

# STORMWATER MANAGEMENT & DRAINAGE SYSTEM UPDATE



**BBVCC Lakes, Ponds & Drainage Committee**

**7/30/26**

# INTRODUCTIONS



- **Jon Hall (Chair, Lakes Ponds & Drainage Committee)**
- **Bill Reilly (member, Lakes Ponds & Drainage Committee)**
- **David Scheirman (member, Lakes Ponds & Drainage Committee)**
- **Mathue Totten, Committee Board Liaison**

# WHAT WE WILL COVER

1. BBV Water Bodies & Drainage System overview
2. Survey Mapping update; engineering studies & contracts
3. M.O.U. (Memorandum of Understanding) with Whatcom County
4. Planned/pending projects within BBV, and with County Public Works
5. Residential development projects uphill, and potential future impact

# **AREAS OF SPECIAL EXPERTISE REQUIRED TO MANAGE BBV WATER SYSTEMS**



- **Civil Engineering**
- **Surveying**
- **Hydrology**
- **Aquatic Ecology & Biology**
- **Environmental Science**

# **WHO DOES BIRCH BAY VILLAGE INTERFACE WITH?**



- **Outside Professional Contractors**
- **County Officials & Departments**
- **State & Federal Agencies**

# Some Communicating Agencies & Organizations

Welch Ecological  
Services, LLC



TETRA TECH



Exact Scientific Services



**I & I PIPE SERVICES**

*Sewer and Drain*

**IVERSON**  
EARTH WORKS LLC



**AquaTechnex**



DEPARTMENT OF  
**ECOLOGY**  
State of Washington



**FREELAND**  
& ASSOCIATES  
CIVIL ENGINEERS



DRAYTON  
ARCHAEOLOGY



**BBWARM**  
Birch Bay Watershed and Aquatic  
Resources Management District



Washington Department of  
**FISH & WILDLIFE**



1.

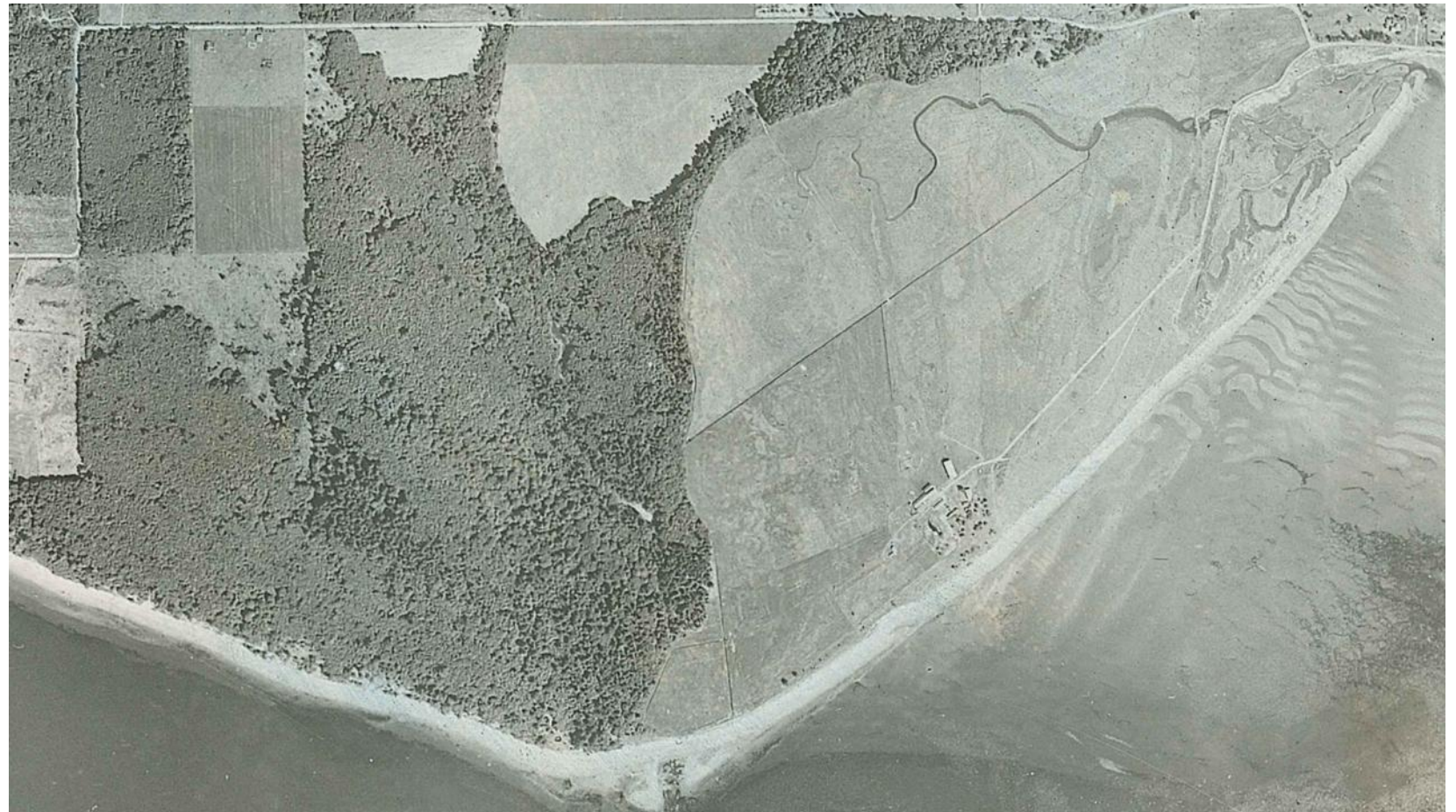
# **BBV Water Bodies & Drainage System overview**

**Before BBV Development: A heavily-treed  
region adjoining grasslands.**

**≈100% permeable surface.**



Aerial view,  
1956

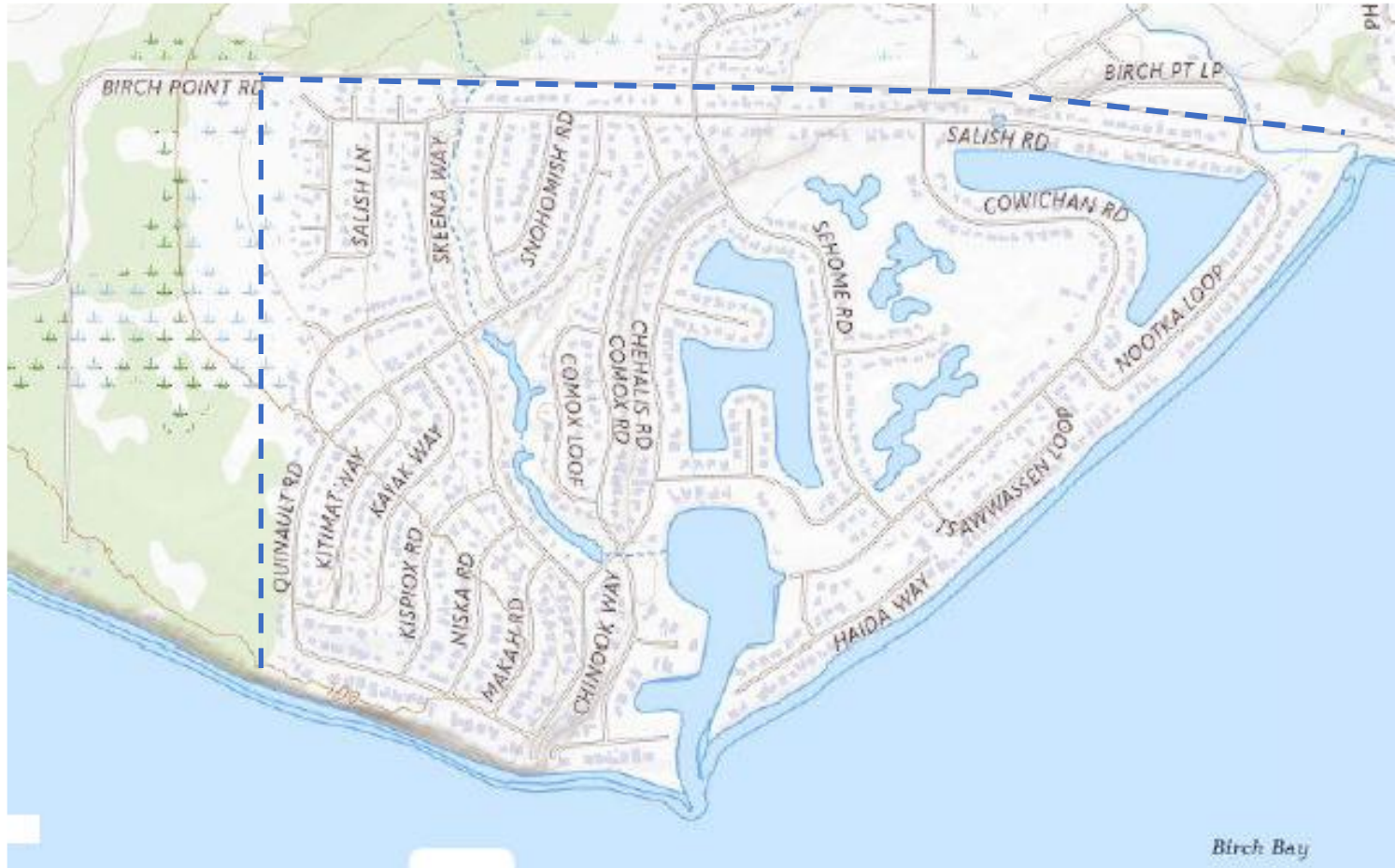


# Significant changes by 1976



Thunderbird  
Lake not yet  
excavated

# Birch Bay Village today



- 2 impoundment ponds
- Series of inter-connected golf course ponds
- Natural creek (drains through Beaver Pond)
- Harbor with marina
- Drainage system linking 13 miles of paved roads

# We Have an Inter-connected Drainage System



Different types of pipes, culverts, structures & watercourses

# Drains & below-grade pipes link runoff from private lots to larger BBV system



# Some private lots have open ditches. Others have covered drainpipes.



\* Lot-to-lot interfaces should not impede water flow

# Drainage System for Private Lots



- Example of a lot-to-lot interface problem

# Sometimes things fail.



Current program seeks to prevent future emergencies.

# STORMWATER SYSTEM: A SHARED RESPONSIBILITY



...Birch Bay Village is responsible for the community association-owned piping and overall functioning of the entire drainage system. We make sure the water flows; catch basins are cleaned regularly...

Members are responsible for the proper installation of the piping when it is installed, and replacement when it reaches the end of its useful life. If you live in an older house in the Village that has enclosed piping adjacent to your lot, you may want to seek the advice of professional contractors to determine the condition and replacement cost of your stormwater piping...



**Aged, deteriorated corrugated  
drain pipe (Salish Lane)**

*- GM David Franklin, Weekly Update, 3/6/26*

**2.**

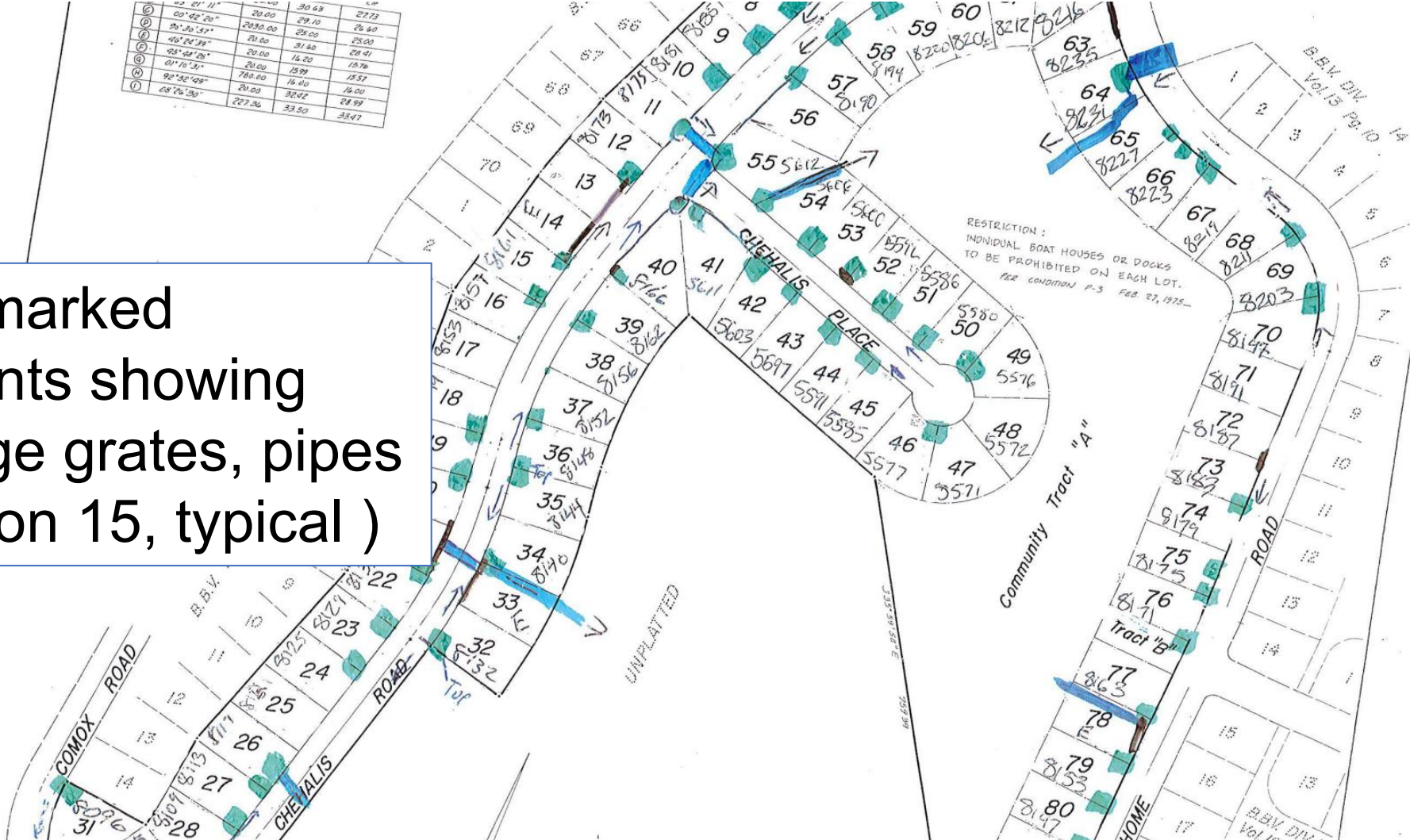
# **Survey Mapping Update: Engineering Surveys & Projects**

# Previous BBV documentation format



|   |             |         |       |       |
|---|-------------|---------|-------|-------|
| ① | 00° 01' 11" | 20.00   | 30.63 | 2773  |
| ② | 00° 42' 20" | 20.00   | 29.10 | 26.40 |
| ③ | 26° 30' 31" | 2030.00 | 28.00 | 25.00 |
| ④ | 40° 24' 39" | 20.00   | 31.60 | 28.41 |
| ⑤ | 25° 44' 26" | 20.00   | 16.20 | 18.76 |
| ⑥ | 01° 16' 31" | 20.00   | 15.99 | 15.57 |
| ⑦ | 92° 32' 48" | 785.00  | 16.00 | 16.00 |
| ⑧ | 28° 26' 30" | 227.36  | 33.50 | 33.47 |

Hand-marked blueprints showing drainage grates, pipes ( Division 15, typical )



# Early C.A.D. Modeling Project, 1999



- (Wilson Engineering)
- USGS location references
- Elevations
- Pipe sizes & types

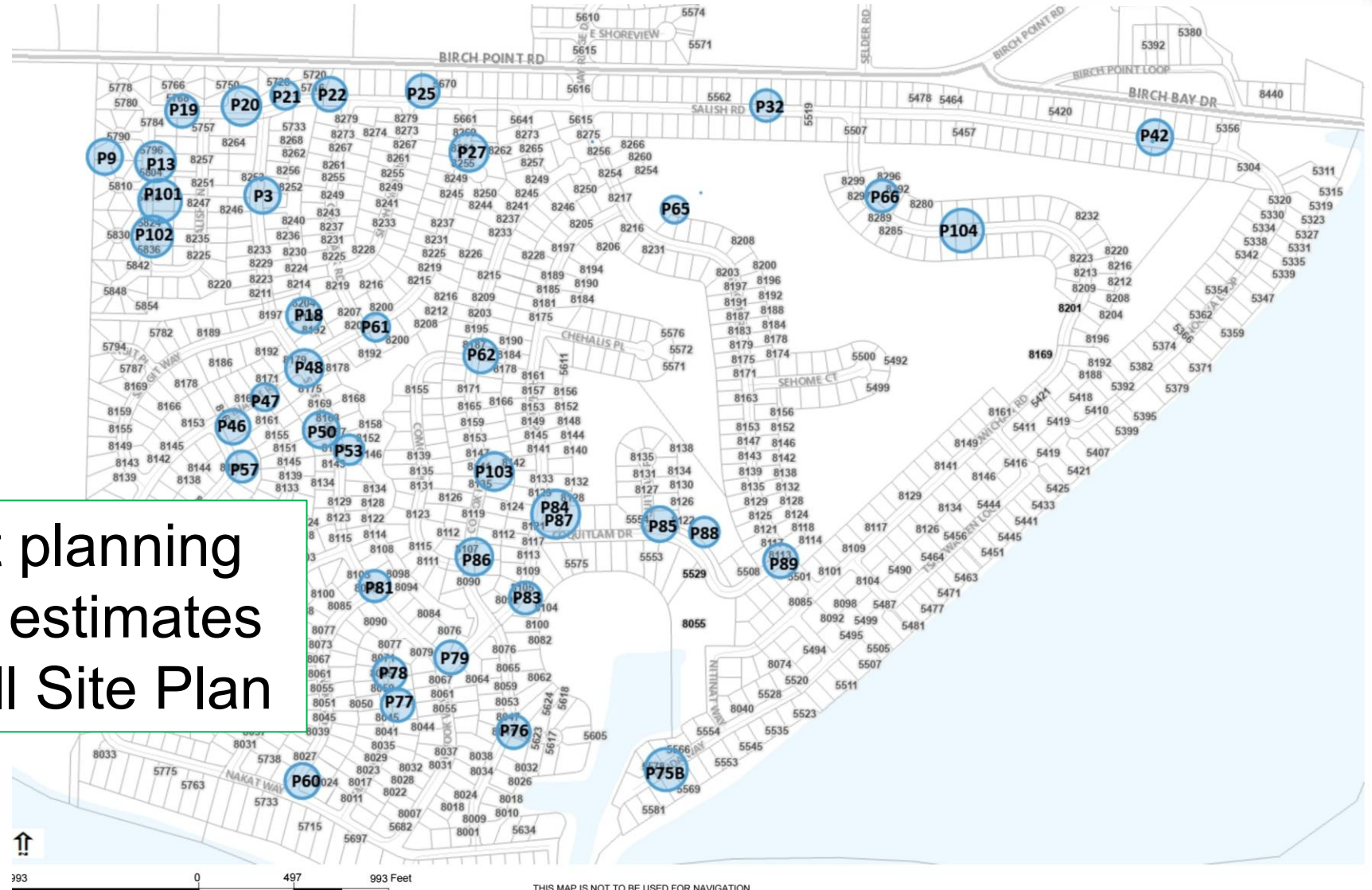


**BIRCH BAY  
VILLAGE**

# All Culvert & Pipe Locations Now Have Position Locator Identifiers



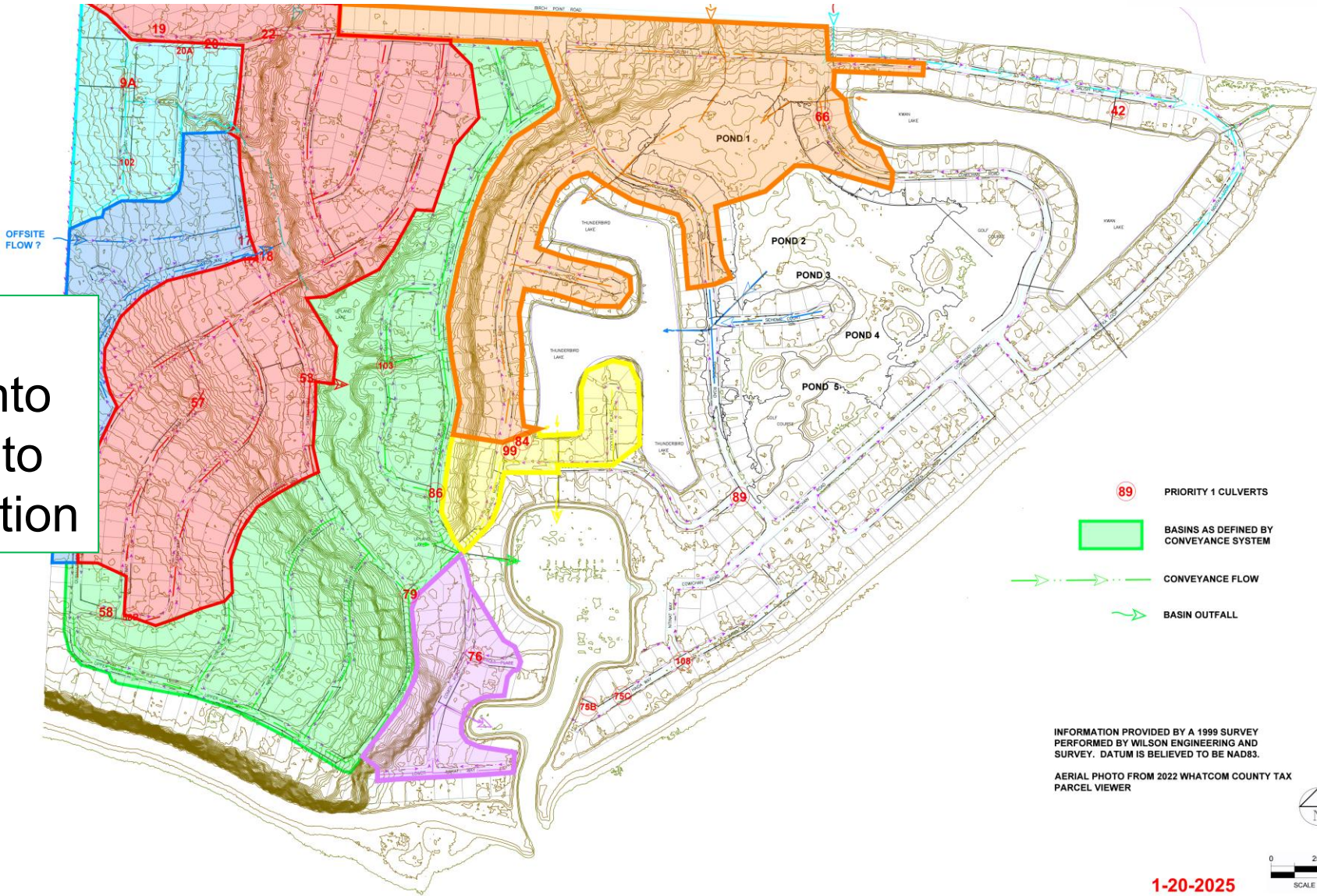
- Aids in project planning
- Supports cost estimates
- Informs overall Site Plan



# Knowledge Compiled About Flow Directions & System Connectivity



Image shows the village sectioned into drainage “basins”, to highlight flow direction



BIRCH BAY, WHATCOM COUNTY  
**BIRCH BAY VILLAGE**  
STORMWATER BASINS  
CONVEYANCE SYSTEM

**CASCADE**  
ENGINEERING GROUP, P.S., INC.  
110 Grand Avenue, Suite D  
Bellevue, Washington 98005  
(206) 306-8161

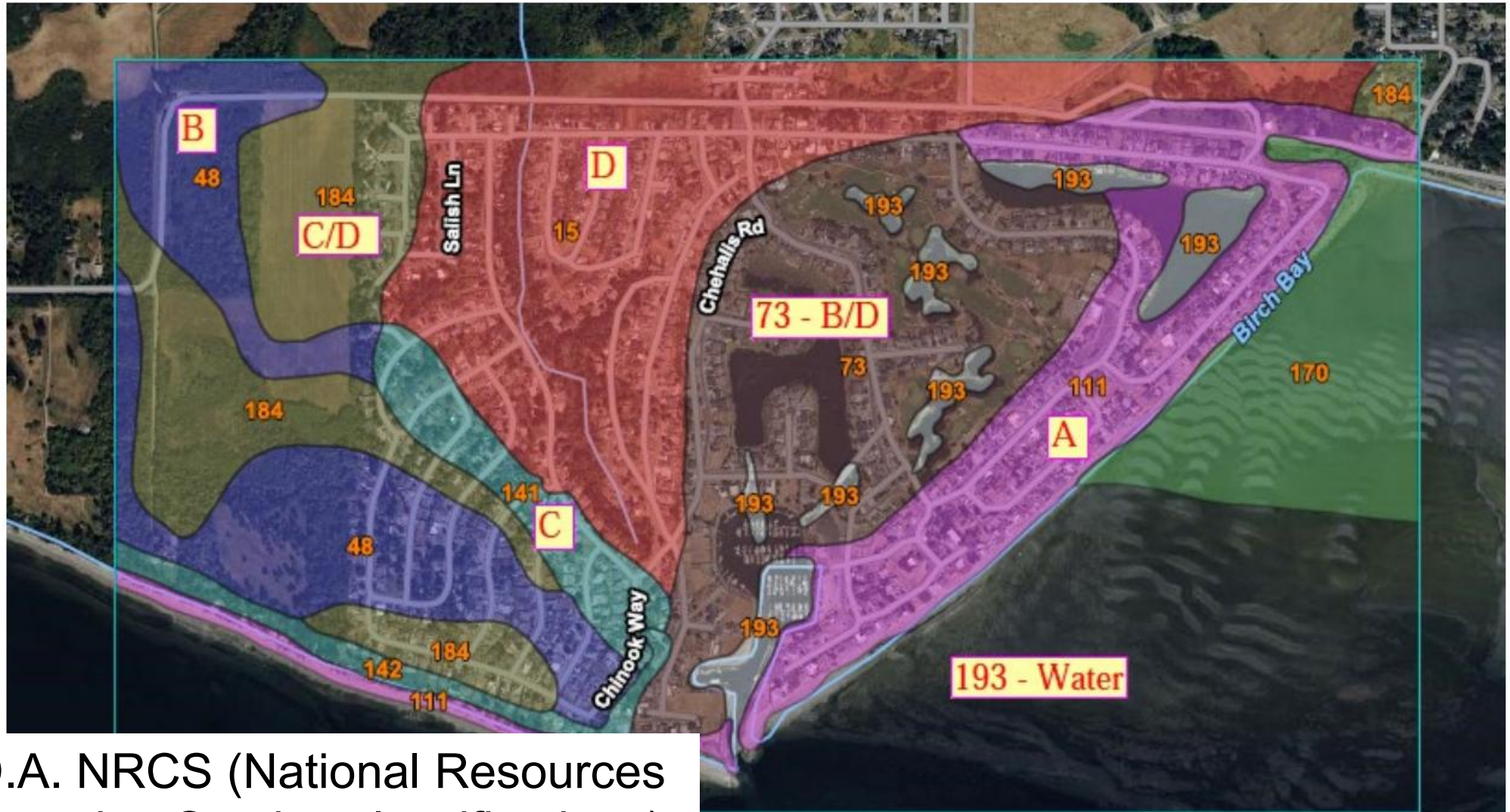
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DATE: 1-20-2025  
DESIGN: MJD  
DRAWN: MJD  
CHECKED: MJD  
SCALE: AS SHOWN  
PROJECT NUMBER: BBVX0001

**BBVX0001**

SHEET NO. **1**  
OF

# We Now Have a Soil & Fill Types Geological Analysis Map



- U.S.D.A. NRCS (National Resources Conservation Service classifications)

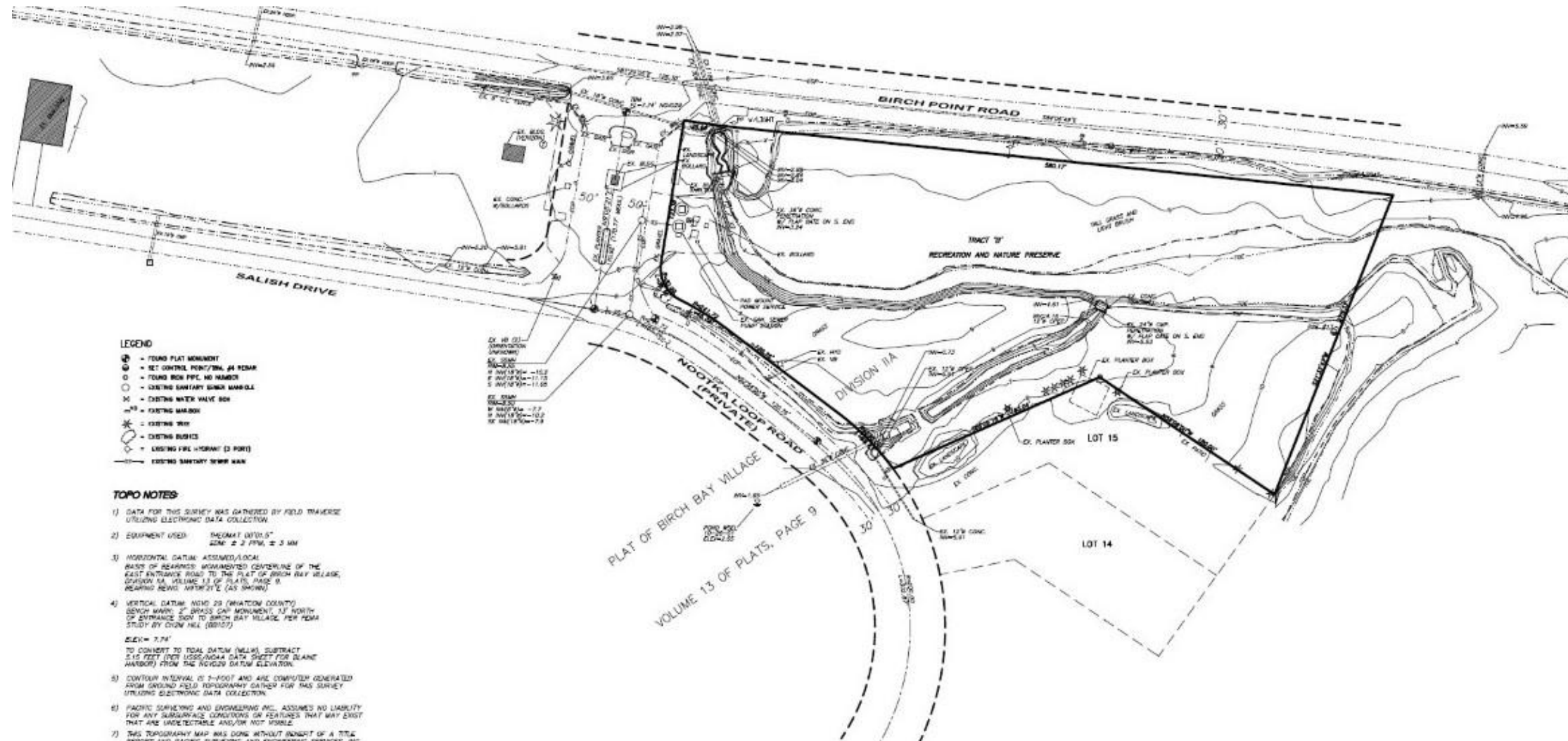
# We Are Now Working With a Complete Digital Model



Views (Layers) can now be reviewed to support a variety of information requirements. This view shows the FEMA future flood hazard predictions.



# Technical Knowledge Base Now Prepares BBV to Interface with Whatcom County Public Works for Project-Based Permits



**3.**

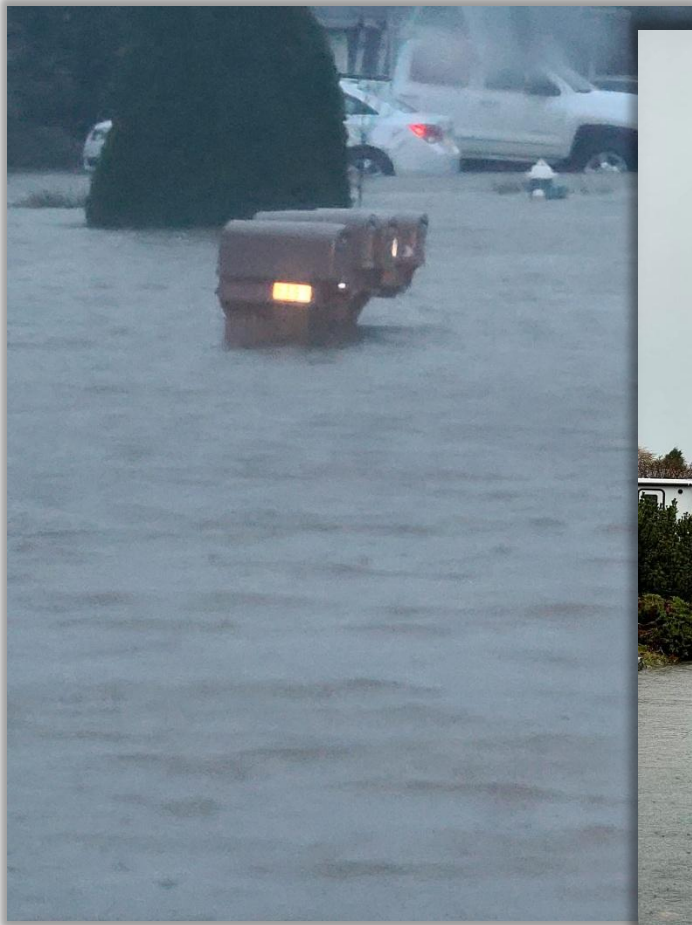
**M.O.U.**

**(Memorandum of Understanding)  
with Whatcom County**

# **The Whatcom County + BBV M.O.U. sets the stage for coordination on major drainage system projects. Why?**

- Runoff from county ditches and culverts passes through BBV property on its way to the Bay

# Background: November 2021, Unusually Heavy Rains...

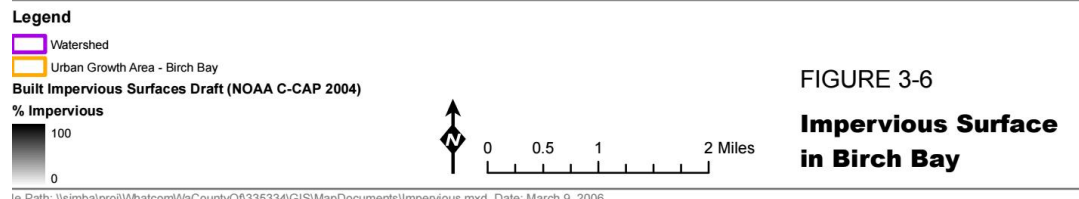
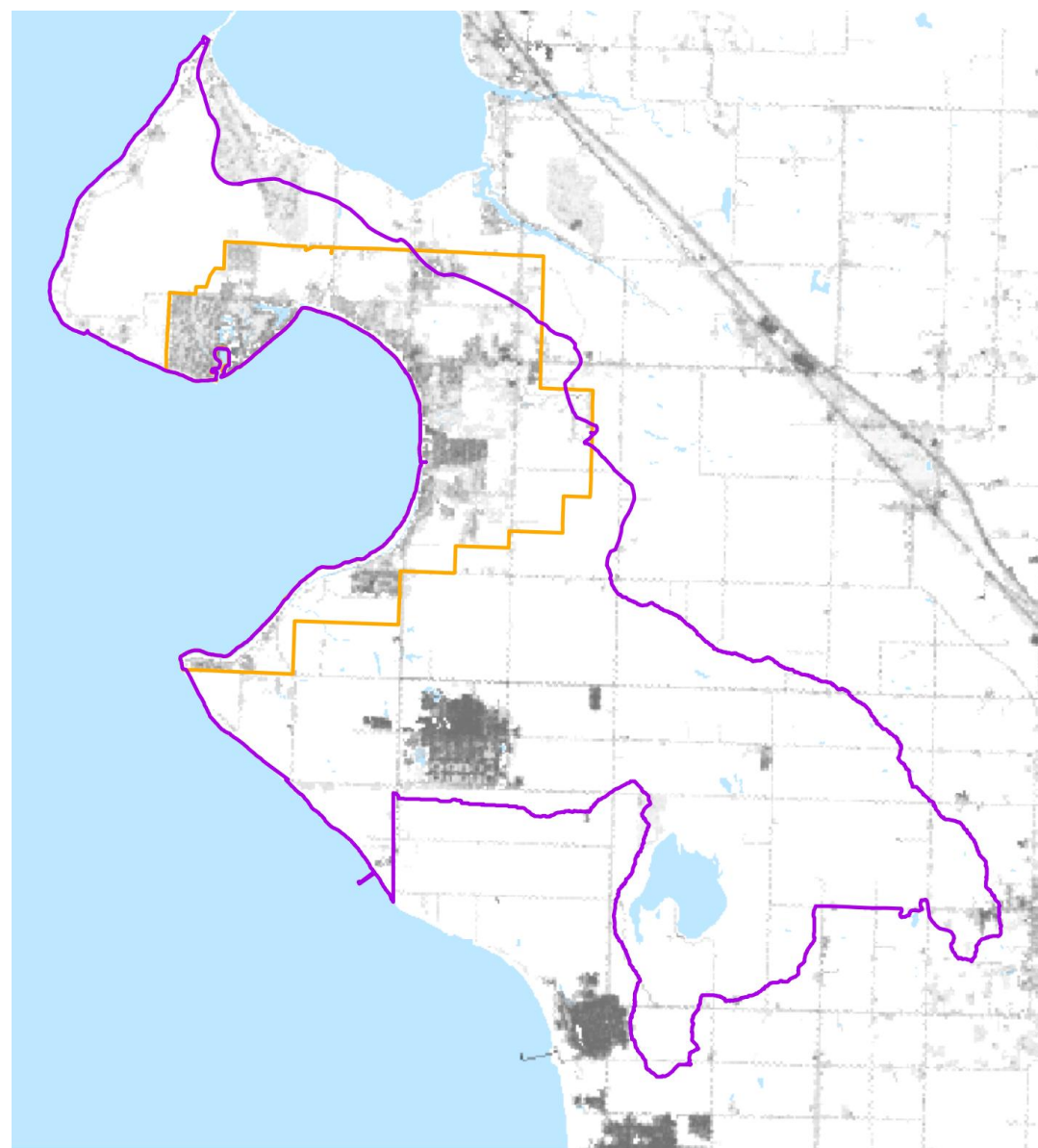


Salish Rd.



Golf Course

**County's long-range planning accounts for the urban growth area plan, weather patterns, 100-year floodplain forecasts, & stormwater run-off management throughout the area**



Source: CH2M-Hill consulting report, 2006

# M.O.U. : Coordinating with the County

**WHEREAS**, the Rogers Slough Lower Tributary Drainage Basin was identified as having eight drainage-related problems in the 2016 Birch Point, Terrell Creek Urban Area and Point Whitehorn Subwatershed Master Plan; and

**WHEREAS**, in November 2021 intense storm events resulted in unprecedented flooding of approximately 64 BBVCC homes, roads, golf courses, lakes and community spaces due to stormwater flows from within and outside the BBVCC boundary; and

**WHEREAS**, in response to the 2021 flooding, BBWARM hired a consultant to conduct a Birch Point Subwatershed Drainage Study, which identified three capital improvement projects on Birch Bay Village property to mitigate flood impacts, with an estimated cost of over \$500,000;

WHATCOM COUNTY  
PUBLIC WORKS DEPARTMENT

Elizabeth Kosa  
Director



STORMWATER  
322 N. Commercial, 4<sup>th</sup> Floor  
Bellingham, WA 98225  
Main: (360) 778-6230  
FAX: (360) 778-6201  
[www.whatcomcounty.us](http://www.whatcomcounty.us)



# M.O.U. signed October 2023

## MEMORANDUM

**TO:** The Honorable Satpal Singh Sidhu, County Executive and  
The Honorable Members of the Whatcom County Council

**THROUGH:** Elizabeth Kosa, Public Works Director

**FROM:** Kraig Olason, Stormwater Program Manager *ko*

**DATE:** October 5, 2023

**RE:** Memorandum of Understanding between Whatcom County and the Birch  
Bay Village Community Club

RECEIVED

OCT 27 2023

WHATCOM COUNTY  
EXECUTIVE'S OFFICE

### Action Requested

Authorization by Whatcom County Council for the County Executive to enter into a Memorandum of Understanding (MOU) for stormwater capital improvement project coordination between Whatcom County (County) and the Birch Bay Village Community Club (BBVCC).

DATED this 16<sup>th</sup> day of OCTOBER, 2023.

  
BBVCC General Manager

IN WITNESS WHEREOF, the parties have executed this agreement in Bellingham, Washington, to exchange certain engineering and construction services on the day and year herein indicated.

DATED this 16 day of October, 2023,

  
BBVCC Board of Directors President

IN WITNESS WHEREOF, the parties have executed this agreement on the day and year herein indicated.

FOR WHATCOM COUNTY

  
Satpal Singh Sidhu, Whatcom County Executive

# A Key Provision: Cost Sharing (County Funds to Benefit BBV)



**2.) Project Selection.** The County will review stormwater Project proposals from BBVCC and consider proposals based on the following criteria: 1. The Project furthers the goals of the BBWARM programs; 2. The Project provides a benefit to community members outside of BBVCC; 3. The Project is a result of collaborative planning; 4. The Project includes provisions for **cost sharing** and clearly identifies ownership and maintenance responsibilities for both parties.

# Drainage System Projects Funding



- BBV funding is drawn from the Roads & Drainage Reserve Fund (not the community's general operating fund)
- Planning now for pre-scheduled, managed pipe replacements enables advance budgeting & significant cost savings (fewer surprises)
- A single emergency pipe or culvert repair can cost \$100,000 or more

**4.**

# **Planned/pending projects within BBV, and with County Public Works**



**STORMWATER CULVERT  
REPLACEMENT PROJECT  
BIRCH BAY VILLAGE  
COMMUNITY CLUB  
BIRCH BAY, WASHINGTON**

**STORMWATER  
SITE PLAN**

Prepared for:  
Mr. David Franklin – General Manager  
Birch Bay Village Community Club  
8055 Cowichan Road  
Blaine, WA 98230  
(360) 371-7744



Prepared by:  
CASCADE ENGINEERING GROUP, P.S., INC.  
119 Grand Avenue, Suite D  
Bellingham, Washington 98225  
(360) 306-8161

May 14, 2026



# May 2026: Stormwater Site Plan for Birch Bay Village Culvert Replacements

(provided by Cascade Engineering)

- **Comprehensive technical inventory of culverts for use in project planning**

#### 1.4.2 Design Criteria/Assumptions

This *Stormwater Site Plan* (SSP) applies to all 23 culverts proposed for replacement and for the Salish Lane culvert (#4) replaced in 2024. It is understood that culverts in Habitat Conservation Areas/critical areas and in shoreline jurisdiction will required additional applications and reports that will need to be submitted and approved before these specific culverts can be replaced.

- **Plan Details all culvert locations, types, sizes**

All of the culverts proposed for replacement are corrugated metal pipe (CMP) except for one deformed corrugated high density polyethylene pipe (HDPE). Most of these pipes are from the original construction from over 50 years ago and most, if not all, of these pipes are near to or in the process of failure. Most of these pipes cross roads into lawn areas with either an existing catch basin or shallow ditch at each end. Three culverts cross roads and discharge into existing creeks. One culvert discharges into the marina and another into an internal lake.

# Individual projects now catalogued and prioritized

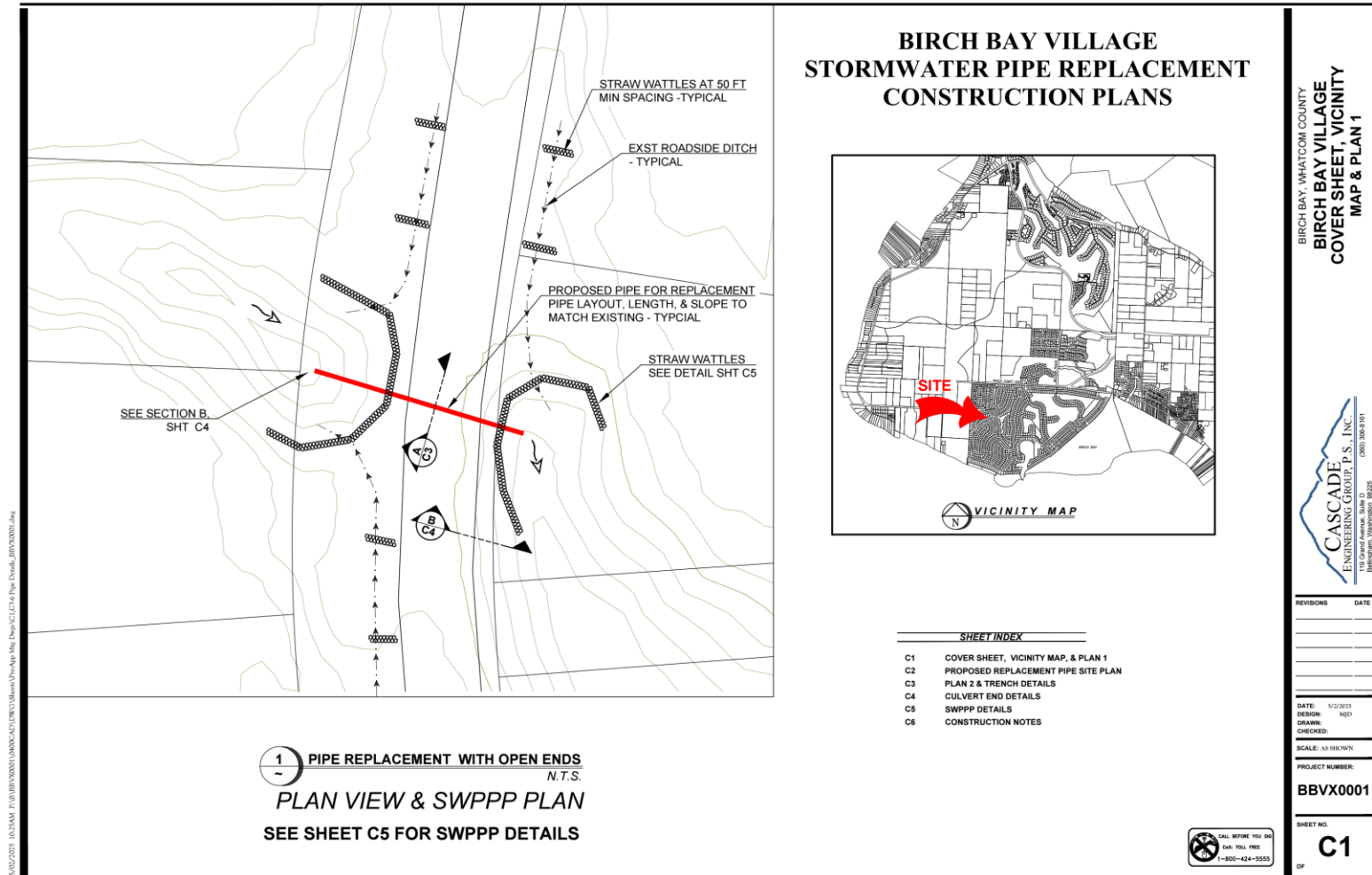


# Chart: Critical Culvert Inventory



|                                                                 | Culvert # | Nearest Address   | Description                  | Existing Material Type   | Length (ft) | Dia. (in) | Slope | Culvert Capacity QF (pipe full) | Critical Area (Y or N) | Shoreline (Y or N) |
|-----------------------------------------------------------------|-----------|-------------------|------------------------------|--------------------------|-------------|-----------|-------|---------------------------------|------------------------|--------------------|
| <b>Completed in 2024</b>                                        |           |                   |                              |                          |             |           |       |                                 |                        |                    |
| 1                                                               | 4         | 8254 Salish Lane  | Beaver W. Trib @ Salish Ln   | Completed HDPE           | 70          | 24        | 0.039 | 48.26                           | Y                      | N                  |
| <b>Proposed Culvert Replacements</b>                            |           |                   |                              |                          |             |           |       |                                 |                        |                    |
| 2                                                               | 17A       | 8198 Skeena       | S. Xing Skeena @ Skagit      | CMP                      | 45          | 18        | 0.024 | 17.76                           | N                      | N                  |
| 3                                                               | 19        | 5768 Salish       | Salish Road Culvert          | CMP                      | 50          | 12        | 0.006 | 2.90                            | N                      | N                  |
| 4                                                               | 20        | 5752 Salish       | Salish Road Culvert          | CMP (~50'); HDPE (~120') | 50          | 12        | 0.016 | 4.90                            | N                      | N                  |
| 5                                                               | 20A       | 5763 Salish       | Salish Lane Xing @ Salish    | CMP                      | 70          | 12        | 0.034 | 7.12                            | N                      | N                  |
| 6                                                               | 22        | 5732 Salish       | Salish Road Culvert          | CMP                      | 50          | 12        | 0.009 | 3.71                            | N                      | N                  |
| 7                                                               | 53        | 8149 Skeena       | Skeena Xing                  | CMP                      | 55          | 18        | 0.069 | 32.11                           | N                      | N                  |
| 8                                                               | 57        | 8140 Kitamat      | Kitamat Xing                 | CMP                      | 55          | 12        | 0.043 | 7.98                            | N                      | N                  |
| 9                                                               | 58        | 8026 Kayak        | Kayak Xing @ Kitamat         | CMP                      | 50          | 12        | 0.000 | 0.55                            | N                      | N                  |
| 10                                                              | 58A       | 8030 Kayak        | Kitamat Xing @ Kayak         | CMP?                     | 50          | 12        | 0.005 | 2.74                            | N                      | N                  |
| 11                                                              | 58B       | 8030 Kayak        | Kayak Xing @ Kitamat         | CMP                      | 50          | 12        | 0.050 | 8.64                            | N                      | N                  |
| 12                                                              | 66        | 8296 Cowichan     | Cowichan Xing - NW Kwan Lake | CMP                      | 70          | 12        | 0.001 | 0.93                            | N                      | N                  |
| 13                                                              | 86        | 8107 Comox        | Comox Loop Xing @ Comox      | CMP                      | 50          | 12        | 0.005 | 2.84                            | N                      | N                  |
| 14                                                              | 89        | 8113 Sehome       | Coquitlam Xing @ Sehome      | HDPE S. Wall             | 75          | 12        | 0.021 | 5.60                            | N                      | N                  |
| 15                                                              | 102       | 5824 Salish       | Under Salish Cul de Sac 7    | CMP                      | 45          | 12        | 0.028 | 6.53                            | N                      | N                  |
| <b>Proposed Culvert Replacements with Critical Area Impacts</b> |           |                   |                              |                          |             |           |       |                                 |                        |                    |
| 16                                                              | 3         | 8248 Skeena       | Beav W. Trib @ Skeena        | CMP                      | 80          | (2) 18    | 0.023 | 34.23                           | Y                      | N                  |
|                                                                 | 3R        | 1 @ 24" dia.      |                              |                          |             | 24        | 0.023 | 36.86                           |                        |                    |
| 17                                                              | 18        | 8198 Skeena       | Outlet Skeena to Beaver Ck   | CMP                      | 125         | 18        | 0.030 | 19.76                           | Y                      | N                  |
| 18                                                              | 103       | 8141 Comox Loop   | Xing of Comox Loop           | CMP                      | 90          | 18        | 0.006 | 9.16                            | Y                      | N                  |
| <b>Proposed Culvert Replacements with Shoreline Impacts</b>     |           |                   |                              |                          |             |           |       |                                 |                        |                    |
| 19                                                              | 42        | 5373/5379 Salish  | Salish Road to Kwann Lake    | CMP                      | 145         | 18        | 0.004 | 7.34                            | Y                      | Y                  |
| 20                                                              | 42X       | 5373/5379 Salish  | Salish Road to Kwann Lake    | New HDPE                 | 145         | 18        | 0.005 | 8.07                            | Y                      | Y                  |
| 21                                                              | 75B       | 5578 Haida        | Outlet to Harbor             | CMP                      | 90          | 12        | 0.010 | 3.87                            | Y                      | Y                  |
| 22                                                              | 75C       | 5566 Haida        | Haida Xing                   | CMP                      | 45          | 12        | 0.012 | 4.16                            | N                      | Y                  |
| 23                                                              | 108       | 5495 Haida        | Nitnat Xing @ Haida          | CMP                      | 60          | 12        | 0.000 | 0.87                            | N                      | Y                  |
|                                                                 | 108R      | Min slope 0.5%    |                              |                          |             | 12        | 0.005 | 2.74                            |                        |                    |
| 24                                                              | Kwan OF   | Kwan Lake Outfall | 5311 Nootka Loop             | New HDPE                 | 205         | 36        | 0.005 | 51.23                           | N                      | Y                  |

- BIRCH BAY  
VILLAGE**



- BIRCH BAY  
VILLAGE**



1. CULVERT END TREATMENT MAY VARY WHEN PIPES ARE IN CRITICAL AREAS. PROTECTION MEASURES MAY INCLUDE, WOODY DEBRIS, STILLING BASINS, OR SIMILAR SYSTEMS TO MINIMIZE WETLAND IMPACTS. SEE WETLAND MITIGATION REPORT AND SUPPLEMENTAL DRAWINGS AT THESE PIPES FOR ADDITIONAL INFORMATION.

BIRCH BAY, WHATCOM COUNTY  
**BIRCH BAY VILLAGE**  
**STORMWATER PIPE REPLACEMENT**  
**CULVERT END DETAILS**

**CASCADE**  
ENGINEERING GROUP, P.S., INC.  
119 Grand Avenue, Suite D  
Bellingham, Washington 98225  
(360) 306-8161

| REVISIONS | DATE |
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DATE: 5/2/2025  
DESIGN: MJD  
DRAWN:  
CHECKED:

SCALE: AS SHOWN

PROJECT NUMBER:

**BBVX0001**

SHEET NO.

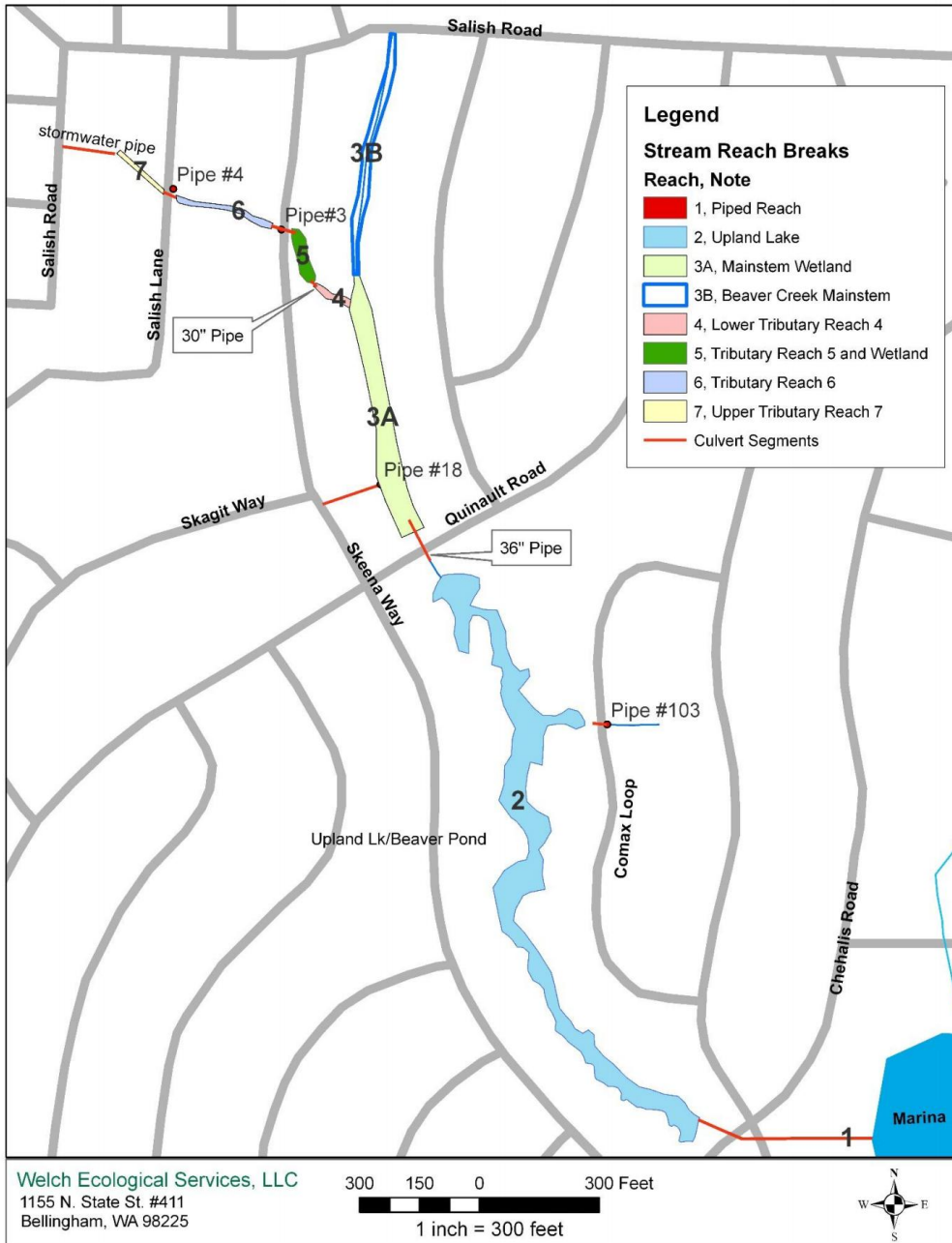
**C4**

OF



Figure 1. Beaver Creek System Features Map

Figure 1. Beaver Creek System



**Sensitive-area pipe replacement locations are also biologically surveyed, with watercourses typed**

- Example: Beaver Creek System showing tributaries, stream reaches and types

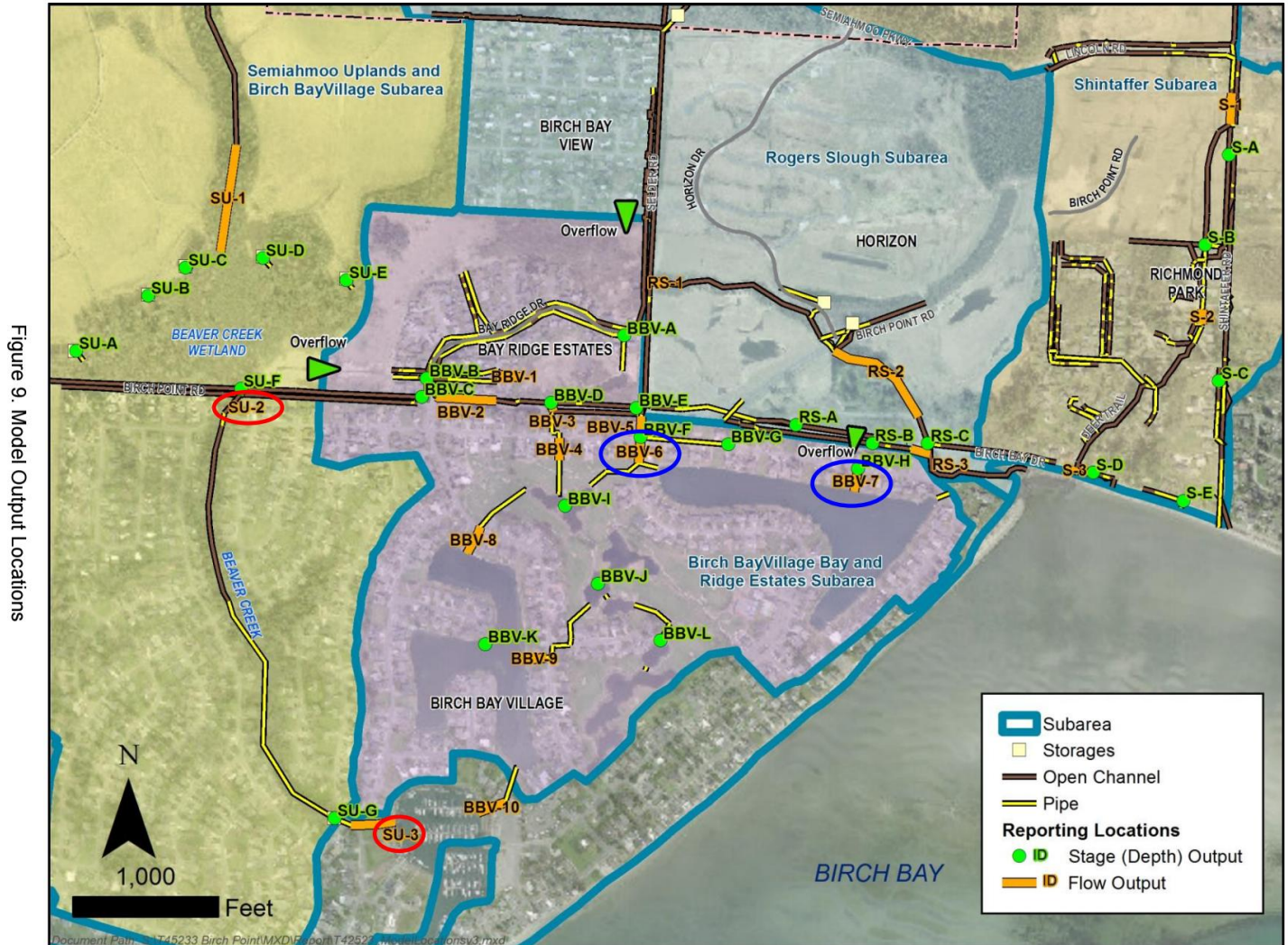


**Each pipe project location has also been archaeologically assessed with a cultural resources review for excavation impact**

# Outside BBV: Tracking Neighboring Drainage Systems Information



- Understanding stormwater run-off patterns from outside our property lines is a key priority for coordinating with Whatcom County Public Works

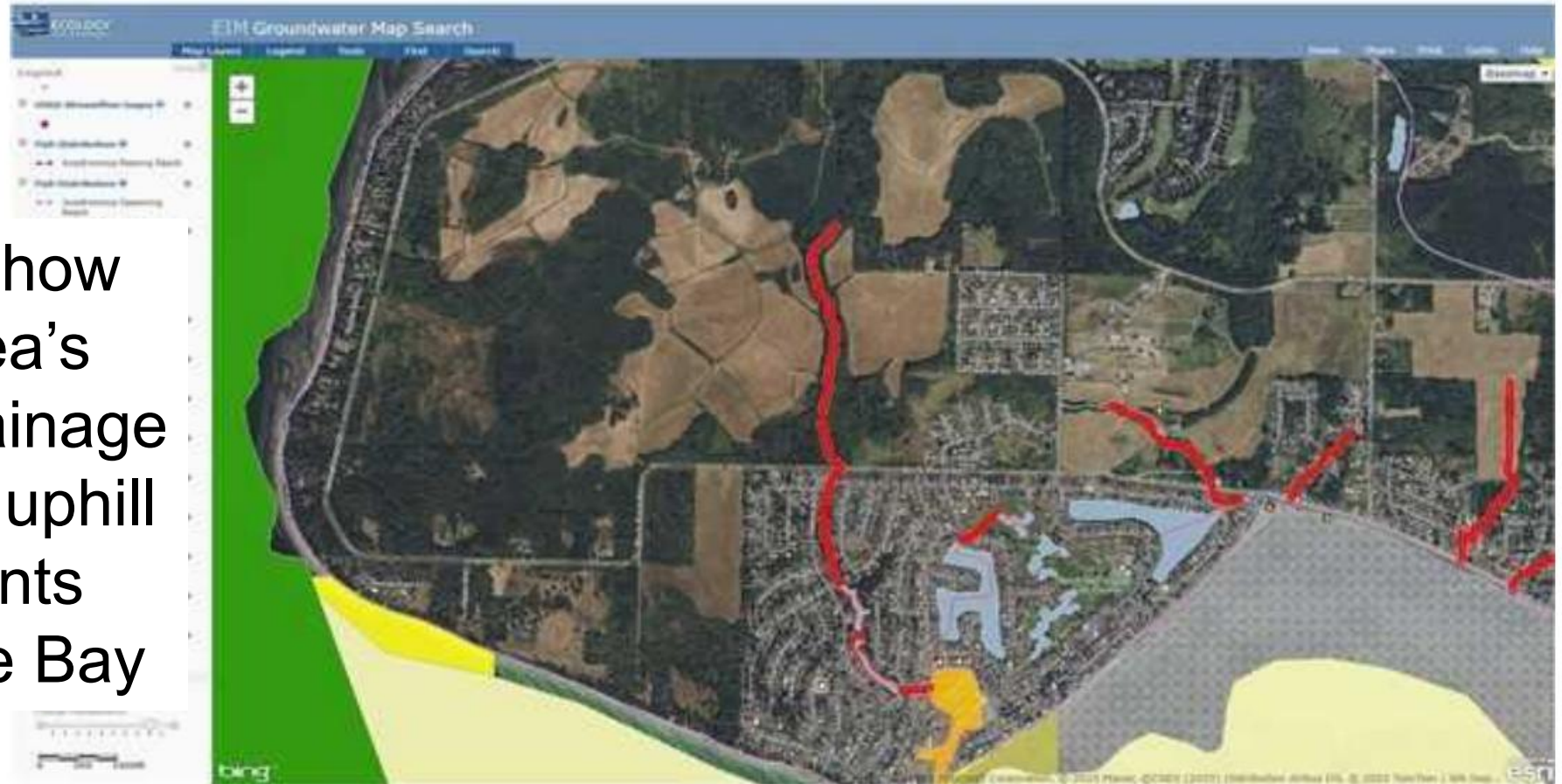


**5.**

# **Residential Development Uphill, and Potential Future Impact on BBV Drainage Systems**

# Understanding How Stormwater Flows Into BBV Matters

- Red lines show general area's primary drainage paths from uphill developments down to the Bay



**Image 3A:** Shows coastal receiving waters (Birch Bay) immediately downstream of the Avista PUD headwater stream and Selder road ditch flows into Horizon outflows are listed by Ecology as **Category 5 – 303(d) impaired water body and sediments**

# Water Flows Downhill Through BBV to the Bay



**“Beaver Creek”**

**County ditch to  
N. Golf Course Pond**

**Selder Rd. drainage**

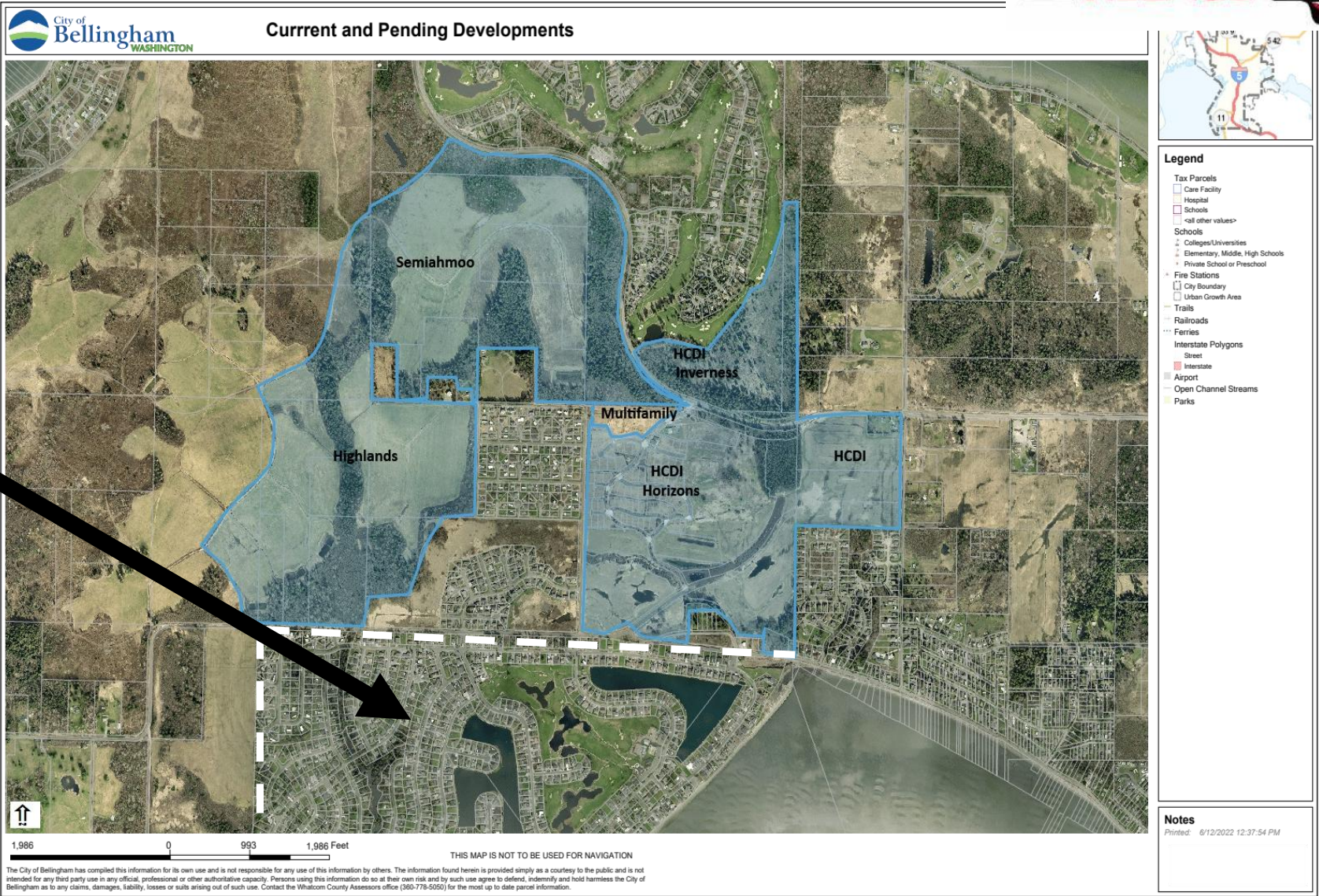
**Rogers Slough**



# Current & Pending Developments Outside BBV



Birch Bay Village



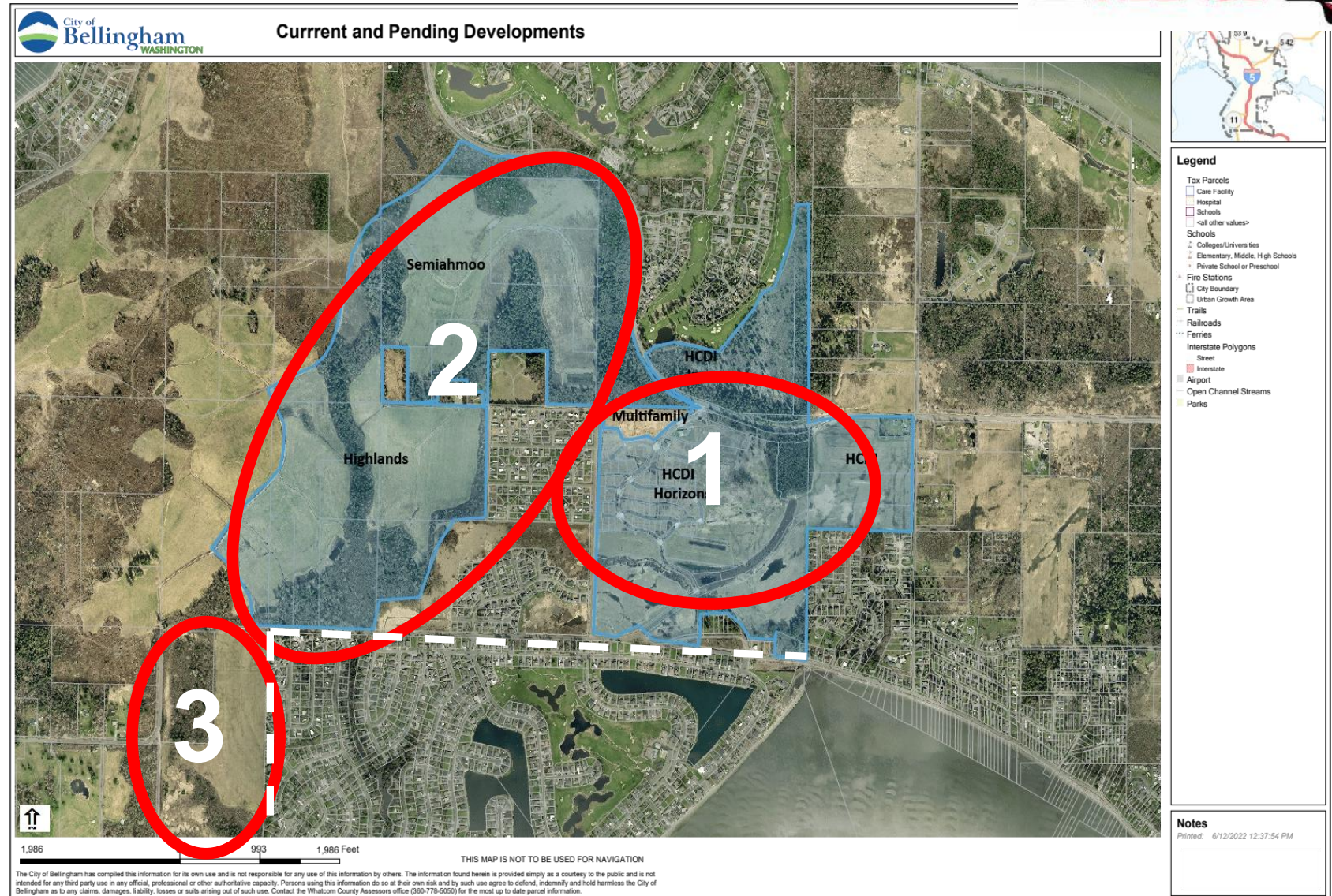
# Current & Pending Developments Outside BBV



1. HORIZON, TRACT 5

2. AVISTA

3. HANIEL LLC



# Current & Pending Developments



- 1 Horizons at Semiahmoo, Multi-Family (Tract 5)**
  - \* drainage/streets infrastructure, underway now
- 2 Avista at Birch Point**
  - \* first phase infrastructure, summer 2026
  - \* first homes by spring 2027
- 3 Haniel LLC –open land, 3 adjacent parcels**
  - \* recent survey; development timeline unknown
  - \* possible future project name not yet announced

1

# HORIZONS AT SEMIAHMOO (TRACT 5)



Excavations now underway

# 2

## AVISTA AT BIRCH POINT



- 2023: tour of open land by BBV representatives
- Two large parcels
- (north: City of Blaine)  
(south: unincorporated Whatcom County)

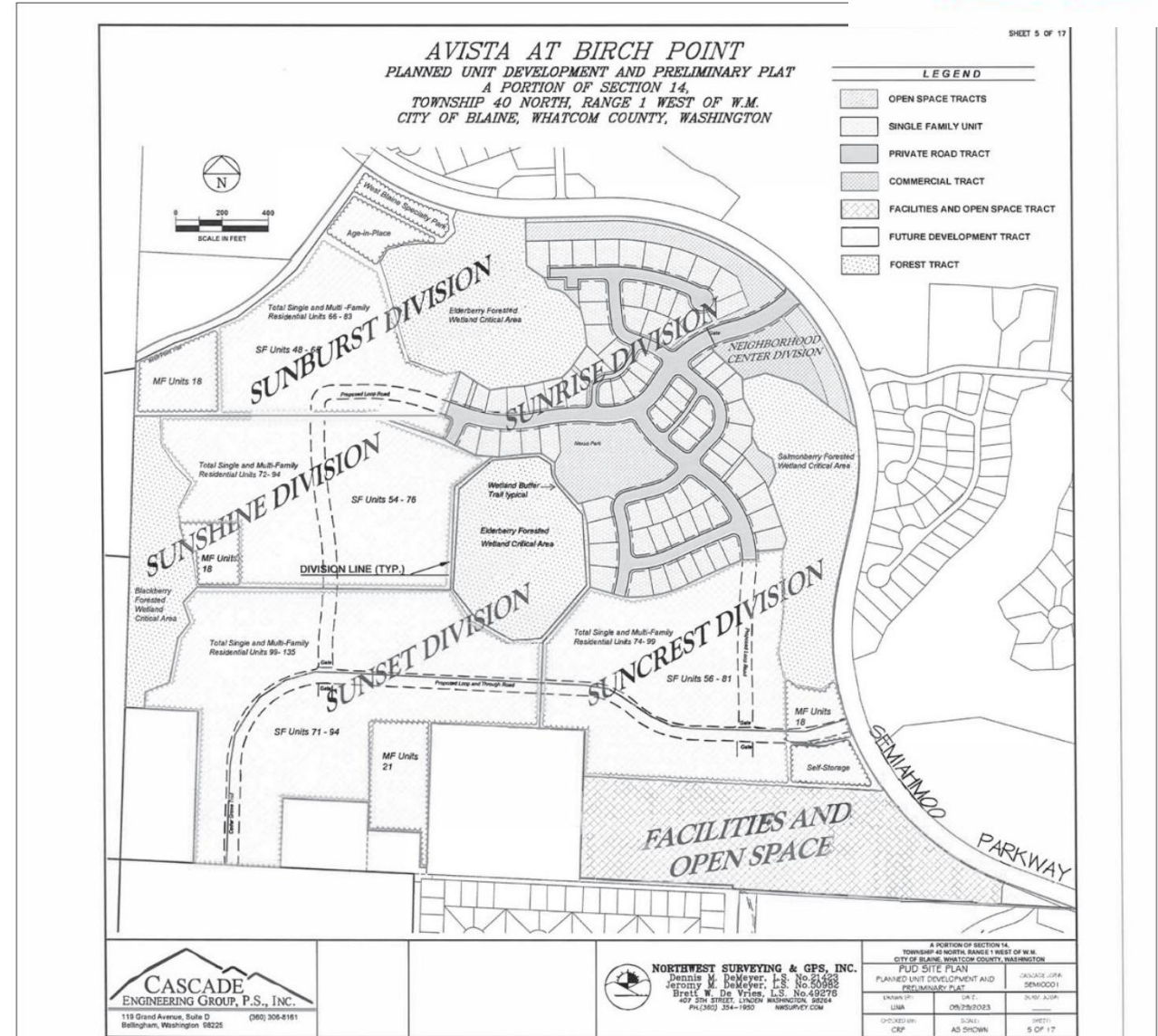


# 2

## AVISTA AT BIRCH POINT



- April 2026: Direct updates from developer
- Infrastructure work, summer 2026
- First residences spring 2027



3

## HANIEL LLC (OWNER)



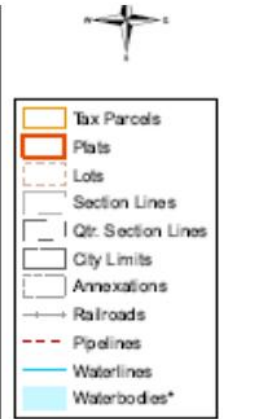
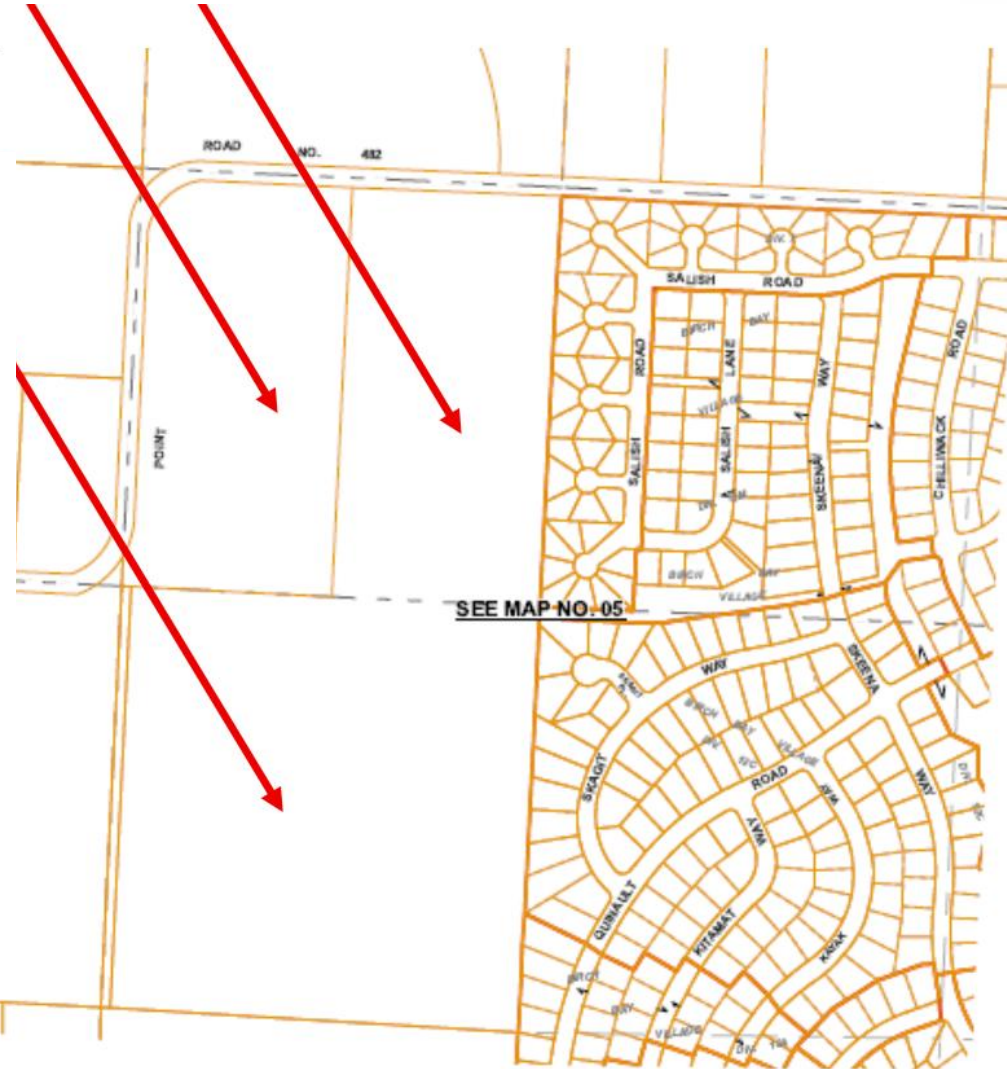
**Due west of BBV,  
≈ 100 acres**



3

# HANIEL LLC (OWNER)

- New survey flags, 2025
- 3 separate parcels
- Future plans unknown
- Project name & timing unknown



Whatcom County  
Assessor's Office

Apr. 01, 2025

This map is for assistance in property location  
and not guaranteed for accurate measurements.

Geographic Tax Parcel Numbers (GTD) are  
a 16-digit number derived from a combination  
of the Township, Range and Section, plus the XY  
coordinates of the theoretical center of the parcel,  
plus four trailing zeroes. The trailing zeroes are  
used where an existing tax parcel was in the  
same location as the primary parcel, such as  
a condo unit or a mobile home.

\*Waterbodies provided for reference only  
have not been verified by Assessor

For information on reading maps visit our website  
whatcomcounty.gov/177/assessor

# Summary of Developments



1. HORIZON, TRACT 5

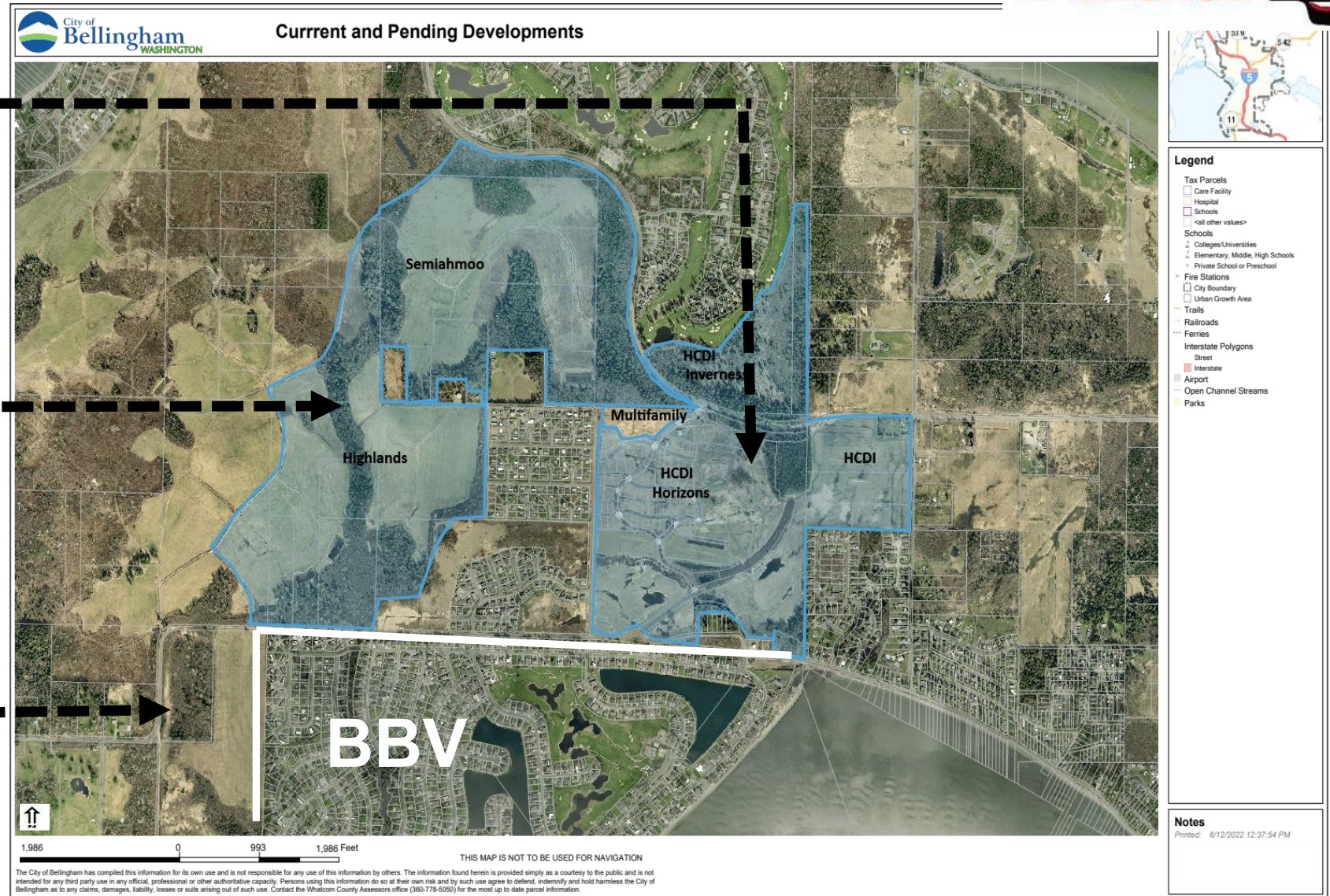
( NOW )

2. AVISTA

( 2027 )

3. HANIEL LLC

( UNKNOWN )



# Summary: LP&D Committee Progress 2022-26



- Revitalized Lakes Ponds and Drainage Committee Created, Scope Expanded
- Outreach effort to Village residents affected by 2021 flooding (impact on properties etc.)
- High Flow Pump Acquired & deployment program for future flooding developed
- Dysfunctional tidal gate & Dam at Rogers Slough removed
- December 27, 2022 flooding averted
- Joint Board/Lakes & Drainage Development sub-committee created
- Reviewed and Commented on Horizon Development, Multiple Exchanges of Info with County
- Attended, commented on multiple meetings for Semiahmoo Highlands development (now Avista)
- Hydrologic modeling of BBV: project to help discern effects of development
- Discovery that portions of Semiahmoo (Avista) development will drain through Birch Bay Village
- Subcommittee of Lakes and Drainage created for water quality monitoring (turbidity/clarity of water)
- Baseline water quality monitoring completed for turbidity
- Board includes funding for stormwater projects in budgets for 2023 and beyond
- Technical details provided for BBV stormwater system master Site Plan (Cascade Engineering)
- Subcommittee meets with Whatcom County; M.O.U. drafted, developed and executed
- Preliminary project reviews with Whatcom County Public Works (Freeland Civil Engineers)
- Plans developed for Lower Gate Project – 2027 build schedule
- Various ongoing issues related to our lakes (carp, otters, aquatic weeds, chemical treatment)



Q & A