driveway culverts. Culvert heading under 16th Street can be seen near top right.

