



Memo

July 15, 2022

TO: Kobi Amo-Mensah, Business & Finance Officer II

FM: Marisa Baptiste, Engineer III

RE: Feasibility Study on Constructing an Organics Processing Facility on Vashon Island Closed Landfill Property

Purpose:

The purpose of this memo is to provide the findings of the Feasibility Study on constructing an organics processing facility on the Vashon Island Closed Landfill (VICLF) property.

Site Background:

The VICLF is located on a 54.3-acre King County owned parcel in the west central portion of Vashon Island (Figure 1). The landfill property is divided by Westside Highway SW. Most of the property exists in sparsely vegetated to unwooded, gently rolling terrain at elevations of 300 to 400 ft. The 39-acre area east of the highway is primarily unwooded open space and consists of 10.3 acres of municipal solid waste and 28.7 acres of landfill facilities. The 15.3-acre area west of the highway is steep, undeveloped, forested land sloping towards Colvos Passage, commonly referred to as the West Hillslope. The VICLF property is bounded by Westside Highway Southwest and rural residential land to the northwest, by King County Parks property, commonly referred to as the Borrow Pit, to the north, by forested land and rural residential land to the east, and by rural residential land to the south (Figure 1).

Solid waste disposal began at the landfill property in the early 1900s. Operation of the landfill was assumed by the King County Solid Waste Division (Division) in the late 1950s, when daily cover, record keeping, and other updated solid waste management practices were initiated. The landfill was closed in two phases: a partial closure in 1988, in accordance with WAC (Washington Administrative Code) 173-304, and a final closure in 2001, in accordance with WAC 173-351. The combined Phase 1 and Phase 2 landfill closure area is approximately 10.3 acres. The VICLF has the following environmental control and monitoring systems: stormwater collection and conveyance system; leachate collection, conveyance, and treatment system; landfill gas collection, conveyance, and treatment system; landfill gas monitoring; groundwater monitoring; phase 1 closure cover system, and phase 2 closure cover and liner systems.

Assumptions:

In April of 2021, HDR produced a report on the feasibility of an on-island organics processing facility.¹ The HDR report suggested a multi-phase approach to constructing the organic processing facility, to accommodate increasing demands. The report predicted that the facility would require two acres of land. However, based on discussions within King County and on the conclusions of this report, this study will evaluate what kind of composting facility can fit onto available land, rather than asking where a 2-acre facility can fit. This feasibility study focuses on the closed landfill property because there is not sufficient space at the transfer station to accommodate an organics processing facility. This feasibility study looked at three alternatives (Figure 2; Alternative 3 is a combination of Alternatives 1 & 2) at the closed landfill that have a minimum of one acre of space available and do not have a slope greater than five percent. The top of the landfill was not considered due to the added complications construction on top of the landfill (e.g., settlement, post-closure care requirements, existing collections systems, etc.) would cause.

Alternative 1:

Location: Narrow strip of land east of closed landfill (Figure 3)

Area: approximately 1.1 acres

Environmental Control Systems in proximity: (Figure 3)

- Stormwater conveyance (yellow and blue lines)
- Leachate/wastewater conveyance (red lines)
- Leachate/wastewater manholes (black dots)
- Groundwater monitoring well (blue dot; MW-29)
- Landfill gas blower/treatment station (north of Alternative 1)
- Landfill gas probes (red and purple dots, GP-01S,I,D, GP-02S,I,D, and TP-4)
- Ambient air monitoring (yellow dot; AM-3)

Closest Non-County Structure: 775 ft from southern end of alternative area

Road Access: Crushed gravel road and dirt perimeter road

Major Consideration: Currently, stormwater collects and runs through open culverts in this area (Figure 4). To construct the facility, these stormwater culverts would need to be modified and the stormwater system enclosed. Leachate/wastewater conveyance pipes are beneath part of this area. In accordance with WAC 173-350-330, we are required to do integrity testing on these pipes every two years. The method of testing is still being determined; however, constructing a facility above those pipes could limit access and

¹ HDR, Matthew Cotton, and O2Compost. 2021. *Vashon Island Organics Processing Feasibility Study Final Phase 1 Report*. April 2021

testing options. There is also monitoring infrastructure (groundwater monitoring wells and landfill gas probes) near the boundaries of this area (Figure 3). Additionally, the Alternative 1 area is primarily covered in trees.

Questions:

- Does the Division want to modify the current stormwater system to construct the new facility?
- Does the Division want to have the stormwater conveyance system beneath an organics processing facility, which might impede access for maintenance or repairs?
- Does the Division want to have the leachate/wastewater conveyance system beneath an organics processing facility, which might impede access for maintenance, repairs, or required testing under WAC 173-350-330?
- Does the Division want to improve the current access roads, to provide all-weather roads as required in WAC 173-350?
- Does the Division want to remove the trees covering this area to construct the organics processing facility?
- Is Alternative 1 too close to the nearest offsite property and building (12726 SW Cemetery Rd., Vashon Island, WA, 98070)? Is that building occupied, or will it be in the future, according to records it was recently purchased?

Alternative 2:

Location: Southeast corner of property near stormwater pond (Figure 5)

Area: approximately 1.6 acres

Environmental Control Systems in proximity: (Figure 5)

- Stormwater conveyance (yellow and blue lines)
- Stormwater pond (just south of Alternative 2)
- Leachate/wastewater conveyance (red lines)
- Leachate/wastewater manholes (black dots)
- Groundwater monitoring wells (blue dots; MW-7, MW-13, MW-20, and MW-24)
- Landfill gas probes (red dot, GP-03S,I,D)
- Ambient air monitoring (yellow dot; AM-4)

Closest Non-County Structure: 350 ft from southern end of alternative area

Road Access: Crushed gravel road and dirt perimeter road.

Major Consideration: Currently, stormwater collects and runs through open culverts in this area and through pipes under this area (Figure 5). Leachate/wastewater conveyance pipes are beneath part of this area. In accordance with WAC 173-350-330, we are required to do integrity testing on these pipes every two years. The method of testing is still being

determined; however, constructing a facility above those pipes could limit access and testing options. There is also monitoring infrastructure (groundwater monitoring wells and landfill gas probes) near the boundaries of this area (Figure 6). Monitoring well MW-20 is the upgradient well for the contaminated aquifer Channel Cc2.

Questions:

- Does the Division want to modify the current stormwater system to construct the new facility?
- Does the Division want to have the stormwater conveyance system beneath an organics processing facility, which might impede access for maintenance or repairs?
- Does the Division want to have the leachate/wastewater conveyance system beneath an organics processing facility, which might impede access for maintenance, repairs, or required testing under WAC 173-350-330?
- Does the Division want to improve the current access roads, in order to provide all-weather roads as required in WAC 173-350?
- Does the Division want/will regulatory agencies allow an organics processing facility to be installed in close proximity to an upgradient well?
- Is Alternative 2 too close to the nearest offsite property and building (12726 SW Cemetery Rd., Vashon Island, WA, 98070)? Is that building occupied, or will it be in the future, according to records it was recently purchased?

Alternative 3:

Alternative 3 is a combination of Alternatives 1 and 2, which are separated by a gravel access road.

Location: Eastern portion of property (Figures 3 and 5)

Area: approximately 2.7 acres

Closest Non-County Structure: 350 ft from southern end of alternative area

Road Access: Crushed gravel road and dirt perimeter road.

Major Consideration: See Major Considerations for Alternatives 1 and 2 above.

Questions: See Questions for Alternatives 1 and 2 above.

Other Considerations:

Post-Closure Care and Termination: Post-closure care for VICLF began in 2002 and is required by WAC 173-351 to continue for a minimum of 30 years before post-closure care can be terminated; however, based on groundwater contamination levels, post-closure care is expected to last for approximately 50 years. As part of post-closure care, KCSWD is required to maintain

leachate and landfill gas collection; groundwater, landfill gas, leachate, and cover system monitoring; and system and site maintenance. Constructing an organics processing facility could impact the County's ability to maintain and modify these systems and modifications to these systems and monitoring networks could be required by regulators to terminate post-closure care or end independent cleanup under the Model Toxics Control Act (see below).

Currently, the leachate lagoon at VICLF is oversized for the volume of leachate that is produced by the landfill and in the next five years there is a plan to evaluate the leachate collection system and assess alternative methods for collecting and treating the leachate. Modifications to the leachate system could be impacted by the construction of an organics processing facility, depending on the leachate/wastewater system of the facility.

In accordance with WAC 173-350-220, composting facilities are not required to have a groundwater monitoring network. However, the presence of the groundwater monitoring network at VICLF could prove to be beneficial for the facility to ensure that groundwater is not being impacted by the processing facility.

Regulatory Agencies: Public Health – Seattle & King County and the Washington State Department of Ecology have been asked if they would approve constructing an organics processing facility on the VICLF property and they have indicated that they are open to the idea but would need to review the plans.

Permits: We currently have an Industrial Stormwater General Permit for the transfer station and Wastewater Discharge Authorization for the landfill and transfer station for the leachate and wastewater that is hauled off site. If the County does not own and operate the organics processing facility, there will need to be the consideration about whether to allow the organics processing facility to discharge wastewater and stormwater into our control systems.

Model Toxics Control Act: King County Solid Waste Division initiated an independent cleanup action under the Model Toxics Control Act (MTCA) in 2010 to address vinyl chloride contamination in groundwater. The County has produced a Remedial Investigation and is now working on the Feasibility Study. The Feasibility Study will determine the preferred cleanup alternative action. The preferred cleanup action, site impacts of conducting the cleanup, and additional monitoring requirements are unknown at this time. Also, the addition of a new facility to the site would likely impact the outcome of the MTCA Feasibility Study and the construction of an organics processing facility would need to be taken into consideration when producing the Feasibility Study and when selecting the cleanup action.

Site Access: Currently, the public is not allowed on the landfill property. Construction of an organics processing facility on either alternative would require additional fencing to limit the access to the rest of the landfill property.

Utilities: This feasibility study did not assess utility access. The transfer station and parts of the landfill are connected to electrical, and the transfer station has potable water, so it is assumed

connecting to utilities should not be an issue, but Alternative 1 would be closer to existing connection locations.

Conclusions/Recommendations:

There are three locations on the VICLF property which may be suitable for an organics processing facility. The locations are greater than one acre in area and have a slope less than 5%. However, the alternatives have environmental control systems running through them and have monitoring locations in their vicinity, which could impact landfill operations and compliance with landfill regulations. The existing infrastructure at VICLF could also benefit an organics processing facility since groundwater monitoring is not required under the composting facility regulation and would likely not be installed at another location.

These are the recommended next steps:

- Conduct a cost estimate for the necessary upgrades (stormwater system modifications, tree removal, etc.) to construct an organics processing facility in both alternatives.
- Contact the Project Manager for the WAC 173-350-330 compliance project (i.e., wastewater/leachate pipe integrity testing) to find out project status and potentially learn what kinds of testing is being evaluated.
- Engage with Public Health – Seattle & King County and the Washington State Department of Ecology about the alternatives' locations, proximity to monitoring locations, and any concerns about post-closure care and MTCA compliance.
- Assess the long-term plans for the transfer station and whether in the future an organics processing facility could be incorporated into the newly constructed transfer station facility.
- Determine if the building on 12726 SW Cemetery Rd., Vashon Island, WA, 98070 is occupied or will be occupied in the future, because it is less than 800 ft from either alternative.
- Review this report with HDR to determine if a composting facility could work on any of these sites.

FIGURES

Figure 1 – Site Location Map

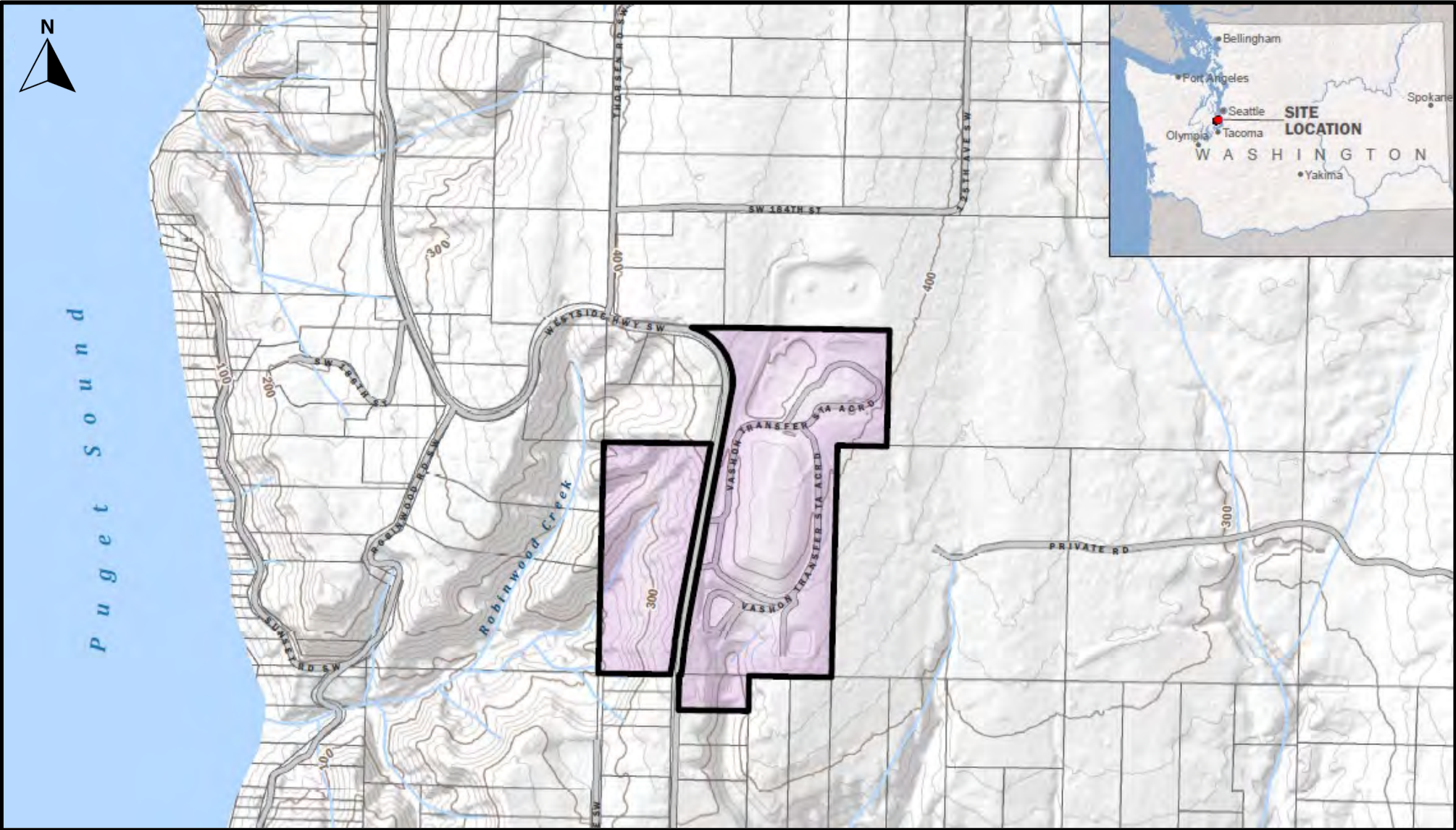
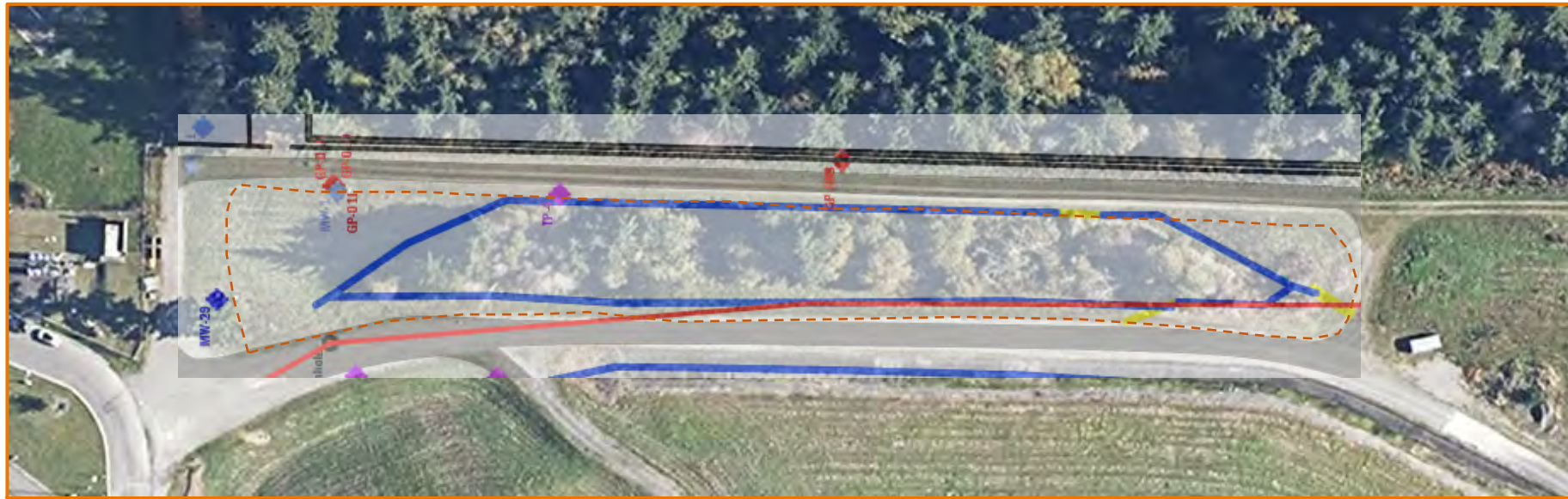


Figure 2 – Vashon Island Closed Landfill Aerial



Figure 3 – Organics Processing Facility Location Alternative 1



Legend

- Alternative Area
- Stormwater System
- Stormwater System
- Leachate/Wastewater System
- ◆ Temporary Gas Probe
- ◆ Compliance Gas Probe
- ◆ Decommissioned Monitoring Well
- ◆ Monitoring Well

Figure 4 - Organics Processing Facility Location Photos Alternative 1



Figure 4a: North end of Alternative 1 (looking north towards transfer station)



Figure 4b: North end of Alternative 1 (looking east towards GP-01)



Figure 4c: North end of Alternative 1 (looking south at stormwater culvert and trees)

Figure 5 – Organics Processing Facility Location Alternative 2

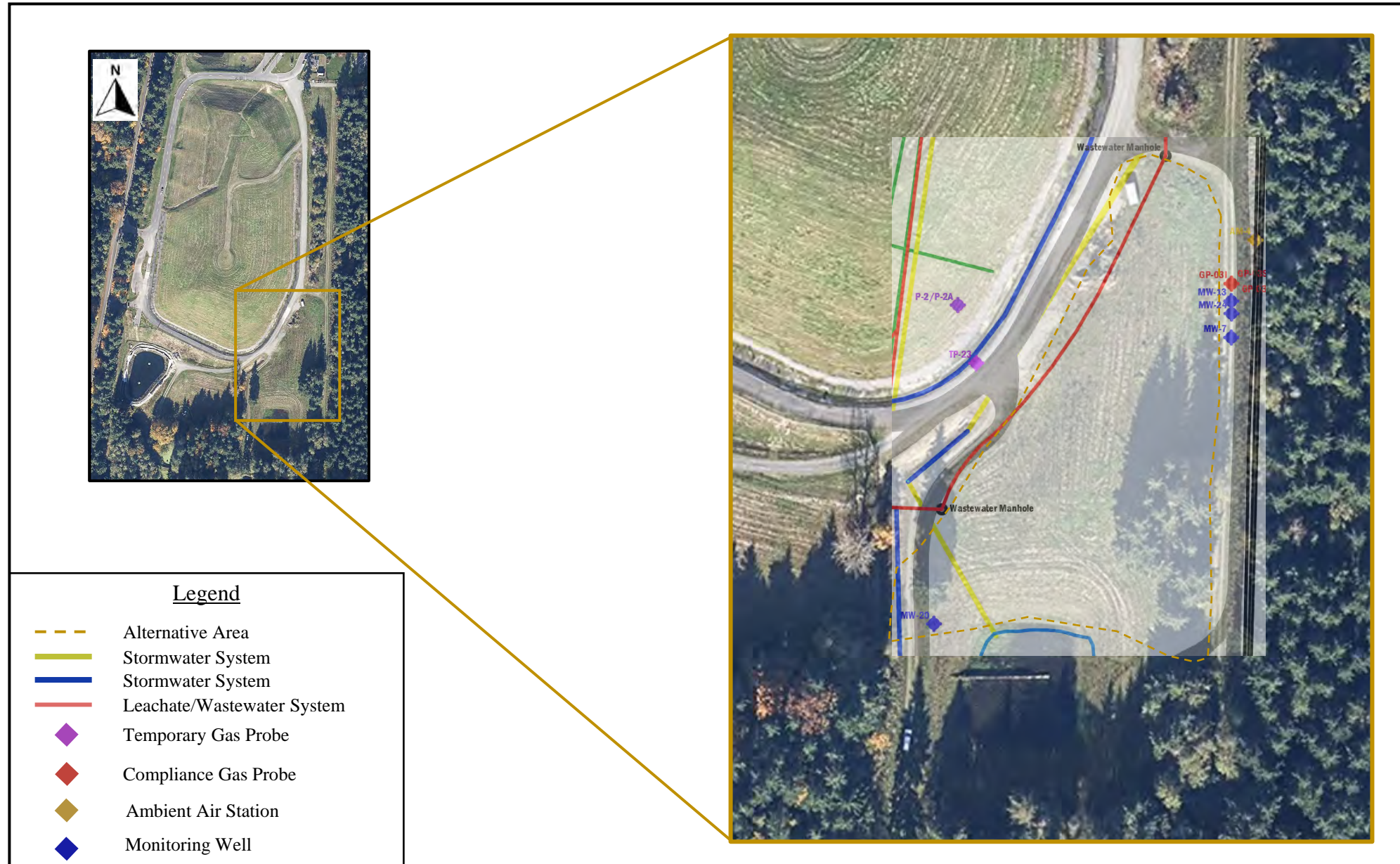


Figure 6 - Organics Processing Facility Location Photos Alternative 2



Figure 6a: East side of Alternative 2 (looking south towards stormwater pond)



Figure 6b: North end of Alternative 2 (looking north towards Alternative 1)



Figure 6c: North end of Alternative 2 (looking south towards stormwater pond)



Figure 6d: North end of Alternative 2 (looking east towards property line)