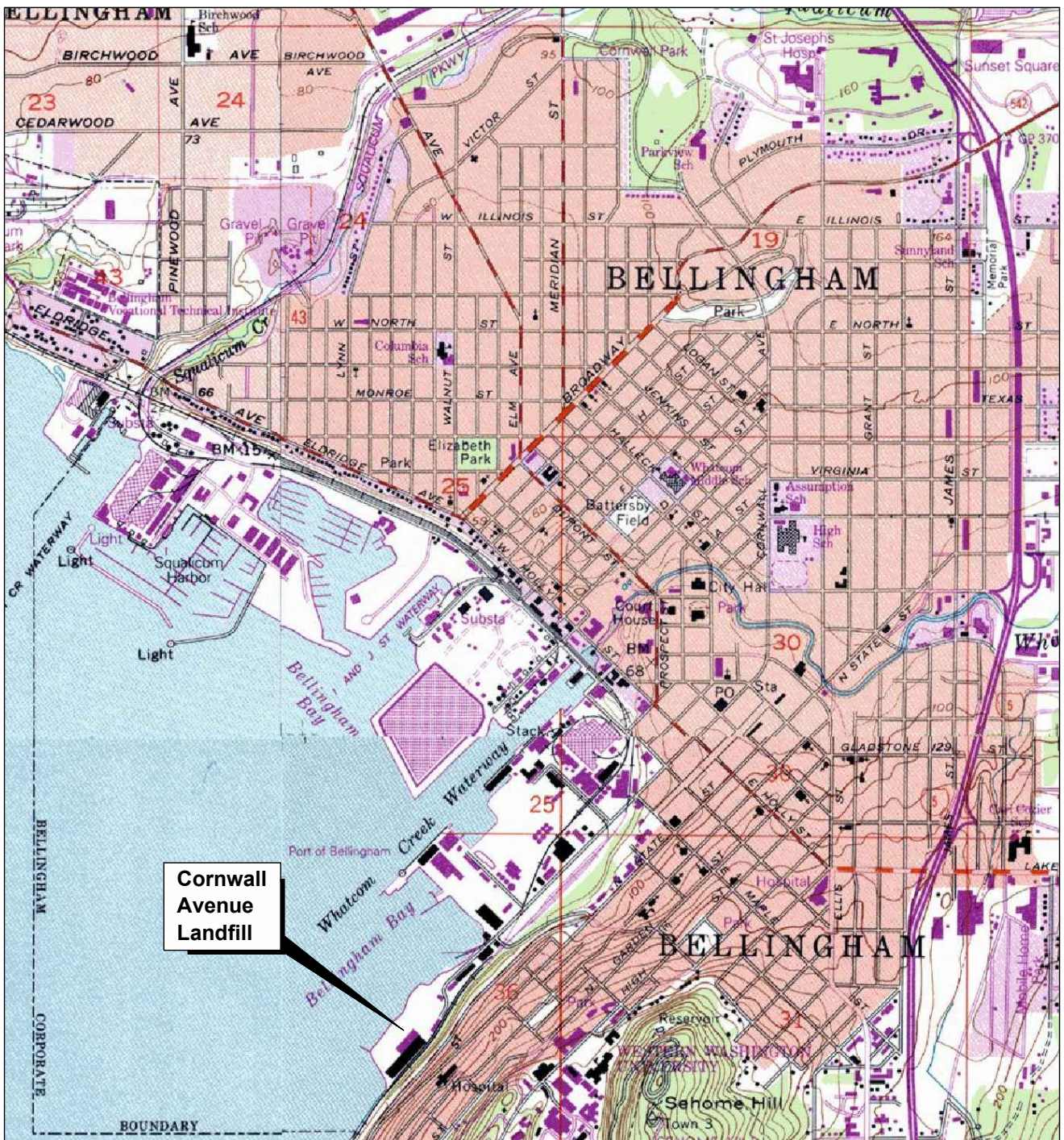
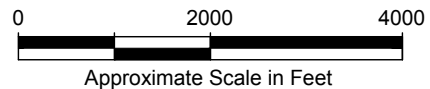


Port of Bellingham \ Cornwall Avenue Landfill \ R\F\ I\ V:\001020\0400\510\RI\F\ 2013\Fig 1-01.dwg (A) "Figure 1-1" 8/13/2013



Map from DeLorme Street Atlas USA 2002



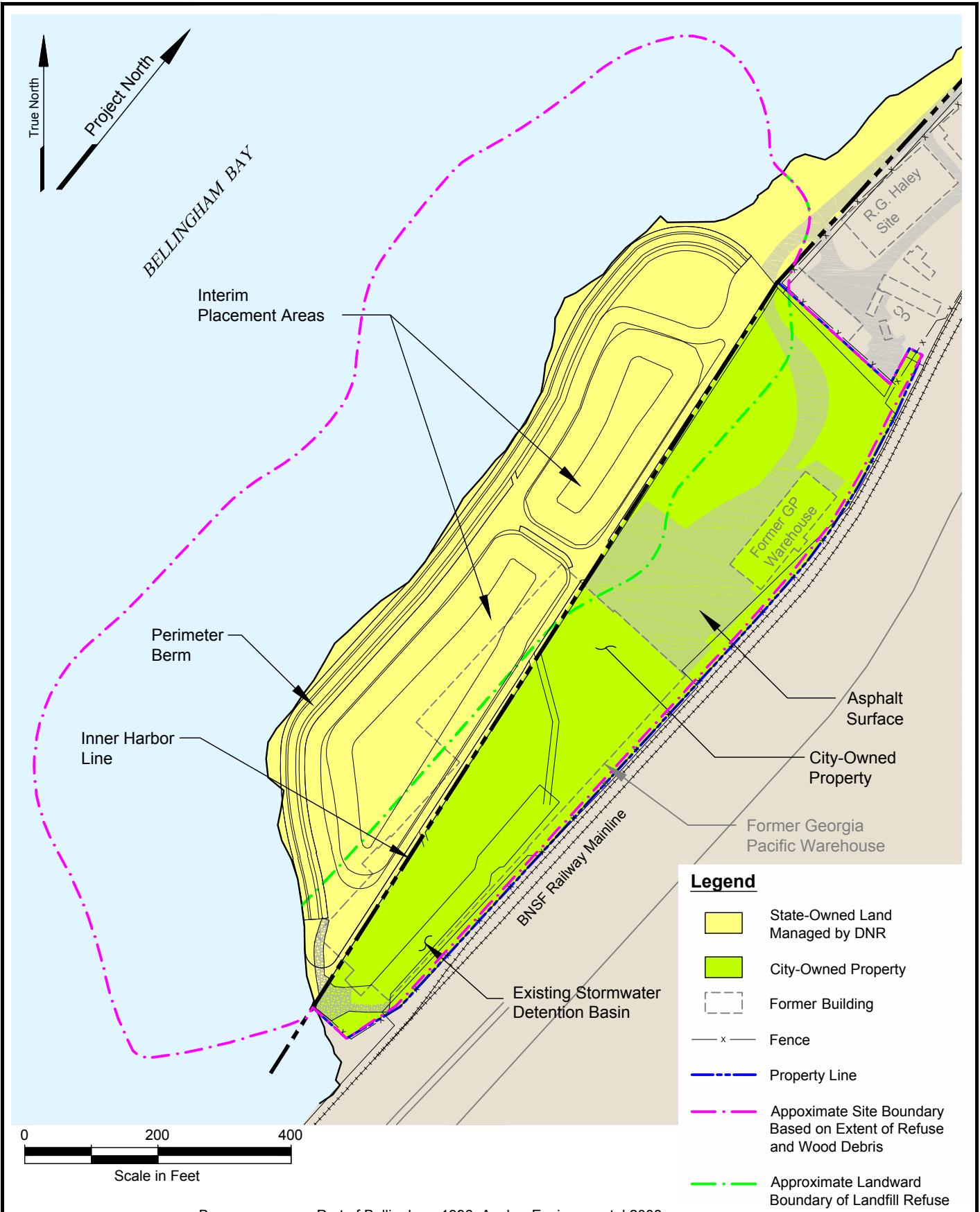
Cornwall Avenue Landfill
Bellingham, Washington

Vicinity Map

Figure
1-1



Landau Associates, Inc. | V:\001020\400\510\RF\2013\Fig 1-02.dwg (A) "Figure 1-2" 8/13/2013



Basemap source: Port of Bellingham 1996, Anchor Environmental 2008



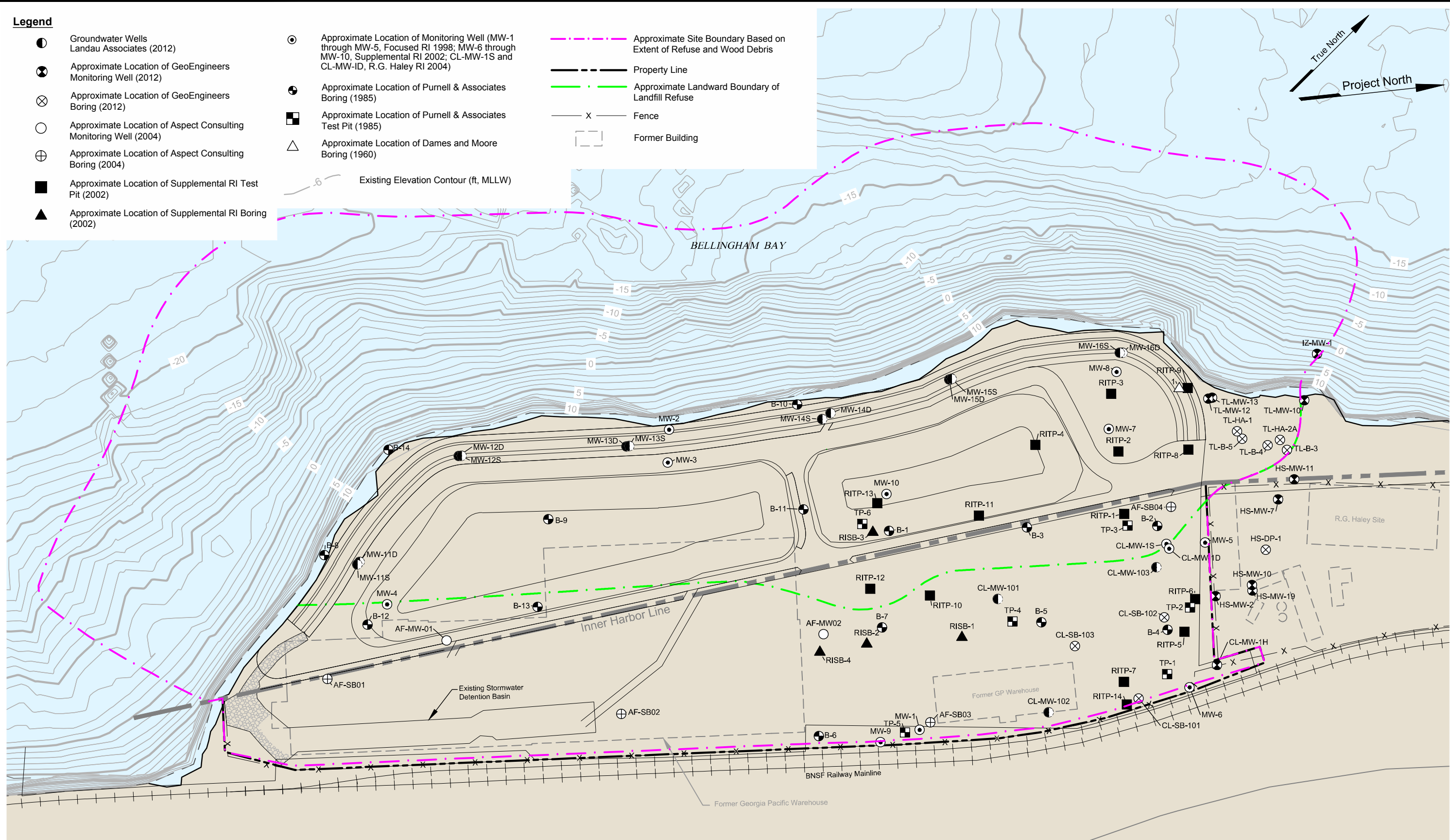
Cornwall Avenue Landfill
Bellingham, Washington

**Current Conditions
Site Plan**

Figure
1-2

Legend

- Groundwater Wells Landau Associates (2012)
- ⊗ Approximate Location of GeoEngineers Monitoring Well (2012)
- ⊗ Approximate Location of GeoEngineers Boring (2012)
- Approximate Location of Aspect Consulting Monitoring Well (2004)
- ⊕ Approximate Location of Aspect Consulting Boring (2004)
- Approximate Location of Supplemental RI Test Pit (2002)
- ▲ Approximate Location of Supplemental RI Boring (2002)
- ⊙ Approximate Location of Monitoring Well (MW-1 through MW-5, Focused RI 1998; MW-6 through MW-10, Supplemental RI 2002; CL-MW-1S and CL-MW-1D, R.G. Haley RI 2004)
- ⊕ Approximate Location of Purnell & Associates Boring (1985)
- ⊠ Approximate Location of Purnell & Associates Test Pit (1985)
- △ Approximate Location of Dames and Moore Boring (1960)
- Existing Elevation Contour (ft, MLLW)
- Approximate Site Boundary Based on Extent of Refuse and Wood Debris
- Property Line
- Approximate Landward Boundary of Landfill Refuse
- X — Fence
- Former Building



Basemap source: Port of Bellingham 1996, Anchor Environmental 2008

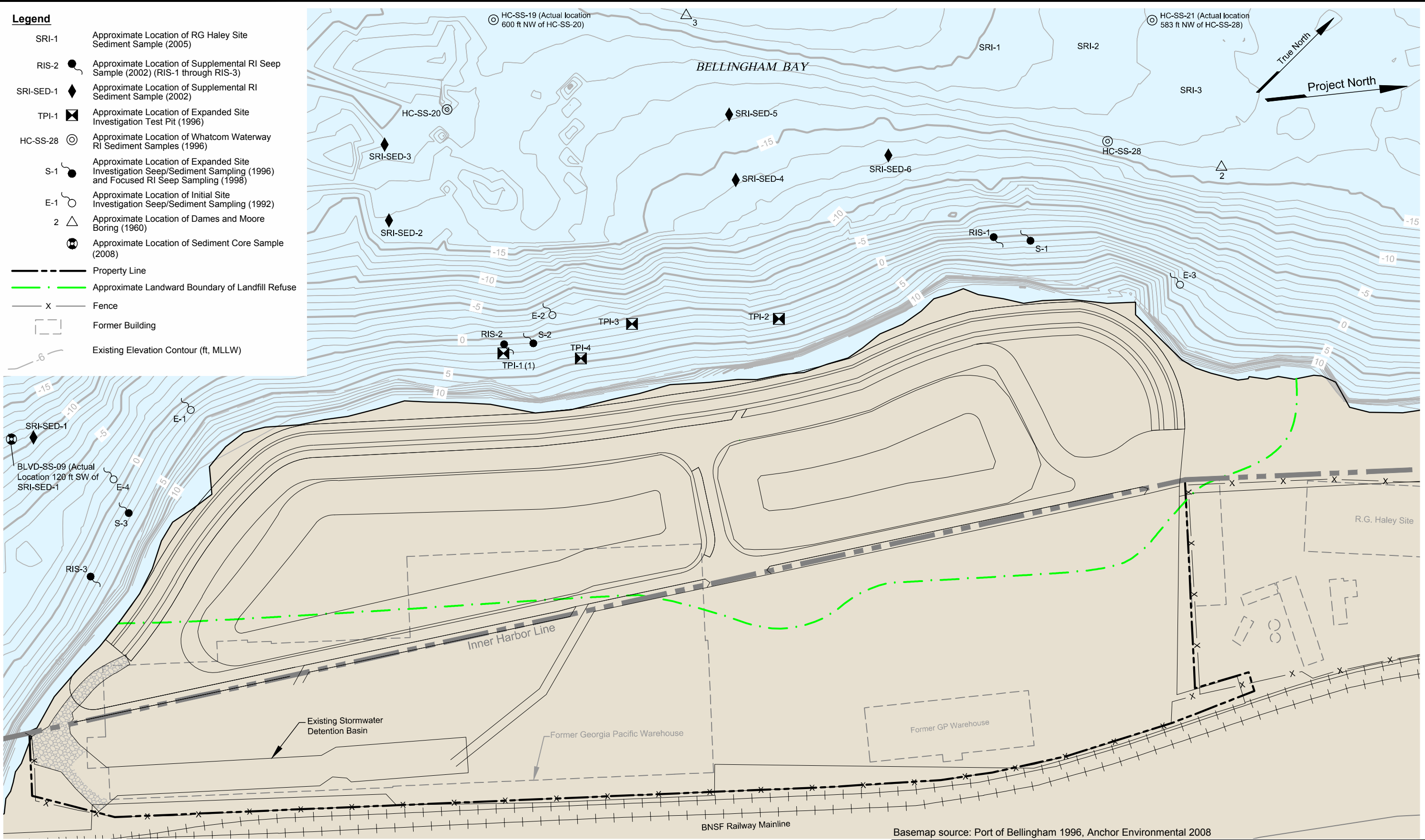


Cornwall Avenue Landfill Bellingham, Washington	Upland Site Exploration Locations	Figure 2-1
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Landau Associates, Inc. | V:\001020\400\510\RI\FS 2013\Fig 2-01.dwg (A) "Figure 2-1" 8/13/2013

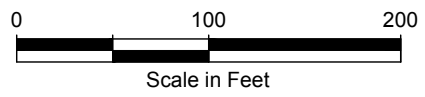


- Legend**
- SRI-1 Approximate Location of RG Haley Site Sediment Sample (2005)
 - RIS-2 Approximate Location of Supplemental RI Seep Sample (2002) (RIS-1 through RIS-3)
 - SRI-SED-1 Approximate Location of Supplemental RI Sediment Sample (2002)
 - TPI-1 Approximate Location of Expanded Site Investigation Test Pit (1996)
 - HC-SS-28 Approximate Location of Whatcom Waterway RI Sediment Samples (1996)
 - S-1 Approximate Location of Expanded Site Investigation Seep/Sediment Sampling (1996) and Focused RI Seep Sampling (1998)
 - E-1 Approximate Location of Initial Site Investigation Seep/Sediment Sampling (1992)
 - 2 Approximate Location of Dames and Moore Boring (1960)
 - Approximate Location of Sediment Core Sample (2008)
 - Property Line
 - Approximate Landward Boundary of Landfill Refuse
 - Fence
 - Former Building
 - Existing Elevation Contour (ft, MLLW)



Landau Associates, Inc. | V:\1001020\400\510\RI\FS 2013\Fig 2-02.dwg (A) "Figure 2-2" 8/13/2013

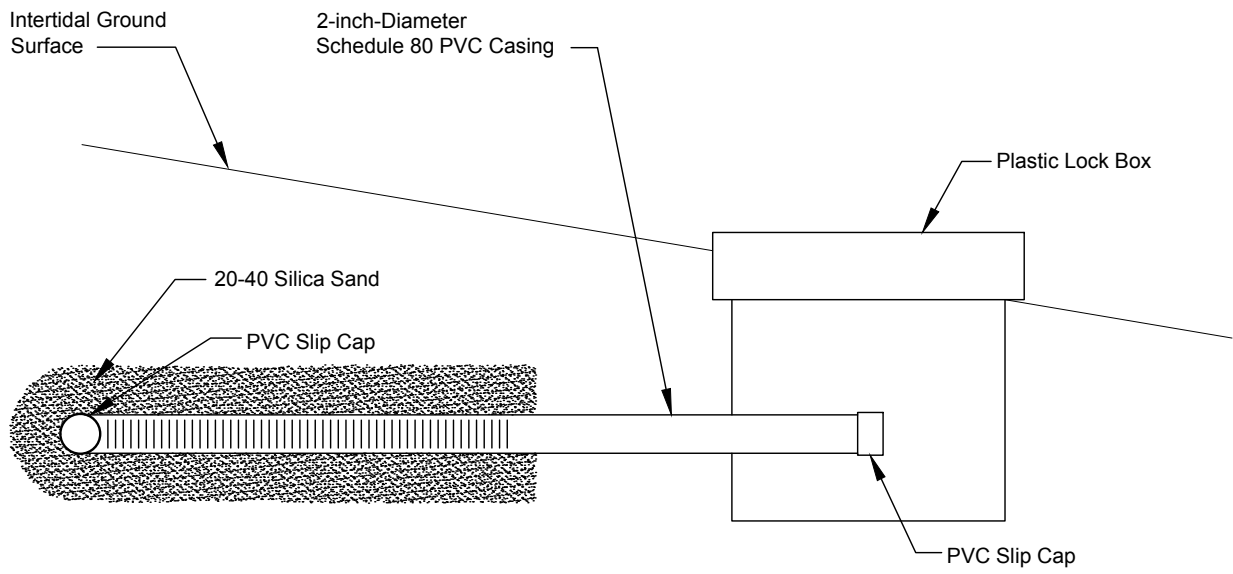
Basemap source: Port of Bellingham 1996, Anchor Environmental 2008



Cornwall Avenue Landfill Bellingham, Washington	Sediment / Seep Site Exploration Locations	Figure 2-2
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Landau Associates, Inc. | V:\001020\400\510\RF\2013\Fig 2-03.dwg (A) "Figure 2-3" 8/13/2013



Not to Scale



Cornwall Avenue Landfill
Bellingham, Washington

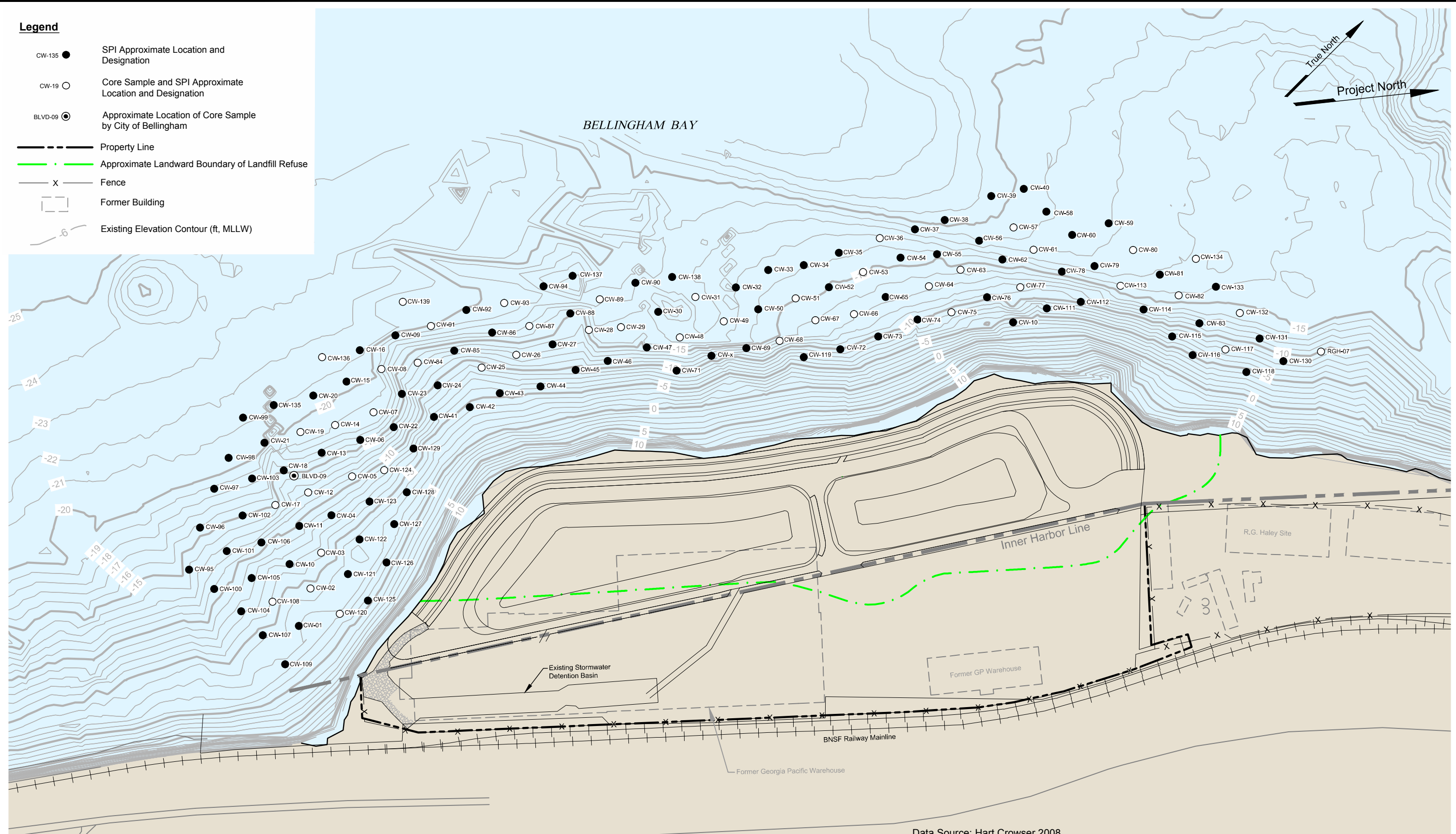
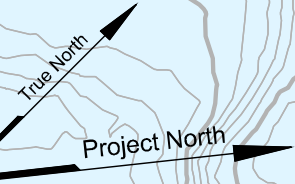
**Seep Collection Device
Construction Details**

Figure
2-3

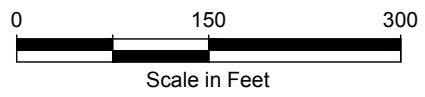
Legend

- CW-135 ● SPI Approximate Location and Designation
- CW-19 ○ Core Sample and SPI Approximate Location and Designation
- BLVD-09 ⊙ Approximate Location of Core Sample by City of Bellingham
- Property Line
- Approximate Landward Boundary of Landfill Refuse
- X— Fence
- []— Former Building
- Existing Elevation Contour (ft, MLLW)

BELLINGHAM BAY



Data Source: Hart Crowser 2008
 Basemap source: Port of Bellingham 1996, Anchor Environmental 2008











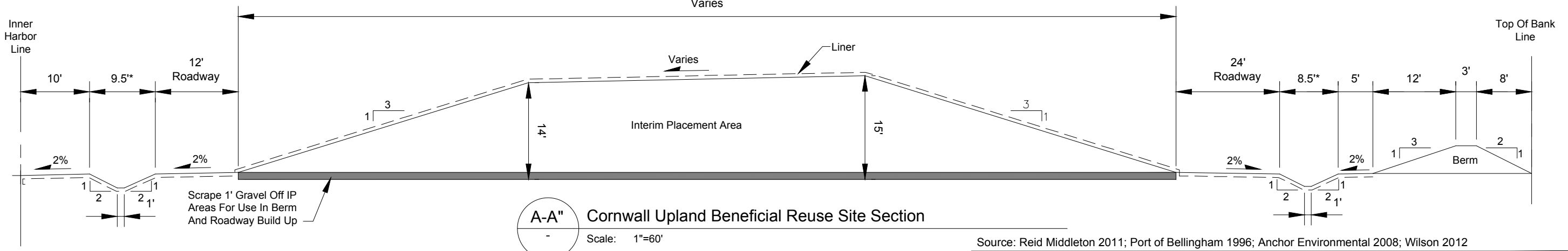
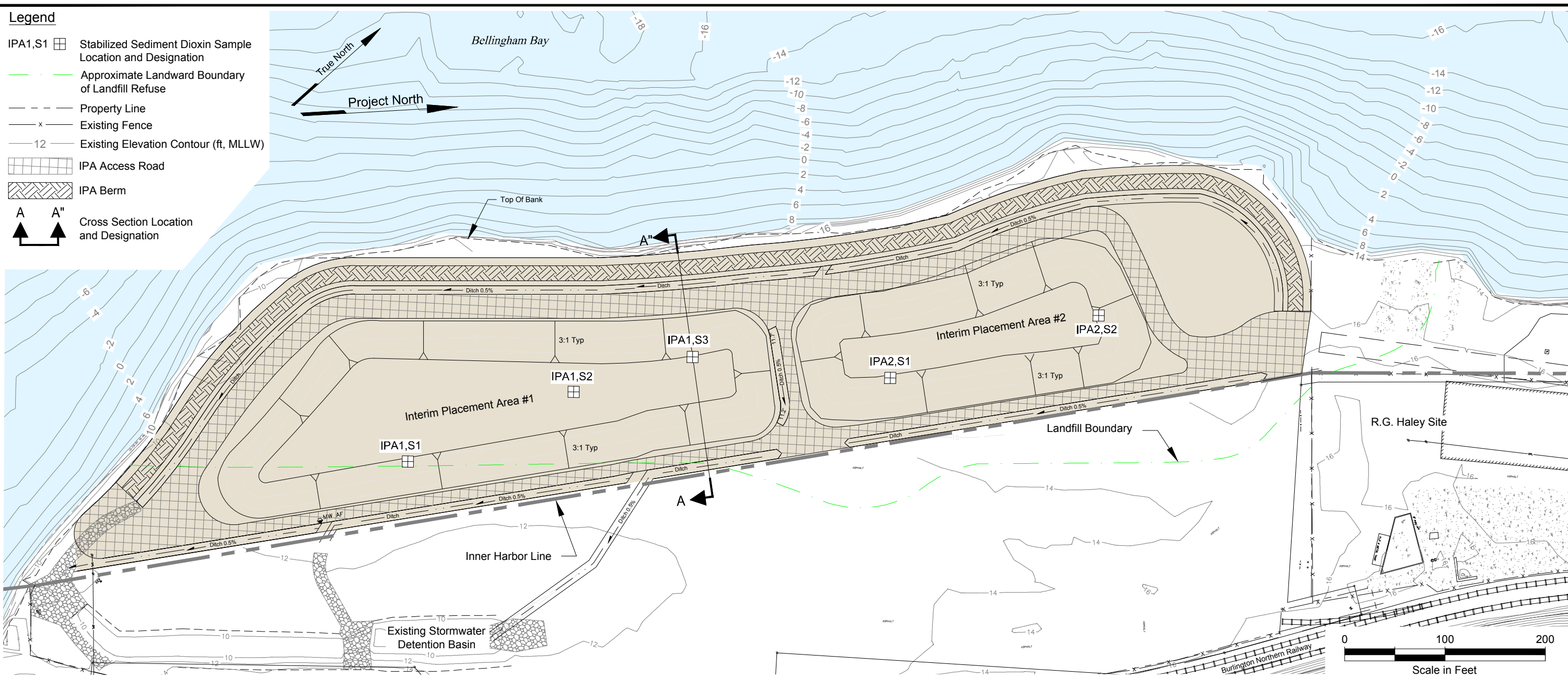
Cornwall Avenue Landfill Bellingham, Washington	2008 Ecology Sediment Investigation Exploration Locations	Figure 3-1
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Landau Associates, Inc. | V:\001020\400\510\RI\FS 2013\Fig 3-01.dwg (A) "Figure 3-1" 8/13/2013



Legend

- IPA1,S1  Stabilized Sediment Dioxin Sample Location and Designation
-  Approximate Landward Boundary of Landfill Refuse
-  Property Line
-  Existing Fence
-  Existing Elevation Contour (ft, MLLW)
-  IPA Access Road
-  IPA Berm
- A A''  Cross Section Location and Designation



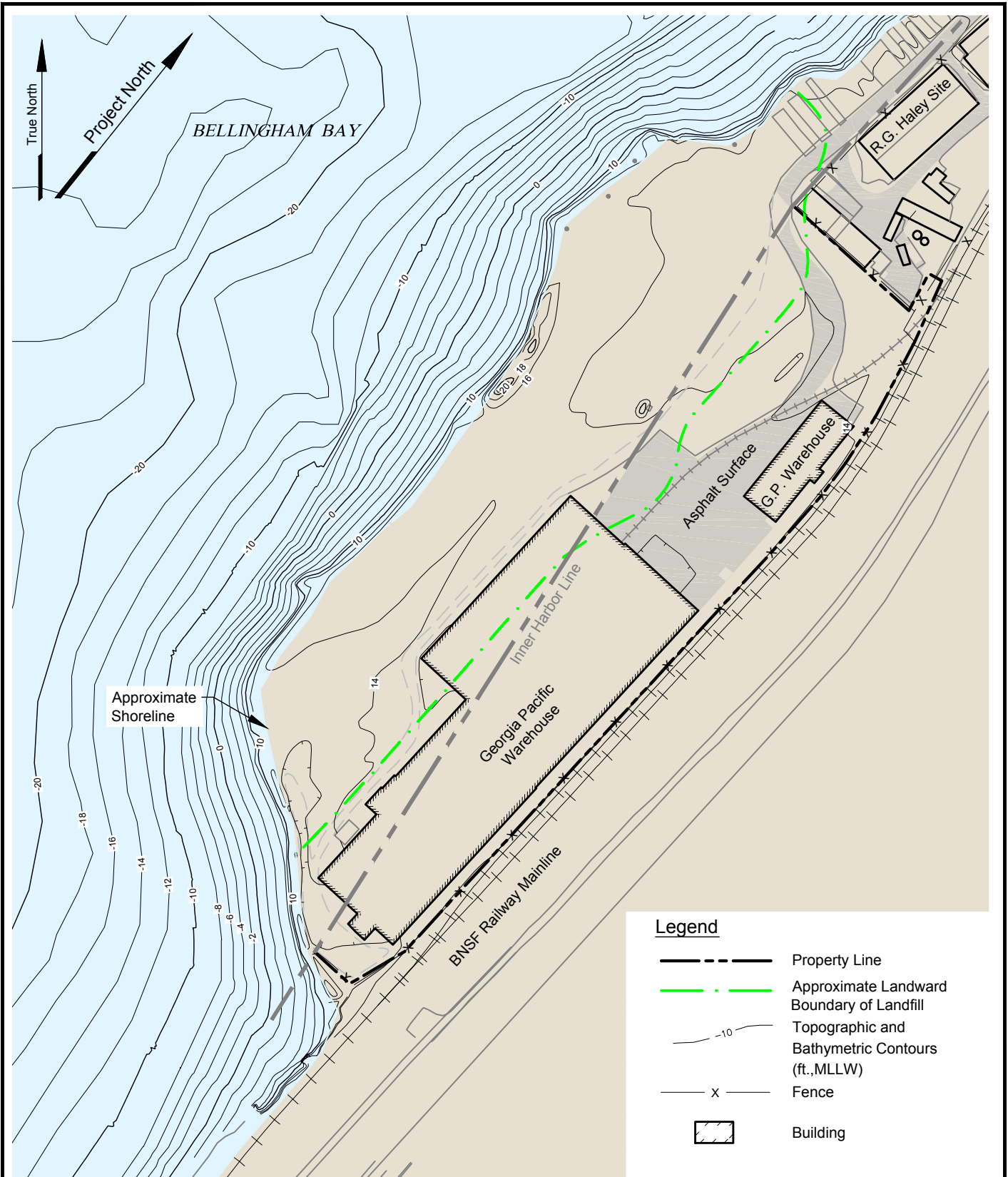
A-A'' Cornwall Upland Beneficial Reuse Site Section
Scale: 1"=60'

Source: Reid Middleton 2011; Port of Bellingham 1996; Anchor Environmental 2008; Wilson 2012

Landau Associates, Inc. | V:\001020400510\IRIFS 2013\Fig. 3-02.dwg (A) Figure 3-2 8/13/2013




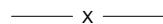



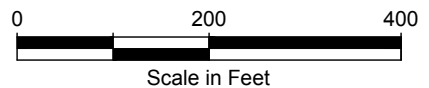
Cornwall Avenue Landfill Bellingham, Washington	Interim Action Site Plan and Section	Figure 3-2
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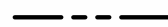

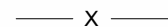

Site Topography is based on Walker and Associates (1993) Photogrammetric Survey. Bathymetric data is based on soundings collected by Georgia Pacific (1996) and by the Army Corps of Engineers (1996).

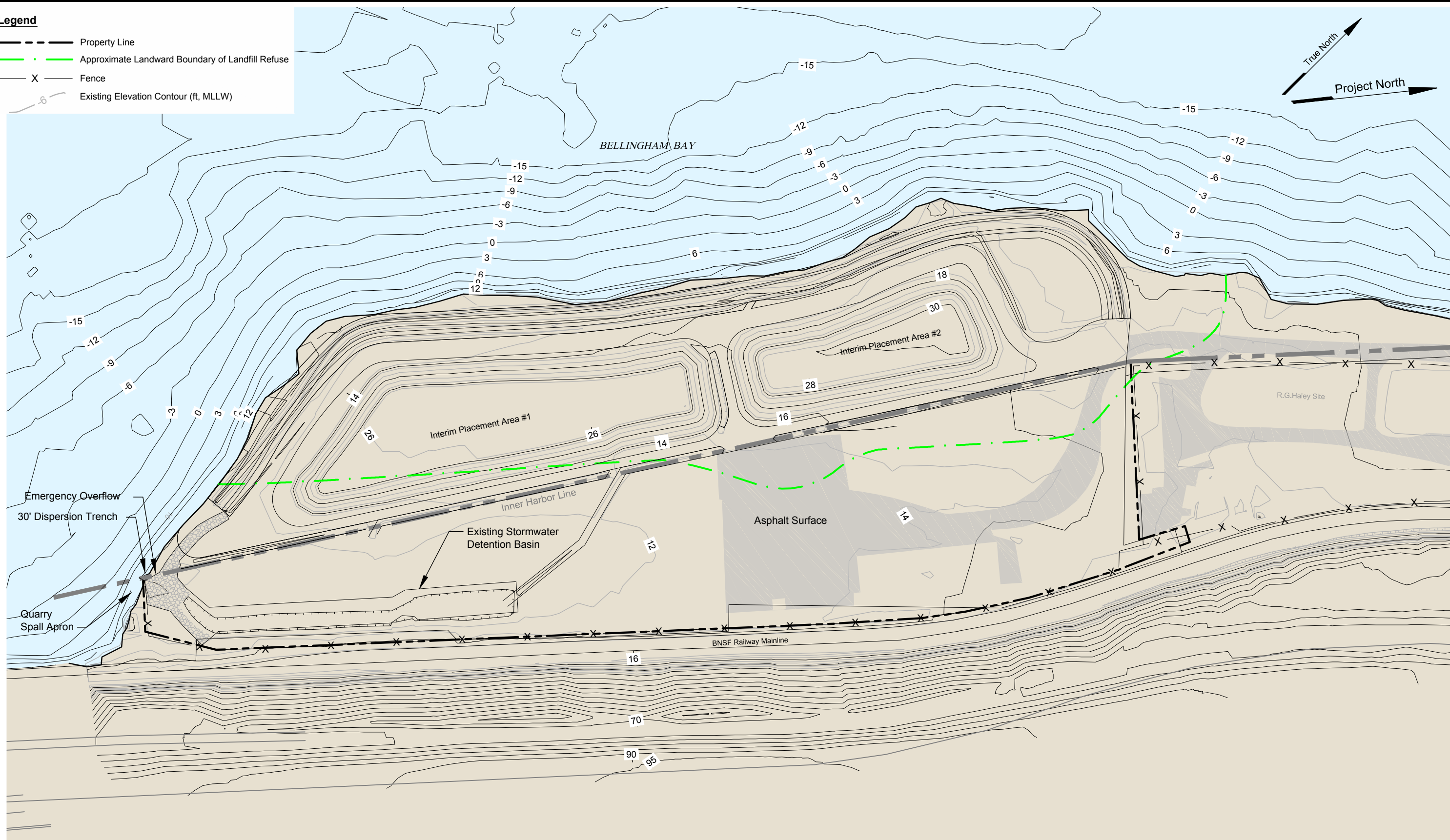
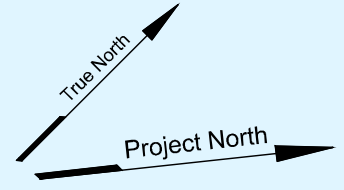
Legend

-  Property Line
-  Approximate Landward Boundary of Landfill
-  Topographic and Bathymetric Contours (ft., MLLW)
-  Fence
-  Building



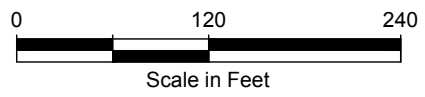
Legend

-  Property Line
-  Approximate Landward Boundary of Landfill Refuse
-  Fence
-  Existing Elevation Contour (ft, MLLW)



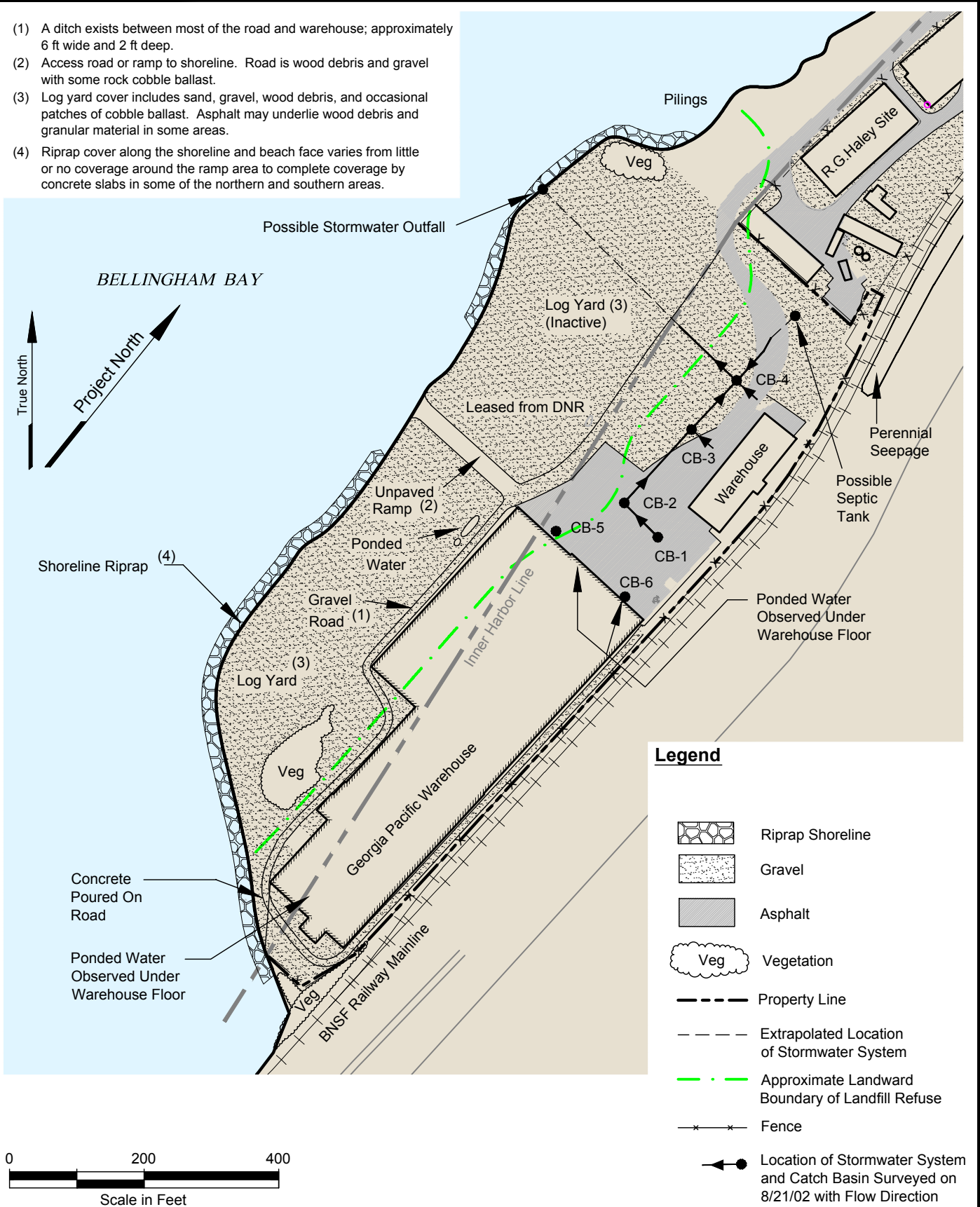
Landau Associates, Inc. | V:\1001020\400\510\RI\FS 2013\Fig 4-02.dwg (A) Figure 4-2 8/13/2013

Source: Bennett Engineering, LLC 2007, Anchor Environmental 2008



Cornwall Avenue Landfill Bellingham, Washington	Current Site Topography and Bathymetry	Figure 4-2
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- (1) A ditch exists between most of the road and warehouse; approximately 6 ft wide and 2 ft deep.
- (2) Access road or ramp to shoreline. Road is wood debris and gravel with some rock cobble ballast.
- (3) Log yard cover includes sand, gravel, wood debris, and occasional patches of cobble ballast. Asphalt may underlie wood debris and granular material in some areas.
- (4) Riprap cover along the shoreline and beach face varies from little or no coverage around the ramp area to complete coverage by concrete slabs in some of the northern and southern areas.



Landau Associates, Inc. | V:\00110220\400\510\RFIS 2013\Fig 4-03.dwg (A) "Figure 4-3" 8/13/2013

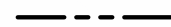

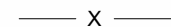
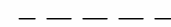







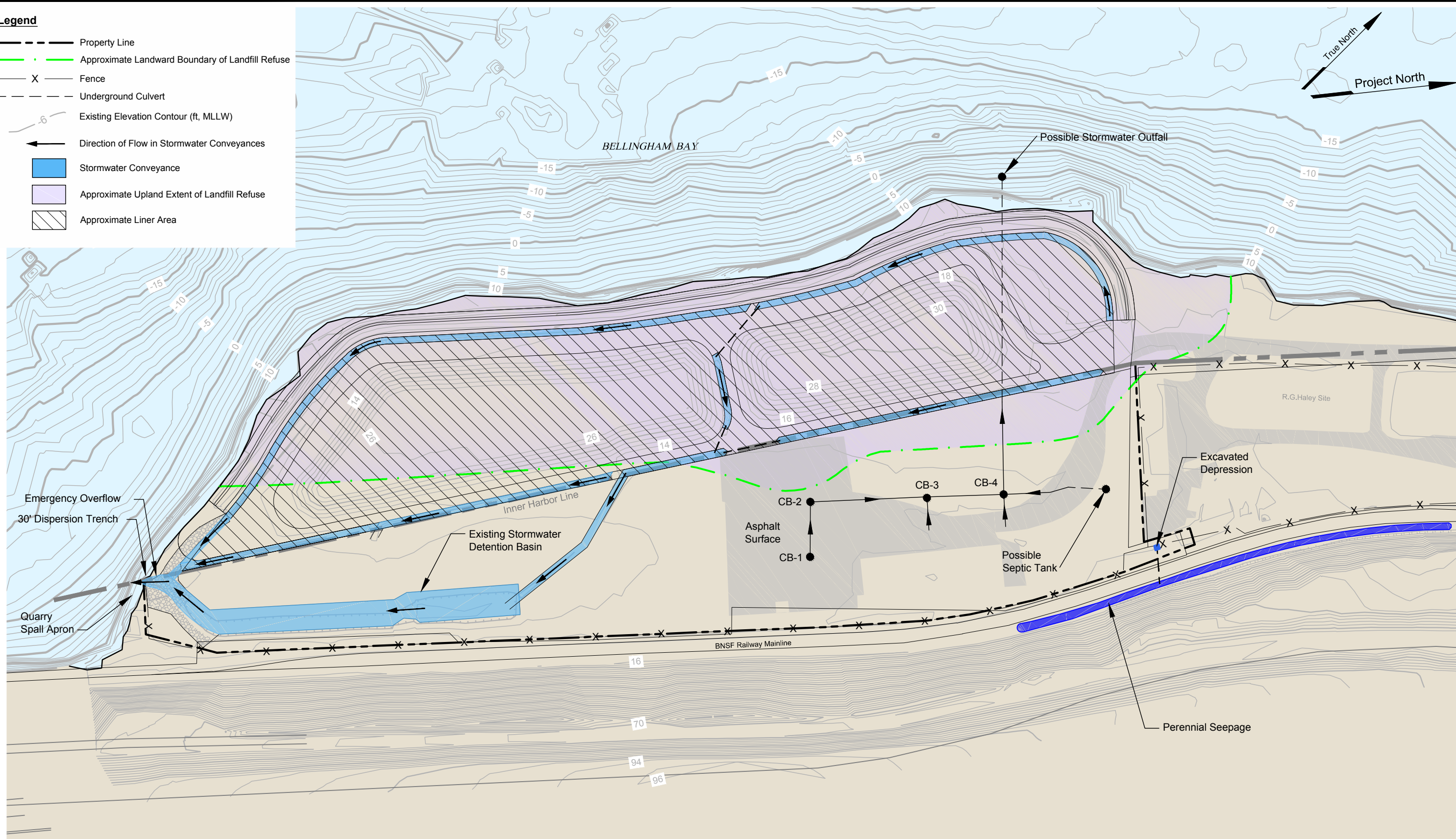
Basemap source: Port of Bellingham 1996



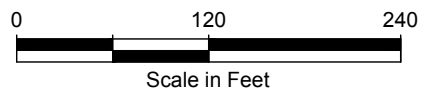
Cornwall Avenue Landfill Bellingham, Washington	Upland Cover and Drainage Conditions 2003	Figure 4-3
--	--	----------------------

Legend

-  Property Line
-  Approximate Landward Boundary of Landfill Refuse
-  Fence
-  Underground Culvert
-  Existing Elevation Contour (ft, MLLW)
-  Direction of Flow in Stormwater Conveyances
-  Stormwater Conveyance
-  Approximate Upland Extent of Landfill Refuse
-  Approximate Liner Area



Landau Associates, Inc. | V:\1001020\400\510\RI\FS 2013\Fig 4-04.dwg (A) Figure 4-4 8/13/2013



Source: Bennett Engineering, LLC 2007, Anchor Environmental 2008

<p>Cornwall Avenue Landfill Bellingham, Washington</p>	<p>Upland Cover and Drainage Conditions 2012</p>	<p>Figure 4-4</p>
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Landau Associates, Inc. | V:\0011020\400\510\RIFS 2013\Fig 4-05.dwg (A) "Figure 4-5" 8/13/2013

True North

Project North

BELLINGHAM BAY



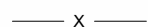

Approximate Shoreline (2012)

Approximate Shoreline (2007)

Approximate Shoreline Based on Top Of Slope (1994)

Approximate Shoreline Based on Top Of Slope (1969)

Legend

-  Property Line
-  Approximate Landward Boundary of Landfill Refuse
-  Fence
-  Former Building



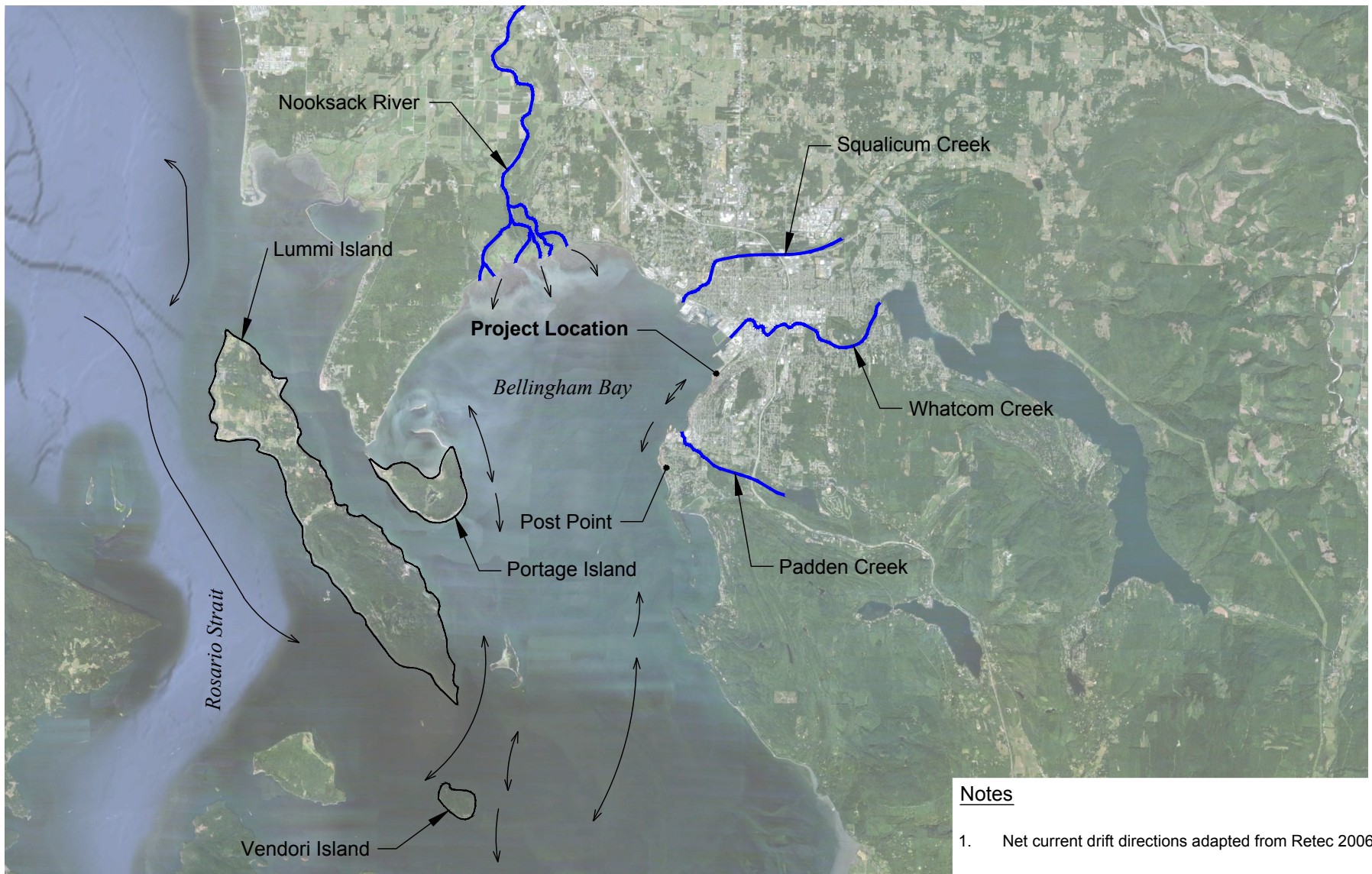
Basemap source: Port of Bellingham 1996, Google Earth 2011



Cornwall Avenue Landfill
Bellingham, Washington

Shoreline Erosion Evaluation

Figure
4-5



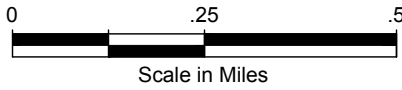
Notes

1. Net current drift directions adapted from Retec 2006
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

Net Current Drift Directions

Source: Google Earth Pro 2010



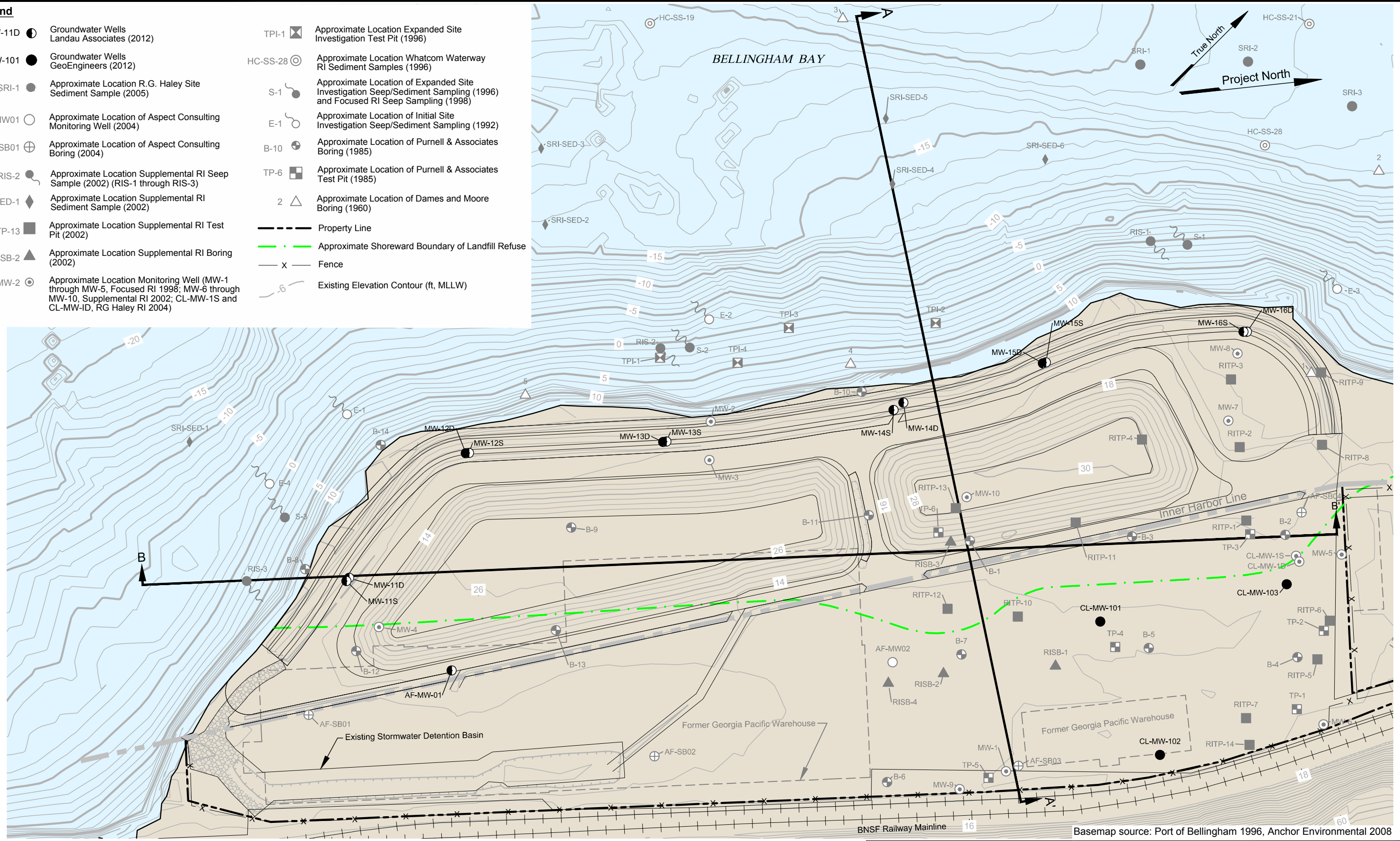
Cornwall Avenue Landfill
Bellingham, Washington

**Watershed Discharges and
Current Directions in Greater
Bellingham Bay Area**

Figure
4-6

Legend

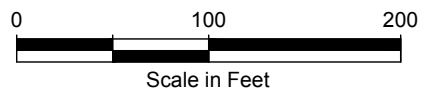
- MW-11D ● Groundwater Wells Landau Associates (2012)
- CL-MW-101 ● Groundwater Wells GeoEngineers (2012)
- SRI-1 ● Approximate Location R.G. Haley Site Sediment Sample (2005)
- AF-MW01 ○ Approximate Location of Aspect Consulting Monitoring Well (2004)
- AF-SB01 ⊕ Approximate Location of Aspect Consulting Boring (2004)
- RIS-2 ● Approximate Location Supplemental RI Seep Sample (2002) (RIS-1 through RIS-3)
- SRI-SED-1 ◆ Approximate Location Supplemental RI Sediment Sample (2002)
- RITP-13 ■ Approximate Location Supplemental RI Test Pit (2002)
- RISB-2 ▲ Approximate Location Supplemental RI Boring (2002)
- MW-2 ○ Approximate Location Monitoring Well (MW-1 through MW-5, Focused RI 1998; MW-6 through MW-10, Supplemental RI 2002; CL-MW-1S and CL-MW-ID, RG Haley RI 2004)
- TPI-1 ⊠ Approximate Location Expanded Site Investigation Test Pit (1996)
- HC-SS-28 ○ Approximate Location Whatcom Waterway RI Sediment Samples (1996)
- S-1 ● Approximate Location of Expanded Site Investigation Seep/Sediment Sampling (1996) and Focused RI Seep Sampling (1998)
- E-1 ○ Approximate Location of Initial Site Investigation Seep/Sediment Sampling (1992)
- B-10 ⊕ Approximate Location of Purnell & Associates Boring (1985)
- TP-6 ⊠ Approximate Location of Purnell & Associates Test Pit (1985)
- 2 △ Approximate Location of Dames and Moore Boring (1960)
- Property Line
- Approximate Shoreward Boundary of Landfill Refuse
- x — Fence
- - - Existing Elevation Contour (ft, MLLW)



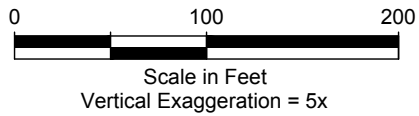
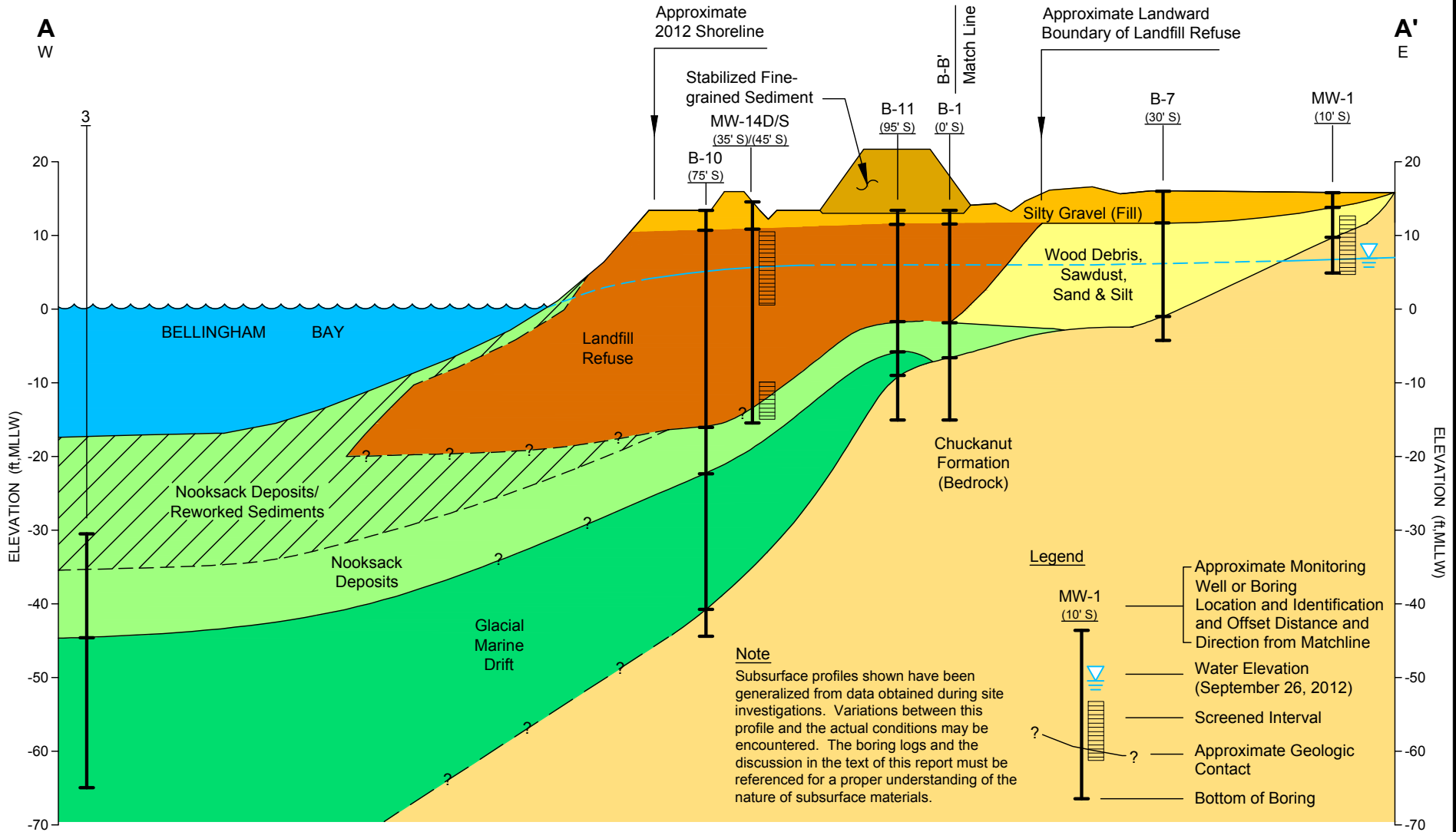
Landau Associates, Inc. | V:\001020\400\510\RI\FS 2013\Fig 4-7.dwg (A) "Figure 4-7" 8/13/2013



Note
Cross sections are shown on Figures 4-6 and 4-7.



Cornwall Avenue Landfill Bellingham, Washington	Geologic Cross Section Locations	Figure 4-7
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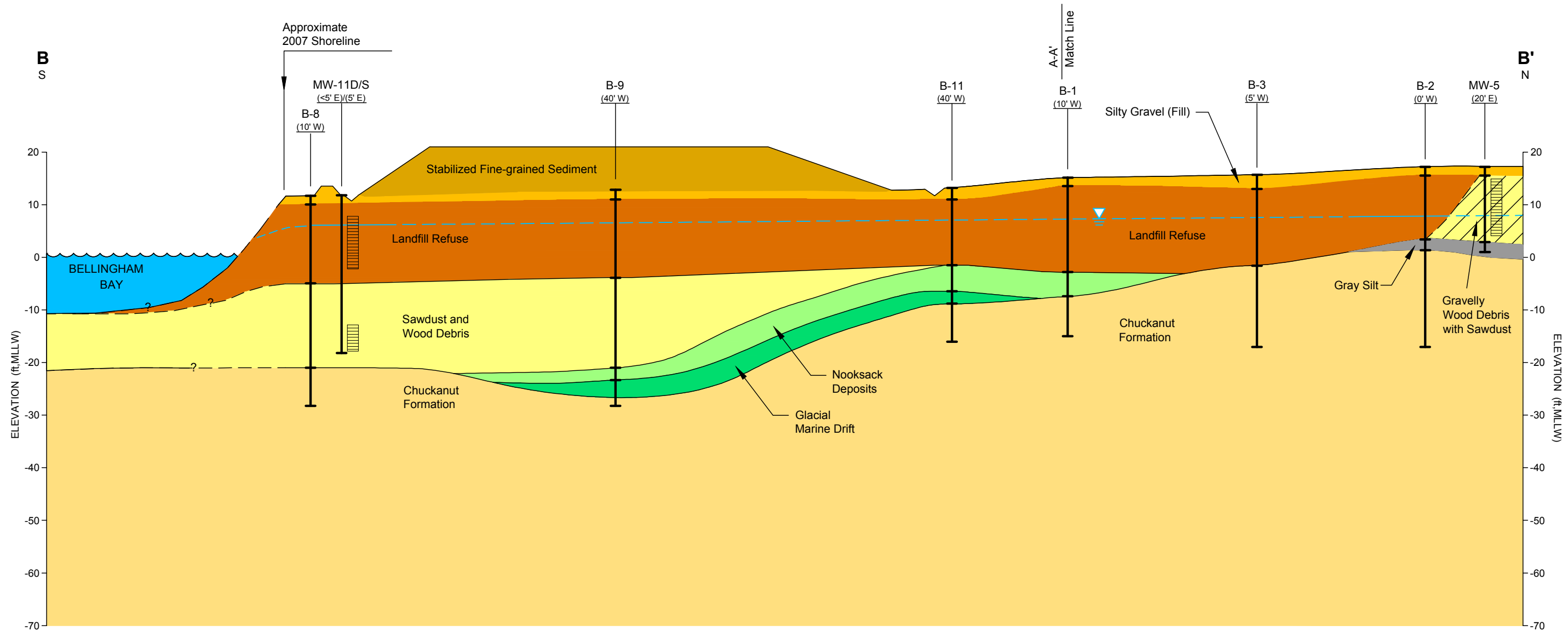
Cornwall Avenue Landfill
Bellingham, Washington

Geologic Cross Section A-A'

Figure
4-8



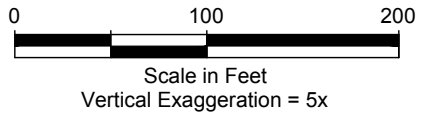
Landau Associates, Inc. | V:\1001020\400\510\RIFS 2013\Fig 4-09.dwg (A) Figure 4-9 8/13/2013



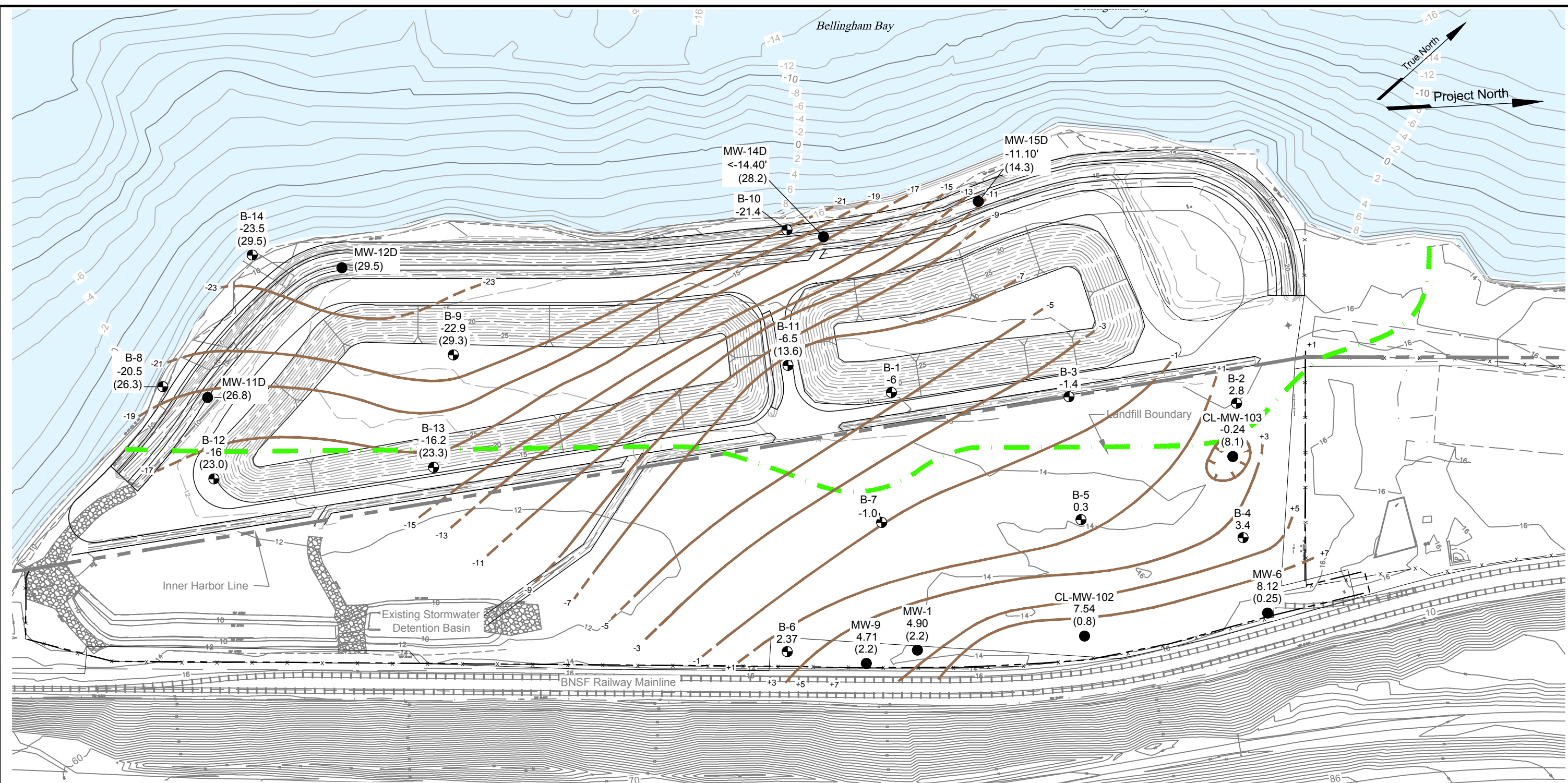
Note
 Subsurface profiles shown have been generalized from data obtained during site investigations. Variations between this profile and the actual conditions may be encountered. The boring logs and the discussion in the text of this report must be referenced for a proper understanding of the nature of subsurface materials.

Legend

- MW-1 (10' W) ——— Approximate Monitoring Well or Boring Location, Identification, and Offset Distance and Direction from Matchline
- Water Elevation (September 26, 2012)
- Screened Interval
- ? ——— Approximate Geologic Contact
- Bottom of Boring

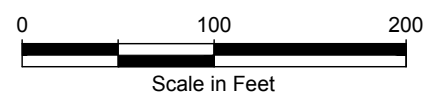


Landau Associates, Inc. | V:\001020\400\510\IRIFS 2013\Fig 4-10.dwg (A) "Figure 4-10" 8/13/2013



- Legend**
- MW-1 (23.3) — Monitoring Well Location
 - B-14 (-23.5) — Approximate Location of Purnell & Associates Boring (1985)
 - (23.3) — Estimated Saturated Thickness of Uppermost Hydrostratigraphic Unit (ft, MLLW); based on groundwater monitoring results from September 2012
 - (23.0) — Aquitard Elevation (ft, MLLW)
 - (23.0) — Estimated Saturated Thickness of Uppermost Hydrostratigraphic Unit (ft, MLLW); based on groundwater monitoring results from September 2012
 - x — Existing Fence
 - 12 — Existing Elevation Contour (ft, MLLW)
 - — Property Line
 - -19 — Approximate Landward Boundary of Landfill Refuse
 - -19 — Elevation Contour of the Top of the Aquitard Unit, or the Top of the Chuckanut Formation where the Aquitard is Not Present (as Noted).
 - ▨ Existing Building

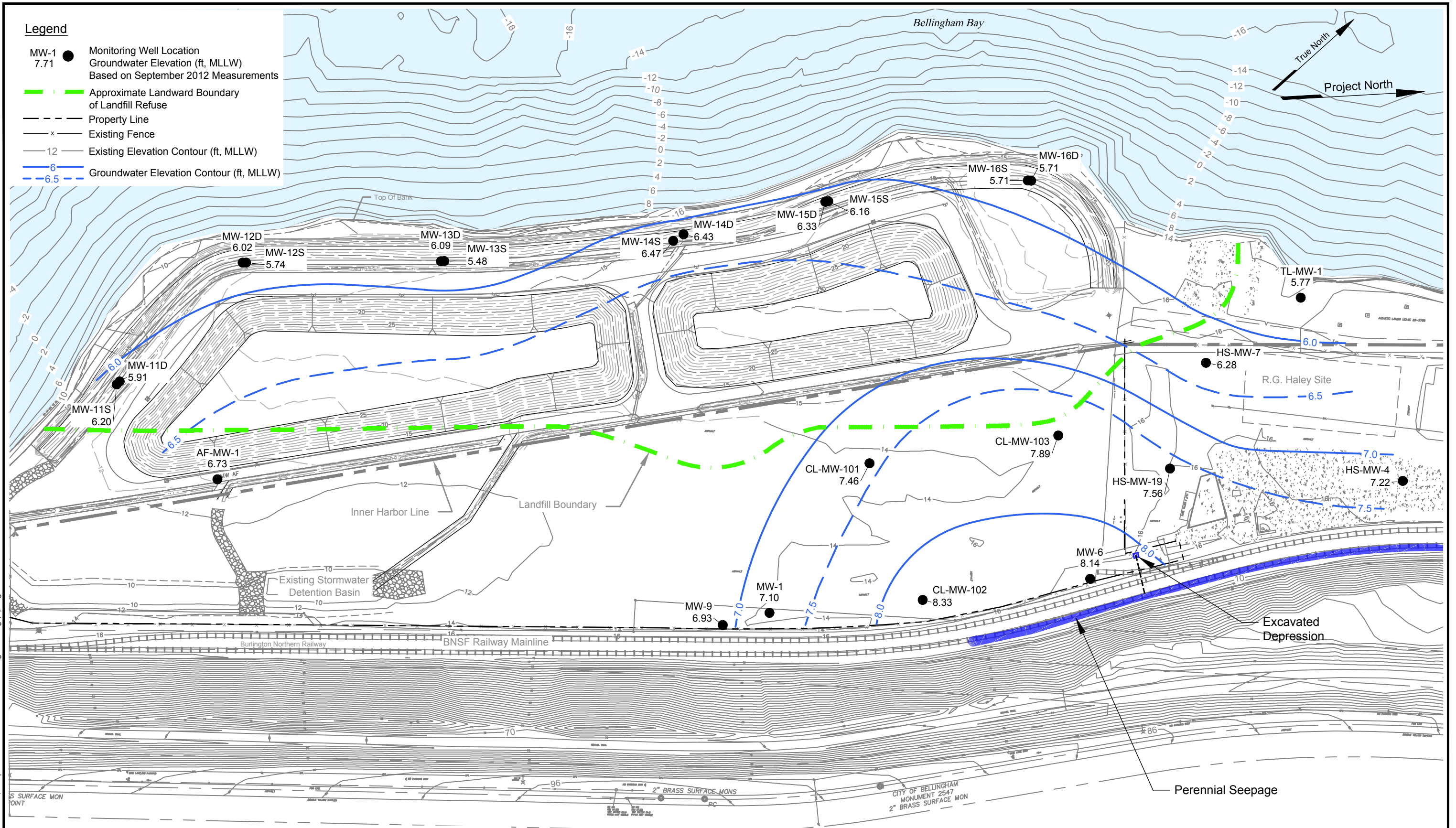
Source: Reid Middleton 2011; Port of Bellingham 1996; Anchor Environmental 2008; Wilson 2012



Cornwall Avenue Landfill Bellingham, Washington	Base of Uppermost Hydrostratigraphic Unit and Saturated Thickness	Figure 4-10
--	--	-----------------------

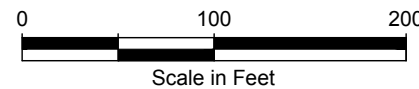
Legend

- MW-1 ● Monitoring Well Location
- 7.71 ○ Groundwater Elevation (ft, MLLW)
- Based on September 2012 Measurements
- Approximate Landward Boundary of Landfill Refuse
- - - Property Line
- x Existing Fence
- Existing Elevation Contour (ft, MLLW)
- 6 — Groundwater Elevation Contour (ft, MLLW)
- 6.5 —



Landau Associates, Inc. | V:\001020\400\510\IRIFS 2013\Fig 4-11.dwg (A) "Figure 4-11" 8/13/2013

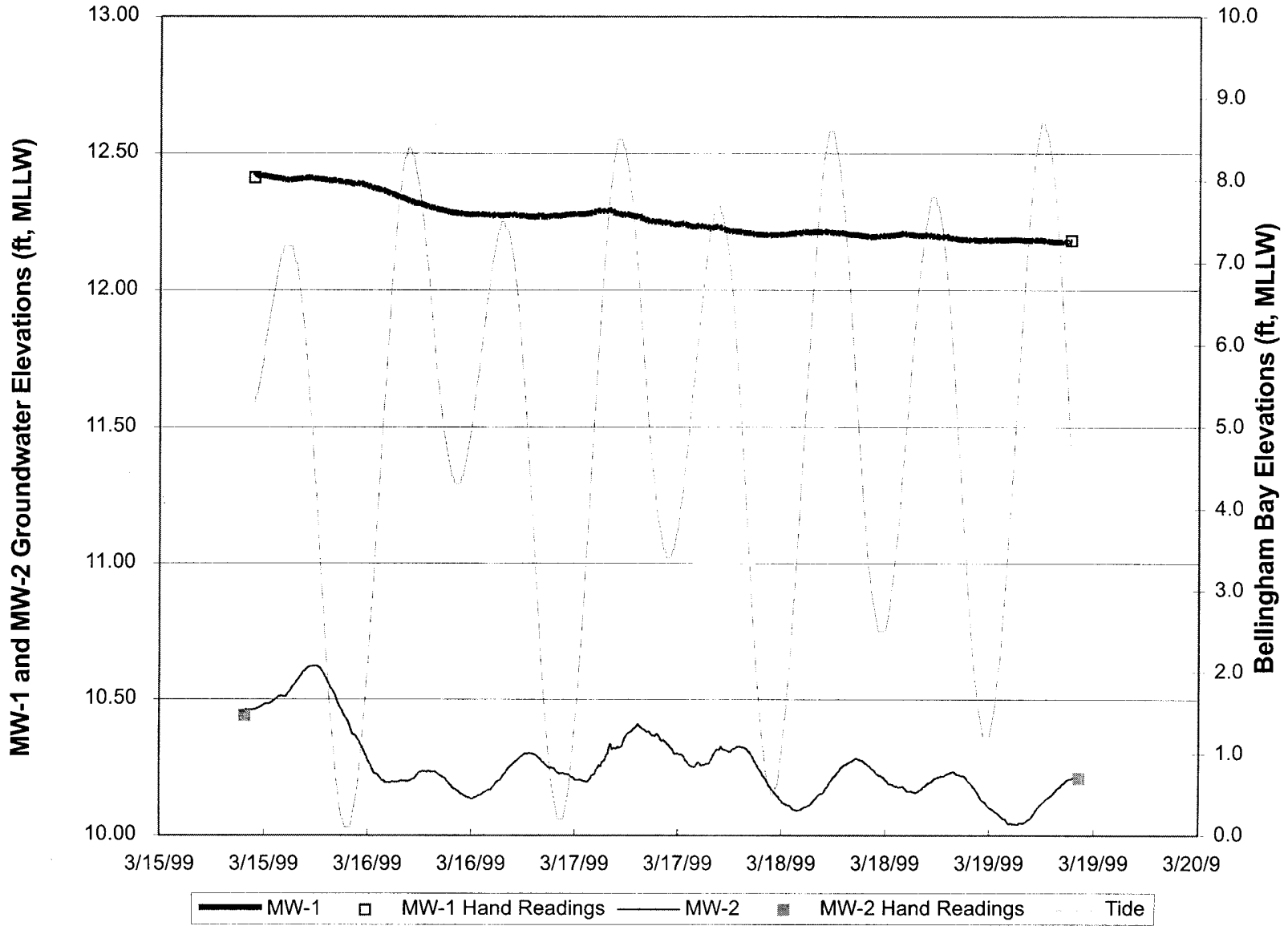
Source: Reid Middleton 2011; Port of Bellingham 1996; Anchor Environmental 2008; Wilson 2012



Cornwall Avenue Landfill
Bellingham, Washington

Water Table Map
September 2012

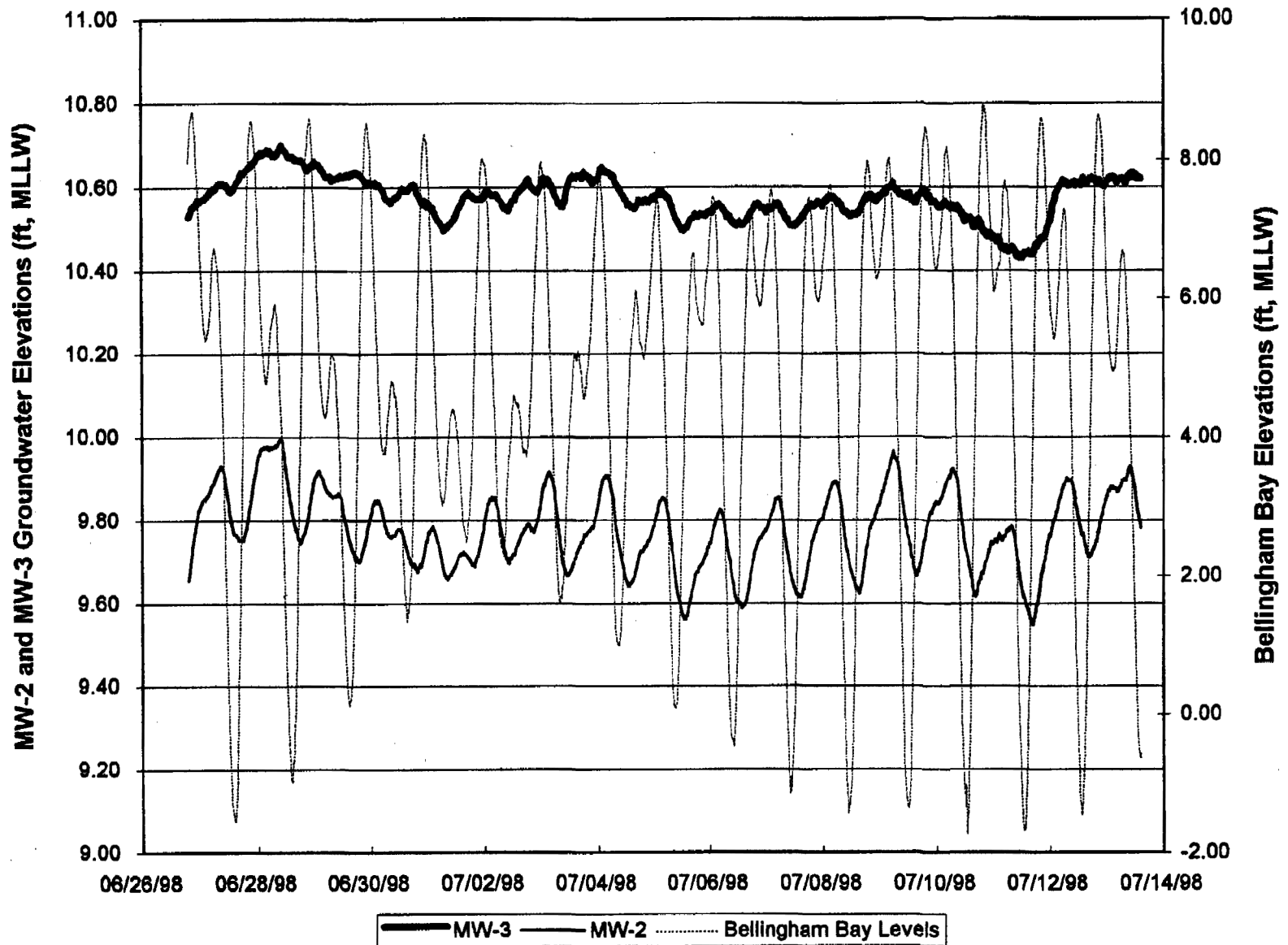
Figure
4-11



Cornwall Avenue Landfill
Bellingham, Washington

**Groundwater Elevations for MW-1,
MW-2, and Bellingham Bay Levels
March 15 - March 20, 1999**

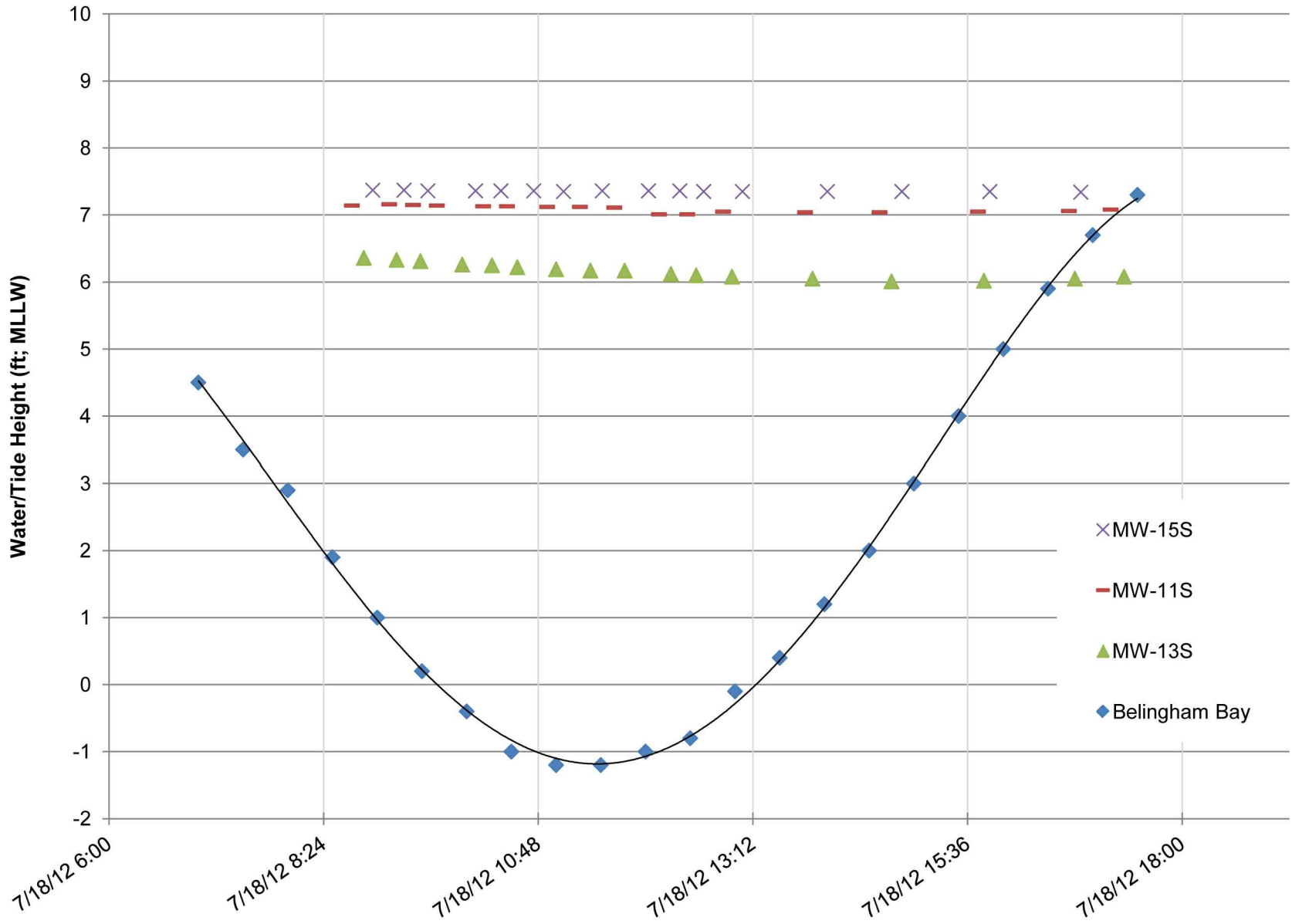
Figure
4-12



Cornwall Avenue Landfill
Bellingham, Washington

Groundwater Elevations for
MW-2, MW-3, and Bellingham
Bay Levels June 26 - July 13, 1998

Figure
4-13



Cornwall Avenue Landfill
Bellingham, Washington

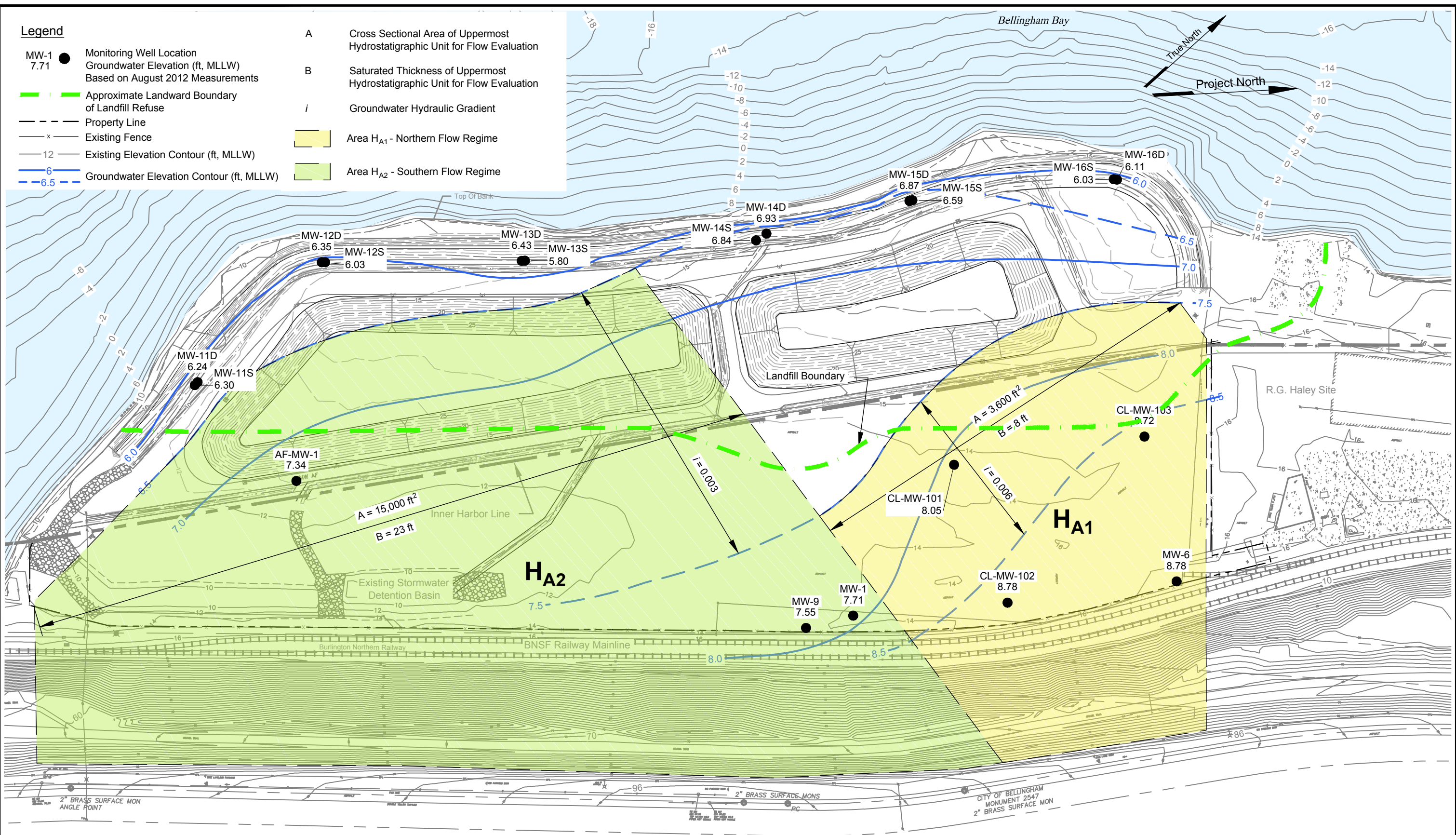
**Groundwater Elevations
for MW-11S, MW-13S, MW-15S, and
Bellingham Bay Levels, July 18, 2012**

Figure
4-14

Landau Associates, Inc. | V:\001020\400\510\IRIFS 2013\Fig 4-15.dwg (A) "Figure 4-15" 8/13/2013

- Legend**
- MW-1 7.71 ● Monitoring Well Location
Groundwater Elevation (ft, MLLW)
Based on August 2012 Measurements
 - Approximate Landward Boundary
of Landfill Refuse
 - - - Property Line
 - x Existing Fence
 - Existing Elevation Contour (ft, MLLW)
 - 6 Groundwater Elevation Contour (ft, MLLW)
 - 6.5 Groundwater Elevation Contour (ft, MLLW)

- A Cross Sectional Area of Uppermost
Hydrostratigraphic Unit for Flow Evaluation
- B Saturated Thickness of Uppermost
Hydrostratigraphic Unit for Flow Evaluation
- i* Groundwater Hydraulic Gradient
- Area H_{A1} - Northern Flow Regime
- Area H_{A2} - Southern Flow Regime



Source: Reid Middleton 2011; Port of Bellingham 1996; Anchor Environmental 2008; Wilson 2012

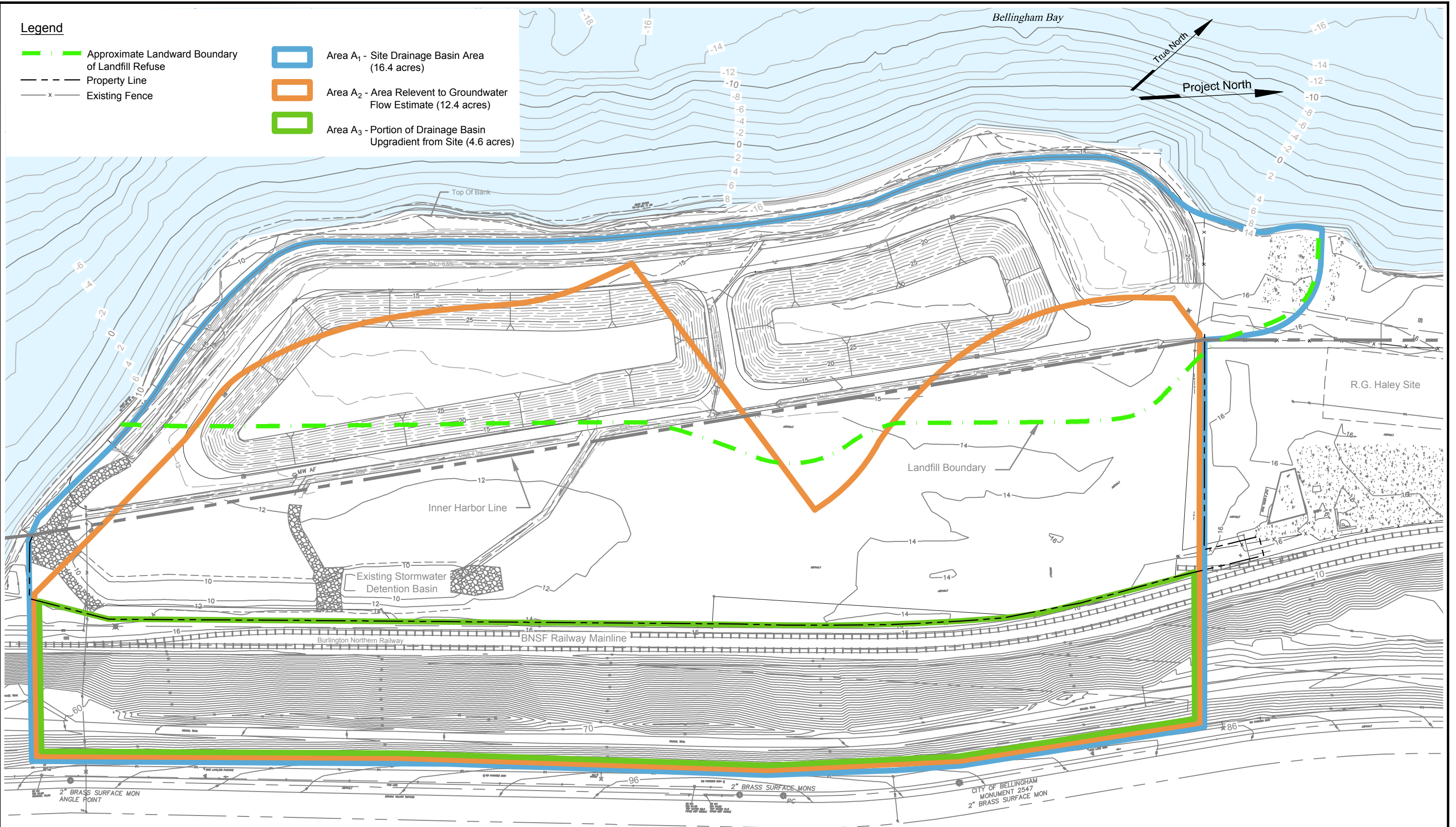


Cornwall Avenue Landfill Bellingham, Washington	Groundwater Elevation Contours and Flow Regimes August 2012	Figure 4-15
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Legend

- — — Approximate Landward Boundary of Landfill Refuse
- Property Line
- Existing Fence
- Area A₁ - Site Drainage Basin Area (16.4 acres)
- Area A₂ - Area Relevant to Groundwater Flow Estimate (12.4 acres)
- Area A₃ - Portion of Drainage Basin Upgradient from Site (4.6 acres)
















Landau Associates, Inc. | V:\001020\400\510\IRIFS 2013\Fig 4-16.dwg (A) "Figure 4-16" 8/13/2013

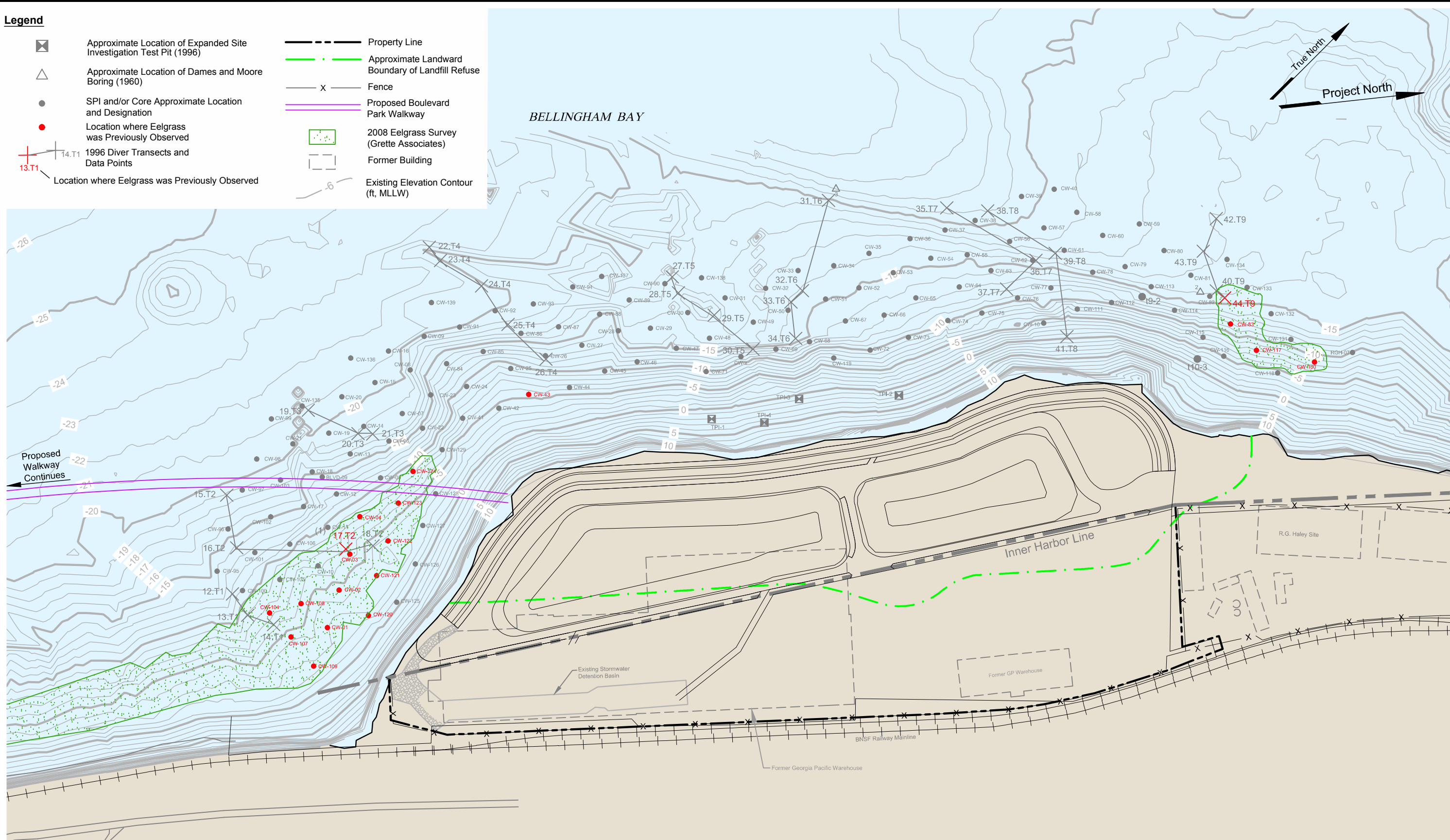
Source: Reid Middleton 2011; Port of Bellingham 1996; Anchor Environmental 2008; Wilson 2012



Cornwall Avenue Landfill Bellingham, Washington	Site Drainage Basin and Subareas	Figure 4-16
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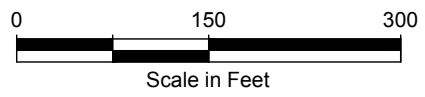
Legend

-  Approximate Location of Expanded Site Investigation Test Pit (1996)
-  Approximate Location of Dames and Moore Boring (1960)
-  SPI and/or Core Approximate Location and Designation
-  Location where Eelgrass was Previously Observed
-  1996 Diver Transects and Data Points
-  Location where Eelgrass was Previously Observed
-  Property Line
-  Approximate Landward Boundary of Landfill Refuse
-  Fence
-  Proposed Boulevard Park Walkway
-  2008 Eelgrass Survey (Grette Associates)
-  Former Building
-  Existing Elevation Contour (ft, MLLW)

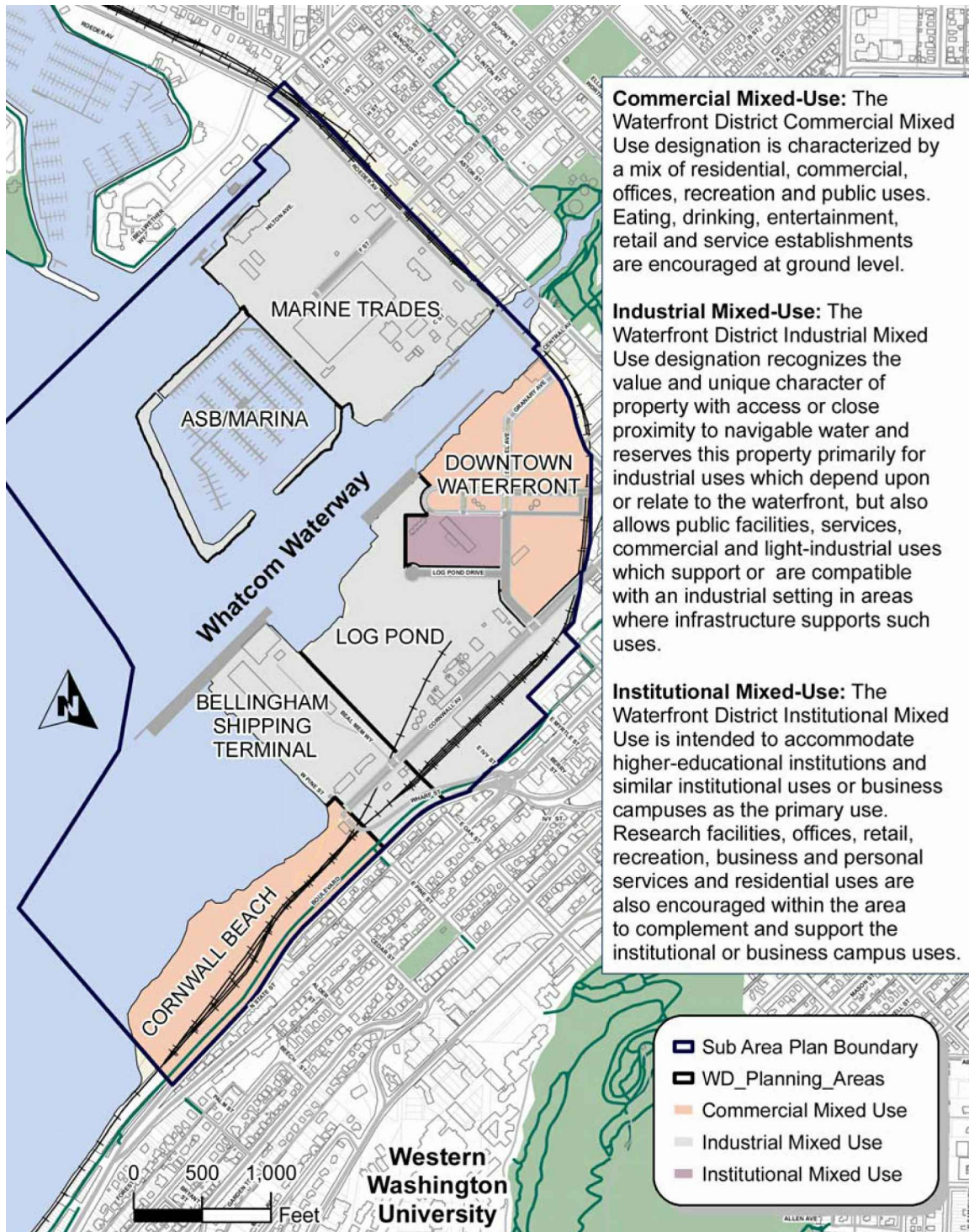


Landau Associates, Inc. | V:\001020\400\510\RI\FS 2013\Fig 4-17.dwg (A) "Figure 4-17" 8/13/2013

Basemap source: Port of Bellingham 1996, Anchor Environmental 2008, Grette Associates 2008



Cornwall Avenue Landfill Bellingham, Washington	Extent of Eelgrass	Figure 4-17
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Note

1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Source: Port of Bellingham

Cornwall Avenue Landfill
Bellingham, Washington

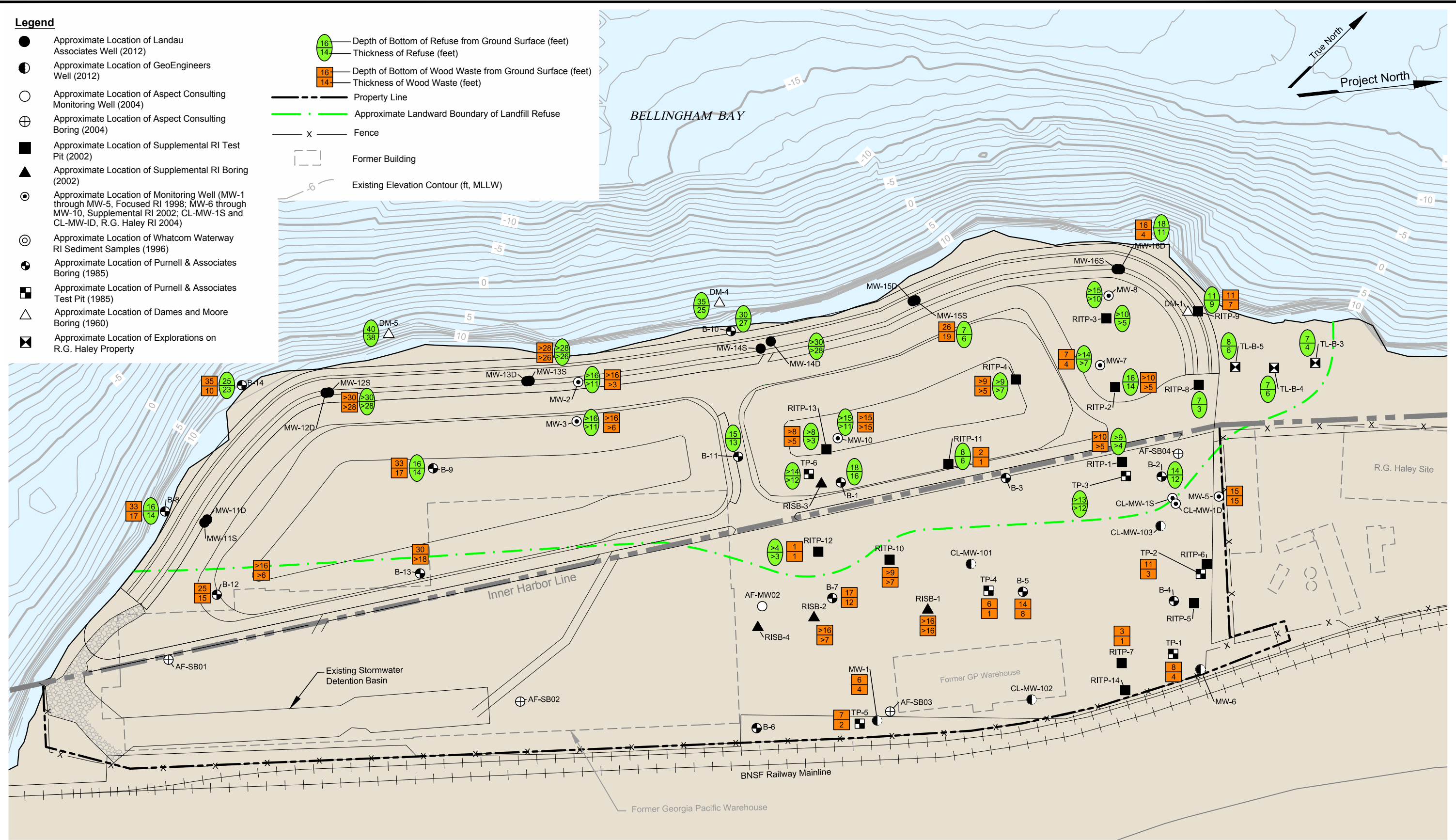
**Waterfront District Redevelopment
Medium Density Alternative**

Figure
4-18

Legend

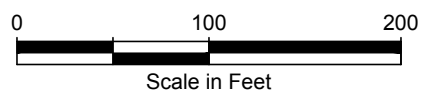
- Approximate Location of Landau Associates Well (2012)
- ⊙ Approximate Location of GeoEngineers Well (2012)
- Approximate Location of Aspect Consulting Monitoring Well (2004)
- ⊕ Approximate Location of Aspect Consulting Boring (2004)
- Approximate Location of Supplemental RI Test Pit (2002)
- ▲ Approximate Location of Supplemental RI Boring (2002)
- ⊙ (with center dot) Approximate Location of Monitoring Well (MW-1 through MW-5, Focused RI 1998; MW-6 through MW-10, Supplemental RI 2002; CL-MW-1S and CL-MW-ID, R.G. Haley RI 2004)
- ⊙ (with outer ring) Approximate Location of Whatcom Waterway RI Sediment Samples (1996)
- ⊕ (with center dot) Approximate Location of Purnell & Associates Boring (1985)
- (with center dot) Approximate Location of Purnell & Associates Test Pit (1985)
- △ Approximate Location of Dames and Moore Boring (1960)
- ⊕ (with center dot) Approximate Location of Explorations on R.G. Haley Property

- (with numbers) Depth of Bottom of Refuse from Ground Surface (feet)
- (with numbers) Thickness of Refuse (feet)
- (with numbers) Depth of Bottom of Wood Waste from Ground Surface (feet)
- (with numbers) Thickness of Wood Waste (feet)
- Property Line
- Approximate Landward Boundary of Landfill Refuse
- X — Fence
- - - Former Building
- - - Existing Elevation Contour (ft, MLLW)

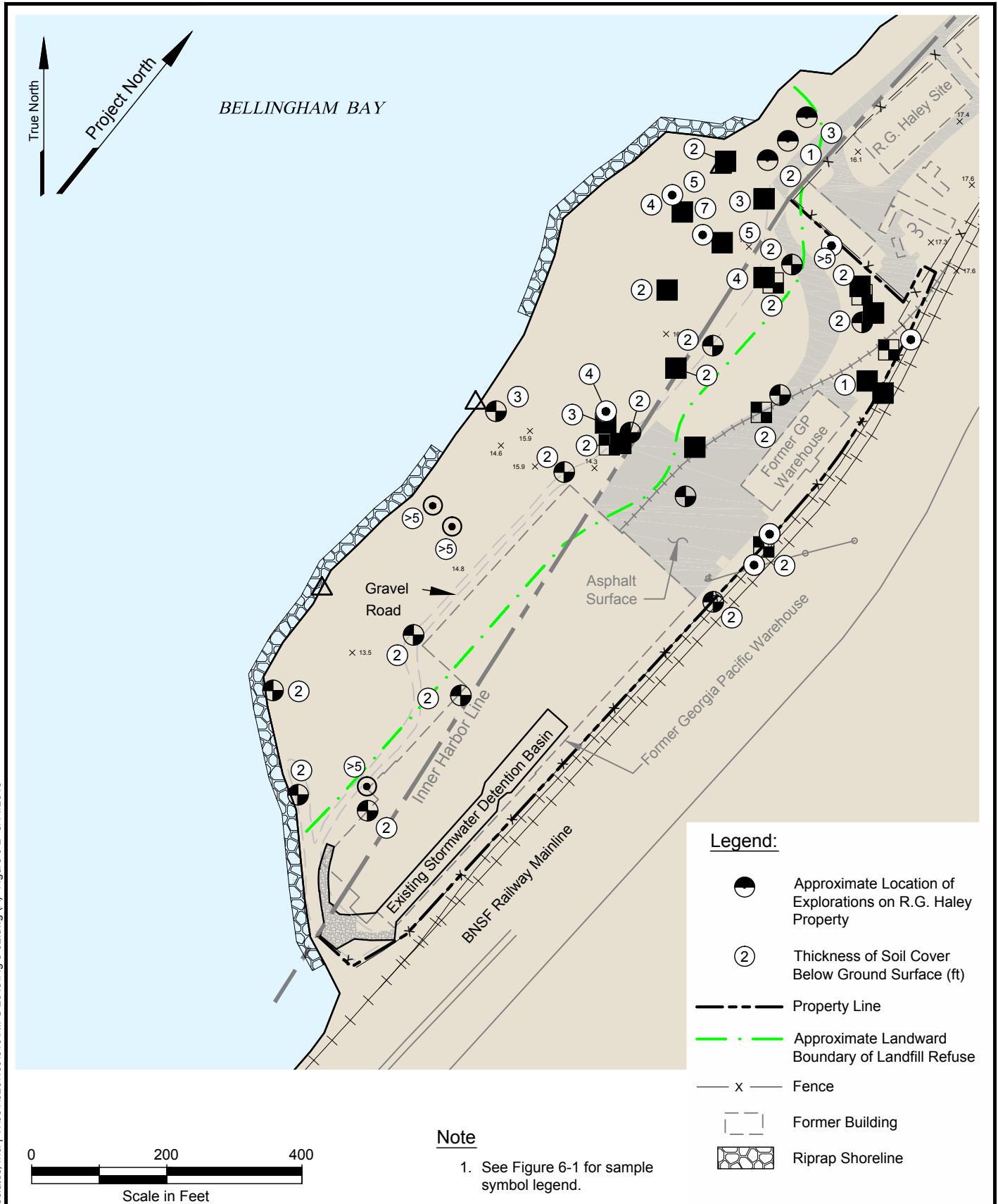


Landau Associates, Inc. | G:\Projects\001020400510\RI\FS 2013\Fig 6-01.dwg (A) "Figure 6-1" 12/13/2013

Basemap source: Port of Bellingham 1996, Anchor Environmental 2008



<p>Cornwall Avenue Landfill Bellingham, Washington</p>	<p>Approximate Extent of <i>In Situ</i> Landfill Refuse and Wood Waste in Upland Area</p>	<p>Figure 6-1</p>
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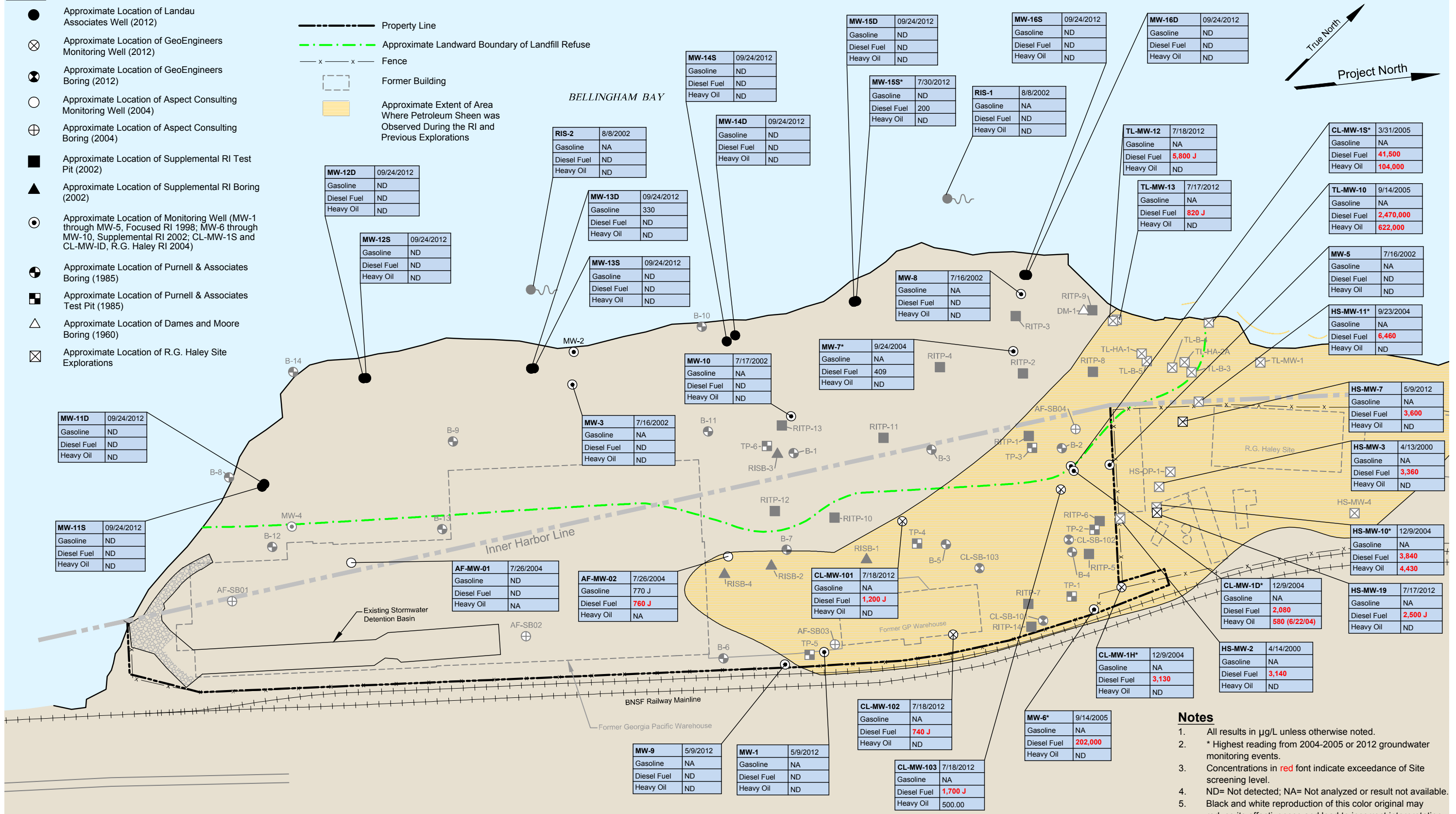


Basemap source: Port of Bellingham 1996, Anchor Environmental 2008

Legend

- Approximate Location of Landau Associates Well (2012)
- ⊗ Approximate Location of GeoEngineers Monitoring Well (2012)
- ⊗ (with circle) Approximate Location of GeoEngineers Boring (2012)
- Approximate Location of Aspect Consulting Monitoring Well (2004)
- ⊕ (with circle) Approximate Location of Aspect Consulting Boring (2004)
- Approximate Location of Supplemental RI Test Pit (2002)
- ▲ Approximate Location of Supplemental RI Boring (2002)
- (with circle) Approximate Location of Monitoring Well (MW-1 through MW-5, Focused RI 1998; MW-6 through MW-10, Supplemental RI 2002; CL-MW-1S and CL-MW-ID, R.G. Haley RI 2004)
- ⊗ (with circle) Approximate Location of Purnell & Associates Boring (1985)
- (with circle) Approximate Location of Purnell & Associates Test Pit (1985)
- △ (with circle) Approximate Location of Dames and Moore Boring (1960)
- ⊗ (with circle) Approximate Location of R.G. Haley Site Explorations

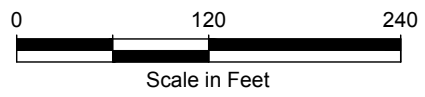
- Property Line
- · - · - · - · - Approximate Landward Boundary of Landfill Refuse
- x - x - x - x - Fence
- Former Building
- Approximate Extent of Area Where Petroleum Sheen was Observed During the RI and Previous Explorations



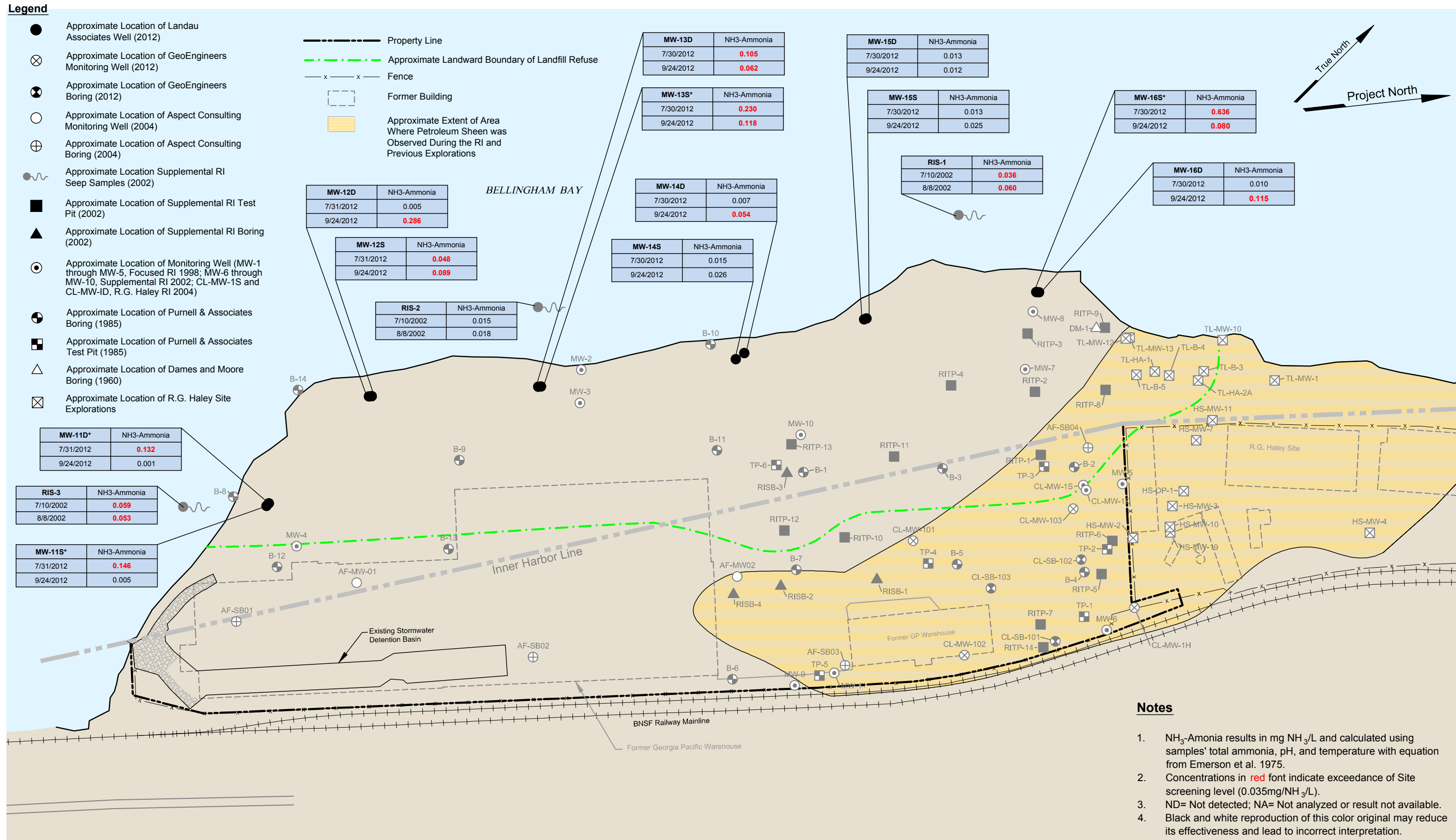
- Notes**
- All results in µg/L unless otherwise noted.
 - * Highest reading from 2004-2005 or 2012 groundwater monitoring events.
 - Concentrations in red font indicate exceedance of Site screening level.
 - ND= Not detected; NA= Not analyzed or result not available.
 - Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Basemap source: Port of Bellingham 1996

Landau Associates, Inc. | V:\1001020\400\510\RI\FS 2013\Fig 6-3 8/13/2013



Landau Associates, Inc. | V:\001\020\400\510\RI\Figs 2013\Fig 6-4.dwg (A) | Figures 6-4 | 8/14/2013



Cornwall Avenue Landfill
Bellingham, Washington

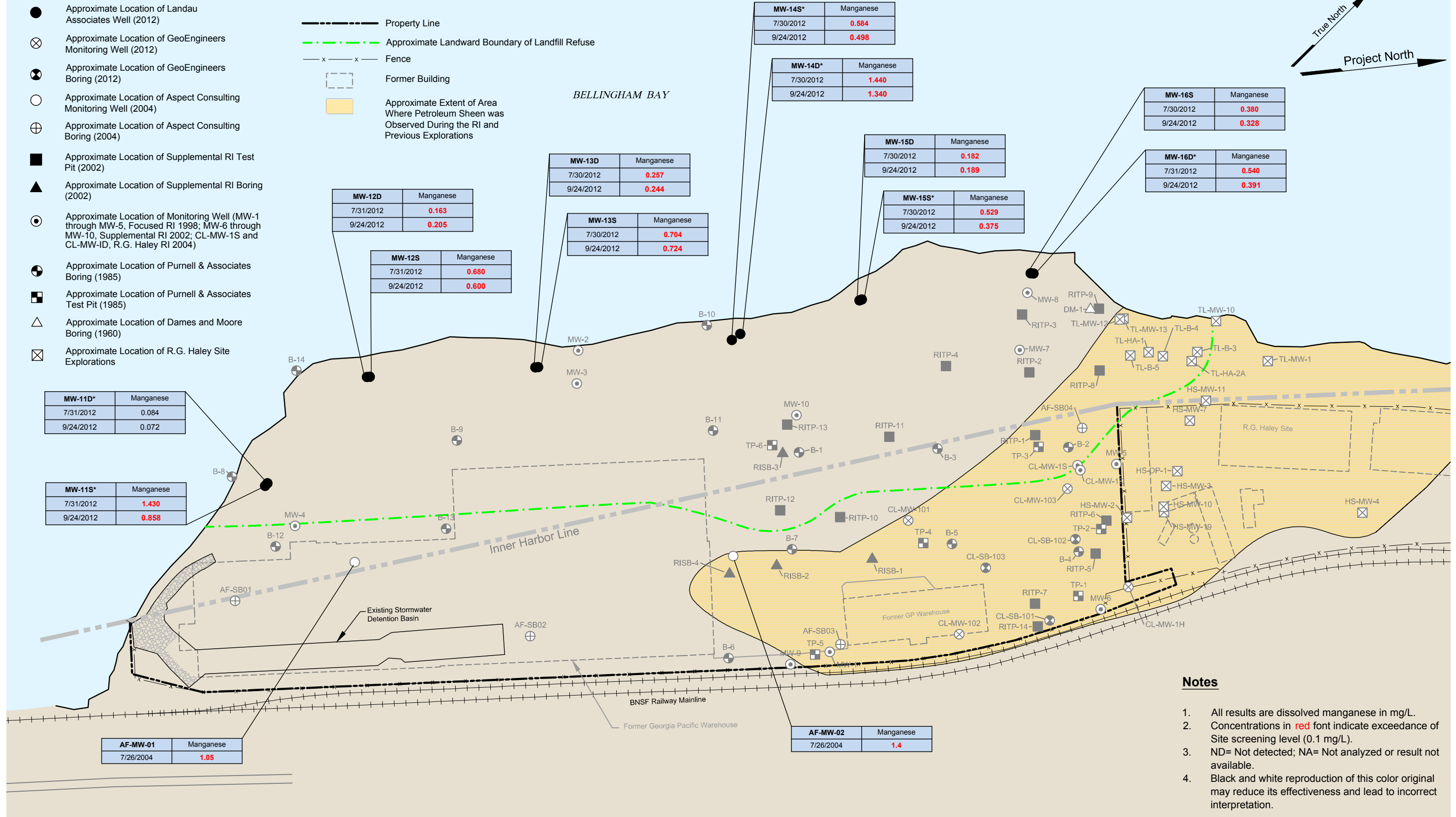
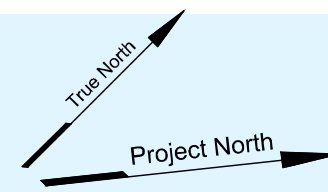
**Ammonia Concentrations
in Groundwater**

Figure
6-4

Legend

- Approximate Location of Landau Associates Well (2012)
- ⊗ Approximate Location of GeoEngineers Monitoring Well (2012)
- ⊗ (with dot) Approximate Location of GeoEngineers Boring (2012)
- Approximate Location of Aspect Consulting Monitoring Well (2004)
- ⊕ (with dot) Approximate Location of Aspect Consulting Boring (2004)
- Approximate Location of Supplemental RI Test Pit (2002)
- ▲ Approximate Location of Supplemental RI Boring (2002)
- ⊙ (with dot) Approximate Location of Monitoring Well (MW-1 through MW-5, Focused RI 1998; MW-6 through MW-10, Supplemental RI 2002; CL-MW-1S and CL-MW-ID, R.G. Haley RI 2004)
- ⊗ (with dot) Approximate Location of Purnell & Associates Boring (1985)
- ⊕ (with dot) Approximate Location of Purnell & Associates Test Pit (1985)
- △ (with dot) Approximate Location of Dames and Moore Boring (1960)
- ⊗ (with dot) Approximate Location of R.G. Haley Site Explorations

- Property Line
- · - · - Approximate Landward Boundary of Landfill Refuse
- x - x - Fence
- Former Building
- Approximate Extent of Area Where Petroleum Sheen was Observed During the RI and Previous Explorations



MW-11D*	Manganese
7/31/2012	0.084
9/24/2012	0.072

MW-11S*	Manganese
7/31/2012	1.430
9/24/2012	0.858

MW-12D	Manganese
7/31/2012	0.163
9/24/2012	0.205

MW-12S	Manganese
7/31/2012	0.680
9/24/2012	0.600

MW-13D	Manganese
7/30/2012	0.257
9/24/2012	0.244

MW-13S	Manganese
7/30/2012	0.704
9/24/2012	0.724

MW-14S*	Manganese
7/30/2012	0.584
9/24/2012	0.498

MW-14D*	Manganese
7/30/2012	1.440
9/24/2012	1.340

MW-15D	Manganese
7/30/2012	0.182
9/24/2012	0.189

MW-15S*	Manganese
7/30/2012	0.529
9/24/2012	0.375

MW-16S	Manganese
7/30/2012	0.380
9/24/2012	0.328

MW-16D*	Manganese
7/31/2012	0.540
9/24/2012	0.391

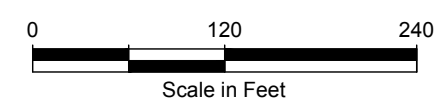
AF-MW-01	Manganese
7/26/2004	1.05

AF-MW-02	Manganese
7/26/2004	1.4

Notes

1. All results are dissolved manganese in mg/L.
2. Concentrations in red font indicate exceedance of Site screening level (0.1 mg/L).
3. ND= Not detected; NA= Not analyzed or result not available.
4. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Basemap source: Port of Bellingham 1996



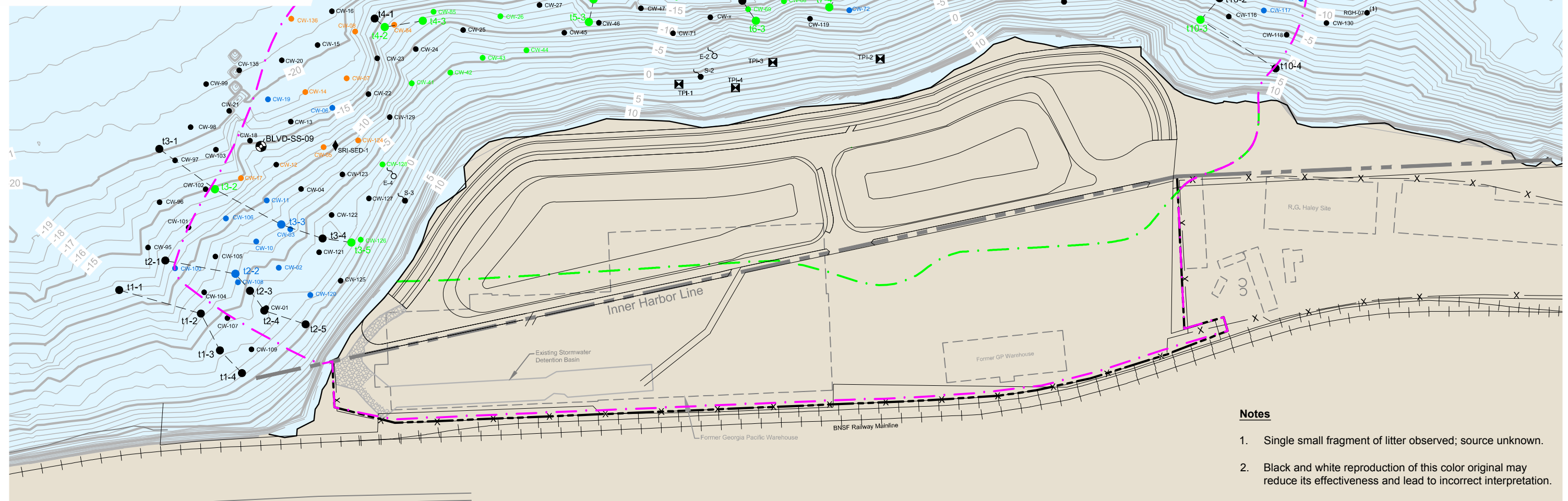
Landau Associates, Inc. | V:\001020\400\510\RI\FS 2013\Fig 6-5.dwg (A) Figure 6-5 8/13/2013



Cornwall Avenue Landfill Bellingham, Washington	Manganese Concentrations in Groundwater	Figure 6-5
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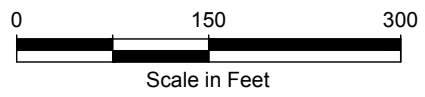
Legend

- TPI-1 Approximate Location of Expanded Site Investigation Test Pit (1996)
- 3 Approximate Location of Dames and Moore Boring (1960)
- CW-20 SPI and/or Core Approximate Location and Designation
- CW-20 Any Wood Debris Present
- CW-20 Any Landfill Refuse Present
- CW-20 Both Wood Debris and Landfill Refuse Present
- SRI-1 Approximate Location of RG Haley Site Sediment Sample (2005); See Notes 1 & 2
- SRI-SED-1 Approximate Location of Supplemental RI Sediment Sample (2002); See Notes 1 & 2
- HC-SS-20 Approximate Location of Whatcom Waterway RI Sediment Samples (1996); See Notes 1 & 2
- S-1 Approximate Location of Expanded Site Investigation Seep/Sediment Sampling (1996); See Notes 1 & 2
- E-1 Approximate Location of Initial Site Investigation Seep/Sediment Sampling (1992); See Notes 1 & 2
- BLVD-SS-09 Approximate Location of Boulevard Park Overwater Walkway Sediment Investigation
- Existing Elevation Contour (ft, MLLW)
- Property Line
- Estimated Extent of Refuse & Wood Debris
- Approximate Landward Boundary of Landfill Refuse
- Fence
- Former Building
- 2002 Diver Transects and Data Points
Data Point Number
Transect Number



- Notes**
1. Single small fragment of litter observed; source unknown.
 2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Basemap source: Port of Bellingham 1996, Anchor Environmental 2008



Cornwall Avenue Landfill Bellingham, Washington	Extent of Landfill Subtidal Refuse and Wood Debris	Figure 6-6
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Landau Associates, Inc. | V:\001020\400\510\RI\Figs 2013\Fig 6-6.dwg (A) "Figure 6-6" 8/13/2013



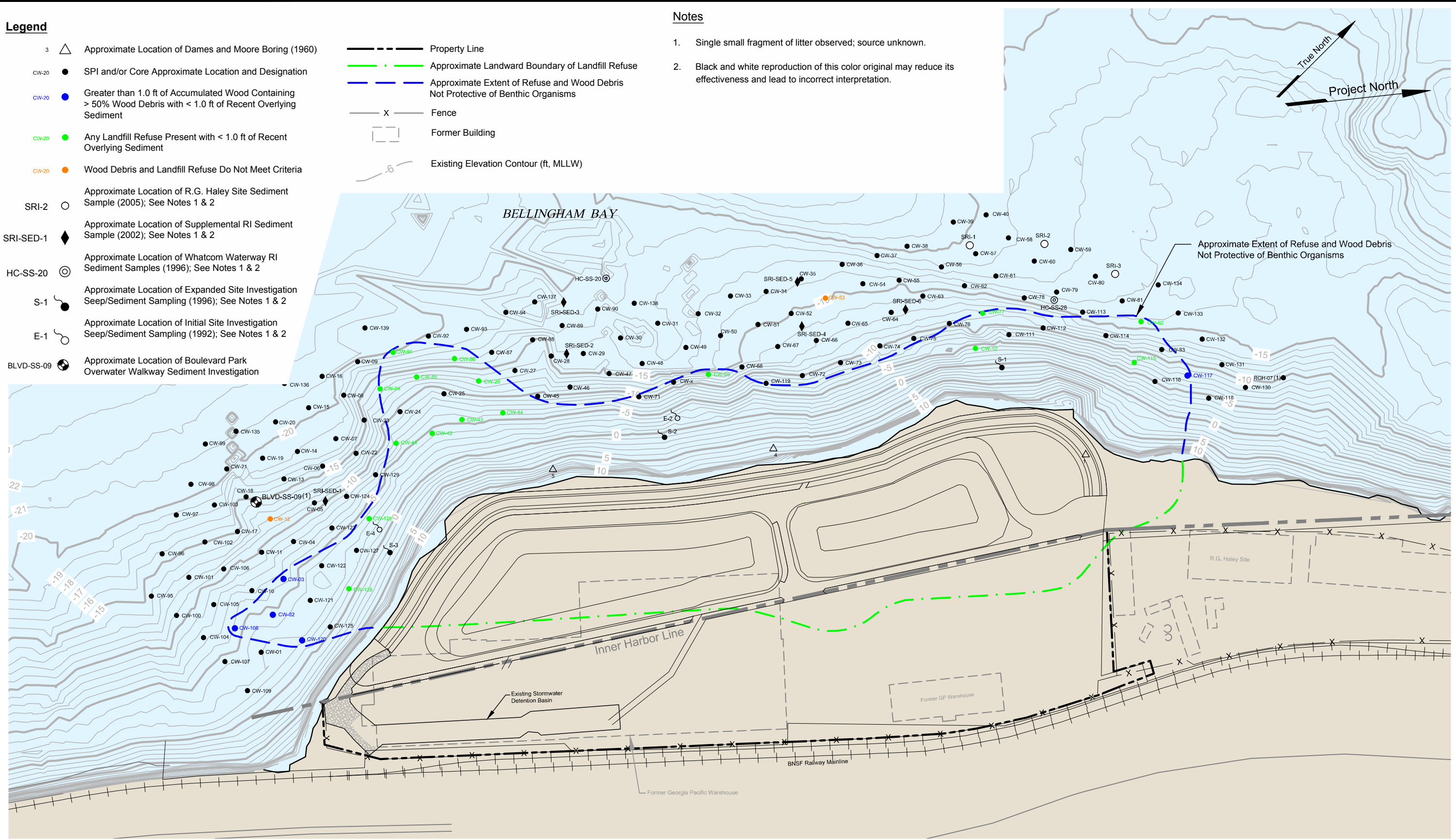
Legend

- 3 \triangle Approximate Location of Dames and Moore Boring (1960)
- cw-20 \bullet SPI and/or Core Approximate Location and Designation
- cw-20 \bullet Greater than 1.0 ft of Accumulated Wood Containing > 50% Wood Debris with < 1.0 ft of Recent Overlying Sediment
- cw-20 \bullet Any Landfill Refuse Present with < 1.0 ft of Recent Overlying Sediment
- cw-20 \bullet Wood Debris and Landfill Refuse Do Not Meet Criteria
- SRI-2 \circ Approximate Location of R.G. Haley Site Sediment Sample (2005); See Notes 1 & 2
- SRI-SED-1 \blacklozenge Approximate Location of Supplemental RI Sediment Sample (2002); See Notes 1 & 2
- HC-SS-20 \odot Approximate Location of Whatcom Waterway RI Sediment Samples (1996); See Notes 1 & 2
- S-1 \bullet Approximate Location of Expanded Site Investigation Seep/Sediment Sampling (1996); See Notes 1 & 2
- E-1 \circ Approximate Location of Initial Site Investigation Seep/Sediment Sampling (1992); See Notes 1 & 2
- BLVD-SS-09 \bullet Approximate Location of Boulevard Park Overwater Walkway Sediment Investigation

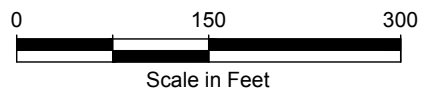
- Property Line
- · - · - Approximate Landward Boundary of Landfill Refuse
- - - - - Approximate Extent of Refuse and Wood Debris Not Protective of Benthic Organisms
- x - Fence
- - - Former Building
- - - Existing Elevation Contour (ft, MLLW)

Notes

1. Single small fragment of litter observed; source unknown.
2. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.



Basemap source: Port of Bellingham 1996, Anchor Environmental 2008



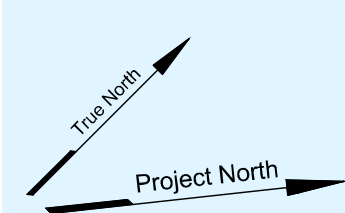
Cornwall Avenue Landfill Bellingham, Washington	Extent of Subtidal Refuse and Wood Debris Not Protective of Benthic Organisms	Figure 6-7
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Landau Associates, Inc. | V:\1001020\400\510\RI\FS 2013\Fig 6-7.dwg (A) Figures 6-7 8/13/2013



Legend

- SRI-2 ● Approximate Location of R.G. Haley Site Sediment Sample (2005)
- SRI-SED-1 ◆ Approximate Location of Supplemental RI Sediment Sample (2002)
- HC-SS-20 ⊙ Approximate Location of Whatcom Waterway RI Sediment Samples (1996)
- S-1 ● Approximate Location of Expanded Site Investigation Seep/Sediment Sampling (1996)
- E-1 ○ Approximate Location of Initial Site Investigation Seep/Sediment Sampling (1992)
- BLVD-SS-09 ⊙ Approximate Location of Boulevard Park Overwater Walkway Sediment Investigation
- Property Line
- · - · - Approximate Landward Boundary of Landfill Refuse
- x — Fence
- ▭ Existing Building



BLVD-SS-09 (Actual location 120 ft SW of SRI-SED-1)

SRI-SED-1	
Date	6/10/2002
Copper	88.3
Lead	51
Mercury	NA
Silver	0.9
Zinc	156
PCBs	260
BEP	7.1
BBP	NA

SRI-SED-3	
Date	6/10/2002
Copper	63.2
Lead	22
Mercury	0.4
Silver	0.7 U
Zinc	126
PCBs	28
BEP	5.5
BBP	NA

SRI-SED-2	
Date	6/10/2002
Copper	68.9
Lead	30
Mercury	NA
Silver	0.8U
Zinc	142
PCBs	31
BEP	5.2
BBP	NA

E-4	
Date	5/6/1992
Copper	378
Lead	887
Mercury	0.071
Silver	1.5 U
Zinc	313
PCBs	80U
BEP	0.98
BBP	NA

S-3	
Date	9/24/1996
Copper	57.3
Lead	248
Mercury	0.098
Silver	0.9
Zinc	220
PCBs	716
BEP	5.1
BBP	NA

Former Georgia Pacific Warehouse

HC-SS-19	
Date	1996
Copper	52
Lead	15
Mercury	0.62
Silver	1.4 U
Zinc	95
PCBs	NA
BEP	NA
BBP	NA

S-2	
Date	9/24/1996
Copper	398
Lead	649
Mercury	0.136
Silver	0.5
Zinc	242
PCBs	75
BEP	77
BBP	NA

E-2	
Date	5/6/1992
Copper	756
Lead	431
Mercury	0.34
Silver	2.7
Zinc	2,140
PCBs	320
BEP	100
BBP	NA

HC-SS-21	
Date	1996
Copper	56
Lead	19
Mercury	1.2
Silver	1.4 U
Zinc	100
PCBs	NA
BEP	NA
BBP	NA

Inner Harbor Line

Former GP Warehouse

SRI-SED-4	
Date	6/10/2002
Copper	104
Lead	56
Mercury	NA
Silver	0.8
Zinc	215
PCBs	159
BEP	10.8
BBP	NA

SRI-SED-5	
Date	6/10/2002
Copper	69.9
Lead	33
Mercury	0.7
Silver	0.8 U
Zinc	151
PCBs	46
BEP	7.8
BBP	NA

SRI-SED-6	
Date	6/10/2002
Copper	126
Lead	57
Mercury	NA
Silver	0.8 U
Zinc	175
PCBs	110
BEP	7.1
BBP	NA

HC-SS-20	
Date	1996
Copper	61
Lead	22
Mercury	0.44
Silver	1.4 U
Zinc	110
PCBs	NA
BEP	NA
BBP	NA

HC-SS-19 (Actual location 600 ft NW of HC-SS-20)

SRI-2	
Date	2005
Copper	NA
Lead	NA
Mercury	NA
Silver	NA
Zinc	NA
PCBs	NA
BEP	6.1
BBP	<1.4

SRI-3	
Date	2005
Copper	NA
Lead	NA
Mercury	NA
Silver	NA
Zinc	NA
PCBs	NA
BEP	8.5
BBP	<0.9

HC-SS-28	
Date	1996
Copper	83
Lead	43
Mercury	0.47
Silver	1.5 U
Zinc	160
PCBs	NA
BEP	NA
BBP	NA

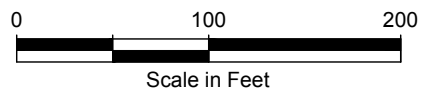
SRI-1	
Date	2005
Copper	NA
Lead	NA
Mercury	NA
Silver	NA
Zinc	NA
PCBs	NA
BEP	15.4
BBP	11.8

S-1	
Date	9/24/1996
Copper	84.9
Lead	115
Mercury	0.1
Silver	12
Zinc	189
PCBs	22
BEP	4.5
BBP	NA

Sediment Management Standards		
Constituent	SQS	CSL
Copper (mg/kg)	390	390
Lead (mg/kg)	450	530
Mercury (mg/kg)	0.41	0.59
Silver (mg/kg)	6.1	6.1
Zinc (mg/kg)	410	960
PCBs (µg/kg; SL Based on PQL)	6	
Bis(2-Ethylhexyl)phthalate (BEP) (mg/kg OC)	47	78
Butyl Benzyl Phthalate (BBP) (mg/kg OC)	5	64

- Notes**
- Concentrations in purple exceed the SQS criteria only.
 - Concentrations in red exceed the CSL criteria.
 - PCB concentrations in green exceed PQL.
 - Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

NA = Not analyzed
 U = Not detected above the value shown
 µg/kg = micrograms per kilogram
 mg/kg = milligrams per kilogram
 OC = values normalized to organic carbon



Basemap source: Port of Bellingham 1996, Anchor Environmental 2008

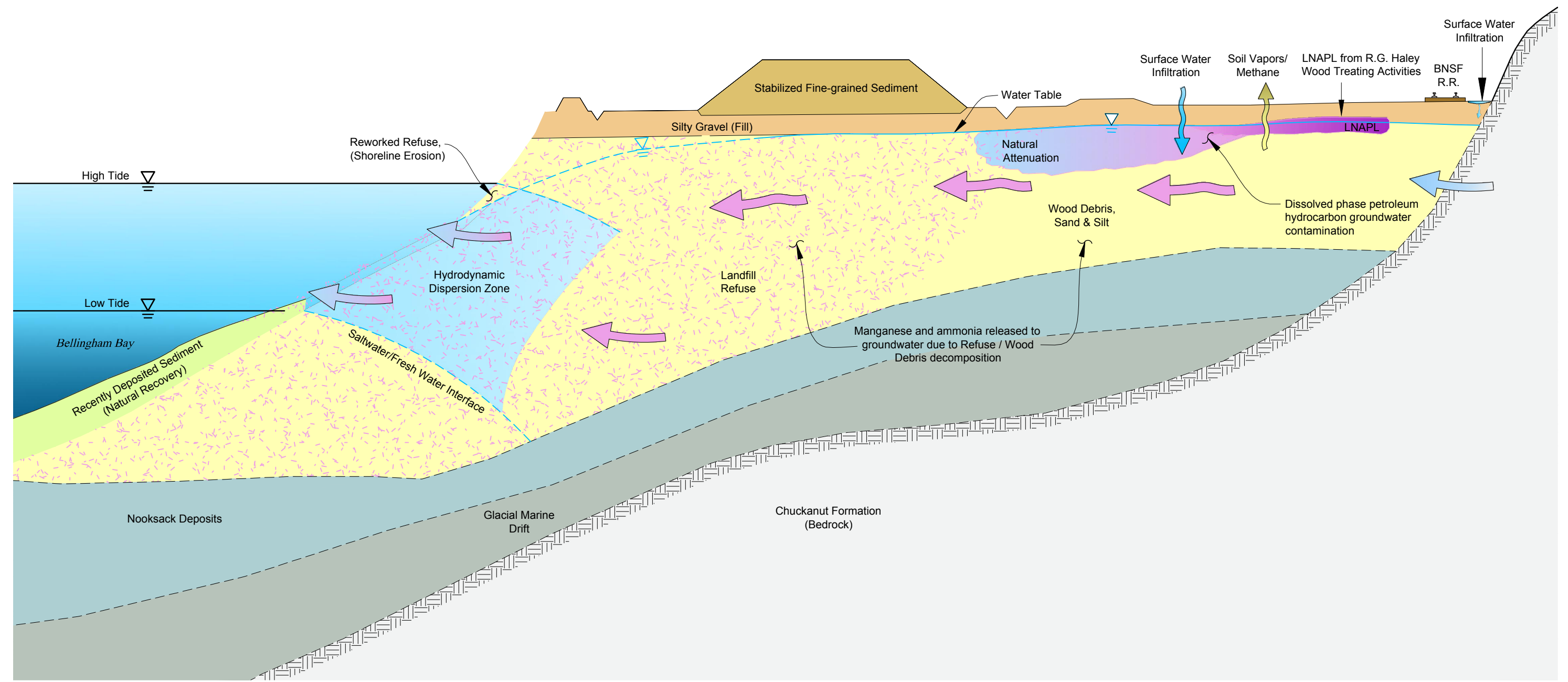
Cornwall Avenue Landfill
 Bellingham, Washington

**Surface Sediment
 Site Exploration Locations
 and Chemical Data**




Figure
6-8



Landau Associates, Inc. | V:\001\020\400\510\RIFS 2013\Fig 7-01.dwg (A) "Figure 7-1" 8/13/2013



Legend









-  Water Table
-  Tidally Influenced Water Level
-  Groundwater Flow

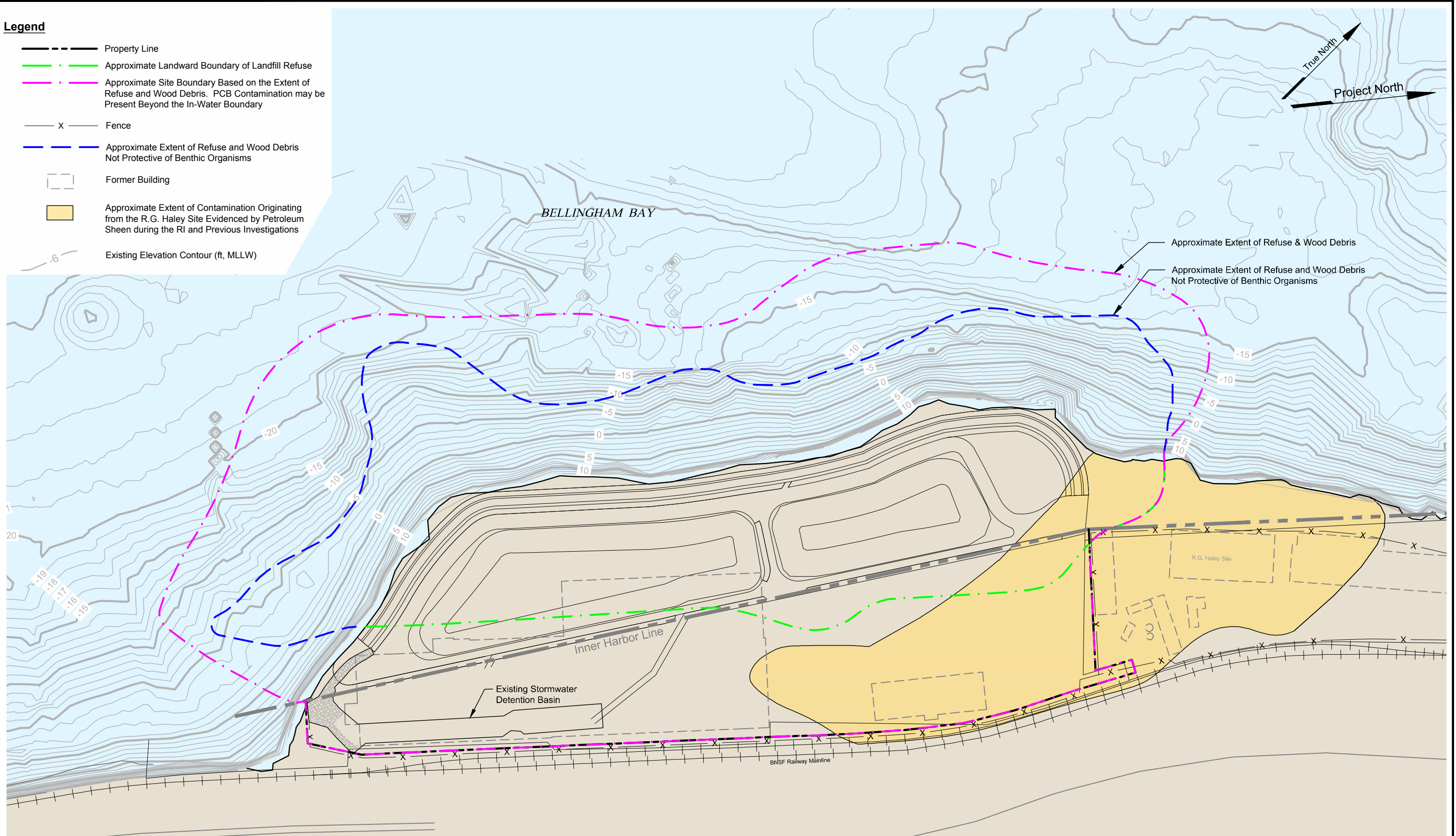
Not to Scale

Notes

1. The Blue color in arrows indicates clean groundwater.
2. The Pink color in arrows indicates dissolved phase groundwater contamination.

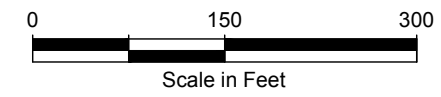
Legend

-  Property Line
-  Approximate Landward Boundary of Landfill Refuse
-  Approximate Site Boundary Based on the Extent of Refuse and Wood Debris. PCB Contamination may be Present Beyond the In-Water Boundary
-  Fence
-  Approximate Extent of Refuse and Wood Debris Not Protective of Benthic Organisms
-  Former Building
-  Approximate Extent of Contamination Originating from the R.G. Haley Site Evidenced by Petroleum Sheen during the RI and Previous Investigations
-  Existing Elevation Contour (ft, MLLW)












Landau Associates, Inc. | V:\001020\400\510\RI\FS 2013\Fig 7-2.dwg (A) Figure 7-2 8/13/2013

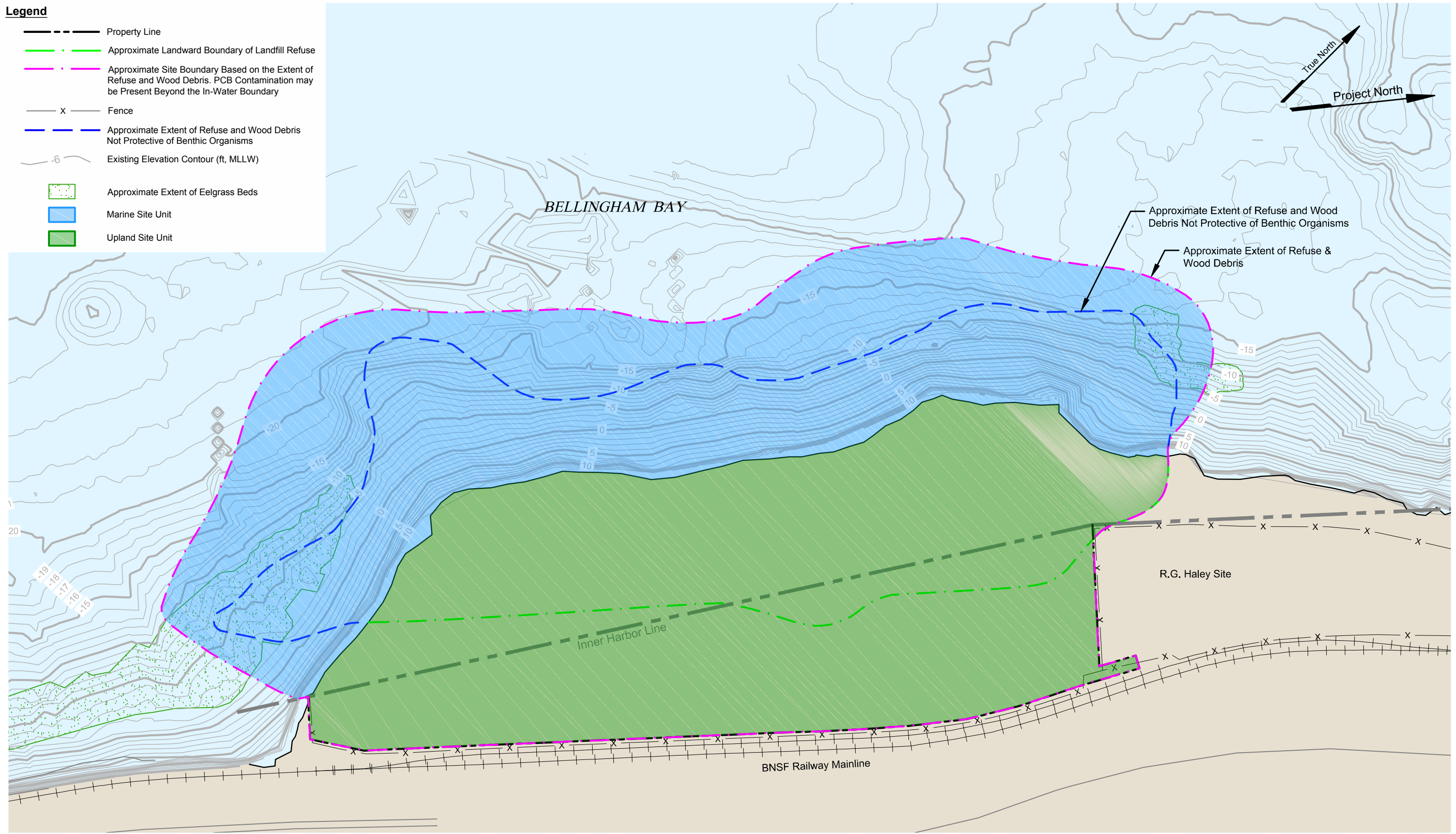
Basemap source: Port of Bellingham 1996, Anchor Environmental 2008



<p>Cornwall Avenue Landfill Bellingham, Washington</p>	<p>Extent of Site Contamination</p>	<p>Figure 7-2</p>
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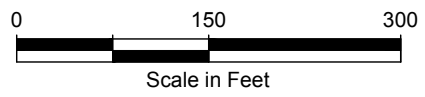
Legend

-  Property Line
-  Approximate Landward Boundary of Landfill Refuse
-  Approximate Site Boundary Based on the Extent of Refuse and Wood Debris. PCB Contamination may be Present Beyond the In-Water Boundary
-  Fence
-  Approximate Extent of Refuse and Wood Debris Not Protective of Benthic Organisms
-  Existing Elevation Contour (ft, MLLW)
-  Approximate Extent of Eelgrass Beds
-  Marine Site Unit
-  Upland Site Unit



Landau Associates, Inc. | V:\1001020\400\510\RIFS 2013\Fig 9-01.dwg (A) "Figure 9-1" 8/13/2013

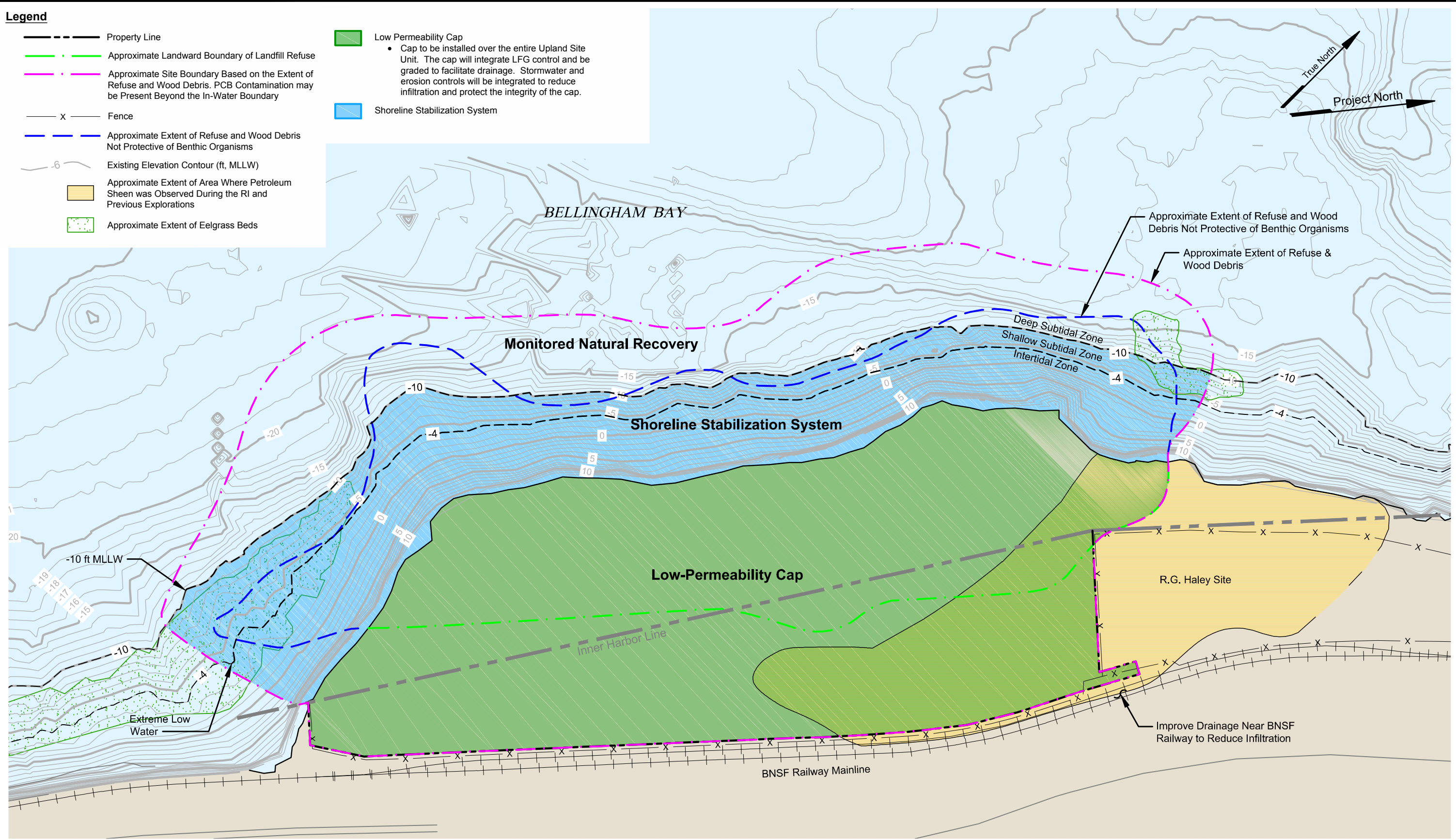
Basemap source: Port of Bellingham 1996, Anchor Environmental 2008



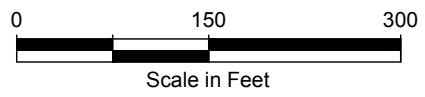
<p>Cornwall Avenue Landfill Bellingham, Washington</p>	<p>Site Units</p>	<p>Figure 9-1</p>
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Legend

- Property Line
- Approximate Landward Boundary of Landfill Refuse
- Approximate Site Boundary Based on the Extent of Refuse and Wood Debris. PCB Contamination may be Present Beyond the In-Water Boundary
- Fence
- Approximate Extent of Refuse and Wood Debris Not Protective of Benthic Organisms
- Existing Elevation Contour (ft, MLLW)
- Approximate Extent of Area Where Petroleum Sheen was Observed During the RI and Previous Explorations
- Approximate Extent of Eelgrass Beds
- Low Permeability Cap
 - Cap to be installed over the entire Upland Site Unit. The cap will integrate LFG control and be graded to facilitate drainage. Stormwater and erosion controls will be integrated to reduce infiltration and protect the integrity of the cap.
- Shoreline Stabilization System



Note
 Monitored Natural Recovery (MNR) will be conducted in the Marine Site Unit. The boundaries of MNR will be determined during the design phase.



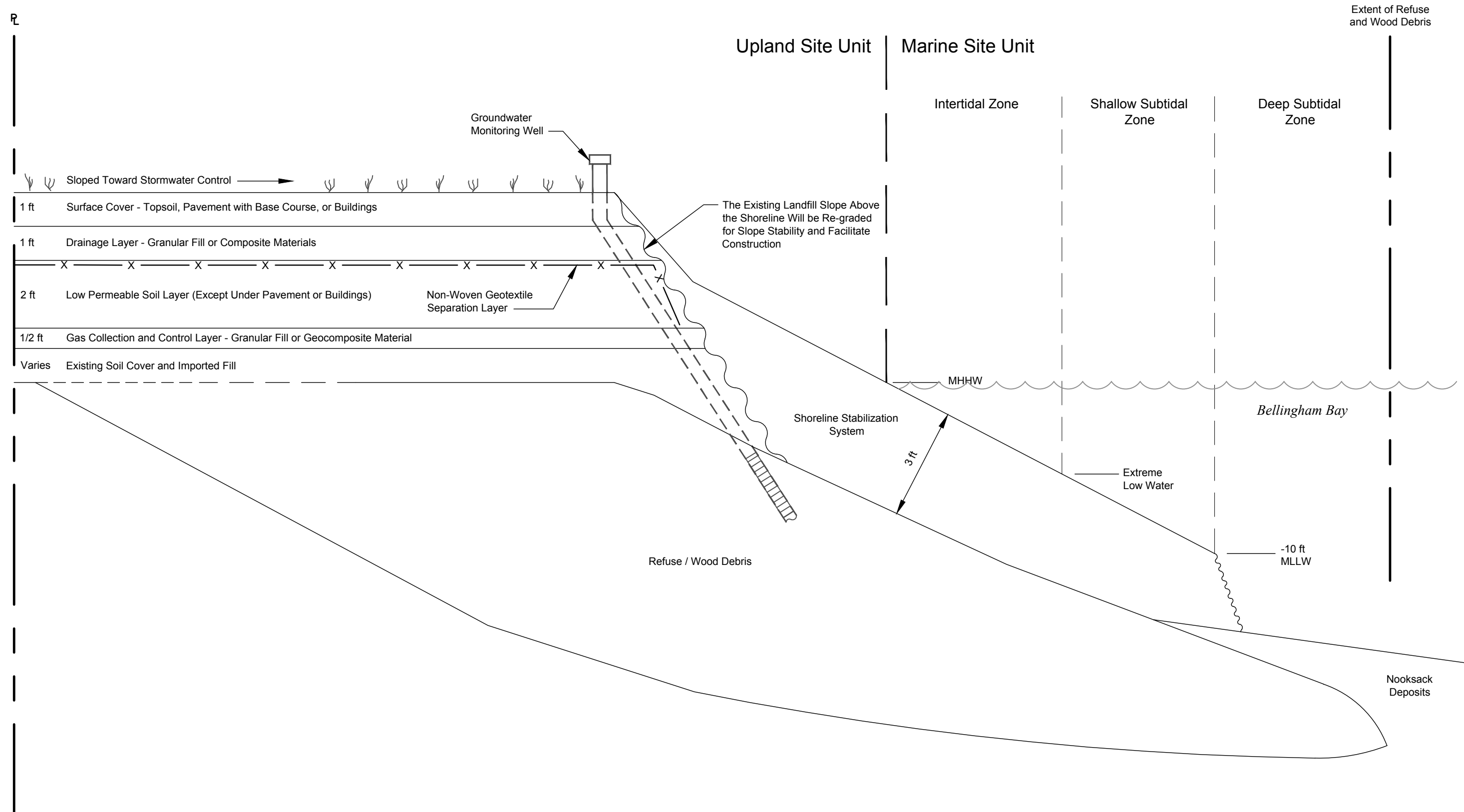
Basemap source: Port of Bellingham 1996, Anchor Environmental 2008

Cornwall Avenue Landfill Bellingham, Washington	Alternative 1 Conceptual Site Plan	Figure 9-2
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Landau Associates, Inc. | V:\1001020\400\510\RI\FS 2013\Fig 9-02.dwg (A) "Figure 9-2" 8/13/2013



LANDAU ASSOCIATES, INC. | V:\001\020\400\510\RIFS 2013\Fig 9-03.dwg (A) "Figure 9-3" 8/13/2013



Note

1. The profiles presented on this figure provide conceptual-level design details. The final selection of materials, layer thickness, and details for transitioning between zones will be determined during the remedial design process.

Not to Scale

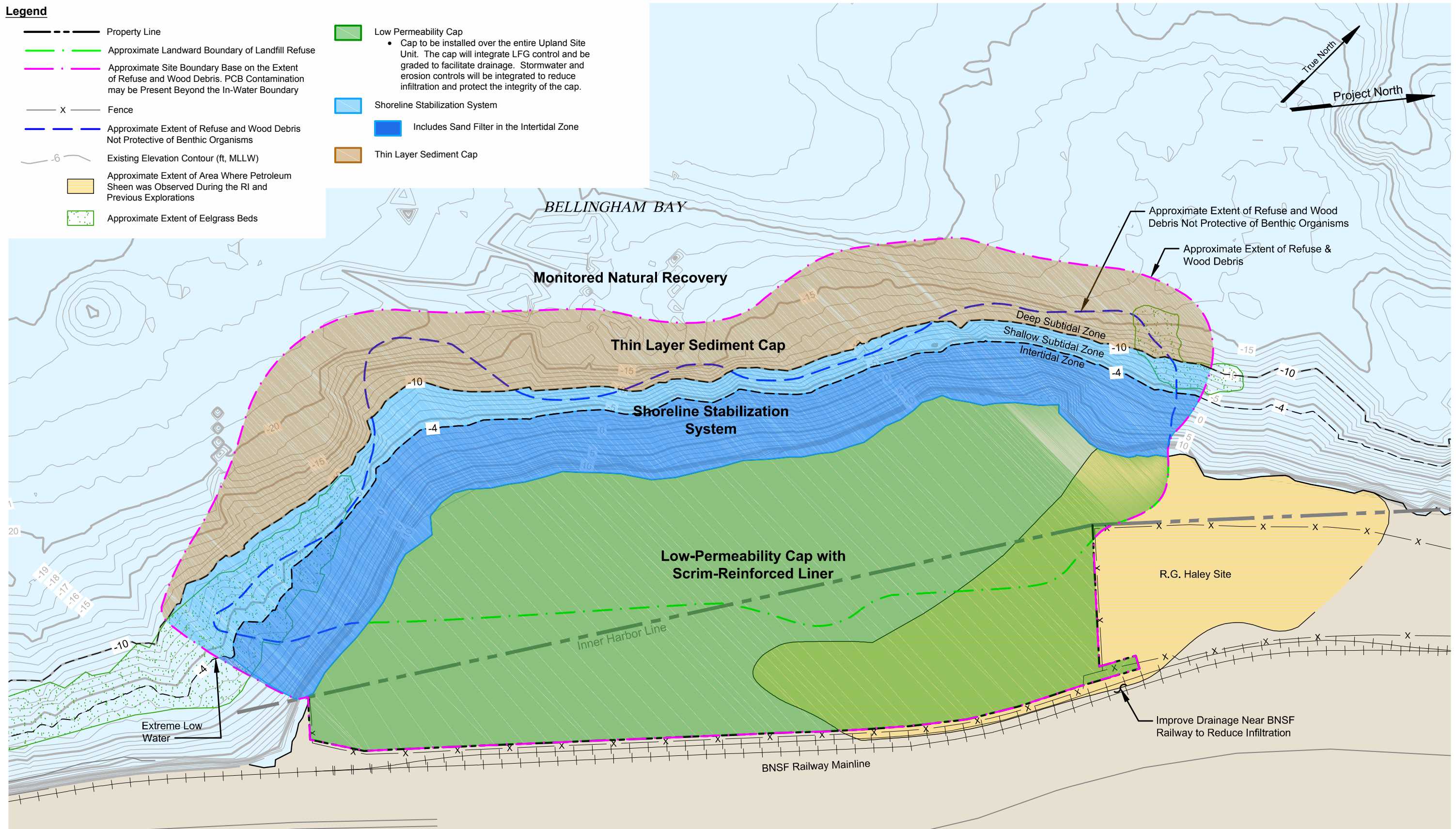
Cornwall Avenue Landfill
Bellingham, Washington

**Alternative 1
Conceptual Site Profile**

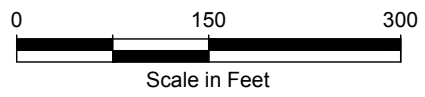
Figure
9-3

Legend

- Property Line
- Approximate Landward Boundary of Landfill Refuse
- Approximate Site Boundary Base on the Extent of Refuse and Wood Debris. PCB Contamination may be Present Beyond the In-Water Boundary
- Fence
- Approximate Extent of Refuse and Wood Debris Not Protective of Benthic Organisms
- Existing Elevation Contour (ft, MLLW)
- Approximate Extent of Area Where Petroleum Sheen was Observed During the RI and Previous Explorations
- Approximate Extent of Eelgrass Beds
- Low Permeability Cap
 - Cap to be installed over the entire Upland Site Unit. The cap will integrate LFG control and be graded to facilitate drainage. Stormwater and erosion controls will be integrated to reduce infiltration and protect the integrity of the cap.
- Shoreline Stabilization System
 - Includes Sand Filter in the Intertidal Zone
- Thin Layer Sediment Cap



Note
 Monitored Natural Recovery (MNR) will be conducted in the Marine Site Unit. The boundaries of MNR will be determined during the design phase.

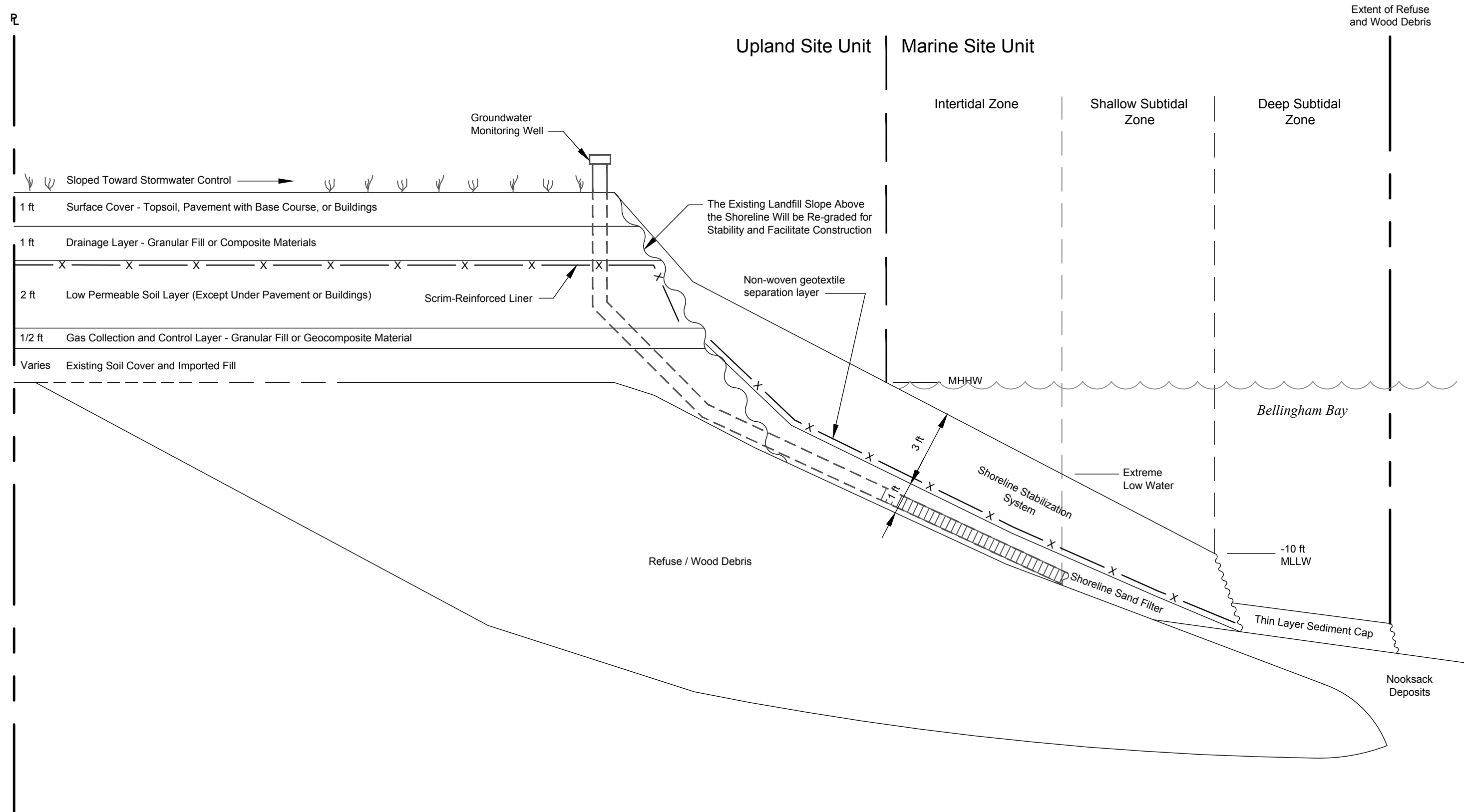


Basemap source: Port of Bellingham 1996, Anchor Environmental 2008

Landau Associates, Inc. | V:\1001020\400\510\RI\FS 2013\Fig 9-04.dwg (A) "Figure 9-4" 8/13/2013



LANDAU ASSOCIATES, INC. | V:\001\020\400\510\RIFS 2013\Fig 9-05.dwg (A) "Figure 9-5" 8/13/2013



Note

1. The profiles presented on this figure provide conceptual-level design details. The final selection of materials, layer thickness, and details for transitioning between zones will be determined during the remedial design process.

Not to Scale

Cornwall Avenue Landfill
Bellingham, Washington

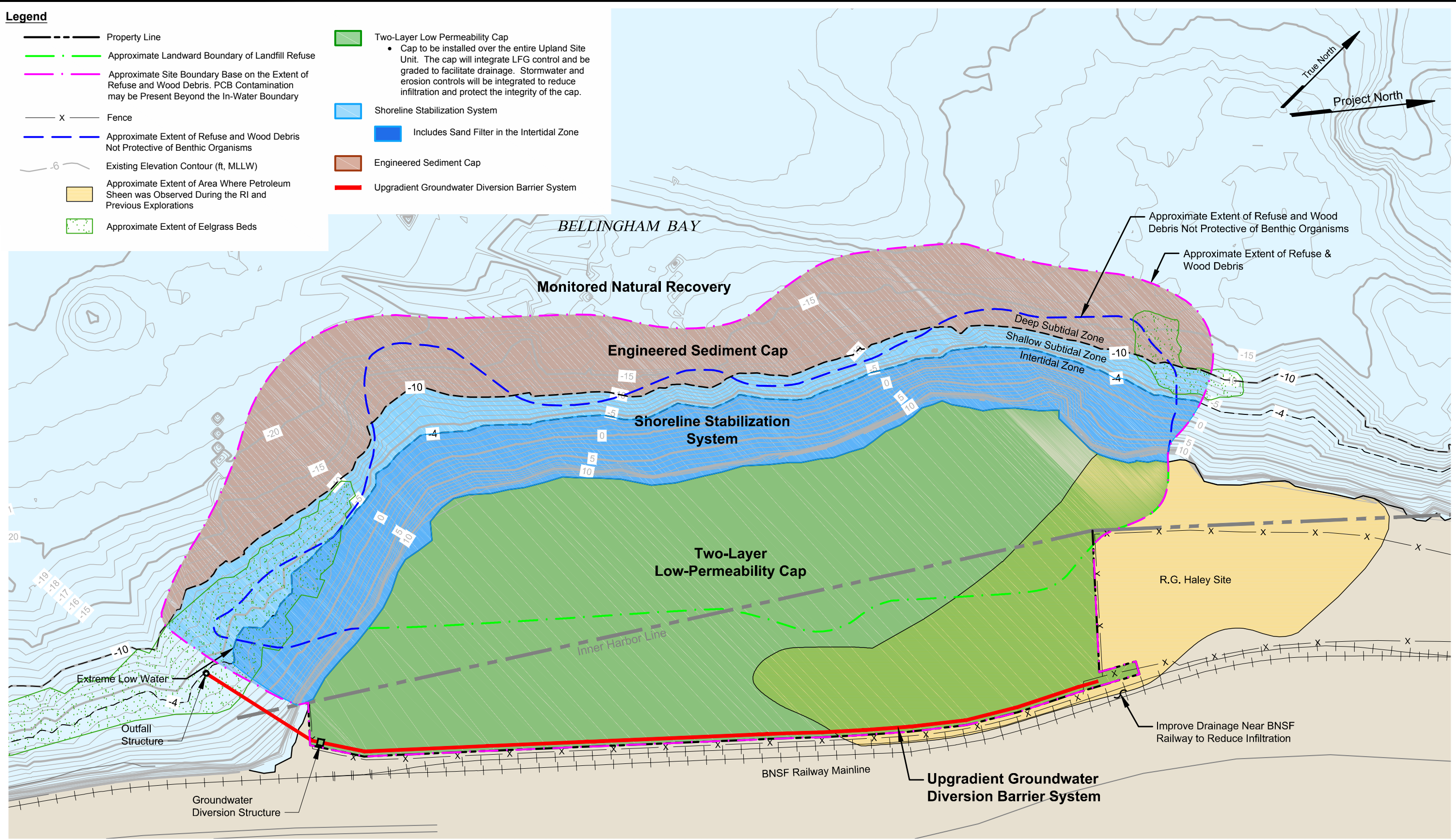
Alternative 2
Conceptual Site Profile

Figure
9-5

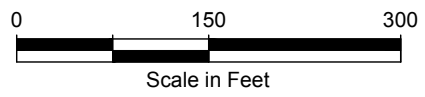


Legend

- Property Line
- Approximate Landward Boundary of Landfill Refuse
- Approximate Site Boundary Base on the Extent of Refuse and Wood Debris. PCB Contamination may be Present Beyond the In-Water Boundary
- Fence
- Approximate Extent of Refuse and Wood Debris Not Protective of Benthic Organisms
- Existing Elevation Contour (ft, MLLW)
- Approximate Extent of Area Where Petroleum Sheen was Observed During the RI and Previous Explorations
- Approximate Extent of Eelgrass Beds
- Two-Layer Low Permeability Cap
 - Cap to be installed over the entire Upland Site Unit. The cap will integrate LFG control and be graded to facilitate drainage. Stormwater and erosion controls will be integrated to reduce infiltration and protect the integrity of the cap.
- Shoreline Stabilization System
 - Includes Sand Filter in the Intertidal Zone
- Engineered Sediment Cap
- Upgradient Groundwater Diversion Barrier System



Note
 Monitored Natural Recovery (MNR) will be conducted in the Marine Site Unit. The boundaries of MNR will be determined during the design phase.



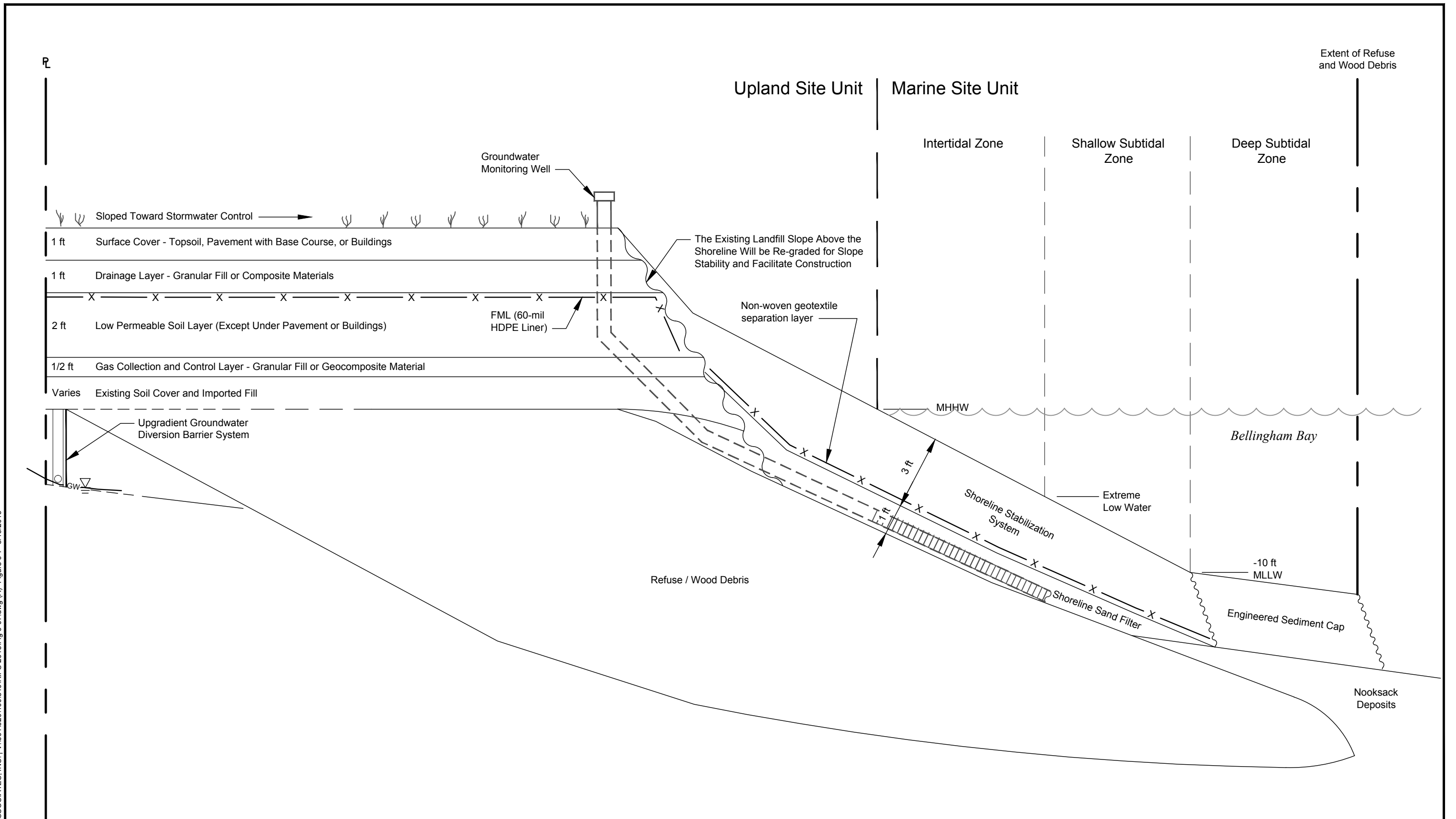
Basemap source: Port of Bellingham 1996, Anchor Environmental 2008

Cornwall Avenue Landfill Bellingham, Washington	Alternative 3 Conceptual Site Plan	Figure 9-6
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Landau Associates, Inc. | V:\1001020\400\510\RI\FS 2013\Fig 9-6.dwg (A) "Figure 9-6" 8/13/2013



LANDAU ASSOCIATES, INC. | V:\001\020\400\510\RIFS 2013\Fig 9-07.dwg (A) "Figure 9-7" 8/13/2013



Note

1. The profiles presented on this figure provide conceptual-level design details. The final selection of materials, layer thickness, and details for transitioning between zones will be determined during the remedial design process.

Not to Scale

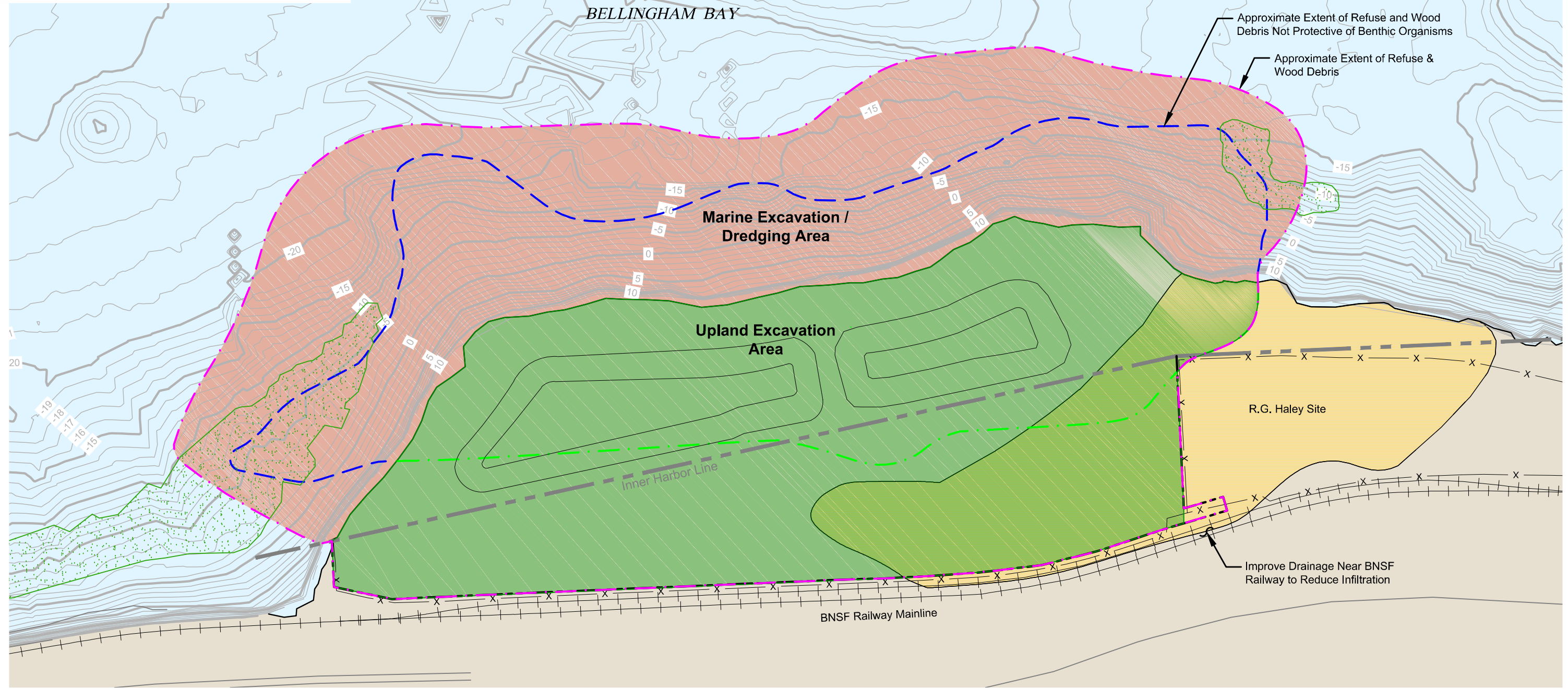
Cornwall Avenue Landfill
Bellingham, Washington

**Alternative 3
Conceptual Site Profile**

Figure
9-7

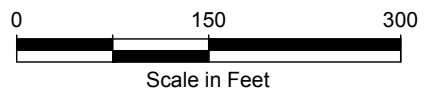
Legend

- Property Line
- Approximate Landward Boundary of Landfill Refuse
- Approximate Site Boundary Base on the Extent of Refuse and Wood Debris. PCB Contamination may be Present Beyond the In-Water Boundary
- Fence
- Approximate Extent of Refuse and Wood Debris Not Protective of Benthic Organisms
- Existing Elevation Contour (ft, MLLW)
- Approximate Extent of Area Where Petroleum Sheen was Observed During the RI and Previous Explorations
- Upland Excavation Area
- Marine Excavation / Dredging Area



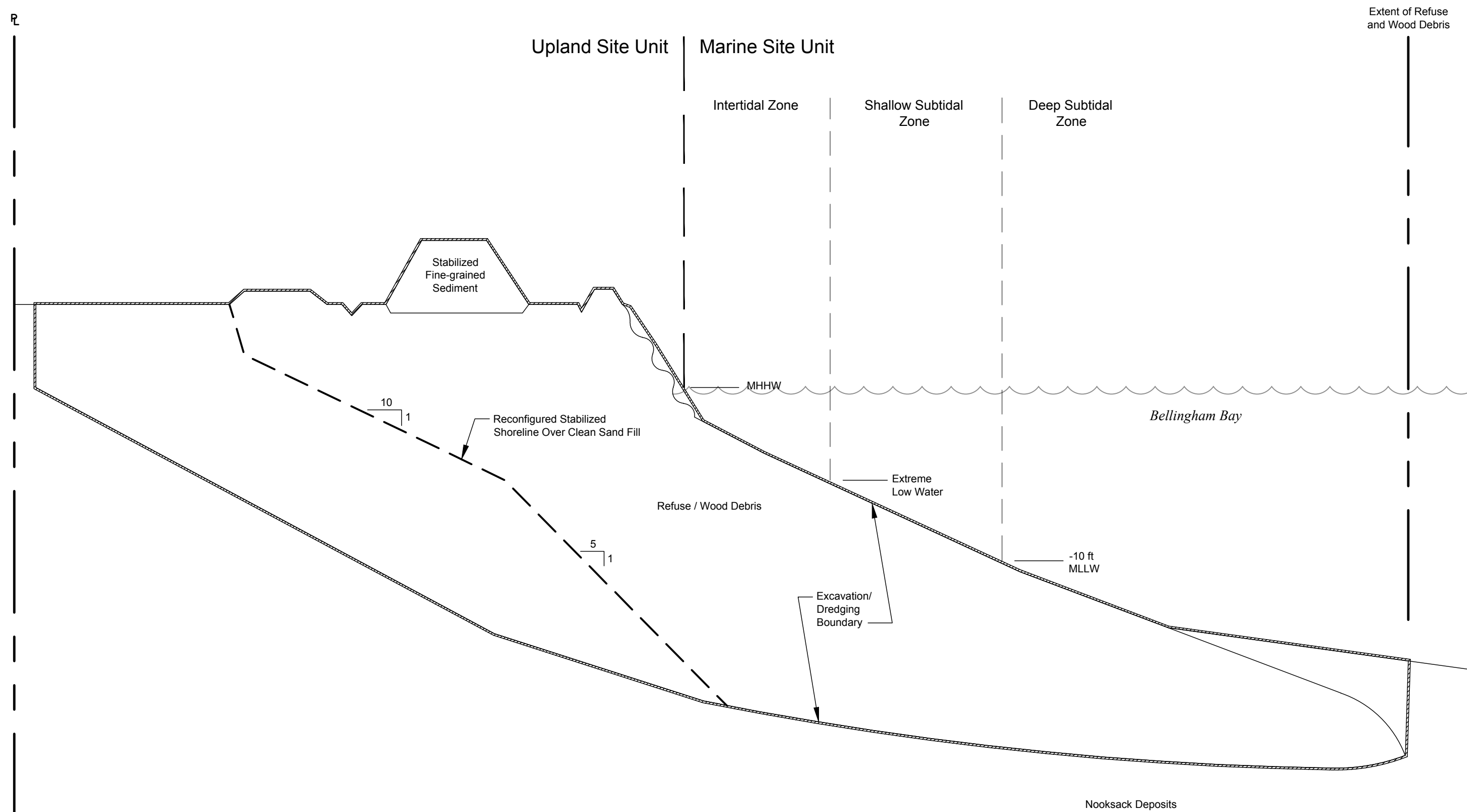
Landau Associates, Inc. | V:\1001020\400\510\RI\FS 2013\Fig 9-8.dwg (A) "Figure 9-8" 8/13/2013

Basemap source: Port of Bellingham 1996, Anchor Environmental 2008



Cornwall Avenue Landfill Bellingham, Washington	Alternative 4 Conceptual Site Plan	Figure 9-8
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LANDAU ASSOCIATES, INC. | V:\001\020\400\510\RIFS 2013\Fig 9-09.dwg (A) *Figure 9-9* 8/13/2013



Note

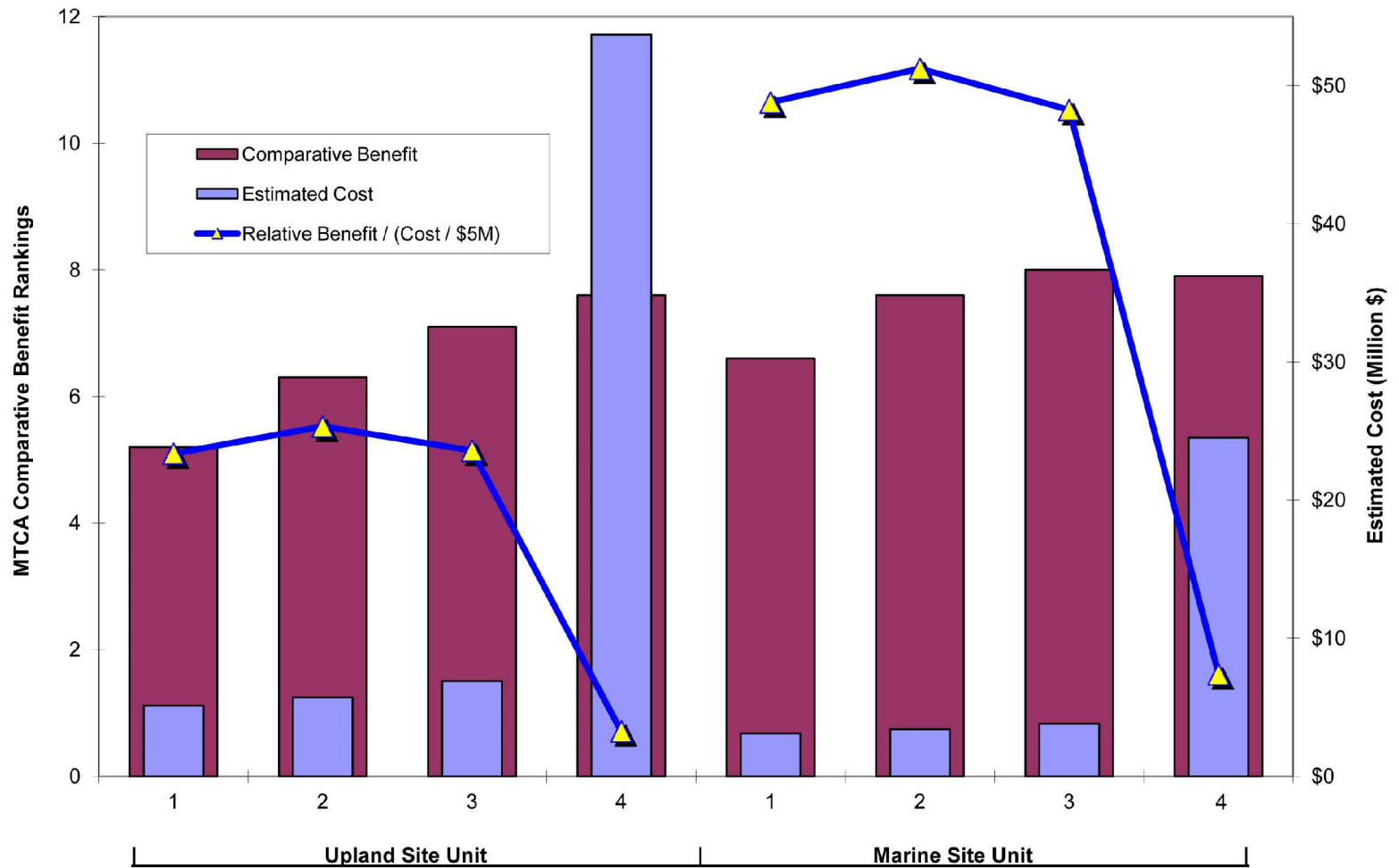
1. The profiles presented on this figure provide conceptual-level design details. The final selection of materials, layer thickness, and details for transitioning between zones will be determined during the remedial design process.

Not to Scale

Cornwall Avenue Landfill
Bellingham, Washington

**Alternative 4
Conceptual Site Profile**

Figure
9-9

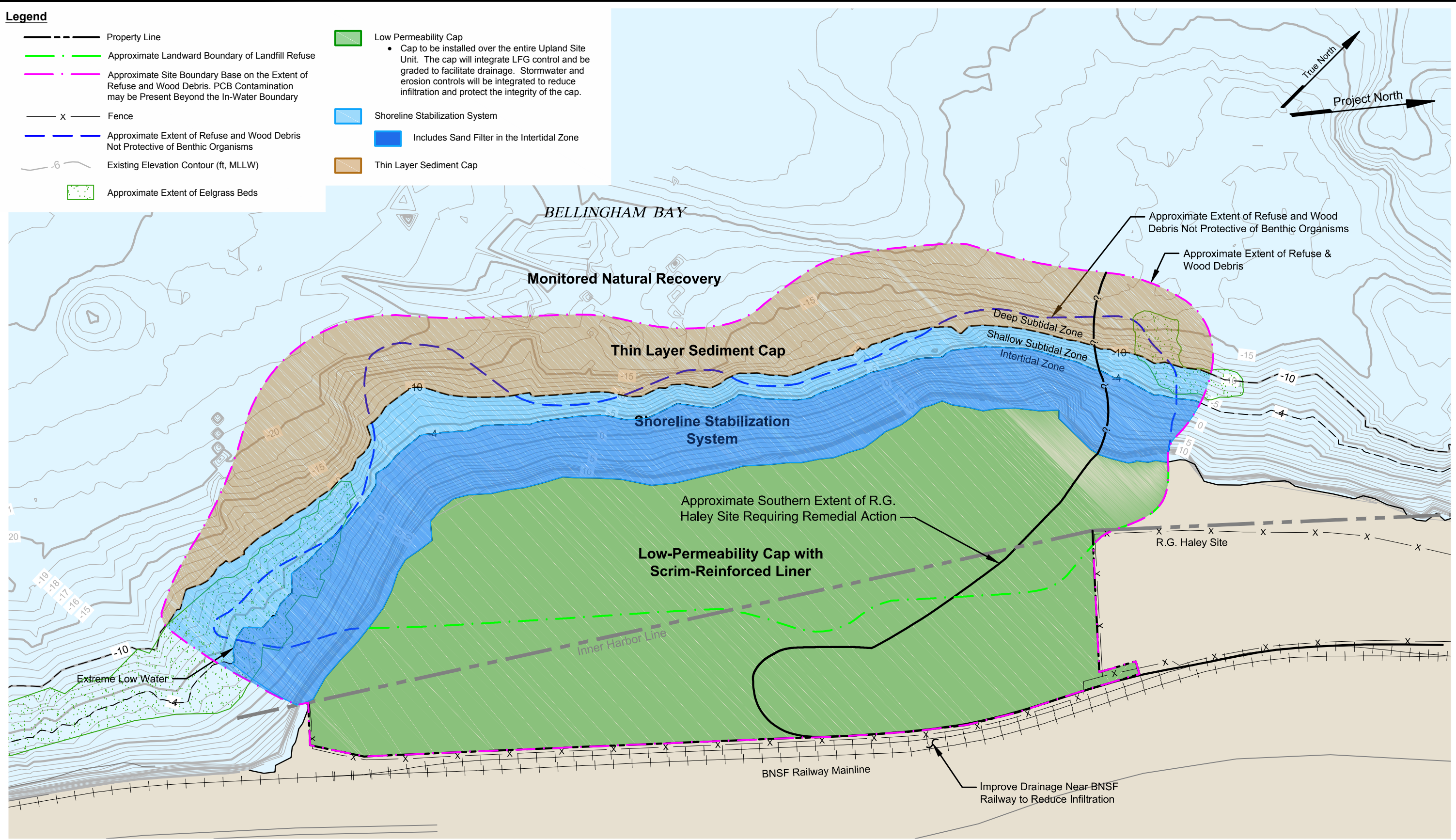


Note

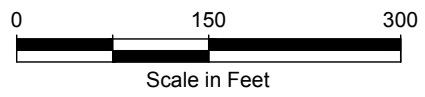
1. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Property Line
- Approximate Landward Boundary of Landfill Refuse
- Approximate Site Boundary Base on the Extent of Refuse and Wood Debris. PCB Contamination may be Present Beyond the In-Water Boundary
- Fence
- Approximate Extent of Refuse and Wood Debris Not Protective of Benthic Organisms
- Existing Elevation Contour (ft, MLLW)
- Approximate Extent of Eelgrass Beds
- Low Permeability Cap
 - Cap to be installed over the entire Upland Site Unit. The cap will integrate LFG control and be graded to facilitate drainage. Stormwater and erosion controls will be integrated to reduce infiltration and protect the integrity of the cap.
- Shoreline Stabilization System
 - Includes Sand Filter in the Intertidal Zone
- Thin Layer Sediment Cap



Note
 Monitored Natural Recovery (MNR) will be conducted in the Marine Site Unit. The boundaries of MNR will be determined during the design phase.

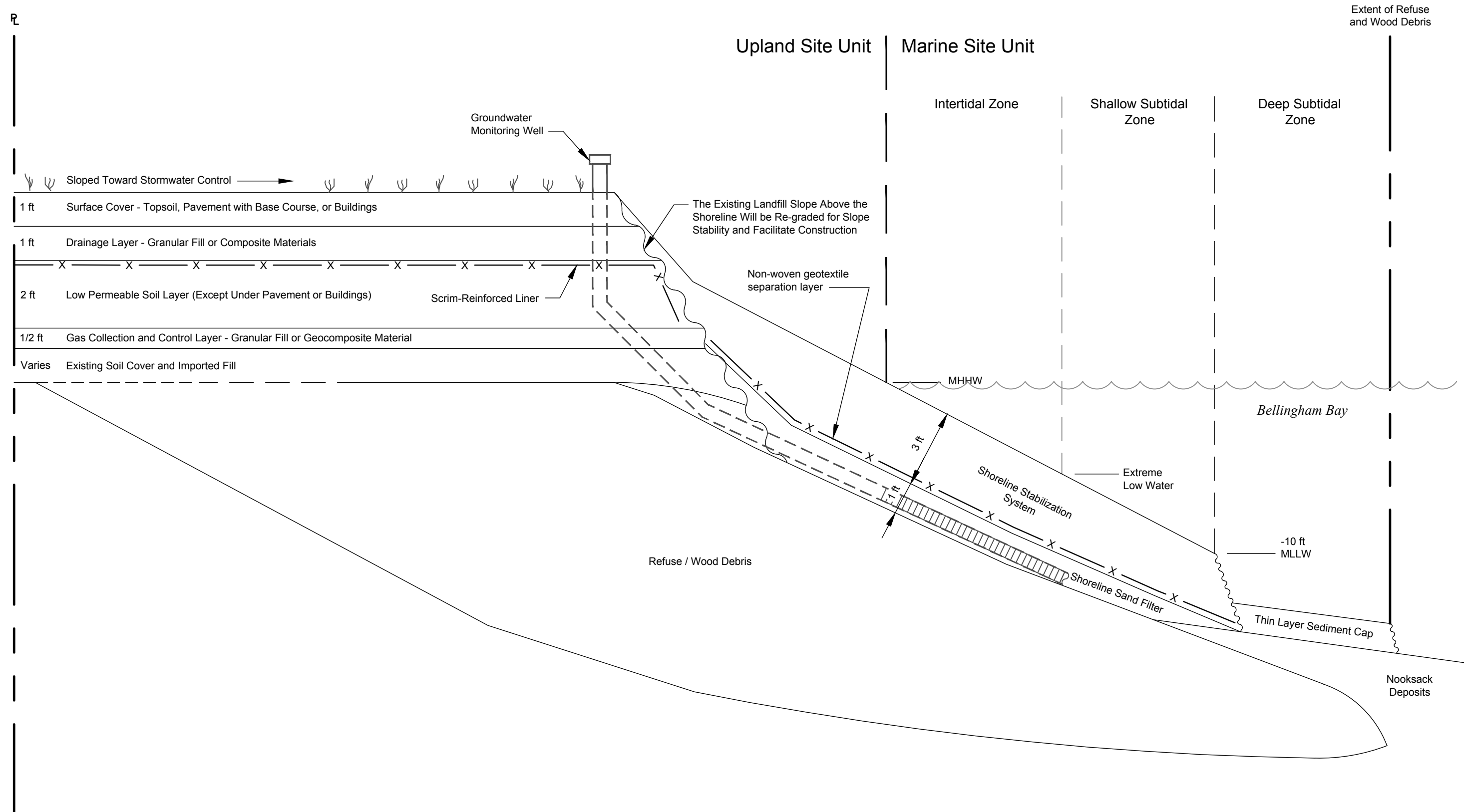


Basemap source: Port of Bellingham 1996, Anchor Environmental 2008

Landau Associates, Inc. | V:\1001020\400\510\RIFS 2013\Fig 10-01.dwg (A) Figure 10-1 8/13/2013



LANDAU ASSOCIATES, INC. | V:\001\020\400\510\RIFS 2013\Fig 10-02.dwg (A) "Figure 10-2" 8/13/2013



Note

1. The profiles presented on this figure provide conceptual-level design details. The final selection of materials, layer thickness, and details for transitioning between zones will be determined during the remedial design process.

Not to Scale

Cornwall Avenue Landfill
Bellingham, Washington

**Preferred Alternative
Conceptual Site Profile**

Figure
10-2