Supplement to the Shoreline Inventory

This document is a supplement to the *Shoreline Inventory* report that was prepared by Grette Associates LLC in 2008 as an element of the City of Burien's Shoreline Master Program Update (SMP). This supplement provides

- an update to the inventory based on information available in 2012
- a level of quantitative and qualitative detail that is unavailable in the baseline inventory
- data corrections

This supplement provides new information in both a narrative and quantitative style. It serves as the basis for the *Supplement to the Shoreline Analysis and Characterization* that is also an element of this work product.

1) Executive Summary

This inventory provides data and preliminary analysis that demonstrates the following broad development characteristics within Burien's Shoreline Jurisdiction.

The Lake Burien shoreline consists of 70 waterfront properties and 8 upland properties on just over a mile of waterfront. While every property is unique, development patterns are reasonably uniform. The properties are typically 15K to 26K sq. ft. in area with moderate levels of building coverage and total impervious surface. Setbacks from Ordinary High Water Mark (OHWM) are typically 80' to 125'. Most of the properties are extensively landscaped. Approximately 67% of the perimeter includes bulkheads and retaining walls. There is clear evidence of the presence of wetlands at multiple points around the lake. There is only one undeveloped property on the lake but it is a small parcel that appears to be unbuildable.

The Marine Shoreline consists of 304 waterfront properties and 74 upland properties on just less than five miles of waterfront. Development patterns are considerably more diverse than for Lake Burien.

Approximately 22.5% of the Marine shoreline, measured by length, is in a broadly natural condition.

Approximately 25% of the Marine shoreline is developed at a density that is considerably greater than is expected for RS-12000. These properties are typically between 5K and 9K sq. ft. in area with relatively high levels of building coverage and total impervious surface. Building setbacks from OHWM are typically 25' to 35'. Some of these properties include meaningful amounts of native vegetation but, if so, it is primarily on the landward side of the home at distances of over 100' from OHWM.

The remaining 52.5% of the Marine shoreline is developed in a style that is broadly consistent with RS-12000. The properties are typically 8K to 18K sq. ft. in area and generally meet the guidelines for building coverage and total impervious surface. However many of these properties are impacted to some degree by steep slopes which limit flexibility for new development. Most of the properties are protected by bulkheads; many of these are substantial structures.

Nearly three-quarters of these properties are developed towards OHWM with typical setbacks from OHWM of 25' to 60'. For these properties the land towards OHWM is generally impervious surface and partially functioning areas for the first 100' or so with a greater tendency for native vegetation in the remaining 100'. Another 20% of these properties are developed towards the top of steep slopes with setbacks of well over 200'. For these properties the land towards OHWM is generally native vegetation. Finally there are 10 undeveloped private properties.

2) Methodology and Terminology

The quantitative data is derived from a number of sources including public King County data, primarily the Department of Assessments database and various parcel mapping tools, a careful evaluation of high quality aerial imagery, USGS digital elevation model (DEM) data, and multiple physical surveys. We focus on the following indicators of development conditions

- Tax Parcel Outlines - available in several formats at the King County website
- Waterfront Footage - taken directly from King County Tax Parcel database when available
- Property Depth - developed from careful evaluation of aerial imagery
- Lot size - based on aerial imagery and validated by reference to the Tax Parcel database
- Setbacks from OHWM - developed from aerial imagery
- Bulkhead type - based on physical surveys

It is important to note that most of these indicators are based on evaluations of aerial imagery rather than professional physical surveys. It is believed that the accuracy of the resulting measures is sufficient to support effective planning decisions in the context of the SMP guidelines.

It is impractical to present and fully evaluate these indicators at the tax parcel level; it becomes necessary to summarize the values using convenient statistical methods. In some discussions it is sufficient to consider the **average** (mean) value of an indicator. Mean is particularly useful for values that are distributed in a uniform manner. In other cases it may be helpful to refer to the **minimum** (min), **median**, and **maximum** (max) values which are defined in the common way.

More generally it is helpful to consider the indicators in quartiles and report the 1st percentile (i.e. the minimum), the 25th percentile, the 50th percentile (also the median), the 75th percentile, and the 100th percentile (i.e. the maximum). When this report provides the **typical** values for an indicator we mean the 50% of the range between the 25th and 75th percentile.

The term **generally** is used in a more informal way that is intended to convey the same sense as **typically** but without a meaningful number of samples or statistical calculation.

Distances are measured in feet in the horizontal plane, rather than along the slope (if present).

When this report uses the term **setback** without further qualification it should be interpreted as the setback from OHWM i.e. the minimum distance of the primary structure from the line of Ordinary High Water Mark measured in the horizontal plane.

High quality aerial imagery is available from several sources; this report uses Google Earth. This tool provides relatively detailed imagery and simple drawing tools that can be used to add annotations, mark reference locations, and draw polygons around features of interest.

3) Shoreline Inventory Reaches

The original report considered Burien's two shorelines to be partitioned into a sequence of five Shoreline Inventory reaches. Table 1 shows the five reaches and descriptions from the original report but provides updated estimates of the lengths of each reach. These estimates of the lengths of the reaches are noticeably smaller than those provided in the Grette Inventory except for M3. The updated estimates have been validated by a number of efforts; we have no explanation for the magnitude of the differences between these estimates and those in the original reports.

Reach		Description	Length		
			(ft)	(mi)	(%)
Marine	M1	Primarily residential marine shoreline extending south from City limit to the north edge of Seahurst Park.	5,463	1.0	21.2
	M2	North edge of Seahurst Park south to the point at which consistent residential development begins again. Corresponds to a line projected west from SW 149th Street to intersection with the shoreline	5,811	1.1	22.5
	M3	Consistent residential development extending south to the tip of Three Tree Point.	9,084	1.7	35.2
	M4	Consistent residential development from the tip of Three Tree Point to the southern City limit.	5,469	1.0	21.2
		Marine Subtotal	25,827	4.9	100.0
Lake Burien	LB	Entire Perimeter of Lake Burien	5,374	1.0	100.0
		Total Jurisdictional Shoreline	31,201	5.9	

Table 1: Shoreline Inventory Reaches in the City of Burien.

Note: summing the distance in miles and the percentages may reveal the effect of rounding.

4) Shoreline Inventory Segments

This report will demonstrate that development conditions along the Marine Shoreline vary to a degree that is not fully captured by 4 large reaches. This evaluation introduces a refinement of Shoreline Inventory Reaches, *Inventory Segments*, to facilitate a thoughtful evaluation of existing conditions.

Seg		Description	Count		Length	
			Wft	Up	(ft)	(%)
M1	A	Homes along SW Seola Ln on level ground	6	2	362	1.4
	B	Homes along 30th Ave SW at base of steep slope	12	4	983	3.8
	C	A community beach and a portion of Shorewood Dr SW	16	4	1,310	5.1
	D	Shorewood Ln SW at base of steep slope	10	6	816	3.2
	E	A substantial property in a valley at mouth of Salmon creek	1	0	390	1.5
	F	Homes along Standring Lane SW at base of steep slope	23	1	1,602	6.2
M2	A	Seahurst Park	1	0	4,355	16.9
	B	Homes along 24th/25th Ave primarily along top of slope	13	0	1,156	4.5
	C	Eagle Landing Park	1	0	300	1.2
M3	A	28th Ave SW with homes primarily at base of steep slope	23	4	1,513	5.9
	B	27th Ave SW and a portion of Maplewild Ave SW	24	7	2,407	9.3
	C	Properties along the Indian Trail	56	31	3,702	14.3
	D	Level properties along 3 Tree Point Ln and SW 171st St	14	0	1,462	5.7
M4	A	Properties on south beach along SW 171st St	15	0	740	2.9
	B	Properties impacted by SW 172nd St and a steep slope	42	8	1,875	7.3
	C	Seacoma Blvd developed on water-ward side of SW 172nd	9	3	438	1.7
	D	Homes at top and bottom of steep slope along SW 172nd St	23	1	1,390	5.4
	E	SW 173rd Pl / SW 174th St with moderate slopes	15	3	1,026	4.0
		Marine subtotal	304	74	25,827	
LB		Entire Perimeter of Lake Burien	70	8	5,374	
		Total Jurisdictional Shoreline	374	82	31,201	

Table 2: Shoreline Inventory Segments in the City of Burien.

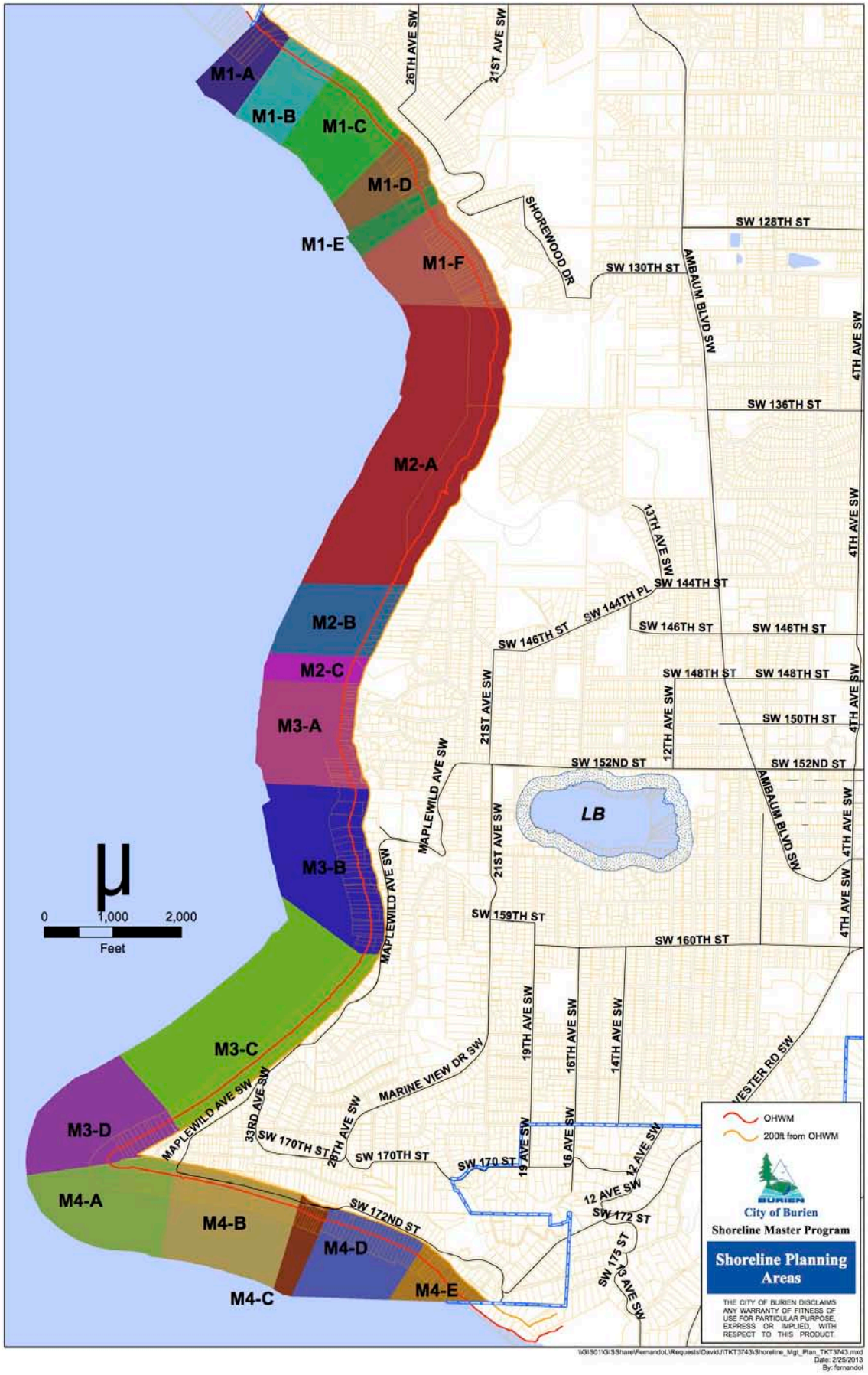

Figure 1: Approximate location of the 19 Shoreline Inventory Segments

5) Properties vs Tax Parcels

A **property** consists of one or more tax parcels. Detailed aerial imagery, physical surveys, and the King County Tax Assessors database were used to merge tax parcels into properties based on ownership and patterns of development. Properties along the shoreline are then classified into four categories:

- Public parks and street ends
- Community owned private properties
- Private waterfront properties. Most of these are developed as Single Family Residences (SFR)
- Private upland properties that intrude significantly into Shoreline Jurisdiction but are generally separated from Ordinary High Water Mark (OHWM) by a waterfront property. A few of these properties include narrow access paths that connect the bulk of the property to OHWM.

Summary information for the Shoreline properties, grouped by category, is shown in Table 3.

The two public properties in M2 are parks. The remaining 4 public properties are small street ends.

The community property in M1 is the Shorewood Community Beach which is owned by a non-profit corporation that is responsible for its maintenance. The community website indicates that this corporation serves 458 local households.

The community property in M4 is a narrow access path to the beach that is jointly owned by a small number of nearby properties.

The community property on Lake Burien is a small unbuildable parcel adjacent to the lake which is co-owned by the three homes that sit directly behind it.

Reach		Properties						Parcels
		Waterfront				Upland	Total	
		Public	Comm	Private				
				Dev	Undev			
Marine	M1	0	1	66	1	17	85	97
	M2	2	0	13	0	0	15	22
	M3	3	0	107	7	42	159	184
	M4	1	1	100	2	15	119	122
	Total	6	2	286	10	74	378	425
	% by Length	18.8%	1.5%	76.2%	3.1%	0.4%	100%	
Lake Burien	Total	0	1	68	1	8	78	82
	% by Length	0.0%	1.7%	97.3%	0.7%	0.3%	100%	

Table 3: Properties and Parcels for each Shoreline Inventory Reach

6) Lake Burien

Lake Burien consists of 70 private waterfront properties on slightly over 1 mile of shoreline. The lake is irregularly shaped but is broadly elliptical. It is approximately 2100' long in the east-west direction, up to 1000' wide in the north-south direction, and covers almost 40 acres.

Figure 2 provides an aerial image of a representative portion of the lake from Google Earth. The road at the top of the image is SW 152nd St and, for scale, is approximately 185' from the lake at the center for this image.

Fig 2: A representative portion of properties on the north side of Lake Burien

Lake Burien is zoned as RS-7200. Existing development conditions for the homes around the lake are generally uniform and broadly consistent with RS-12000 for area and building coverage. Homes are typically between 80' and 125' from OHWM and the properties are extensively landscaped.

There is one property of note at the north-east corner of the lake; the Ruth Dykeman Children's Center. This is a non-profit group home that serves a modest number of residents. This property is a special planning district in Burien's comprehensive plan and is developed at an intensity that approximates the private homes around this lake.

The level of the lake varies by almost 3' during a typical year; it is highest in the winter and lowest in the summer. Approximately 67% of the lake perimeter is protected by either a bulkhead or a retaining wall. The bulkheads are almost fully submerged when the lake is at its highest point. The bulkheads may also be subject to wave action during storms.

More than 3/4 of the waterfront properties include a dock.

There is only one property that has not been developed, a small parcel towards the south east corner of the lake. This property is less than 2500 sq. feet and appears to be unbuildable.

The properties on Lake Burien were converted from septic to municipal sewer around 1960. The sewer pipes ring the lake at a distance of approximately 45' from OHWM. Maintenance of the sewer line limits opportunities for developing or expanding a primary structure closer to OHWM than these pipes.

There is clear evidence of the presence of wetlands at a number of sites around the Lake but there is a little scientific data available to provide an unambiguous record of the full extent and characterization of these wetlands. An element of the uncertainty is the complexity inherent in the identification and delineation of wetlands. The Department of Ecology developed the *Washington State Wetlands Identification and Delineation Manual* in March 1997 at the direction of the State Legislature in Engrossed Senate Bill 5776. This 145 page document provides a sense of the complexity of this task and indicates the need to engage a qualified professional to make an accurate determination.

As of July 2012 the King County Tax Assessor's Database indicates that 47 of the waterfront properties, approximately 66% of the perimeter, include a wetland but this database does not indicate the extent or characterization of the wetlands and it is unclear how this data was collected. It is supposed that this is updated primarily during permitting of major development activities which suggests that the data may not be current in some instances. There are reports by residents of the Lake that there is evidence of wetlands at several sites that are not indicated in the King County Tax Assessor's database.

Table 4 provides a summary of four dimensional indicators for the private waterfront properties

Indicator	Excluding Ruth Dykeman Children's Center			Dykeman Center
	Min	Typical	Max	
Footage (ft)	20	60 - 87	144	345
Depth (ft)	125	187 - 295	745	700
Area (sq ft) (000's)	3.1	15.2 - 26.0	87.8	334
Setback (ft)	40	80 - 125	200	80

Table 4: Summary of Development Indicators for Lake Burien

7) Marine Shoreline

Table 5 provides four dimensional indicators for the private waterfront properties along the Marine shoreline. This table hints at the variation in conditions that is to be found along the Marine shoreline. Consider, for example, the ratio of the 25th percentile and the 75th percentile; for some of the indicators the value at the 75th percentile is two to three times that at the 25th percentile even within a single Reach.

As noted in Section 4, we respond to this level of variation by dividing the four Marine Shoreline Reaches into eighteen Inventory Segments. Segments are defined by geographic identifiers and by patterns of development.

Reach	Indicator	Min	Typical	Max
M1	Footage (ft)	10	60 - 77	390
	Depth (ft)	60	80 - 200	835
	Area (sq ft) (000's)	3.6	5.2 - 16.8	225.1
	Setback (ft)	10	25 - 43	273
M2	Footage (ft)	32	70 - 80	280
	Depth (ft)	295	610 - 740	835
	Area (sq ft) (000's)	31.5	46.3 - 69.6	178.7
	Setback (ft)	45	315 - 505	570
M3	Footage (ft)	20	60 - 81	579
	Depth (ft)	80	122 - 242	635
	Area (sq ft) (000's)	4.4	7.3 - 16.7	128.4
	Setback (ft)	5	25 - 68	250
M4	Footage (ft)	21	40 - 60	150
	Depth (ft)	95	157 - 217	320
	Area (sq ft) (000's)	4.4	7.6 - 13.4	69.1
	Setback (ft)	15	45 - 96	150

Table 5: Summary of Development Indicators for Private Waterfront Properties

7.1) Segments in Reach M1

SW Seola Lane (M1-A)

Figure 3 shows an aerial image of all eight homes in this segment. The image is rotated so that OHWM is roughly horizontal. The compass in the upper-right corner can be used to determine map directions. The image includes an estimate of the property boundaries, excluding the tidelands, and an estimate of the location of OHWM. The properties are labeled with the final 4 digits of the tax parcel id.

This segment consists of 6 waterfront homes and 2 upland homes on generally level ground at the mouth of the Seola Creek valley. SW Seola Lane is approximately 200' from OHWM towards the northern end of the segment and closes to approximately 160' at the south-east end.

These properties are developed at a level that is toward the denser level for RS-12000. The waterfront homes are setback between 40 and 115 ft from OHWM. Conditions between the homes and OHWM are consistent with the definition of partially functioning areas [BMC 20.40.101]. The native vegetation is primarily on the landward side of the homes.

The properties include bulkheads that are approximately 2' high.

Fig 3: The eight homes within shoreline jurisdiction in Segment M1-A

30th Ave SW (M1-B)

This segment is defined by 12 waterfront homes along the landward side of 30th Ave SW between the northern extent of 30th Ave SW and the northern edge of the Shorewood Community Beach. The road runs along the bottom of a steep slope and is generally between 60’ and 80’ from OHWM. The road rises to an altitude of approximately 50’ above sea-level as one travels to the south-east along this segment.

The parcels on the water ward side of the road are typically between 5K and 7K square feet in area. This is the entire land area for six of the properties; the other six properties include land on the steep slope on the landward side of the road.

It appears that the building coverage and total impervious surface exceed the standards for RS-12000, and perhaps even for RS-7200, if one excludes the area on the steep slope.

The land within 100’ of OHWM is dominated by impervious surface; the roadway, driveways, buildings, concrete decks, bulkheads, etc with the remaining surface being partially functioning. In contrast the area on the landward side of 30th Ave SW consists exclusively of mature native vegetation.

Fig 4: A representative portion of M1-B

Shorewood Dr SW (M1-C)

This segment consists of the Shorewood Community Beach, the final home at the south-east end of 30th Ave SW, and 14 waterfront homes with addresses along Shorewood Dr SW. Shorewood Dr SW is approximately 350' from OHWM at an altitude of approximately 130' above Puget Sound.

Development along this segment is strongly impacted by the slope between the road and OHWM.

Approximately 1/2 of these homes, generally those at the north end of this segment, are located at the top of the slope. These homes are well over 200' from OHWM and the land between the home and OHWM is densely vegetated. All of these properties include significant bulkheads.

The remaining homes are in close proximity to OHWM at the base of the slope. Setbacks from OHWM are generally between 25' and 45'. Conditions between the home and OHWM are primarily impervious surface and partially functioning areas while the land between the home and the road is densely vegetated steep slope. All of the properties include significant bulkheads.

One of the properties, located at the center of figure 5, is undeveloped.

Fig 5: A representative portion of M1-C

Shorewood Lane SW (M1-D)

This segment includes 10 waterfront homes at the base of Shorewood Lane SW. Much of this private road has the character of a single track shared driveway that zig-zags across the steep slope in this area.

The label for the road in this image is approximately 200’ from OHWM. The properties are generally between 5K and 17K sq. ft. where the larger properties include land that stretch across the lane, e.g. the properties labeled 9077 and 9067 in the image.

Setbacks from OHWM are typically between 15’ and 30’. The area between the homes and OHWM is dominated by impervious surface or partially functioning area. Native vegetation is primarily on the landward side of the homes. All of these homes are protected by significant bulkheads.

The waterfront property at the northern end of this segment, just to the left of this image, is being redeveloped; a tiny cabin is being replaced with a modern 3000 sq. ft. home on two levels.

Fig 6: A representative portion of M1-D

Standring Lane SW (M1-E)

This segment consists of a single substantial property that is located in the valley at the mouth of Salmon Creek. Figure 7 shows, approximately, the portion of this property that is within shoreline jurisdiction. This property includes a substantial bulkhead.

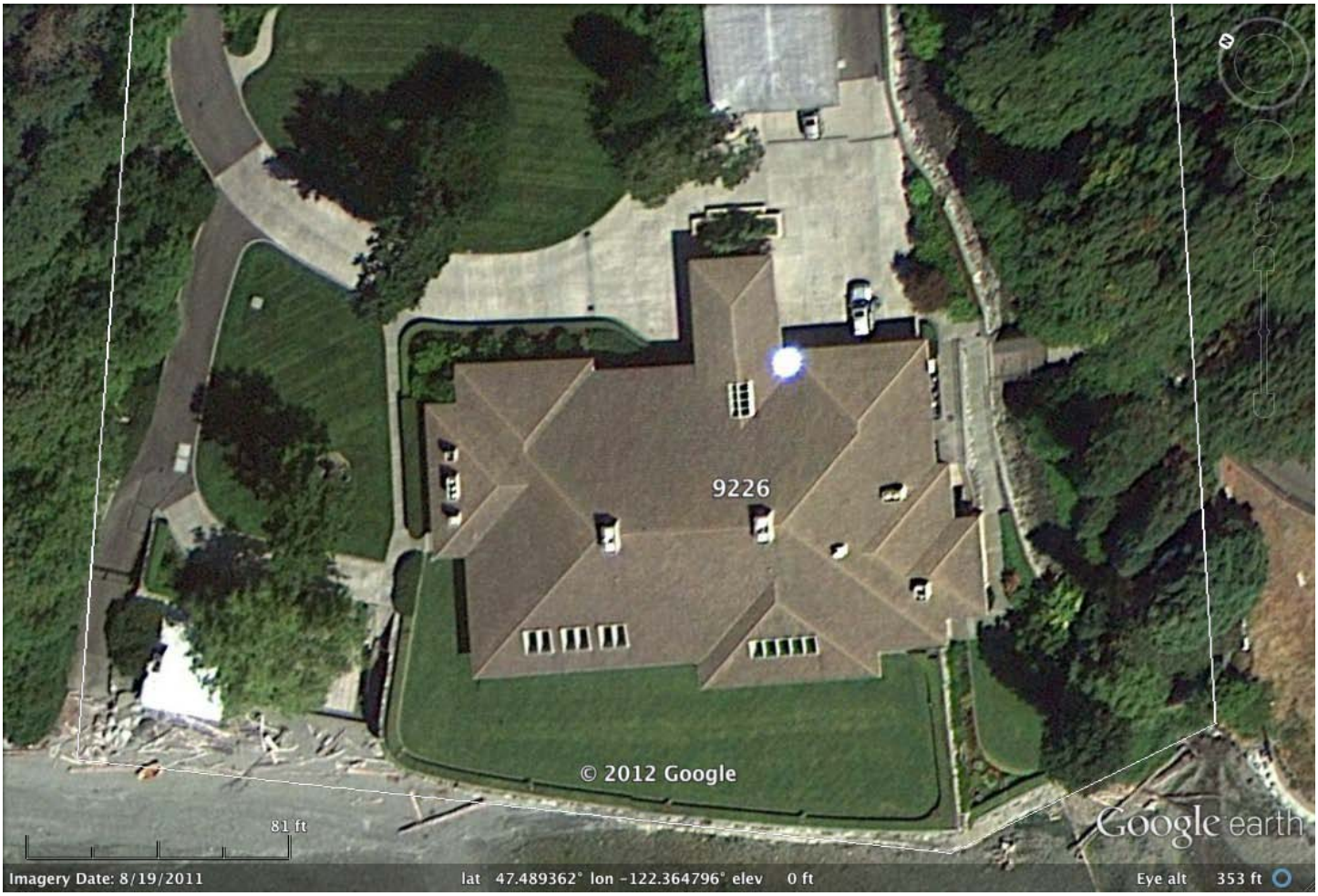

Fig 7: A significant property at the entrance to Standring Lane SW

Standring Lane SW continued (M1-F)

This segment consists of the 23 waterfront homes that are located on the landward side of Standring Lane SW as it runs along the base of a steep slope and approximately parallel to OHWM. The road is generally between 75’ and 100’ from OHWM.

The 6 properties at the south end of this lane include land on the steep slope on the landward side of this road. Figure 8 includes the first of these 6 properties; note that the road continues directly to the rear of 0090 but is occluded by the tree coverage in this image.

The portions of the properties on the water ward side of the lane are typically between 5K and 8K sq. ft. and this land is generally dominated by the home. The homes are typically setback between 22’ and 35’ from OHWM.

The land within 125’ of OHWM is dominated by impervious surface; the roadway, the homes, driveways, concrete decks, and significant bulkheads. Some of the properties include limited amounts of partially functioning area.

The remaining 75’ within shoreline jurisdiction, on the landward side of Standring Lane SW, is densely vegetated along the lower portion of a steep slope.

Fig 8: A representative portion of M1-F. Height of image is approximately 200’

	Len (ft)	Indicator	Min	Typical	Max
M1-A	362	Depth (ft)	135	151 - 223	234
		Area (sq ft) (000's)	4.6	11.6 - 18.4	18.6
		Setback (ft)	40	62 - 110	115
M1-B (*)	983	Depth (ft)	60	70 - 80	90
		Area (sq ft) (000's)	3.6	4.9 - 6.8	9.8
		Setback (ft)	15	25 - 35	35
M1-C	1310	Depth (ft)	170	310 - 345	350
		Area (sq ft) (000's)	11.0	16.8 - 21.8	23.7
		Setback (ft)	20	26 - 244	273
M1-D	816	Depth (ft)	65	116 - 191	200
		Area (sq ft) (000's)	6.1	8.9 - 16.5	17.9
		Setback (ft)	10	16 - 30	45
M1-E	390	Depth (ft)	835	835	835
		Area (sq ft) (000's)	225	225	225
		Setback (ft)	55	55	55
M1-F (*)	1602	Depth (ft)	75	75 - 120	120
		Area (sq ft) (000's)	4.3	4.8 - 8.4	16.5
		Setback (ft)	20	22 - 35	55

Table 6: Summary of Dimensional indicators for Segments in M1

(*) Depth/Area excludes portion landward of roadway

7.2) Segments in Reach M2

Seahurst Park (M2-A)

This award winning park provides the primary opportunity for public access to Puget Sound in Burien. While there is a great deal of native vegetation, providing for recreation and public access means that there are also paved and non-paved walkways, several structures, a parking lot, and lawn. There are significant bulkheads in this park but these are a target of on-going restoration efforts by the public.

24th / 25th Ave SW (M2-B)

This segment is defined by 13 waterfront homes that are primarily along 24th Ave SW and 25th Ave SW. The roads are more than 650' from OHWM and are at an altitude of approximately 300'. Most of the homes are at the top of this steep slope but one home has been constructed at the bottom of the hill.

Eagle Landing Park (M2-C)

A smaller public park with shoreline access. Primarily a nature walking trail.

	Len (ft)	Indicator	Min	Typical	Max
M2-A	4355	Depth (ft)	NA	NA	NA
		Area (sq ft) (000's)	NA	NA	NA
		Setback (ft)	NA	NA	NA
M2-B	1156	Depth (ft)	295	610 - 740	825
		Area (sq ft) (000's)	31.5	46.4 - 69.6	178.7
		Setback (ft)	45	315 - 505	570
M2-C	300	Depth (ft)	675	675	675
		Area (sq ft) (000's)	256.1	256.1	256.1
		Setback (ft)	NA	NA	NA

Table 7: Summary of Dimensional indicators for Segments in M2

7.3) Segments in Reach M3

28th Ave SW / SW 115st PL (M3-A)

This segment includes 22 private waterfront properties along 28th Ave SW and SW 115st PL. The roads are approximately 200' - 250' from OHWM at an altitude of 100' to 150' above Puget Sound. The homes are along the base of the slope towards OHWM and served by trams. The properties have substantial bulkheads.

The properties are typically between 10K and 17K sq. ft. in area but are significantly impacted by slopes. The homes are typically setback between 35' and 55' from OHWM. Conditions between the homes and OHWM are primarily impervious surface and partially functioning area. All of the properties include substantial bulkheads.

There are two adjacent undeveloped properties towards the middle of this segment. These are towards the right of figure 9; 0401 and 0420.

Fig 9: A representative portion of M3-A

27th Ave SW / SW 156th St / Initial portion of Maplewild Ave SW (M3-B)

This segment includes 24 waterfront properties between 27th Ave SW and the point at which the Indian Trail meets Maplewild Ave SW. The roads are between 200' and 300' from OHWM at an altitude of approximately 100' above Puget Sound.

The properties are typically between 15K and 30K sq. ft. in area. The steep slope in this segment is generally towards OHWM. For example, the primary structure on the property labeled 0095 towards the left of figure 10 is located at an altitude that is comparable to, but slightly lower than, Maplewild Ave SW and close to the beginning of the steep slope that drops down to OHWM.

There are 14 homes at the base of the steep slope. These homes are generally setback between 25' and 45' from OHWM. Conditions adjacent to OHWM include impervious surface, partially functioning areas, and native vegetation. All of these properties include substantial bulkheads.

There are 7 homes at the top of the steep slope and along Maplewild Ave SW. These are generally approximately 150' from OHWM. All of these properties include substantial bulkheads and some of these have small accessory structures and decks adjacent to the bulkhead.

There are 3 undeveloped properties in this segment. One is a substantial tax parcel at the north end of the segment, one is the more modest property labeled 0185 in the center of the image, and the final property is a substantial property at the south end of the segment. The property at the south of this segment is composed of 6 adjacent tax parcels; 2 waterfront parcels and 4 upland parcels. These properties include bulkheads.

Fig 10: A representative portion of M3-B

Indian Trail (M3-C)

The Indian Trail is a public walking trail that runs for almost 3/4 of a mile between Maplewild Ave SW and Puget Sound. The trail runs generally parallel to OHWM and is approximately 100' from OHWM for most of its length. It is generally at an altitude of 30' - 50' above OHWM although it drops close to sea-level at the public access location at SW 163rd PL and again at the south end of the trail at the public access location at SW 170th St. The distance between the trail and Maplewild Ave SW is more variable but is generally between 150' and 250'.

There are 55 private waterfront properties and 31 private upland properties. Approximately 60% of the waterfront properties are entirely on the water ward side of the trail, and hence are relatively shallow lots. The remaining 40% of the properties span the full distance from Maplewild to OHWM. However all but 4 of the waterfront properties are developed on the water ward side of the trail. The landward side of the trail is generally used for accessory structures; primarily for garages.

There are two undeveloped properties; both of these are in the steepest portion of this segment.

Most of the properties along this segment include significant bulkheads; in many places these rock walls stand over 6' tall. The bulkheads become less substantial towards the final 750' at the south of the segment.

Many of the properties, particularly those towards the middle of segment, include substantial levels of native vegetation on the water ward side of the trail i.e. within the first 100' from OHWM.

Fig 11: A more natural, and generally steeper, portion of M3-C

Fig 12: A more altered, and generally less steep, portion of M3-C

SW Three Tree Point Lane / SW 171st St (M3-D)

This segment, which is effectively level, contains the public access point on SW 170th St and 13 waterfront homes down to and including the property on the point itself at the boundary of M3 and M4.

The properties in this segment are typically between 200' and 250' feet deep and the properties are typically between 11K and 20K sq. ft. in area. Building coverage and impervious surface densities appear to be broadly consistent with RS-12000.

The typical setback from OHWM is 45' - 90'. Conditions between the homes and OHWM are generally partially functioning areas or impervious surfaces. Six of the properties include accessory structures in this area although there are pockets of native vegetation.

These properties include relatively modest bulkheads.

Fig 13: A representative portion of M3-D

Table 8 provides dimensional indicators for private waterfront properties along M3. Adjustments are made for segment M3-C to reflect the development constraint that is imposed by the Indian Trail. It was noted that approximately 40% of the waterfront properties include land on both sides of the trail yet all but 4 of the primary residences are on the water ward side of the trail. In Table 8, for segment M3-C, the reported depth/area is that of the land that contains the primary structure even if the property line spans the trail.

	Len (ft)	Indicator	Min	Typical	Max
M3-A	1513	Depth (ft)	82	148 - 268	328
		Area (sq ft) (000's)	4.6	9.8 - 16.7	32.4
		Setback (ft)	5	33 - 56	70
M3-B	2407	Depth (ft)	100	138 - 323	635
		Area (sq ft) (000's)	8.1	15.5 - 29.5	128.4
		Setback (ft)	15	20 - 135	250
M3-C (*)	3702	Depth (ft)	80	108 - 161	326
		Area (sq ft) (000's)	4.4	6.2 - 8.6	49.5
		Setback (ft)	10	25 - 68	245
M3-D	1462	Depth (ft)	178	200 - 252	286
		Area (sq ft) (000's)	9.0	11.5 - 19.6	49.5
		Setback (ft)	20	47 - 90	130

Table 8: Summary of Dimensional indicators for Waterfront homes for Segments in M3

(*) Depth/Area reflects impact of Indian Trail (see discussion)

7.4) Segments in Reach M4

SW 171st St (M4-A)

This segment contains 15 homes on relatively narrow parcels between OHWM and SW 171st St. The typical properties have footages between 40' and 55' and areas between 7K and 8K sq. ft. The properties are dominated by the structures and other impervious surfaces. The land between the homes and OHWM is impervious surfaces, e.g. decks, and small lawns. All of the properties include bulkheads.

Fig 14: A representative portion of M4-A

SW 172nd St (M4-B)

This segment consists of the first 1800’ of SW 172nd St, including the public street end, up to the intersection of SW 172nd St and Seacoma Blvd. This section of SW 172nd St runs roughly parallel to OHWM and is between 50’ and 75’ from OHWM. The 41 residences along this segment are located on the landward side of this roadway and are constrained to the rear by a steep slope.

The area on the water ward side of this portion of SW 172nd St is used for parking by the residents of this segment and is generally developed with small accessory structures and small landscaped areas.

These properties include minor bulkheads that control erosion on a daily basis but which are overtopped during moderate storms.

Fig 15: A representative portion of M4-B

Seacoma Blvd (M4-C)

This small development contains 9 waterfront homes between SW 172nd St, which begins to move away from Puget Sound at this point, and OHWM. Figure 16 includes all of the waterfront and upland properties in this segment.

These properties are typically between 5K and 6K sq. ft. Setbacks range from 25’ to 105’.

Six of the waterfront properties are primarily impervious surface between the home and OHWM. The final three properties include significant levels of partially functioning areas and perhaps even some native vegetation.

All of these properties include significant concrete wall bulkheads that are 6’ to 10’ tall.

Fig 16: The properties in M4-C

SW 172nd St (M4-D)

SW 172nd St begins to move away OHWM at Seacoma Blvd so that it follows the top of the steep slope that intrudes more closely towards the shore. SW 172nd St is generally approximately 250' from OHWM at an altitude of 70' - 90' above the Puget Sound within this segment.

This segment contains 23 waterfront properties and 1 upland property on lots that are typically 13K to 15K sq. ft in area. The waterfront properties are impacted by a steep slope.

Sixteen of the waterfront homes are located at the top of the slope along SW 172nd St with setbacks from OHWM that are generally between 115' and 140'. The land between the home and OHWM is dominated by native vegetation. All of these properties include substantial bulkheads.

The five remaining waterfront homes are at the base of the slope and generally setback 40' - 50' from OHWM. These properties include impervious surfaces, partially functioning areas, and native vegetation adjacent to OHWM. The land between the home and SW 172nd St is dominated by native vegetation. All of the properties include significant bulkheads.

The final two waterfront properties are undeveloped. One is toward the north of the segment, the property labeled 0270 in figure 17, and the other is towards the south. The second property is owned by a corporation on behalf of several local residents that live on the landward side of SW 172nd St. These two properties include bulkheads.

Fig 17: A representative portion of M4-D

SW 174th St / SW 173rd PL (M4-E)

SW 172nd St moves even further away from OHWM at the southern end of Burien and the slope becomes slightly less steep. This provides space for the final development along the shore.

This segment includes 14 waterfront homes on lots that are typically 10.5K to 20K sq. ft. in area. Most of these properties include modest slopes adjacent to OHWM and the homes tend to be landward of these slopes with typical setbacks of 35' to 65'.

Conditions between the home and OHWM are primarily impervious surface and partially functioning areas but some properties include native vegetation within the first 100' from OHWM.

All of the properties include significant bulkheads.

Fig 17 shows a few properties in this segment. The property labeled 0410, for example, is located behind a modest slope and is perhaps 10' above the level of the land immediately adjacent to OHWM.

Fig 18: A representative portion of M4-E

	Len (ft)	Indicator	Min	Typical	Max
M4-A	740	Depth (ft)	200	200	200
		Area (sq ft) (000's)	4.5	7.1 - 8.3	17.3
		Setback (ft)	25	35 - 55	60
M4-B (*)	1875	Depth (ft)	132	150 - 215	240
		Area (sq ft) (000's)	4.4	7.2 - 10.4	13.8
		Setback (ft)	47	70 - 95	110
M4-C	438	Depth (ft)	95	110 - 130	185
		Area (sq ft) (000's)	4.8	5.0 - 5.8	14.7
		Setback (ft)	20	25 - 75	105
M4-D	1390	Depth (ft)	126	217 - 250	261
		Area (sq ft) (000's)	6.6	13.0 - 15.4	18.5
		Setback (ft)	25	100 - 135	150
M4-E	1026	Depth (ft)	125	150 - 225	320
		Area (sq ft) (000's)	7.7	10.4 - 19.9	69.1
		Setback (ft)	15	35 - 65	125

Table 9: Summary of Dimensional indicators for Waterfront homes for Segments in M4
(*) Setbacks are determined by location of SW 172nd St. Areas include SW 172nd St.

8) Summary

Development in Burien's Shoreline can be grouped in to 4 broad categories

Lake Burien consists of a mile of shoreline and the properties around the lake are developed at a level that is consistent with RS-12000. These properties are extensively landscaped.

Approximately 22.5% of the marine shoreline, reach M2, is in a relatively natural condition with extensive natural vegetation that extends for 100's of feet landward of shoreline jurisdiction. 80% of this reach is public park. Seahurst Park has been a focal point for restoration efforts.

Approximately 52.5% of the marine shoreline is developed at a level that is broadly consistent with RS-12000. Many of these properties are impacted to some degree by a steep slope which is often naturally vegetated.

Approximately 25% of the marine shoreline is relatively densely developed at levels that are more consistent with RS-7200.

There is one, small undeveloped parcel on Lake Burien that appears to be unbuildable.

There are ten private undeveloped waterfront properties at various points along the marine shoreline; seven of these are in M3.

The information provided in this report is the basis for the *Supplement to the Shoreline Analysis* that is included as an element of the Shoreline Master Program.