

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization, or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. **You may use “not applicable” or “does not apply” only when you can explain why it does not apply and not when the answer is unknown.** You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to **all parts of your proposal**, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for lead agencies

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B, plus the [Supplemental Sheet for Nonproject Actions \(Part D\)](#). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in “Part B: Environmental Elements” that do not contribute meaningfully to the analysis of the proposal.

A. Background [Find help answering background questions](#)

1. Name of proposed project, if applicable:

Camano Vista Water District Water System Plan

2. Name of applicant:

Camano Vista Water District (CVWD)

3. Address and phone number of applicant and contact person:

Commissioners:

Renee Ackron
Shirley Morgan
Jason Reed

Address: 3093 Galena Drive
Camano Island, WA 98282

Phone: (360) 387-7714

Email: camanovistawaterdistrict@wavecable.com

4. Date checklist prepared:

June 15th, 2023

5. Agency requesting checklist:

Washington Department of Health

6. Proposed timing or schedule (including phasing, if applicable):

The Camano Vista Water District Water System Plan outlines two phases of development in the plan. The first phase is short-range Capital Improvements that are proposed over the next 10-year planning period that outline new water projects and system upgrades that will be implemented and constructed within the next 6 to 10 years. These projects include: the Dallman and Glacier Lane piping loop, installation of air release valves system wide, and completing 4 remaining road bores.

The next phase will cover long-range 20-year Capital Improvements that are proposed over the next 20-year planning period that outline new water projects and system upgrades that will be implemented and constructed within the next 10 to 20 years. These projects include: replacement of asbestos cement pipe

along Galena Drive, replacement of storage tank fill lines, purchasing a new well reserve area and/or drilling a new well, starting new PUD accounts for CVWDs wellfields at Colfax and Merlot properties, rewiring wellheads from PUD transformers, preparing an area for preloading and construction of a new water storage tank, installation of a curbside coliform sampling monitor station, and upgrading booster pumps and distribution piping for fire flow capacity.

- 7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.**

Not at this time.

- 8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.**

This SEPA Checklist and a proposed hydrogeological site evaluation regarding seawater intrusion; no other environmental documents at this time.

- 9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.**

Not at this time

- 10. List any government approvals or permits that will be needed for your proposal, if known.**

Washington State Department of Health, Office of Drinking Water, Water System Plan Approval; Waterline replacement project report and plan.

Washington State Department of Ecology, Water Resources, Well Construction Notice of Intent;

Island County Environmental Health; Well site confirmation;

Island County Planning; reservoir building permit; L&I electrical permit

- 11. Give a brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)**

The Camano Vista Water District Water System Plan will be used to address all aspects of water use including supply, transmission, and storage for present demands as well as projected demands 6 years and 20 years into the future. The plan considers existing water needs within the water district boundary and the potential development of new service connections, maintenance items, system upgrades, and state and federal requirements for Class A Water Systems.

- 12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and**

section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

Camano Vista is a residential community located on the southern end of Camano Island in Island County. The non-project action will apply only within the designated boundary of Camano Vista Water District's service area. It is approximately one square mile and is shown on Figure 2 (pg. 75) of the Water System Plan. See also attached Area Maps for the 10-year and 20-year capital improvement projects on pages 23 and 24 of this document.

Adjacent water purveyors include the Jolly 2-Party Water System and Sierra Vista Water Association to the north, Ambsdorf Water System and the Somers John A Water System to the south, and Tyee Beach Water Association to the east.

Apart from the densely populated subdivision, the area is predominately rural and is a mix of wooded areas and open fields.

B. Environmental Elements

1. Earth [Find help answering earth questions](#)

a. General description of the site:

The Camano Vista Water District service area includes the upland areas between southeast Camano Drive and Dallman Road. The service area includes a rural subdivision of single-family residences and larger lots of mixed cleared and wooded land. The topography ranges from about 155 to 240 feet. No permanent or intermittent streams are found within the service area.

Circle or highlight one: Flat, rolling, **(hilly)** steep slopes, mountainous, other:

b. What is the steepest slope on the site (approximate percent slope)?

Approximately 23.5%

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them, and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

The general soil types within the Camano Vista Water District Service Area are made up of three soil types found in the USDA Web Soil Survey. The smallest area to the southeast of the service area is comprised of Indianola-Uselessbay (2024) complex with 5 to 30 percent slopes. Most of the service area in the center is made up of Uselessbay-Utsalady (2026) complex with 0 to 10 percent slopes. The third soil type is Utsalady-Uselessbay (2027) complex with 0 to 5 percent slopes. All the soil types are generally well drained soils and are made up primarily of loamy sand or gravelly sandy loam and slightly decomposed plant material.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

No.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Any work associated with the Camano Vista Water District Water System Plan will be assessed based on geotechnical evaluations for each project listed, if applicable. Grading will be conducted to balance cut and fill on-site, and total earthwork quantities will be estimated for each project. The exact source of fill is unknown at this time but anticipated to be structural fill from approved local pits. Grading will be required for the construction of structures and utilities. Earthwork will be balanced and follow natural topography to the extent practical for each separate project within the Water System Plan.

- f. **Could erosion occur because of clearing, construction, or use? If so, generally describe.**

Site soils have a low susceptibility to erosion, particularly where vegetation is established. Some erosion will likely occur, consistent with typical construction activities, especially during periods of heavy precipitation. Construction activities will comply with Island County and WSDOT erosion and sediment control standards.

- g. **About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?**

About 15% or less of the Camano Vista Water District Service Area are and will remain covered with impervious surfaces, such as asphalt roads, buildings, sidewalks, and driveways. Impacts of proposed action will result in a negligible increase in impervious surfaces.

- h. **Proposed measures to reduce or control erosion, or other impacts to the earth, if any.**

Construction will comply with Northwest Clean Air Agency requirements. Erosion control plans will be submitted to Island County in conjunction with the construction plans per each project designated in the Water System Plan. A Storm Water Pollution Prevention Plan will be submitted to the Washington Department of Ecology as part of the Construction Stormwater General Permit for each project, if required.

2. Air [Find help answering air questions](#)

- a. **What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.**

During construction – Diesel exhaust from heavy equipment and trucks; dust from excavation, earth moving, and vehicle tires. During operation – occasional vehicle emissions.

- b. **Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.**

No.

- c. **Proposed measures to reduce or control emissions or other impacts to air, if any.**

For each project outlined in the plan dust control measures and stabilized construction entrances that comply with Island County or WSDOT standards will be used, where necessary.

3. Water [Find help answering water questions](#)

a. Surface Water: [Find help answering surface water questions](#)

1. Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

No permanent or intermittent streams are found within the service area.

2. Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

N/A

3. Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

None.

4. Will the proposal require surface water withdrawals or diversions? Give a general description, purpose, and approximate quantities if known.

No.

5. Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No, nor the 500-year flood plain.

6. Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No.

b. Ground Water: [Find help answering ground water questions](#)

1. Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give a general description, purpose, and approximate quantities if known.

Yes, part of the Water System Plan involves adding a new well and area to withdraw groundwater using existing water rights. The purpose of the new well is to add to system capacity, system redundancy, and to prevent saltwater intrusion into the aquifer by more evenly distributing water withdrawal zones.

- 2. Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (domestic sewage; industrial, containing the following chemicals...; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.**

There are approximately 218 properties within the CVWD and nearly every property appears (based on Island County GIS) to have a single-family home (house or mobile home). Each home is assumed to have a septic tank for domestic sewage.

c. Water Runoff (including stormwater):

- 1. Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.**

Stormwater runoff will be minimal for most projects within the water system plan. All runoff related to pipe system expansions will come from paved parking and drive surfaces and building roofs. The general flow will be away from improvement sites, as the system is located near the ridgecrest of Camano Island, and will be contained and treated on-site via grass-lined bio-retention swales and permitted UIC injection wells in accordance with Island County storm drainage design standards and Western Washington Storm Water Management standards.

- 2. Could waste materials enter ground or surface waters? If so, generally describe.**

Not likely as long as normal industry standards are used in construction of improvements.

- 3. Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.**

No. Most of the work will be underground or on existing roadways. The Camano Vista Water System Plan only has a few projects where structures could alter drainage patterns. These projects will utilize engineered drainage systems that will collect stormwater runoff in designated areas but will remain functionally the same. All stormwater will be retained on-site in the developed condition.

4. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any.

A storm drainage management plan will be prepared in conformance with Island County storm drainage standards. Stormwater will be collected on-site and treated through infiltration into drywells and swales.

4. Plants [Find help answering plants questions](#)

a. Check the types of vegetation found on the site:

deciduous tree: alder, maple, aspen, other

evergreen tree: fir, cedar, pine, other

shrubs

grass

pasture

crop or grain

orchards, vineyards, or other permanent crops.

wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other

water plants: water lily, eelgrass, milfoil, other

other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

Minimal vegetation will be removed. The majority of water pipe work is in already developed areas adjacent road shoulder or under existing paved surfaces. All other projects proposed in the Camano Vista Water System Plan will be assessed before construction. Native trees, shrubs, and grasses will be removed for grading and construction purposes.

Disturbed areas across the Water District Boundary will be re-landscaped with approved, non-invasive vegetation to a similar to preexisting conditions.

c. List threatened and endangered species known to be on or near the site.

None known. Washington Department of Fish & Wildlife Threatened and Endangered Species Maps consulted.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any.

All disturbed landscaping will be amended with approved, non-invasive vegetation to meet Camano /Island County's requirements for disturbed soils.

e. List all noxious weeds and invasive species known to be on or near the site.

Garlic Mustard.

5. Animals [Find help answering animal questions](#)

- a. List any birds and other animals that have been observed on or near the site or are known to be on or near the site.

Examples include:

- **Birds:** hawk, heron, eagle, songbirds, **other:** Common loon, puffin, blue heron, ducks, geese, swans, waterfowl, pigeons, sparrows
- **Mammals:** deer, bear, elk, beaver, **other:** Bats, deer
- **Fish:** bass, salmon, trout, herring, shellfish, **other:** Sturgeon, salmon, cod, rockfish, sole

- b. List any threatened and endangered species known to be on or near the site.

Marbled Murrelet, Short-tailed Albatross, Tufted Puffin, Oregon Vesper Sparrow

- c. Is the site part of a migration route? If so, explain.

Yes, the Camano Vista Water District Service Area is within the mapped Pacific Flyway.

- d. Proposed measures to preserve or enhance wildlife, if any.

None proposed.

- e. List any invasive animal species known to be on or near the site.

Bullfrog

6. Energy and Natural Resources [Find help answering energy and natural resource questions.](#)

- a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

Electricity will be used to run well pumps and booster pumps to provide residential water demand during low and peak use times.

- b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No.

- c. **What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any.**

Industry standard energy conservation measures including compliance with Washington Energy Code will be incorporated into design documents, as applicable, for all proposed improvements.

7. Environmental Health [Find help with answering environmental health questions](#)

- a. **Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur because of this proposal? If so, describe.**

None known.

1. **Describe any known or possible contamination at the site from present or past uses.**

None known.

2. **Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.**

None known.

3. **Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.**

Gasoline and oil could be stored on-site for construction equipment maintenance.

4. **Describe special emergency services that might be required.**

None.

5. **Proposed measures to reduce or control environmental health hazards, if any.**

See Cross-Connection Control Program and Operation and Maintenance Program in Water System Plan document.

b. Noise

- 1. What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?**

The area is primarily rural, rural residential and rural forest, most of the noise will be from vehicular traffic on East Camano Drive and South Camano Drive. No noise in the area will affect any project listed in the Camano Vista Water System Plan.

- 2. What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site)?**

Moderate to high noise will be generated by construction equipment to various degrees during the construction of each project outlined in the Water System Plan. Low noise levels will be generated intermittently over the long-term for operation of water wells, pumps, and storage tanks.

- 3. Proposed measures to reduce or control noise impacts, if any.**

None proposed.

8. Land and Shoreline Use [Find help answering land and shoreline use questions](#)

- a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.**

Camano Vista is a residential community, and the "Residential" use is expected to be maintained in a developed condition. The current zoning for parcels within the service area is rural.

- b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses because of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?**

Not applicable with current land use/zoning.

- 1. Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how?**

No.

a. Describe any structures on the site.

Single-family residential houses, garages, and shop buildings.

b. Will any structures be demolished? If so, what?

Unknown, but none are proposed at this time.

c. What is the current zoning classification of the site?

Rural or Rural Residential.

d. What is the current comprehensive plan designation of the site?

Rural

e. If applicable, what is the current shoreline master program designation of the site?

Not applicable.

f. Has any part of the site been classified as a critical area by the city or county? If so, specify.

Portions of the site contain "Steep Slopes (40+%" critical area shading on Island County's GIS map. However, the Water System Service Area Map (Ref "191971 GIS MAP") shows the proposed water system improvements avoiding the steep slopes.

g. Approximately how many people would reside or work in the completed project?

As of 2021 there were about 197 water connections that serve about 469 people. There will be approximately 213 to 225 total water connections proposed with the water system plan. There will be about 500 to 535 people residing in the water service area using an estimate of about 2.38 people per connection.

h. Approximately how many people would the completed project displace?

None.

i. Proposed measures to avoid or reduce displacement impacts, if any.

None proposed.

j. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any.

None. Camano Vista Water District is a Class A water system and is allowed to build and maintain its system throughout its boundary for rural residential zoning.

k. Proposed measures to reduce or control impacts to agricultural and forest lands of long-

term commercial significance, if any.

None. Impact will be negligible.

9. Housing [Find help answering housing questions](#)

- a. **Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.**

None.

- b. **Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.**

None.

- c. **Proposed measures to reduce or control housing impacts, if any.**

None.

10. Aesthetics [Find help answering aesthetics questions](#)

- a. **What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?**

Few structures will be constructed as a part of the Water System Plan. The well and associated structure will be 2feet in height and the proposed water storage reservoir will be around 12feet in height.

- b. **What views in the immediate vicinity would be altered or obstructed?**

Minimal to none. Some trees may need to be removed for the well head and water storage tank projects, but most of the piping is under existing roadways.

- c. **Proposed measures to reduce or control aesthetic impacts, if any.**

None proposed.

11. Light and Glare [Find help answering light and glare questions](#)

- a. **What type of light or glare will the proposal produce? What time of day would it mainly occur?**

Minimal. The only glare that could be produced is from light reflected off a new water tank.

- b. Could light or glare from the finished project be a safety hazard or interfere with views?**

No

- c. What existing off-site sources of light or glare may affect your proposal?**

None.

- d. Proposed measures to reduce or control light and glare impacts, if any.**

None.

12. Recreation [Find help answering recreation questions](#)

- a. What designated and informal recreational opportunities are in the immediate vicinity?**

None.

- b. Would the proposed project displace any existing recreational uses? If so, describe.**

No.

- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any.**

N/A

13. Historic and Cultural Preservation [Find help answering historic and cultural preservation questions](#)

- a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers? If so, specifically describe.**

Mabana School (no determination).

- b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.**

We consulted WISAARD and nothing was found. Attached is a copy of a cultural resource review report that encouraged a determination of no historic properties affected for work done within the water tank parcel.

- c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.**

We consulted WISAARD.

- d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.**

None proposed. An archaeology study performed by Drayton Archaeology found no evidence of precontact or historic materials in the project area and asserts that the project should proceed as designed without further archaeological oversight.

14. Transportation [Find help with answering transportation questions](#)

- a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.**

Main roads accessing the water service area are S. East Camano Drive, South Camano Drive, and Dallman Road. Glacier Lane or Shuksan Drive can be used as access routes for residents during water line replacement construction. Phasing of construction could allow for better residential access.

- b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?**

CVWD is currently served by public transit along S. East Camano Drive and Dallman Road.

- c. **Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle, or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).**

No.

- d. **Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.**

No. It will transport potable water through an underground piping system.

- e. **How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?**

One per day.

- f. **Will the proposal interfere with, affect, or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.**

No. The projects are off main roads in a rural residential area. There will be a minimal impact on the main roads via delivery trucks and construction vehicles transported to the project sites.

- g. **Proposed measures to reduce or control transportation impacts, if any.**

None.

15. Public Services [Find help answering public service questions](#)

- a. **Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.**

No.

- b. **Proposed measures to reduce or control direct impacts on public services, if any.**

None.

16. Utilities [Find help answering utilities questions](#)

- a. **Circle utilities currently available at the site: electricity, natural gas, water, refuse service, telephone, sanitary sewer, septic system, other:**

Electricity will be available at some site locations.

- b. **Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.**

The projects will be adding potable water infrastructure to multiple sites by the service provider. Electricity will be required for general construction activities on most sites. Refuse service will be required for disposal of construction materials. Portable sanitary service will be required for each project construction site. Water trucks will be on-site for soil compaction. Future pipeline replacement projects in the right-of-way will involve attempting to place the new pipe in non-asphalt areas such as road shoulders and ditches, when possible. When not possible, a combination of road bores and open trench construction (asphalt sawcut and replacement) will likely be used.

C. Signature [Find help about who should sign](#)

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

X: _____

Type name of signee: Benjamin Ware

Position and agency/organization: Click or tap here to enter text.

Date submitted: Click or tap to enter a date.

D. Supplemental sheet for nonproject actions

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

The proposal would not be likely to increase the discharge of water. It is possible but unlikely that any new or existing treated potable water storage will be discharged in the event of an overflow or emergency. Carbon based emissions released into the air would increase during construction and then would return to normal levels. Chlorination is already used in water treatment and is stored at locations in the water district. A new booster pump house would potentially help decrease the amount of noise generated via walls as barriers and new quieter functioning equipment.

- **Proposed measures to avoid or reduce such increases are:**

- ✓ Treated water overflow will have retention areas that can evaporate or percolate into soils without flowing directly into natural drainage areas.
- ✓ Chemical storage will be maintained in a designated containment area.
- ✓ Insulation and construction materials used will likely block noise from well pumps.

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

The proposal would not have much effect on plants, animals, fish, or marine life. Likely some trees would need to be removed during construction. Most of the pipe replacements will be along or under existing roadways and other construction will be on existing sites.

- **Proposed measures to protect or conserve plants, animals, fish, or marine life are:**

- ✓ Use state and county approve erosion and sediment controls and establish an erosion and sediment control plan for every proposed site.

- ✓ Replant trees and other natural vegetation in kind in disturbed areas.

3. How would the proposal be likely to deplete energy or natural resources?

The proposal would not deplete energy or natural resources. While more energy will be used during and after construction of each project, it will be of a greater benefit to all the residents in the Camano Vista Water District by providing safe drinking water. The projects will either have no effect or only have a minimal effect on natural resources. Added connections and a well head will draw more water from the aquifers. However, the new wellhead will also help prevent saltwater intrusion into the aquifers by spreading out the well fields for less impact on groundwater drawdowns from pumping.

- **Proposed measures to protect or conserve energy and natural resources are:**

- ✓ The addition of a new wellhead to lessen the effects of pumping drawdown in the aquifer and will help prevent saltwater incursion into groundwater.
- ✓ All new pumps and generators installed in the proposed projects will be more energy efficient.
- ✓ Establish and follow an Operation and Maintenance Program.
- ✓ Follow the Seawater Intrusion Plan.

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection, such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

The proposed projects in the Camano Water System Plan would have little to no impact on environmentally sensitive areas, threatened or endangered species habitat, historic or cultural sites, or any other lands. No streams or waterways flow through the Camano Vista Service Area boundary.

- **Proposed measures to protect such resources or to avoid or reduce impacts are:**

- ✓ Best management practices for onsite stormwater or potable water overflow retention will be utilized.
- ✓ Approved erosion and sediment controls will be used for each project outlined in the water system plan.
- ✓ Replant disturbed areas with natural vegetation, where applicable.

- ✓ Minimize disturbance of any wetland areas.

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

The proposed projects in the Water System Plan are more than 200-feet inland and will not affect shoreline use. The projects will encourage an increase in land development within the Camano Vista Water Service Area. However, the projects outlined in the Plan will not encourage land or shoreline uses that are incompatible with the existing rural residential zoning in existing plans.

- **Proposed measures to avoid or reduce shoreline and land use impacts are:**

- ✓ Provide the given number of connections within the Water System Plan to meet the land use density of rural residential zoning as well as new projected connections and population numbers to limit growth.

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Camano Vista Water District is a utility, and its expansion projects and upgrades may increase the need for other services. However, the projects outlined in the Water System Plan will have minimal impact on transportation and other public services. Fire protection will increase with pipe project upgrades.

- **Proposed measures to reduce or respond to such demand(s) are:**

- ✓ Upgrade water lines and add booster pumps to provide adequate fire flow for residents within the Camano Vista Water Service Area.

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

The project will not conflict with any state or federal laws or requirements for the protection of the environment. As a Class A Water System, Camano Vista must follow stringent federal and state guidelines including the Safe Drinking Water Act of 1974 (and as amended) to provide its customers safe, clean drinking water. The Water District must also follow state and federal environmental policies from the Department of Ecology and the EPA. The Water District also must follow the established Island County Land Use Plan.

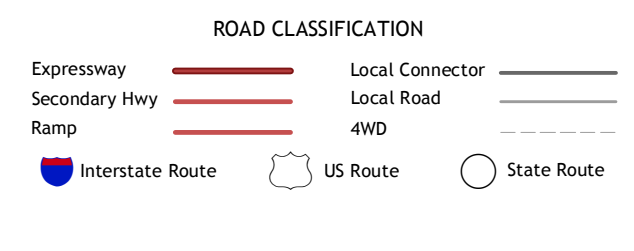
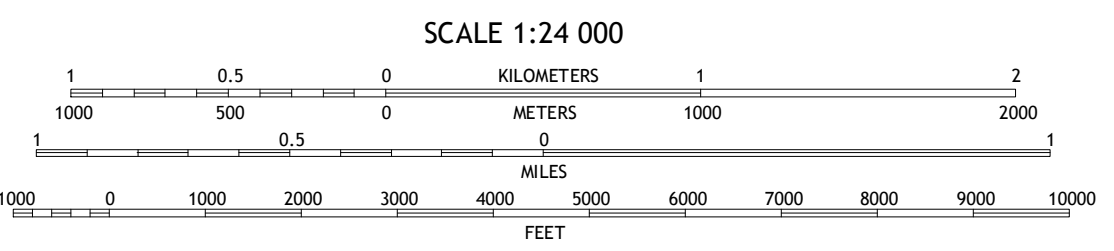
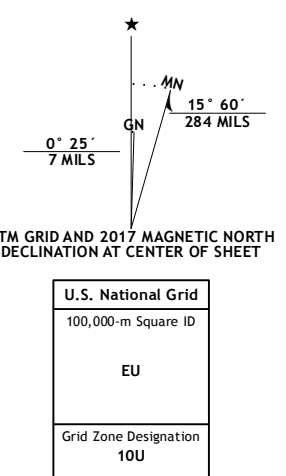


Approximate Water System Service area

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid: Universal Transverse Mercator, Zone 10U
10 000-foot ticks: Washington Coordinate System of 1983 (north zone)

This map is not a legal document. Boundaries may be generalized for this map scale. Private lands within government reservations may not be shown. Obtain permission before entering private lands.

Imagery.....NAIP, November 2015
Roads.....U.S. Census Bureau, 2015
Names.....GNIS, 2016
Hydrography.....National Hydrography Dataset, 2015
Contours.....National Elevation Dataset, 2001
Boundaries.....Multiple sources; see metadata file 1972 - 2016
Public Land Survey System.....BLM, 2016
Wetlands.....FWS National Wetlands Inventory 1977 - 2014



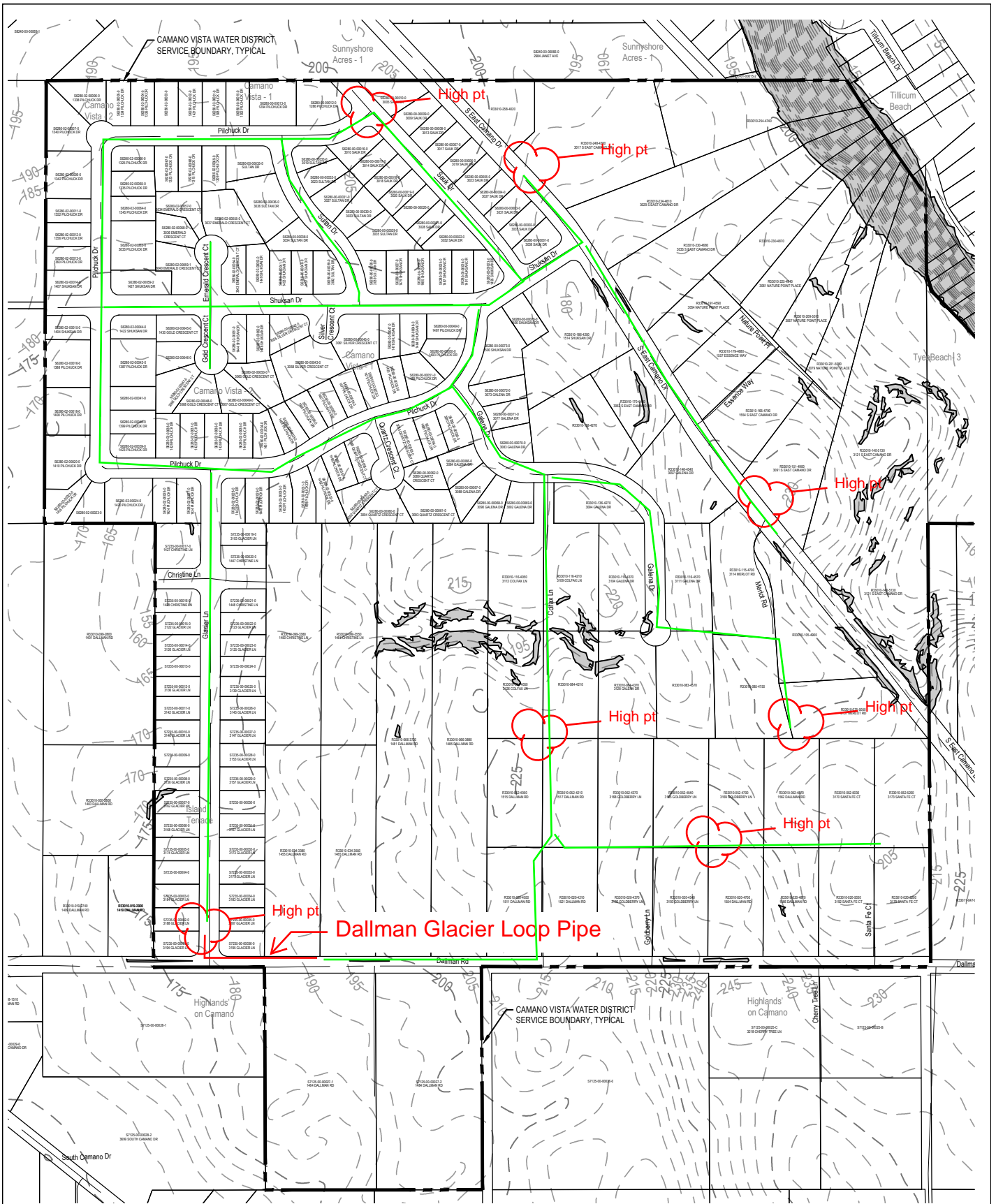
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ADJOINING QUADRANGLES

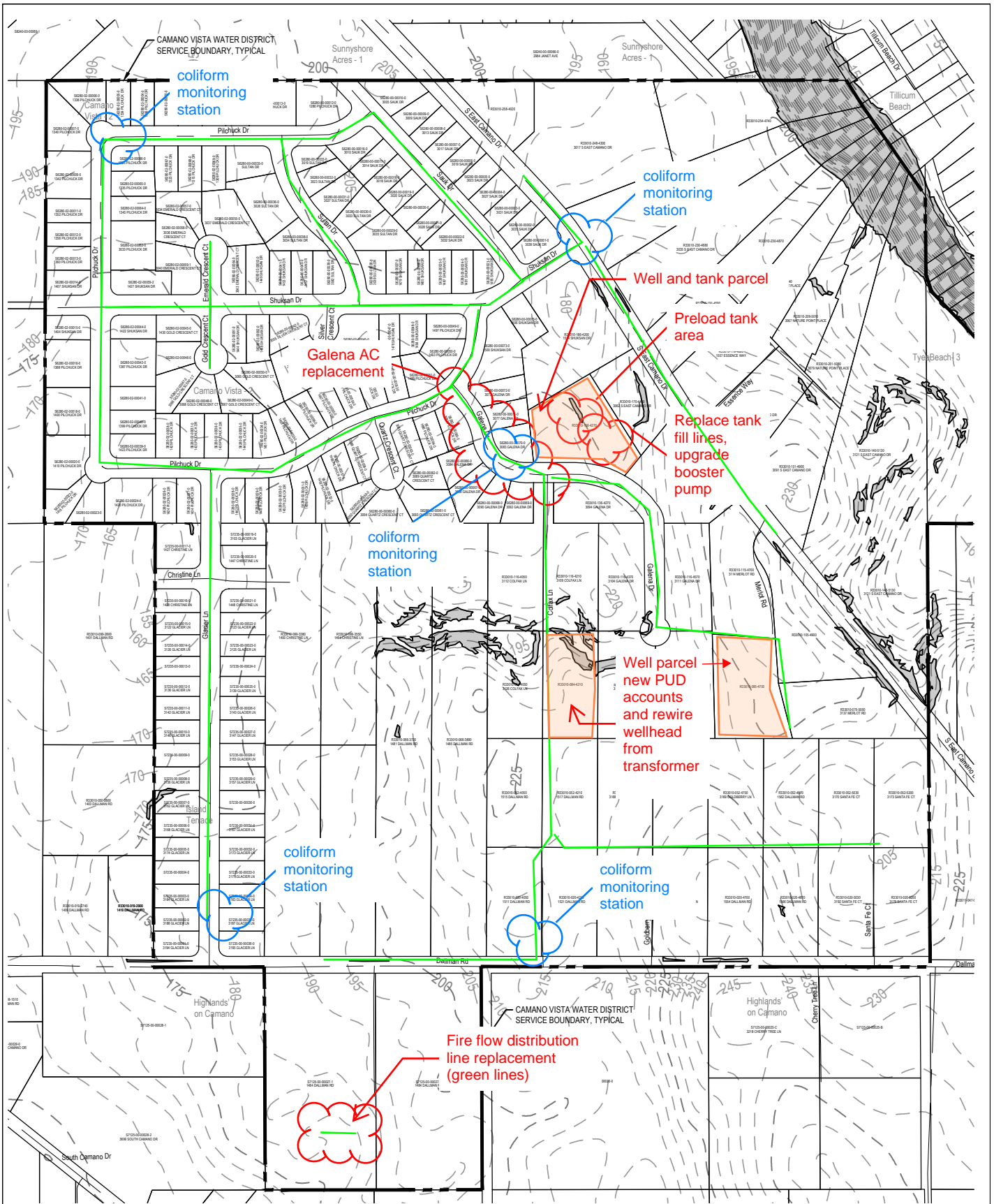
LANGLEY, WA
2017



Figure 2
USGS Topographic Map



 <p>1101 2nd Avenue, Suite 400 Seattle, WA 98101 ph 206.623.0717 www.coffman.com</p>	TITLE: 10-YEAR CAPITAL IMPROVEMENT PLAN MAP		
	PROJECT: WATER SYSTEM PLAN		REF: 191971 GIS MAP
	CLIENT: CAMANO VISTA WATER DISTRICT		SHEET NO:
	PROJ. NO. DATE	191971 7/24/23	CHECKED DRAWN



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 Seattle, WA 98101
 ph 206.623.0717
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TITLE: 20-YEAR CAPITAL IMPROVEMENT PLAN MAP			
PROJECT: WATER SYSTEM PLAN		REF: 191971 GIS MAP	
CLIENT: CAMANO VISTA WATER DISTRICT		SHEET NO:	
PROJ. NO.	191971	CHECKED	BHW
DATE	7/24/23	DRAWN	BHW
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CULTURAL RESOURCES REPORT COVER SHEET

DAHP Project Number: 2019-10-08119

Authors: Garth L. Baldwin

Title of Report: Cultural Resource Review of Proposed Upgrades for the Camano Vista Water System, 3093 Galena Drive (TPN: R33010-158-4270), Camano Island, Washington

Date of Report: November 14, 2019

County: Island Section: 10 Township: T30N Range: 3E
Quad: Langley, WA (1973) Acres: <1

PDF of report submitted (REQUIRED) Yes

Historic Property Inventory Forms to be Approved Online? Yes No

Archaeological Site(s)/Isolate(s) Found or Amended? Yes No

TCP(s) found? Yes No

Replace a draft? Yes No

Satisfy a DAHP Archaeological Excavation Permit requirement? Yes # No

Were Human Remains Found? Yes DAHP Case # No

DAHP Archaeological Site #:

Submission of PDFs is required.

- Please be sure that any PDF submitted to DAHP has its cover sheet, figures, graphics, appendices, attachments, correspondence, etc., compiled into one single PDF file.
- Please check that the PDF displays correctly when opened.



DRAYTON ARCHAEOLOGY

Cultural Resource Review of Proposed Upgrades for the Camano Vista Water System, 3093 Galena Drive (TPN: R33010-158-4270), Camano Island, Washington



Prepared By:
Garth L. Baldwin, M.A., RPA 16248

Prepared For:
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Camano Vista Water District
3093 Galena Drive
Camano Island, WA 98282.

Drayton Archaeology Report: 1019M
November 14, 2019

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Cultural Resource Review of Proposed Upgrades for the Camano Vista Water System, 3093 Galena Drive (TPN: R33010-158-4270), Camano Island, Washington

Author: Garth L. Baldwin
Date: November 14, 2019
Location: Camano Island, Island County, Washington
USGS Quad: Langley, WA (1968)
Township, Range, Section: T30N, R3E, S10

SUMMARY

Drayton Archaeology (Drayton) was retained by Camano Vista Water District to assist in the Camano Vista Water System Upgrade Project (the project). The proposed work would be located at 3093 Galena Drive, Camano Island, Island County, Washington (TPN: R33010-158-4270). The project intent is to upgrade the existing water system. The proposed work will be funded through Washington Department of Health (DOH), Drinking Water State Revolving Fund (DWSRF). The funds are distributed by DOH, but originate with the U.S. Environmental Protection Agency (EPA). As lead federal agency, EPA is responsible for ensuring that projects funded by the DWSRF meet Section 106 requirements. The present cultural resources review was conducted as partial compliance to Section 106, while consultation of parties is the preview of the lead federal agency.

The present investigation consisted of a background review, field investigation, and production of this report. Background review determined the APE to be located in an area of low to moderate probability for cultural and historic properties. The original field investigation included pedestrian and subsurface surveying. During the course of background and field research, no evidence of cultural and historic properties was identified. Drayton asserts that the project should proceed as designed and without further archaeological oversight. The lead federal agency is still encouraged to assert a determination of No Historic Properties Affected to all consulting parties.

REGULATORY CONTEXT

The current review was conducted, in part, to satisfy regulatory requirements for Section 106 of the NHPA and the implementing regulations in 36 CFR Part 800. Section 106 requires Federal agencies take into account the effects of undertakings on historic properties. A historic property is typically aged 50 years or older and is defined in 36 CFR part 800.16(1)(1) as follows:

... any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native

Hawaiian organization and that meet the National Register criteria.

The procedures under Section 106 generally require the Federal agency involved in the undertaking to identify the APE, inventory any historic properties that may be located within the APE, and determine if the identified historic properties located within the APE may be eligible for listing on the NRHP. An APE is defined in 36 CFR 800.16(d), as follows:

... the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

If NRHP-eligible historic properties are identified within the APE, then potential adverse effects to the historic properties must be assessed and a resolution of adverse effects must be recommended. Under Section 106, the responsible Federal agency must, at a minimum, consult with and seek comment from the State Historic Preservation Officer (SHPO) and/or the Tribal Historic Preservation Officer (THPO), as applicable, and consult with any affected or potentially affected Native American Tribe(s).

AREA OF POTENTIAL EFFECTS (APE)

The project is located at 3093 Galena Drive (TPN: R33010-158-4270) on Camano Island, in Island County, Washington, Section 10, Township 30 North, Range 3 East, Willamette Meridian (Figures 1 – 2). The project proposes upgrades to the current facility including pipeline installations on E Dalman Road and Galena Drive (Figure 3).

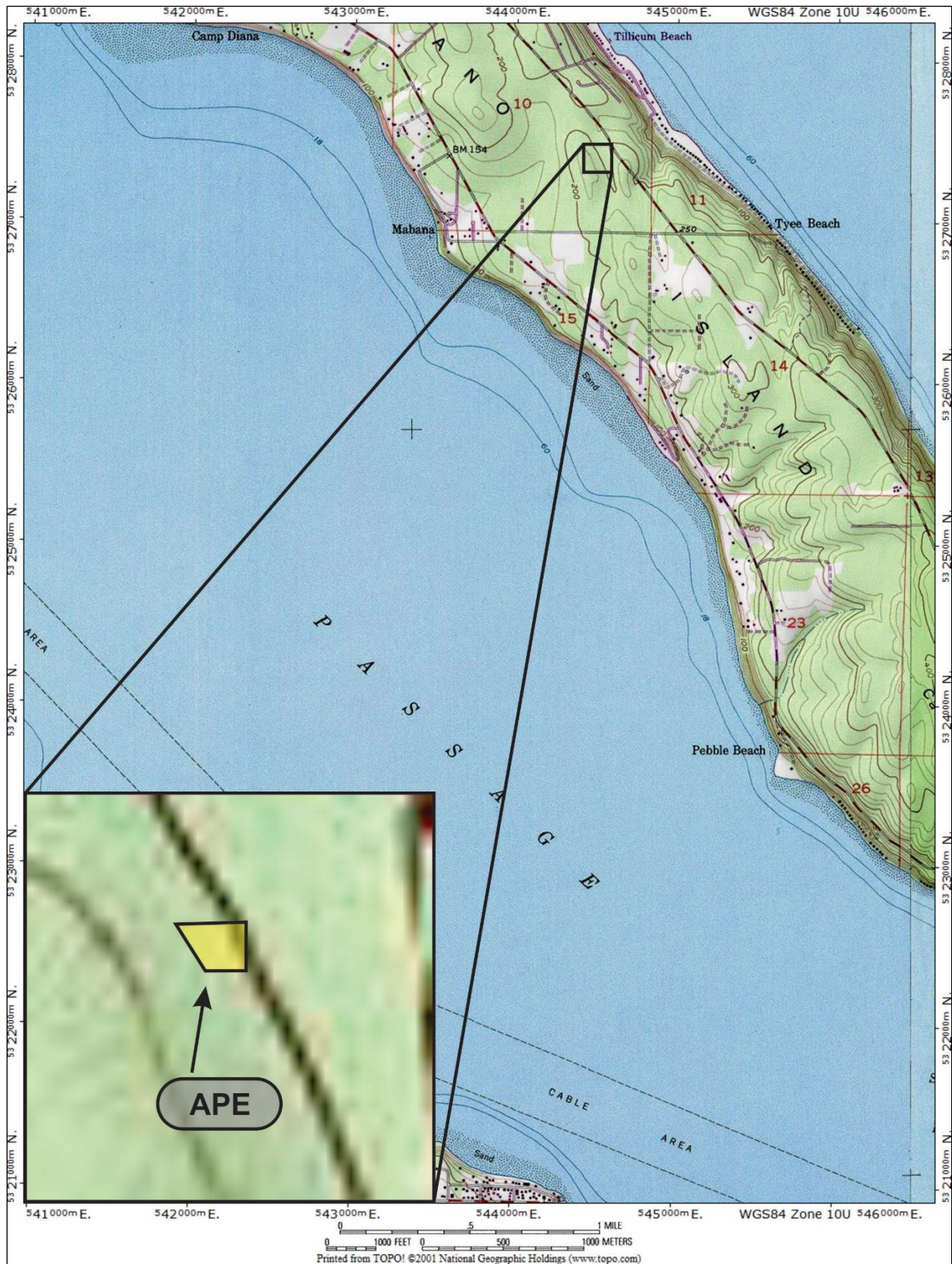


Figure 1. USGS (1968) Langley, WA topographic map detailing the location of the APE.



Figure 2. Aerial map indicating the APE. Image from Google Earth adapted by Drayton Archaeology.

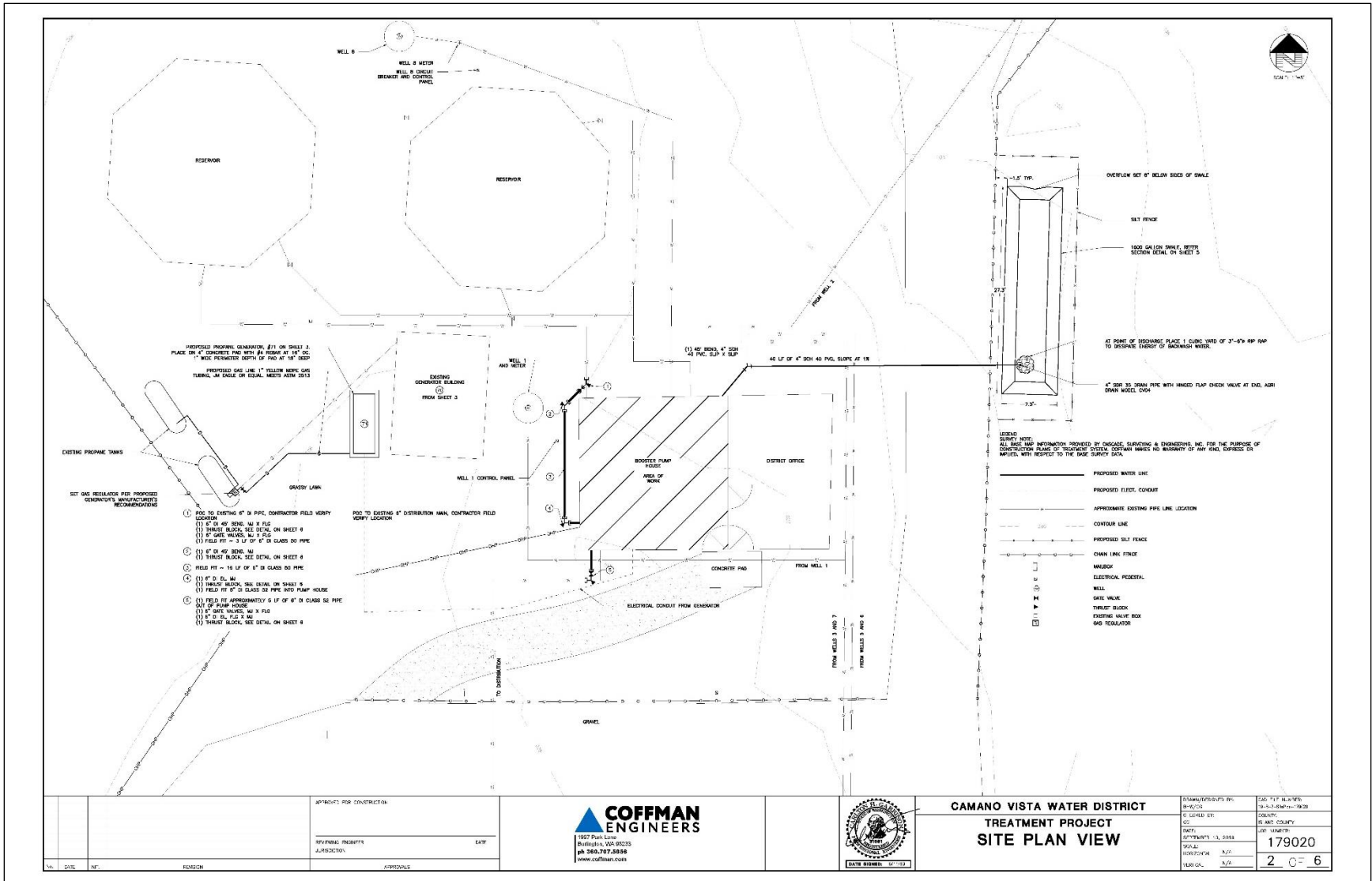


Figure 3. Proposed site plan provided by Coffman Engineers.



CAMANO VISTA WATER DISTRICT
 TREATMENT PROJECT
 SITE PLAN VIEW

DESIGNED BY:	DATE:
DRAWN BY:	SCALE:
CHECKED BY:	PROJECT NO.:
DATE:	179020
DATE:	2 OF 6

COFFMAN ENGINEERS
 1901 Paul Lane
 Everett, WA 98203
 PH 425.797.8898
 WWW.COFFMAN.COM

APPROVED FOR CONSTRUCTION:	DATE:
BY:	
JURISDICTION:	APPROVAL:

BACKGROUND REVIEW

Determining the probability for cultural resources to be present within the APE was based largely upon review and analysis of past environmental and cultural contexts and previous cultural resources studies and sites recorded within one mile of the project area. Consulted sources included reviewing local geologic data to better understand the depositional environment; archaeological, historic and ethnographic records on file on the Washington Information System for Architectural and Archaeological Records Data (WISAARD) database; and selected published local historic records.

Environmental Context

Geology

Most of the surficial geology on Camano Island is a result of the Fraser Glaciation. Vashon Stade (of the Fraser Glaciation) outwash appears to have begun to accumulate in the Puget Lowlands no earlier than approximately 17,000 years BP (Booth 1994; Polenz et. al 2005). The Puget Lobe of the Cordilleran Ice Sheet had advanced to the area by around 15,000 years BP (Booth 1991; Porter and Swanson 1998; Polenz et. al 2005) covering Camano Island with approximately 4,000 feet (ft) of ice (Thorson 1980; 1981; 1989). As ice retreated at the end of the Vashon Stade around 2,000 years BP, western Camano Island appears to have been ice free and not yet submerged under the Everson Interstade incursion of marine water (Polenz et. al 2009).

As the land rebounded after glacial retreat sea levels were in flux. A generalized model of sea level change developed for the Southern Strait of Georgia region suggests that the mean sea level was approximately 140 meters (m) higher than its current level immediately following deglaciation approximately 12,000 years BP, primarily due to eustatic depression of the earth's crust by the weight of the ice (Clague 1981; 1989). Isostatic rebound occurred rapidly until approximately 11,000 to 10,000 years BP, resulting in a mean sea level several meters below its current level. After approximately 10,000 years BP a very gradual eustatic sea level rise led to resubmergence of previously exposed land. Modern sea levels were obtained in the Gulf and San Juan Islands by approximately 4,000 years BP (Clague et al. 1991). As sea levels stabilized during the mid-Holocene, coastal beach deposits began to accumulate along the shores of Camano Island.

Soils

According to the University of California Davis WebSoil Survey (UC Davis SoilWeb n.d.) and the National Resources Conservation Service (NRCS n.d.) soils within the APE have been mapped as consisting primarily of Uselessbay-Utsalady complex, 0 to 10 percent slopes.

The Uselessbay series consists of moderately deep, moderately well drained soils that formed in sandy glacial outwash over dense glacial drift. Uselessbay soils are found on summits and side slopes of narrow ridges with slopes from 0 to 30 percent. A typical Pedon consists of an Oi horizon 0 to 4 centimeters; slightly decomposed needles, leaves, and twigs, an A horizon 4 to 8 centimeters; gravelly

sandy loam, a Bw1 horizon 8 to 23 centimeters; gravelly sandy loam, a Bw2 horizon 23 to 38 centimeters; gravelly loamy sand, a C horizon 38 to 85 centimeters; gravelly sand, a Cg horizon 85 to 93 centimeters; gravelly sand, and a Cd horizon 93 to 152 cm; grayish brown gravelly sandy loam (UC Davis SoilWeb n.d.).

The Utsalady series consists of very deep, well drained soils that formed in sandy glacial outwash. Utsalady soils occur on broad flat summits and toeslopes with slopes from 0 to 30 percent. A typical pedon consists of an Oi horizon 0 to 3 centimeters; slightly decomposed needles, leaves, and twigs, an E horizon 3 to 5 centimeters; loamy sand, a Bw1 horizon 5 to 38 centimeters; loamy sand, a Bw2 horizon 38 to 79 centimeters; gravelly loamy sand, a Bw3 horizon 79 to 107 centimeters; loamy sand, a C horizon 107 to 127 centimeters; sand, a Cg1 horizon 127 to 140 centimeters; loamy sand, and a Cg2 horizon 140 to 152 centimeters; sand (UC Davis SoilWeb n.d.).

Vegetation and Fauna

The APE lies within the *Tsuga heterophylla* vegetation zone (Franklin and Dyrness 1973:44-5), which is characteristic of the Puget Sound basin. Native vegetation would have included, but not have been limited to Douglas fir (*Pseudotsuga menziesii*), western red cedar (*Thuja plicata*), western hemlock (*Tsuga heterophylla*), salal (*Gaultheria shallon*), and vine maple (*Acer circinatum*). Other locally important and available species would have included bracken fern (*Pteridium aquilinum*), blackcap (*Rubus occidentalis*), currants (*Ribes* spp.), deer fern (*Blechnum spicant*), devil's club (*Oplopanax horridus*), gooseberries (*Ribes* spp.), huckleberries (*Vaccinium* spp.), Indian plum (*Oemleria cerasiformis*), oceanspray (*Holodiscus discolor*), red elderberry (*Sambucus racemosa*), snowberry (*Symphoricarpos albus*), sword fern (*Polystichum munitum*) and trailing blackberry (*Rubus ursinus*) (Franklin and Dyrness 1973:44-5; Pojar and MacKinnon 1994). Large areas would have differed from the broader regional pattern, however, with areas of prairie, oak woodland, and pine forest being distributed throughout the southern Puget Sound basin (Franklin and Dyrness 1973:88).

The APE lies in an area high in marine resources. Seals were likely hunted but fish, especially salmon, were a staple food source (Suttles and Lane 1990). Herring (*Clupea pallasii*), smelt or eulachon (*Thaleichthys pacificus*), halibut (*Hippoglossus stenolepis*), flatfish and rockfish would have also been abundant in the area. Shellfish including littleneck clams (*Protothaca staminea*), butter clams (*Saxidomus giganteus*), horse clams (*Tresus capax*), bay mussels (*Mytilus edulis*), cockles (*Clinocardium nuttallii*), and native oysters (*Ostrea lurida*) would have been harvested as well as crab (*Crustacea*). Terrestrial animals in the area would have included black tailed deer (*Odocoileus hemionus*), elk (*Cervus canadensis*), black bear (*Ursus americanus*), beavers (*Castor canadensis*), as well as other small game and many species of waterfowl.

Cultural Context

Puget Lowland archaeology can be subdivided into three phases that include early (end of the last ice age to 5,000 years BP), middle (5,000 to 1,000 BP) and late stages of development (1,000 to 250 BP). The early period is characterized by an emphasis on the use of flaked stone tools including fluted

projectile points, leaf-shaped points and cobble-derived tools. In the regional area, these artifacts are often attributed to the “Olcott” phase, named after the site type near Arlington and Granite Falls (Baldwin 2008; Kidd 1964; Mattson 1985). Olcott sites are generally found some distance from modern shorelines and on terraces of major river valleys. Besides the lithic assemblage, little faunal or organic evidence remains that date to this period. While the paucity of evidence beyond a lithic assemblage suggests a specialization of generalized terrestrial hunting, it is likely that littoral evidence from this time period is not as extensive and does not preclude some exploitation of marine resources. During this phase, camps were frequently established along river terraces or outwash channels.

The middle period coincides with a stabilization of the environment to something similar to today. The broad cultural patterns include a larger suite of specialized tools including smaller notched points and groundstone, and bone or antler implements used for working with wood. Although lithic manufacture of stemmed bifaces and cobble tools is maintained in this period, ground stone tools are less common. Shell midden sites first appear during this period indicating a transition to a more maritime-based subsistence pattern. Although structural elements such as post molds have been identified, habitation structures have not yet been excavated. The middle period is noted for its increased artifact and trait diversity including a full woodworking toolkit, art and ornamental objects, status differentiation in burials, and extremely specialized fishing and sea-mammal hunting technologies.

The late period is dominated by a settlement pattern along the coastline and along streams and rivers. Trade goods also appear indicating extensive trade networks up and down the coast as well as with inland Plateau peoples. Salmon became a primary food source at this time as sea levels had risen and riparian environments supported large runs of salmon and provided plentiful food for native populations. The late period is recognized by an apparent decrease in artifact diversity. Stone carving and chipped stone technologies nearly disappear, while increased habitation and fortifications are common.

Precontact

The precontact and ethnographic inhabitants of the area practiced a semi-sedentary land use system based on hunting, fishing, and gathering resources in the summer months in order to stockpile them for winter use. As with most of Puget Sound peoples, this settlement economy was centered on dispersed temporary camping sites in the spring and summer and larger, multi-family villages in the winter. Transportation was mostly on water in large dugout canoes, which allowed for much faster movement than did overland routes. During spring, summer, and fall people focused primarily on resource acquisition moving to different temporary camps to hunt, fish, and gather food. Temporary shelters were often constructed of poles covered with cattail mats. Much of the food gathered during the summer was stored for winter when people congregated in permanent villages. Large winter houses were constructed from cedar posts, poles, and planks. They relied on salmon as a staple but ate a wide variety of other food as well including fish, shellfish, waterfowl, land mammals, roots, and berries (Sampson 1972; Suttles and Lane 1990).

Inter-tribal use of traditional lands where one group had more sovereignty of the expectation of dominance resulted in staging access to resources of an area. Tweddell (1974:93) termed it as being composed of ...”two circles, an inner circle of usage where other tribes seldom if ever came, except with some special sanction, and an outer circle of usage where other tribes could come on the basis of the traditional alignments of friendship, or with specific permission”. It might be said that in most areas of Camano Island the Snohomish and their subordinate tribes held this distinction. According to Tweddell, “The members of the Snohomish Indian Tribal circle were the Klallam, Chemakum, Lummi, Swinomish, Skagit, Kikialos [sic], Stillaguamish, Snoqualmie, Duwamish, Puyallup, Nisqually, Suquamish, and perhaps the Klickitat” (1974:95).

The project area is located within the traditional-use area of many Southern Coast Salish groups. Various peoples inhabited Camano Island exclusively; however, according to sources the project location is most likely located within the traditional use areas of the Snohomish and Kikiallus (Wessen 1988a; Sampson 1972; Suttles and Lane 1990; Tweddell 1974). Similar to other parts of the Puget Sound area, groups traveled between the islands and mainland as part of their seasonal migration. Suttles and Lane (1990) indicate that Northern Lushootseed was the primary language spoken by the groups in this region. Wessen (1988a) notes that the Snohomish occupied the southern portion of the island, in addition to the southern reaches of Whidbey Island; while the Kikiallus traditionally resided in the northern part of the island. Both groups had close ties with the Stillaguamish and also used upper areas within the Stillaguamish watershed (Ruby and Brown 1992 [1986]). While the people of the island were referred to geographically and not ethnically as: *’t’cak^wbix^w*, people on the mainland were not known by a general term but by their various ethnic names (Tweddell 1974:101).

The Snohomish primarily concentrated their occupations along the Snohomish River between present-day Marysville and Monroe, however there are good sources that identify their use of the southern portions of Camano and Whidbey (Ruby and Brown 1992 [1986]:212, Tweddell 1974). According to sources they were known to maintain seasonal or perhaps longer-term occupations and villages that included, but certainly not limited to, *CtLc ’tLtcL* (Bush Point), *DEqwadzk* (Cultus Bay), *Tc ’tc* Leks (Sandy Point), all on Whidbey Island; and *Xo ’icl*d (Camano Head), Gedney (Hat) Island, Warm Beach, and *Sbi ’bida* (Spee-Bi-Dah), *Hibu ’l³ub* (Everett), *^{tu}xqwota ’itsdEb* (*Quil Ceda* Creek), Priest Point, and inland to *sbah-DAHLH* (Snohomish) (Tweddell 1974:102-103; Waterman 2001:330-371).

A number of camping grounds were noted by Tweddell’s informants along the east and west coasts, and at Camano Head, and that every bay was inhabited, some likely permanent (1974:199). Some of these areas had place names and a number of recorded traditional Snohomish and Lushootseed place names are located from Point Lowell and along the western shoreline, mainly around Camano City (Figure 4). The closest recorded place name to the project area is *^{Tux}qwa ’sus*, or *tx^wq^wasus*, meaning scorched face, or scorched cliff for Point Lowell (Waterman 2001:371). *XwiÚpE’qsEb* refers to a small promontory located along the western shoreline of Camano Island, and *Bite’tc* to a cache, or

place where things are concealed. A number of names have been recorded near *Oowa'lus* or *ʔuʔalus* (Camano City), including *Hadsks* or *hadʔqs*, a long promontory near Camano. North of Camano lies *Heks-qwEsa'lap*, a big place overgrown with a certain kind of tree, and *Bi'bad-qwEsa'lEp*, a small place overgrown with a certain kind of tree. Further to the north is *Tuxxwi'x^wtEb* or *dəxw(x^w)ix^witəb*, place of falling, and *XE'tsxEtsqed*, or *xalxalqid*, bushy head for a knoll overlooking the beach (Waterman 2001:371-373). Tweddell (1974:142) also lists 'x^wet^wetəb and a'uwalos as place names given for Camano City as well as noting it was a camp and prolific clam bed area. Camp Diana, located south of the project area was also noted for its use as a camp area and its clam beds. Osmundson (1964:31-36) also recorded a number of Kikialos place names on Camano Island, as well as two Snohomish seasonal camps located to the east and west of Elger Bay. These locations may reflect cultural materials recorded at 45IS219, 45IS125, and 45IS87.

Diseases had swept through the Puget Sound region decimating most of the native population even before settlers arrived (Suttles and Lane 1990). The Native occupants who signed the Treaty of Point Elliot of 1855, were relegated to several temporary reservations of land. The Swinomish Reservation in Skagit County and the Tulalip Reservation in Snohomish County were two of these that were made permanent in 1873. Other native groups in these areas were expected to move to the reservations and share them; some of these groups did move to the reservations, but many did not. The Stillaguamish began fighting for federal recognition in the 1920s and gained it in the 1970s. They now have recognized tribal lands near Arlington and Smokey Point. The Kikiallus have not been federally recognized (Ruby and Brown 1992 [1986]; Sampson 1972).

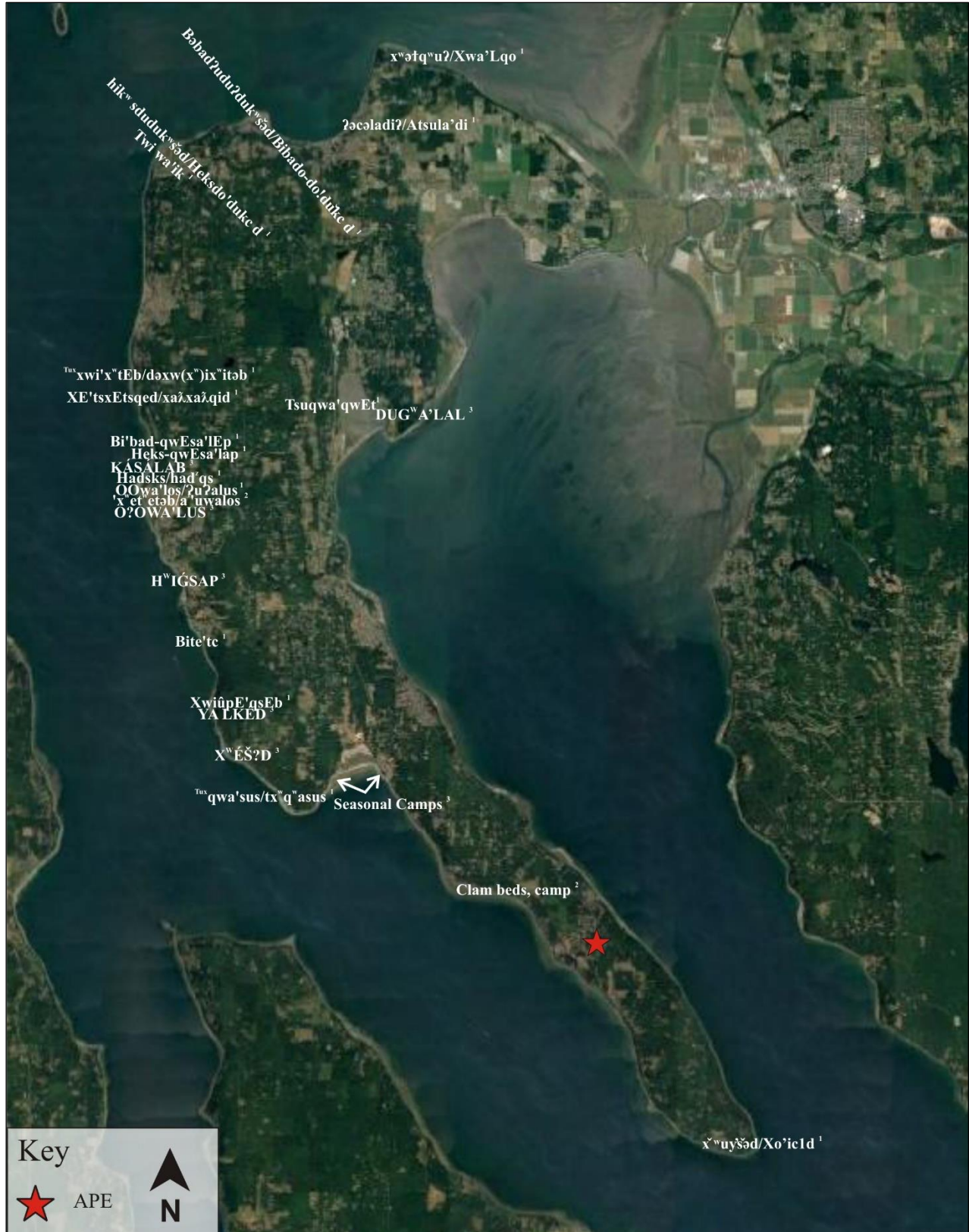


Figure 4. Ariel image indicating the location of place names recorded by Waterman (2001)¹, Tweddell (1974)², and Osmundson (1964)³. Image from Google Earth, adapted by Drayton.

Historic

The waters surrounding Camano Island were first explored by members of a British expedition led by Captain George Vancouver in the spring of 1792. Lt Whidbey was ordered by Vancouver to chart Saratoga Passage during one of several reconnaissance surveys conducted by the crew (Bryan 1955:19). Whidbey was unable to see the east shore of Camano Island because of dense fog on his way down Port Susan Bay during his voyage around Camano Head (Kimball and Dean 1994:7). Later that day, he viewed the west shore of Camano on his trip through Saratoga Passage. Camano Island was first officially charted in 1841 by the Wilkes expedition as "McDonough's Island" in honor of Master Commandant Thomas McDonough, captain of the USS Saratoga during the War of 1812. Subsequently, in 1847, Captain Kellett of the British Navy, in an effort to restore Spanish names to the area, renamed it Camano Island in honor of Spanish explorer Lieutenant Don Jacinto Camano.

The first settlers came to Camano Island in 1855, filing timber claims. The island was heavily forested and by the late 1850s, a shipyard and one of the largest sawmills on Puget Sound had been founded on Utsalady Bay, on the northwestern tip of the island. Shortly after the mill was built a small settlement was established. The Kikiallus village of *Acala'di* was still occupied at this time and Kikiallus Indians were reported to have worked at the mill, and engaged in logging and various activities associated with the settlement until about 1903 (Robinson 1999).

There were no established towns on Camano Island, but steamboats serviced the small communities of Camano City and Mabana that are located on the western shore of the island along Saratoga Passage. Agricultural activity intensified after 1920, when most of the trees had been cut on the island. The logged-off lands were burned and stumps removed to accommodate farming, an industry primarily initiated by Scandinavian immigrants. In addition to farming, dairy cows, beef cattle, sheep, pigs, and chickens were raised for subsistence (Osmundson 1964:82-83).

In the 1920s, tourism became popular and several auto-camps were established. These initial auto-camps were followed by more elaborate resorts at Utsalady Point, Rocky Point, Camp Lagoon, Sunset Beach, Indian Beach, Onamac Point, Mabana, Pebble Beach, Camano City, and Peterson's Beach Resort, located near the project area (Figure 5) (Osmundson 1964:105-106; Prasse 1994) that rented cabins, boats, and fishing gear. In the 1930s Peterson's Beach Resort, located on the east side of Elger Bay was established. In 1949, Washington State Parks and Recreation established Camano Island State Park on the west side of Camano Island, overlooking Saratoga Passage.



Figure 5. A 1958 tourist map illustrating the location of resorts on Camano Island and the mainland west of Interstate-5. Courtesy of Old Camano.

PREVIOUS ARCHAEOLOGY

According to the WISAARD database a total of 11 previously conducted cultural resource reviews have been conducted within a four-mile radius of the project area (Table 1). The previous cultural resource reviews were compliance measures conducted as part of private development and a few public upgrade projects.

Table 1. Cultural resource reviews conducted within four-mile of the project area.

Author, Year	Report Title	Cultural Resources?
Boersema, Jana 2018	Archaeological monitoring of geotechnical bore holes at 4008 Saratoga View Walk, (TPN: S7715-00-0000A-0) Camano Island, Island County, Washington	Negative
Hovezak, Mark 2018	Cultural Resource Survey at 4004 Pebble Beach Rd., Camano Island, Island County, Washington.	Negative

Author, Year	Report Title	Cultural Resources?
Boersema, Jana 2018	Archaeological Survey for a House Replacement at 4008 Saratoga View Walk, Camano Island, Washington	Negative
Boersema, Jana 2016	Letter to Greg Petrie, Jenna Shahak, and Adam Petrie re: Archaeological monitoring of percolation test pits at 4008 Saratoga View Walk, (TPN S7715-00-0000A-0) Camano Island, Island County, Washington	Negative
Arthur, Ed and Camille Mather 2015	Results of an Archaeological Evaluation of Proposed Residential Development at 2349 Honey Comb Lane, Elger Bay, Camano Island	Negative
Baker, Todd 2010	Letter to Matt Wheaton RE: South Camano Cell Tower (SN2831) Cultural Resource Survey	Negative
Alivs, Camille and Glenn Hartmann 2005	Cultural Resources Survey for the Mabana Shores Association Water System Improvement Project, Camano Island, Island County, Washington	Negative
Robinson, Joan 2004	Letter to John M. Benedetto Regarding Archaeological Investigation of the Area of the Proposed Bulkhead Installation at Honeycomb Lane Property, Camano Island, Parcel R33131-087-0720	Positive, 45IS219
Robinson, Joan 2004	Letter to Jesse Allen Regarding Archaeological Investigation of a Bulkhead Replacement Project at 3974 Pebble Beach Rd. Parcels #S7715-00-00021-0, #S7715-00-00022-0, #S7715-00-00023	Negative
Kopperl, Robert E. 2004	Cultural Resources Assessment for the Sun Mountain Construction Camano Island Parcels R33025-353-4120, R33025-327-4220, R33025-315-4250	Negative

Three previously recorded archaeological sites are located within approximately four miles of the project area. Along the western shoreline of Elger Bay, east of Point Lowell is site 45IS219. The site was recorded by Robinson (2004) as a shell midden exposed along a low bank of Elger Bay with FCR, shell fragments, and black soils. A cleared and prepared homesite was located near the site and it was believed that modern construction, along with active marine erosion was impacting the site.

Site 45IS4 is described as “Possible graves and house” located on the southwestern end of Camano Island. Two crosses with several stones at their right side and logs and other wood objects were recorded by Mary Hoffman in 1950 (Wessen 1988b). Site 45IS5 is a shell midden site located at the southwestern end of Camano Island (Wessen 1988c).

CULTURAL RESOURCE EXPECTATIONS

Based on review of the project scope; historical, environmental and cultural contexts; and, previous cultural resources studies, the APE was considered to have a low to moderate probability for encountering cultural resources. The project area is in close proximity to several bodies of water near the base of a slope; locations closer to Livingston Bay would likely have more archaeological potential.

Further, no precontact or ethnographic sites have been reported in the APE. If, however, cultural resources were to be present in the project area, review of cultural resources previously identified in, and in the near vicinity of, the APE suggest types of archaeology that might be present could include

isolated precontact archaeology (such as lithics) and historic archaeology related to agricultural. Based on the environmental context and previous studies any buried cultural resources would expect to be shallow as little deposition has occurred in this location. Any cultural resources in the project area would expect to be disturbed due to the heavy extent of construction in the area.

FIELD INVESTIGATION

The physical archaeological assessment of an area is conducted through visual reconnaissance of a project area, examination of existing ground disturbances and subsurface excavation as needed. Surface survey of an area proposed for ground alteration or other impact is employed in an attempt to locate any surficial cultural materials or structures with any historic or archaeological importance or cultural concern. When utilized, shovel probes or mechanical excavation can assist in providing a wider sample of subsurface soil conditions for determining the potential for, or presence/absence of, buried archaeological deposits. The employment of probes or trenches is most often dependent upon considerations of the landform, topography, project proposal and subsurface geologic conditions.

The present archaeological assessment was conducted on October 23, 2019 by Drayton archaeologist Alex Berry. Weather conditions were sunny, clear and mild in temperature. Survey began with a visual inspection of the property for cultural materials present on the ground surface (exposed dirt, landscaped areas, etc.). The 0.25-acre APE is comprised of an existing water treatment facility (Photos 1 – 3). In addition to the pumphouse APE, two proposed pipeline installation areas were included for this archaeological assessment along E Dalman Road and Galena Drive (Photos 4 – 5). Soil exposures were generally minimal with thick grass covering most of the ground surfaces. No cultural materials were observed as a result of the pedestrian survey.



Photo 1. Northern overview of the pumphouse APE.



Photo 2. Western overview of the pumphouse APE.



Photo 3. Eastern overview of the pumphouse APE.



Photo 4. Eastern Overview of the proposed pipeline location on E Dalman Road.



Photo 5. Northern overview of the proposed pipeline installation on Galena Drive.

Subsurface excavation was conducted following the pedestrian survey. A total of five shovel probes were excavated across the APE. No predetermined target depth was set for probing since depths are based upon geologic conditions, the presence of sterile sediments such as glacial till or glaciomarine drift, water table, degree of disturbance, and professional judgment. Standard shovel probes consist of cylindrical pits measuring about 40 cm in diameter.

During shovel probe testing at the proposed swale and pipeline locations, the soils and sediments encountered closely resembled the defined Useless Bay sand loam soils mapped for the area. Strata observed during subsurface testing consisted of very dark grayish brown gravelly loam overlying fine-grained sand sediments. The sequence was consistent in all five shovel probes with a variation in the thickness of each (Photos 6 – 7). No cultural materials were found in any of the five shovel probes. A complete description of the soil sequence and soil composition of each probe can be found in appendix A. Sediment excavated from probes was sifted through a shaker screen with quarter-inch hardware cloth. Probes are completely backfilled, and the locations marked with a global positioning systems (GPS) device in order to compose a site sketch map (Figures 6 – 7).



Photo 6. Sediment profile observed within the pumphouse APE.



Photo 7. Sediment profile observed in proposed pipeline installation locations.



Figure 6. Location of shovel probes excavated during the course of subsurface investigation.

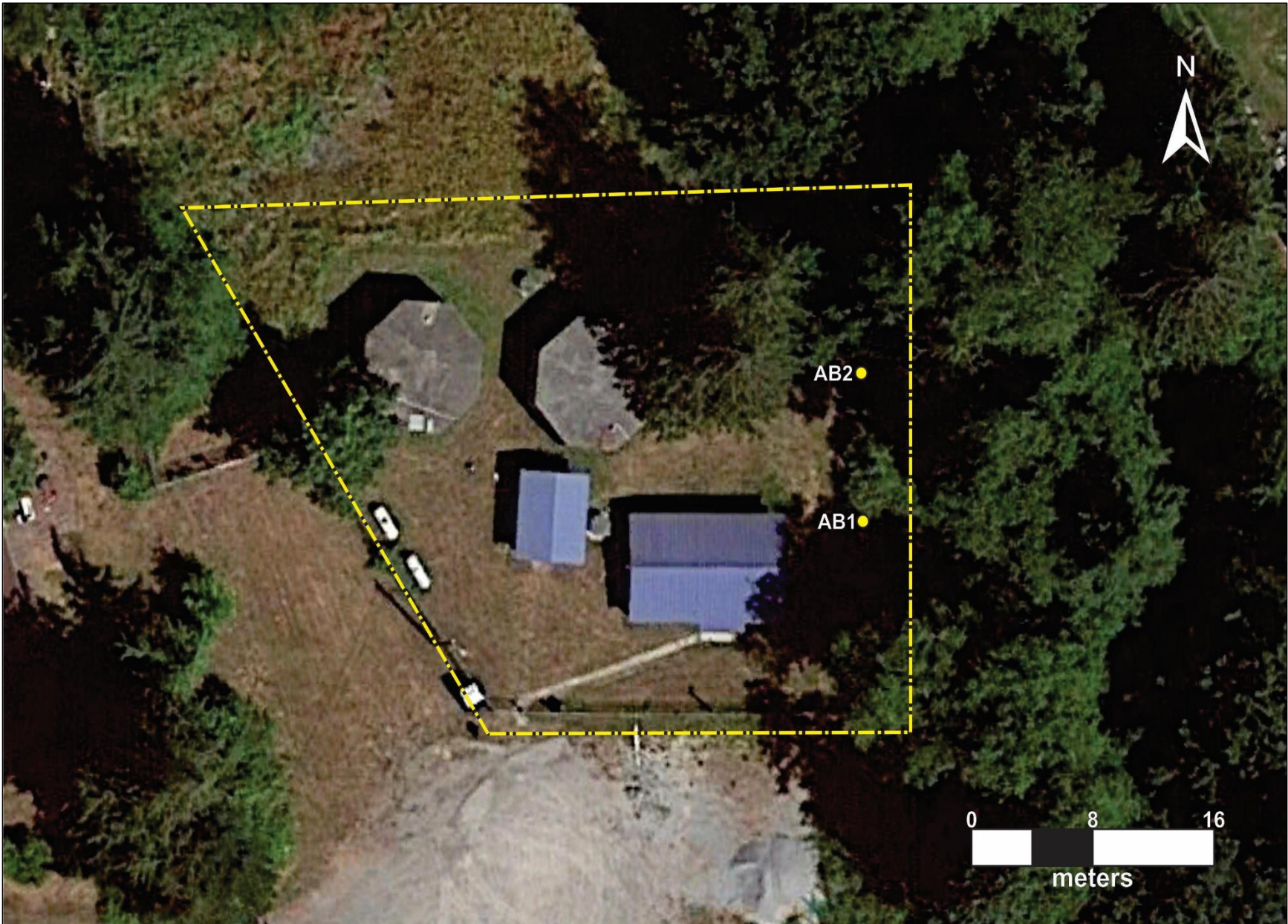


Figure 7. Location of shovel probes excavated during the course of subsurface investigation at the pumphouse.

RECOMMENDATIONS

During the course of the present project background and field investigations found no evidence of precontact or historic materials in the project area. Drayton asserts that the project should proceed as designed and without further archaeological oversight. The lead federal agency is still encouraged to assert a determination of No Historic Properties Affected to all consulting parties.

The assessment of the property has been conducted by a professional archaeologist and meets or exceeds the criteria set forth in RCW: 27.53 for professional archaeological reporting and assessment. Subsurface shovel testing is a cost-effective means to locate subsurface deposits, but it is certainly not exhaustive. Therefore, no shovel testing regiment is 100% accurate in recovering or locating buried cultural sites. In the event any items of cultural patrimony are encountered, by law, all work must cease.

Although the project is under the compliance regulations of Section 106, Washington State law provides for the protection of all archaeological resources. It is recommended that proponents be aware of applicable Washington State laws, particularly Revised Code of Washington (RCW) Chapter 27.53.060, RCW 27.44.040 and RCW 68.50.645. The statute RCW Chapter 27.53, Archaeological Sites and Resources, prohibits the unauthorized removal, theft, and/or destruction of archaeological resources and sites. Additional legal oversight is provided for Indian burials and grave offerings under RCW Chapter 27.44, Indian Graves and Records. RCW 27.44 states that the willful removal, mutilation, defacing, and/or destruction of Indian burials constitute a Class C felony. Further, Washington legal code, RCW 68.50.645, Notification, provides a strict process for the notification of law enforcement and other interested parties in the event of the discovery of any human remains regardless of perceived patrimony.

INADVERTENT DISCOVERY PROTOCOLS

Archaeological Resources:

If archaeological materials (e.g. shell midden, faunal remains (bones), stone tools, historic glass, metal, or other concentrations) are encountered during the development of the property, an archaeologist should immediately be notified, and work halted near the find until the materials can be inspected and assessed. The project archaeologist should be contacted immediately to review the find and contact the relevant parties. An assessment of the discovery and consultation with government and tribal cultural resources staff is a requirement of law. Once the situation has been assessed steps to proceed can be determined.

Human Burials, Remains, or Unidentified Bone(s):

In the event of inadvertently discovered human remains or indeterminate bones, pursuant to RCW 68.50.645, all work must stop immediately, and law enforcement should be contacted. Any remains should be covered and secured against further disturbance, and communication should be immediately established with the Camano Island Police and the State Physical Anthropologist at

Department of Archaeology and Historic Preservation (DAHP) for coordination with the concerned Native Tribe(s).

The area surrounding a discovery should be secured and of adequate size to protect it from further disturbance until the State provides a notice to proceed. The discovery of any human skeletal remains must be reported to law enforcement immediately. The county medical examiner/coroner will assume jurisdiction over the human skeletal remains to decide whether those remains are forensic or non-forensic. If the county medical examiner/coroner determines the remains are non-forensic, then the State Physical Anthropologist at DAHP assumes the jurisdiction over the remains. The DAHP will notify any appropriate cemeteries and all affected tribes of the find. The State Physical Anthropologist will determine whether the remains are Native or Non-Native origin and report that finding to any appropriate cemeteries and the affected tribes. The DAHP will then handle all consultation with the affected parties as to the future preservation, excavation, and disposition of the remains. DAHP will also authorize when work may proceed.

REFERENCES

Alivs, Camille and Glenn Hartmann

2005 *Cultural Resources Survey for the Mabana Shores Association Water System Improvement Project, Camano Island, Island County, Washington*. On file at Department of Archaeology and Historic Preservation, Olympia.

Arthur, Ed and Camille Mather

2015 *Results of an Archaeological Evaluation of Proposed Residential Development at 2349 Honeycomb Lane, Elger Bay, Camano Island*. On file at the Department of Archaeology and Historic Preservation, Olympia.

Baker, Todd

2010 *Letter to Matt Wheaton RE: South Camano Cell Tower (SN2831) Cultural Resource Survey*. On file at Department of Archaeology and Historic Preservation, Olympia.

Baldwin, Garth

2008 *RE: Archaeological Testing of 45SN417 at the Woodhaven Residential Development, Granite Falls, Washington*. On file at Department of Archaeology and Historic Preservation, Olympia.

Boersema, Jana

2018 *Archaeological monitoring of geotechnical bore holes at 4008 Saratoga View Walk, (TPN: S7715-00-0000A-0) Camano Island, Island County, Washington*. On file at the Department of Archaeology and Historic Preservation, Olympia.

2018a *Archaeological Survey for a House Replacement at 4008 Saratoga View Walk, Camano Island, Washington*. On file at the Department of Archaeology and Historic Preservation, Olympia.

2016 *Letter to Greg Petrie, Jenna Shahak, and Adam Petrie re: Archaeological monitoring of percolation test pits at 4008 Saratoga View Walk, (TPN S7715-00-0000A-0) Camano Island, Island County, Washington*. On file at the Department of Archaeology and Historic Preservation, Olympia.

Booth, D. B.

1991 *Glacier Physics of the Puget Lobe, Southwest Cordilleran Ice Sheet. Géographie physique et Quaternaire* 45:301-315.

1994 *Glaciofluvial Infilling and Ccour of the Puget Lowland, Washington, During Ice-Sheet Glaciation. Geology* 22:695-698.

Bryan, A.

1955 *An Intensive Archaeological Reconnaissance in the Northern Puget Sound Region*. Unpublished Master's thesis, Department of Anthropology, University of Washington, Seattle.

- Clague, J.J.
1981 Summary and Discussion of Radiocarbon-dated Quaternary History. *Late Quaternary Geology and Geochronology of British Columbia*, Geological Survey of Canada, Paper 80-35. Ottawa.
- 1989 Sea levels on Canada's Pacific Coast: Past and Future Trends. *Episodes* 12:29-33.
- Clague, J.J., S. Lichti-Federovich, J.P. Guilbault, and R.W. Mathewes
1991 Holocene Sea Level Change, South-Coastal British Columbia. Current Research, Part A, Geological Survey of Canada, Paper 91-1A:15-21.
- Franklin, J.F. and C.T. Dyrness
1973 *Natural Vegetation of Oregon and Washington*. USDA Forest Service General Technical Report PNW-8, Portland, Oregon.
- Hovezak, Mark
2018 *Cultural Resource Survey at 4004 Pebble Beach Rd., Camano Island, Island County, Washington*. On file at the Department of Archaeology and Historic Preservation, Olympia.
- Kidd, Robert S.
1964 *A Synthesis of Western Washington Prehistory from the Perspective of Three Occupation Sites*. Unpublished Master of Arts thesis. Department of Anthropology, University of Washington, Seattle.
- Kimball, A and J. Dean
1994 *Camano Island Stanwood/Camano New Printing*, Stanwood, Washington.
- Kopperl, Robert E.
2004 *Cultural Resources Assessment for the Sun Mountain Construction Camano Island Parcels R33025-353-4120, R33025-327-4220, R33025-315-4250*. On file at the Department of Archaeology and Historic Preservation, Olympia.
- Mattson, John L.
1985 Puget Sound Prehistory: Postglacial Adaptation in the Puget Sound Basin with Archaeological Implications for a Solution to the "Cascade Problem". Unpublished Ph.D dissertation, Department of Anthropology, University of North Carolina, Chapel Hill.
- Osmundson, John S.
1964 Man and His Natural Environment on Camano Island, Washington. Unpublished M.A. thesis, Department of Anthropology, Washington State University, Seattle.
- Polenz, M., S.L. Slaughter, and G.W. Thorsen
2005 Geologic Map of the Coupeville and Part of the Port Townsend North 7.5 minute Quadrangles, Island County, Washington: Washington Division of Geology and Earth Resources Geologic Map GM-58, 1 sheet, scale 1:24,000.

Polenz, M, Schasse, H.W., Kalk, M.L., and B.B Peterson

2009 Geologic Map of the Camano 7.5-minute Quadrangle, Island County, Washington: Washington Division of Geology and Earth Resources Geologic Map GM-68, 1 sheet, scale 1:24,000.

Pojar, Jim and MacKinnon (editors)

1994 *Plants of the Pacific Northwest Coast*. Lone Pine Publishing, Vancouver British Columbia, Canada.

Porter, S. C. and T. W. Swanson

1998 Radiocarbon Age Constraints on Rates of Advance and Retreat of the Puget Lobe of the Cordilleran Ice Sheet During the Last Glaciation. *Quaternary Research* 50:205-213.

Robinson, J.M.

2004 *Letter to John M. Benedetto Regarding Archaeological Investigation of the Area of the Proposed Bulkhead Installation at Honeycomb Lane Property, Camano Island, Parcel R33131-087-0720*. On file at the Department of Archaeology and Historic Preservation, Olympia.

2004a *Letter to Jesse Allen Regarding Archaeological Investigation of a Bulkhead Replacement Project at 3974 Pebble Beach Rd. Parcels #S7715-00-00021-0, #S7715-00-00022-0, #S7715-00-00023*. On file at the Department of Archaeology and Historic Preservation, Olympia.

1999 Archaeological Survey and Monitoring at the Davies/Johnson Property 148 E. Utsalady Road Camano Island, Washington. On file at the Department of Archaeology and Historic Preservation, Olympia.

Ruby, Robert H. and John A. Brown

1992 [1986] *A Guide to Indian Tribes of the Pacific Northwest*. University of Oklahoma Press, Norman.

Sampson, Martin J. (Chief)

1972 *Indians of Skagit County*. Skagit County Historical Series No. 2. Skagit County Historical Society, Mount Vernon, Washington.

Suttles, Wayne P., and Barbara Lane

1990 Southern Coast Salish. In *Northwest Coast*, edited by Wayne Suttles, pp. 485-502. Handbook of North American Indians, Vol. 7, William C. Sturtevant, general editor, Smithsonian Institution, Washington D.C.

Tweddell, Colin E.

1974 Historical and Ethnological Study of the Snohomish Indian People in *Coast Salish and Washington Indians Vol. II, American Indian Ethnohistory, Indians of the Northwest*. David Agee Horr, Ed., Garland Publishing Inc., New York.

Thorson, R.M.

1980 Ice-sheet Glaciation of the Puget Lowland, Washington, During the Vashon Stage (Late Pleistocene). *Quaternary Research* 13:303-321.

1981 Isostatic effects of the last glaciation in the Puget Lowland, Washington. U.S. Geological Survey Open-File Report 81-370, 100 p., 1 plate.

1989 Glacio-Isostatic Response of the Puget Sound Area, Washington. *Geological Society of America Bulletin* 101:1163-1174.

Wessen, Gary

1988a *Prehistoric Cultural Resources of Island County, Washington*. Report Prepared for the Washington State Department of Community Development Office of Archaeology and Historic Preservation.

1988b Washington State Archaeological Site Inventory Form: 45IS11. On file at the Department of Archaeology and Historic Preservation, Olympia.

1988c Washington State Archaeological Site Inventory Form: 45IS92. On file at the Department of Archaeology and Historic Preservation, Olympia.

University of California, Davis SoilWeb Map (UC Davis SoilWeb)

n.d. UC Davis California Soil Resource Lab's SoilWeb Interactive map, displaying Natural Resource Conservation Service (NRCS) soils data, available at: <http://casoilresource.lawr.ucdavis.edu/gmap/>. Accessed October 2019.

United States Department of Agriculture – Natural Resource Conservation Service (NRCS)

n.d. Soil Web Survey, electronic resource, <http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx..> Accessed October 2019.

United States Geological Survey (USGS)

1968 *Langley Quadrangle, Washington*. 1:24,000. 7.5-Minute Series. USGS, Washington, D.C.

APPENDIX A: SHOVEL PROBE INDEX

DEPTH BELOW SURFACE (CM)	SEDIMENT DESCRIPTION	RESULTS
SP1		
0 – 17	10YR 3/1 Very dark gray gravelly sandy loam with a low content of small cobbles.	Negative
17 – 47	10YR 5/6 Yellowish brown fine-grained sandy loam with a high content of small rounded gravels and cobbles.	Negative
47 – 97	10YR 6/2 Light brownish gray fine-grained sand with a high content of small rounded gravels and cobbles.	Negative
SP2		
0 – 20	10YR 3/1 Very dark gray gravelly sandy loam with a low content of small cobbles.	Negative
20 – 49	10YR 5/6 Yellowish brown fine-grained sandy loam with a high content of small rounded gravels and cobbles.	Negative
49 – 110	10YR 6/2 Light brownish gray fine-grained sand with a high content of small rounded gravels and cobbles.	Negative
SP3		
0 – 21	10YR 3/1 Very dark gray gravelly sandy loam with a low content of small cobbles.	Negative
21 – 45	10YR 5/6 Yellowish brown fine-grained sandy loam with a high content of small rounded gravels and cobbles.	Negative
45 – 100	10YR 6/2 Light brownish gray fine-grained sand with a high content of small rounded gravels and cobbles.	Negative
SP4		
0 – 17	10YR 3/1 Very dark gray gravelly sandy loam with a low content of small cobbles.	Negative
17 – 36	10YR 5/6 Yellowish brown fine-grained sandy loam with a high content of small rounded gravels and cobbles.	Negative
36 – 100	10YR 6/2 Light brownish gray fine-grained sand with a high content of small rounded gravels and cobbles.	Negative
SP5		
0 – 18	10YR 3/1 Very dark gray gravelly sandy loam with a low content of small cobbles.	Negative
18 – 62	10YR 3/2 Very dark grayish brown fine-grained sandy loam with a high content of small rounded gravels and cobbles	Negative
62 – 70	10YR 6/2 Light brownish gray fine-grained sand with a high content of small rounded gravels and cobbles.	Negative