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## Outfall Verification Report

**Location:** East, West, and Upper Duwamish Waterway  
**Report Date:** 9/12/2007  
**Inspection Date:** 6/13/2007 & 6/14/2007  
**Present:** Matt Eyer, Phoinix Corporation  
Edwin Wong, Phoinix Corporation  
Tim Fitzgerald, Port of Seattle Contractor

**Purpose:** To locate and verify outfall locations from the Port of Seattle properties into the Duwamish, focusing on the East, West, and Upper Duwamish waterway. Also to confirm and obtain outfall pipe sizes, material, photos, and location.

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### **Inspection Notes:**

#### Inspection Methodology

- The inspection took place over the course of two days, June 13 and June 14.
- The timing of the inspection was planned to coincide with minus tides. The tide was minus 3.0ft at 1003hrs on day one and minus 3.7ft at 1047hrs on day two. The inspections started at about 0800hrs on both days and continued until the tide was high enough that it was deemed no longer effective to continue (~+1ft).
- At times it was possible to access the shore and obtain actual measurements of the outfalls. Some of the outfalls sizes had to be estimated because access was not possible. The measurements in this report will be indicated as "estimate" or "actual" as necessary.
- Outfall locations were ascertained using known onshore structures and pier foot markings. Large previously known outfalls such as metro sewer outfalls were also used as reference points.
- Maps obtained from Aspect Consulting, Port of Seattle (POS) and the terminal tenants were used as guides during the inspection. The maps used were also augmented by our inspections of the stormwater system of the individual facilities.



Inspection Overview

The inspection started at Terminal 102 on both days. On day one, we headed north up the east waterway making our way over to the south end of Terminal 25 (T25). T25 outfall locations were relatively easy to determine because the south end of the terminal does not have a pier. The portion to the site that does have a pier is relatively short. There is also a very visible Metro sewer outfall on this facility; which was also used as a reference point. This inspection was also facilitated by the fact that we have completed the stormwater system inspection for this facility.

After completing T25, the inspection moved on to Terminal 30 (T30), the next POS facility on the east side of the east waterway. At this facility we only needed to confirm one outfall on the south end of the terminal. This outfall was easily verified because it was close to the southern east most tip of T30. Two other outfalls were inspected and photographed, including a Metro sewer outfall, at T30, because our previous inspection did not produce quality pictures.

Moving north from Terminal 30, the next inspection was Terminal 46, again starting at the south end moving north. The outfall verification at this site was facilitated by previous completed stormwater system inspections. There is another very visible Metro sewer outfall on this facility; located at southern half of the terminal. This inspection included Pier 48 and Alaska Square Park.

After completing Terminal 46, Pier 48, and Alaska Square Park we moved south to the north tip of Terminal 18 starting from north to south on the west side of the east waterway. This continued until it was judged that the tide was too high to continue. This concluded the June 13, 2007 outfall verification.

On day two, June 14, 2007 started again at Terminal 102 and moved north up the east waterway. We started at the south end of Terminal 18 and moved north. After completing Terminal 18 we circumnavigated Harbor Island confirming outfalls until we were back at Terminal 102.

After completing Harbor Island, which included Terminal 10 and Terminal 102, we moved to the upper Duwamish Waterway confirming outfalls at Terminal 103, Terminal 106, Terminal 108, and Terminal 115.

Outfall Verification Summary				
Facility	Number of Outfalls Verified	Storm Outfalls	Metro Sewer Outfalls	Outfalls Sealed
Terminal 25	6	5	1	---
Terminal 30	6	5	1	---
Terminal 46	8	7	1	---
Pier 48	5	5	---	---
Alaska Square Park	2	2	---	---
Terminal 18	22	18	---	4
Harbor Island	9	9	---	---
Terminal 102	4	4	---	---
Terminal 10	1	1	---	---
Terminal 5	14	14	---	---
Terminal 103	4	4	---	---
Terminal 108	3	3	---	---
Terminal 106	1	1	---	---
Terminal 104	2	2	---	---
Terminal 107	---	---	---	---
Terminal 115	8	8	---	---



**EAST DUWAMISH WATERWAY**  
**Outfall Verification Photos and Map**

- Terminal 25
- Terminal 30
- Terminal 46
- Pier 48
- Alaska Square Park
- Terminal 18

**TERMINAL 25 OUTFALL VERIFICATION PHOTOS**

Terminal 25 Outfalls				
Outfall #	Size (in)	Material	Type	Notes
1	30	concrete	with hinged lid	storm outfall
2	121	concrete	open	Metro sewer outfall
3	30	concrete	with hinged lid	storm outfall
4	30	concrete	with hinged lid	storm outfall
5	12	concrete	open	storm outfall
6	6	concrete	open	storm outfall



June 13, 2007 - Photo DSC-0021  
 Looking southeast at outfall # T25\_Outfall\_01.

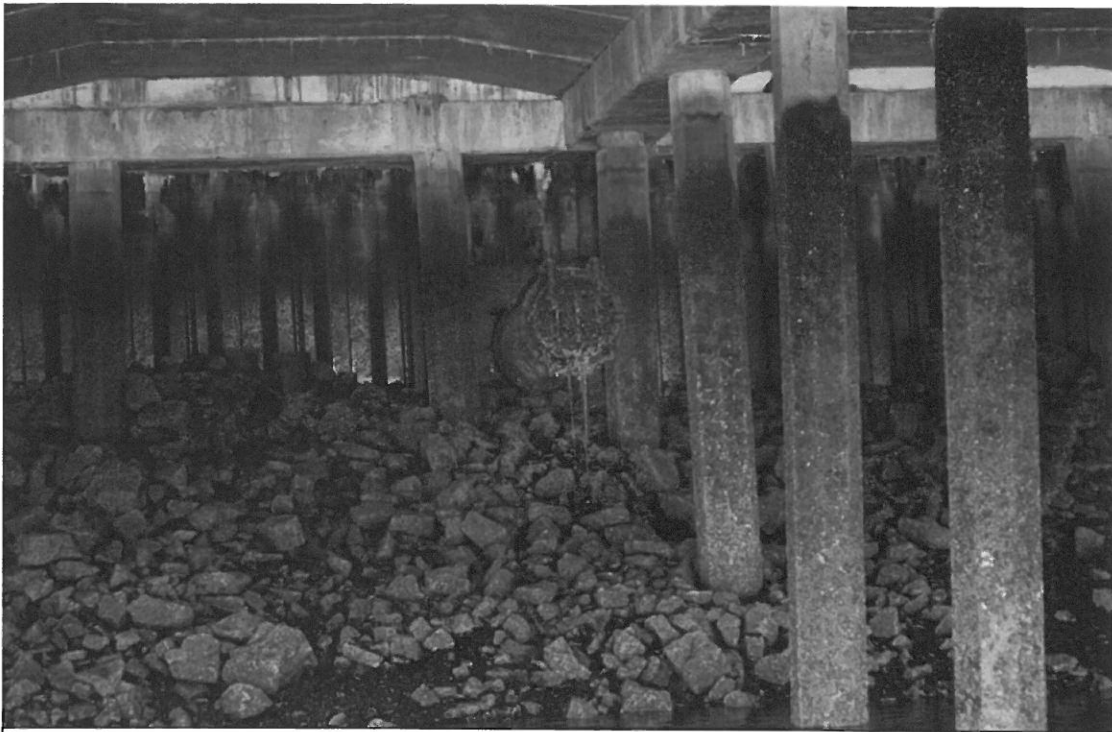


June 13, 2007 - Photo DSC-0023  
Looking east at the Metro sewer outfall# T25\_Outfall\_02.



June 13, 2007 - Photo DSC-0017  
Looking southeast at outfall # T25\_Outfall\_03.





June 13, 2007 - Photo DSC-0013  
Looking east at outfall I# T25\_Outfall\_04.



June 13, 2007 - Photo DSC-0013  
Looking east at outfalls # T25\_Outfall\_05 and T25\_Outfall\_06.

Phoinix Corporation  
 07/05/2007  
**Terminal 25 MAP**  
 Stormwater System Inspections\*

\*Locations are an approximation based on field observations only.



- Drainage Basins**
- new manhole
  - new catch basin
  - Potential Pollutant areas
  - corrected structures
  - ✕ eliminated structures
  - deck drains
  - storm outfall
  - Metro Sewer outfall

- point\_T25**
- catch basin
  - manhole
  - manhole, metro
  - oil/water separator
  - roof drain
  - ▲ unknown
  - polyline\_T25
  - - - property\_T25

T25\_Outfall\_01  
 30" Concrete with Hinged Lid

T25\_Outfall\_02  
 18" Open Concrete  
 "Main Storm"

T25\_Outfall\_03  
 30" Concrete with Hinged Lid

T25\_Outfall\_06  
 30" Concrete with Hinged Lid

SSA has access to and uses the entire site

Feet  
 0 100 200

**TERMINAL 30 OUTFALL VERIFICATION PHOTOS**

Terminal 30 Outfalls				
Outfall #	Size (in)	Material	Type	Notes
1	*	*	*	previously verified*
2	≈ 24 *	*	*	previously verified*
3	*	*	*	previously verified*
4	24	concrete	open	storm outfall
5	100	concrete	open	Metro sewer outfall
6	24	metal	open	storm outfall

\* These outfalls were previously verified by boat on 10/04/2006 for location only. Other data was not obtainable.



June 13, 2007 - Photo DSC-0032  
 Looking east at outfall # T30\_Outfall\_04.

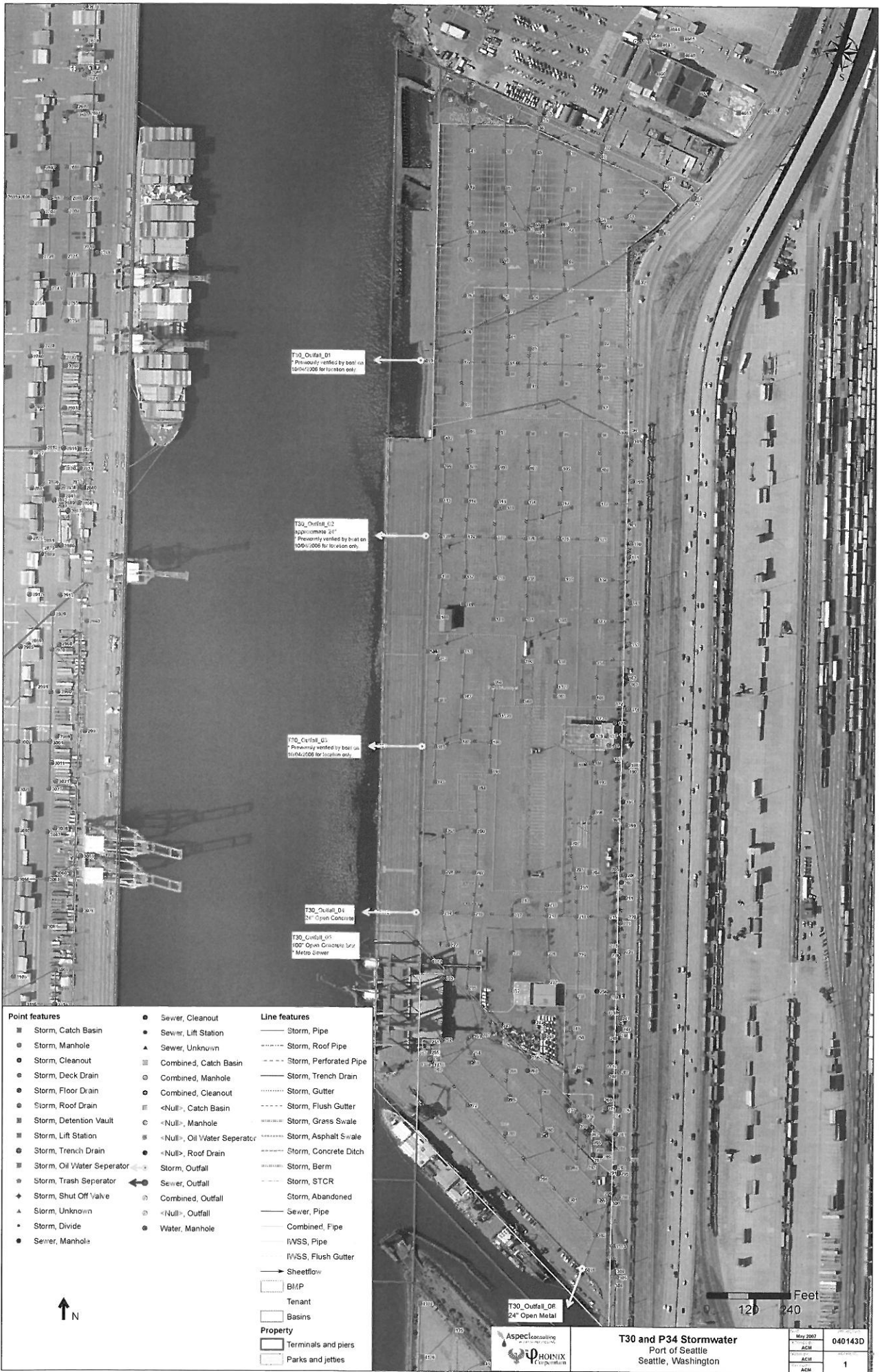




June 13, 2007 - Photo DSC-0028  
Looking east at outfall # T30\_Outfall\_05.



June 13, 2007 - Photo DSC-0026  
Looking northeast at outfall # T30\_Outfall\_06.



T30\_Outfall\_01  
Previously verified by boat on 10/06/2006 for location only.

T30\_Outfall\_02  
Approximate 24"  
Previously verified by boat on 10/06/2006 for location only.

T30\_Outfall\_03  
Previously verified by boat on 10/06/2006 for location only.

T30\_Outfall\_04  
24" Open Concrete

T30\_Outfall\_05  
100' Open Concrete 30"  
Metro Sewer

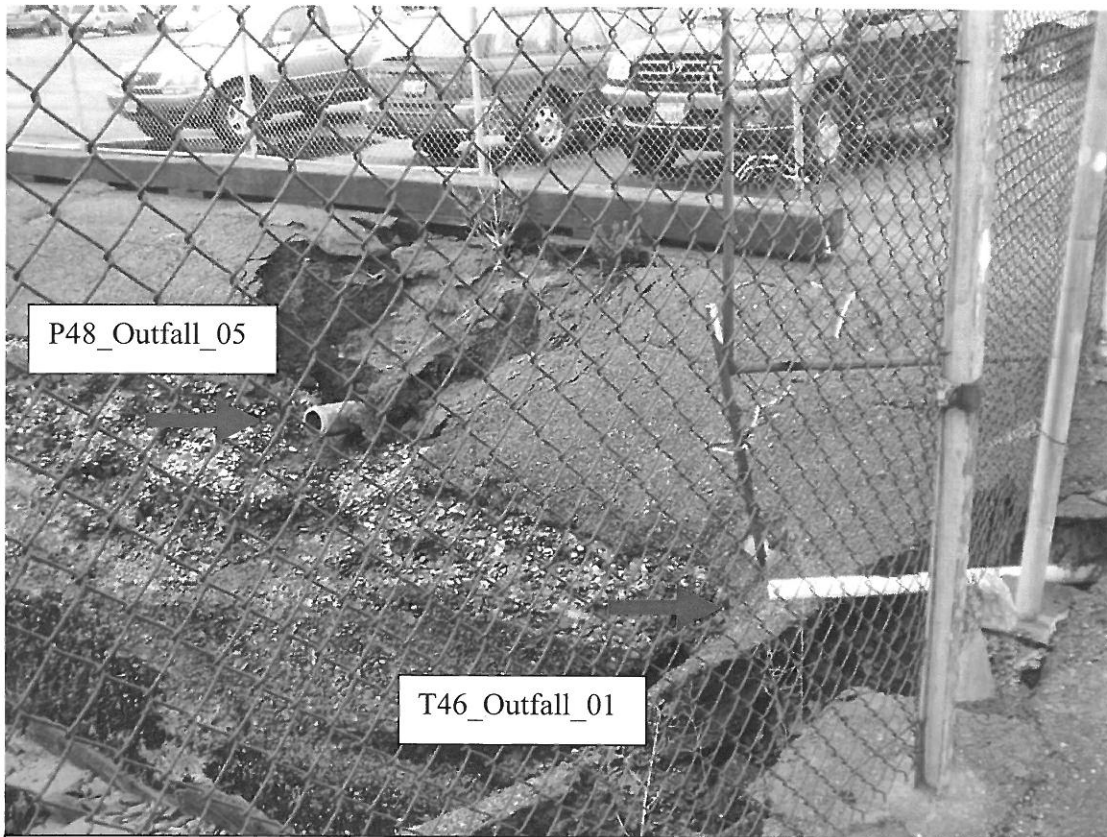
Point features	Line features
Storm, Catch Basin	Storm, Pipe
Storm, Manhole	Storm, Roof Pipe
Storm, Cleanout	Storm, Perforated Pipe
Storm, Deck Drain	Storm, Trench Drain
Storm, Floor Drain	Storm, Gutter
Storm, Roof Drain	Storm, Flush Gutter
Storm, Detention Vault	Storm, Grass Swale
Storm, Lift Station	Storm, Asphalt Swale
Storm, Trench Drain	Storm, Concrete Ditch
Storm, Oil Water Separator	Storm, Berm
Storm, Trash Separator	Storm, STCR
Storm, Shut Off Valve	Storm, Abandoned
Storm, Unknown	Sewer, Pipe
Storm, Divide	Combined, Pipe
Sewer, Manhole	IWSS, Pipe
Sewer, Cleanout	IWSS, Flush Gutter
Sewer, Lift Station	Sheetflow
Sewer, Unknown	BMP
Combined, Catch Basin	Tenant
Combined, Manhole	Basins
Combined, Cleanout	Terminals and piers
<Null>, Catch Basin	Parks and jetties
<Null>, Manhole	
<Null>, Oil Water Separator	
<Null>, Roof Drain	
Storm, Outfall	
Combined, Outfall	
<Null>, Outfall	
Water, Manhole	





**TERMINAL 46 OUTFALL VERIFICATION PHOTOS**

Terminal 46 Outfalls				
Outfall #	Size (in)	Material	Type	Notes
1	3	pvc	open	storm outfall
2	36	metal	open	storm outfall
3	6	pvc	open	storm outfall
4	6	pvc	open	storm outfall
5	40	concrete	open	storm outfall
6	36	concrete	open	storm outfall
7	60	concrete	open	Metro sewer outfall
8	24	concrete	open	storm outfall



P48\_Outfall\_05

T46\_Outfall\_01

June 13, 2007 - Photo DSCF-0466  
 Looking east at outfalls # T46\_Outfall\_01 and P48\_Outfall\_05.



June 13, 2007 - Photo DSC-0049  
Looking east at outfall # T46\_Outfall\_02.

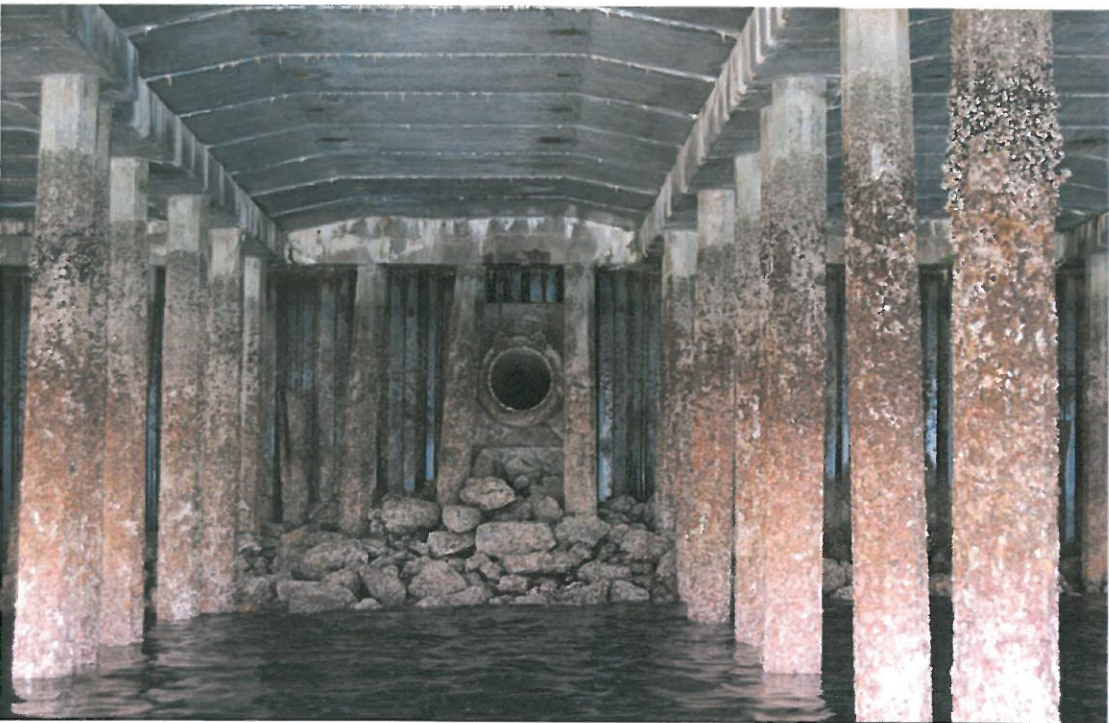


June 13, 2007 - Photo DSC-0052  
Looking southeast at outfall # T46\_Outfall\_03.



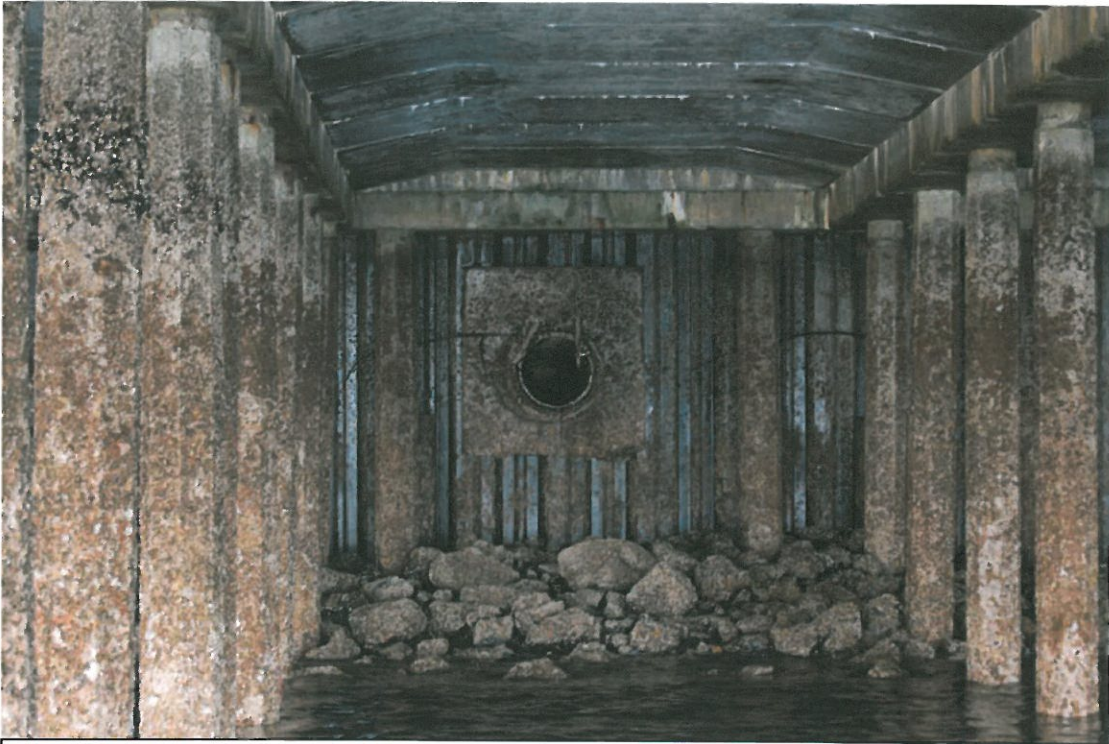


June 13, 2007 - Photo DSC-0054  
Looking southeast at outfall # T46\_Outfall\_04.



June 13, 2007 - Photo DSC-0045  
Looking east at outfall # T46\_Outfall\_05.

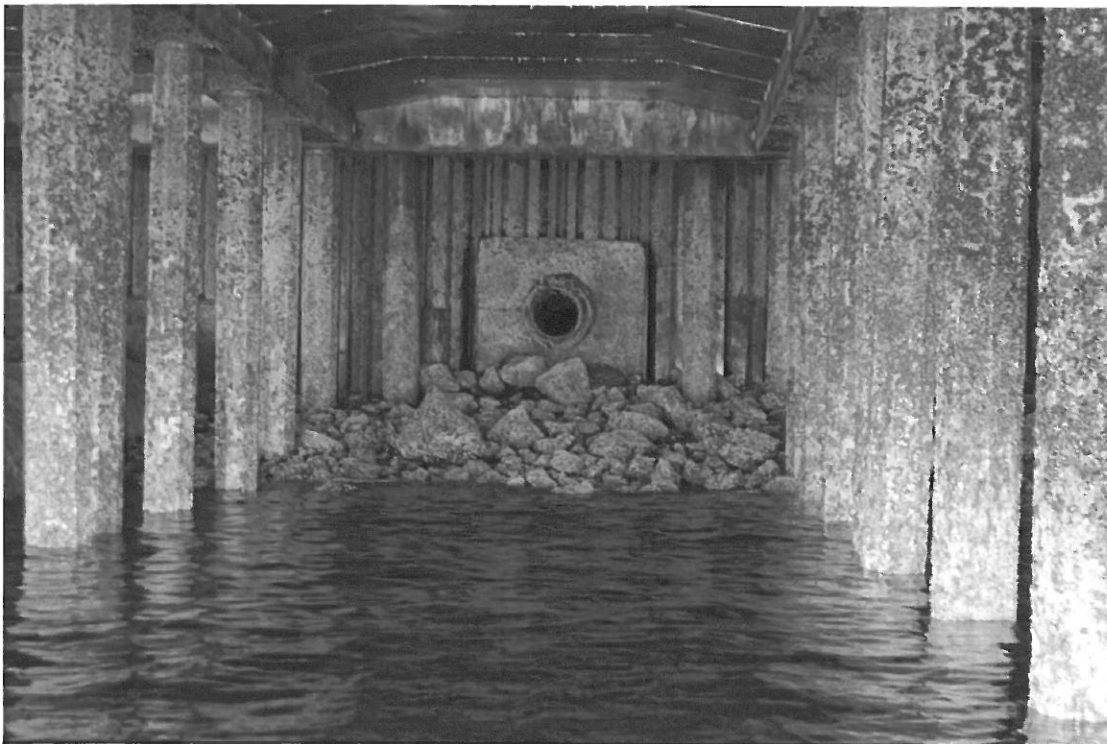




June 13, 2007 - Photo DSC-0043  
Looking east at outfall # T46\_Outfall\_06.



June 13, 2007 - Photo DSC-0043  
Looking east at the Metro sewer outfall # T46\_Outfall\_07.



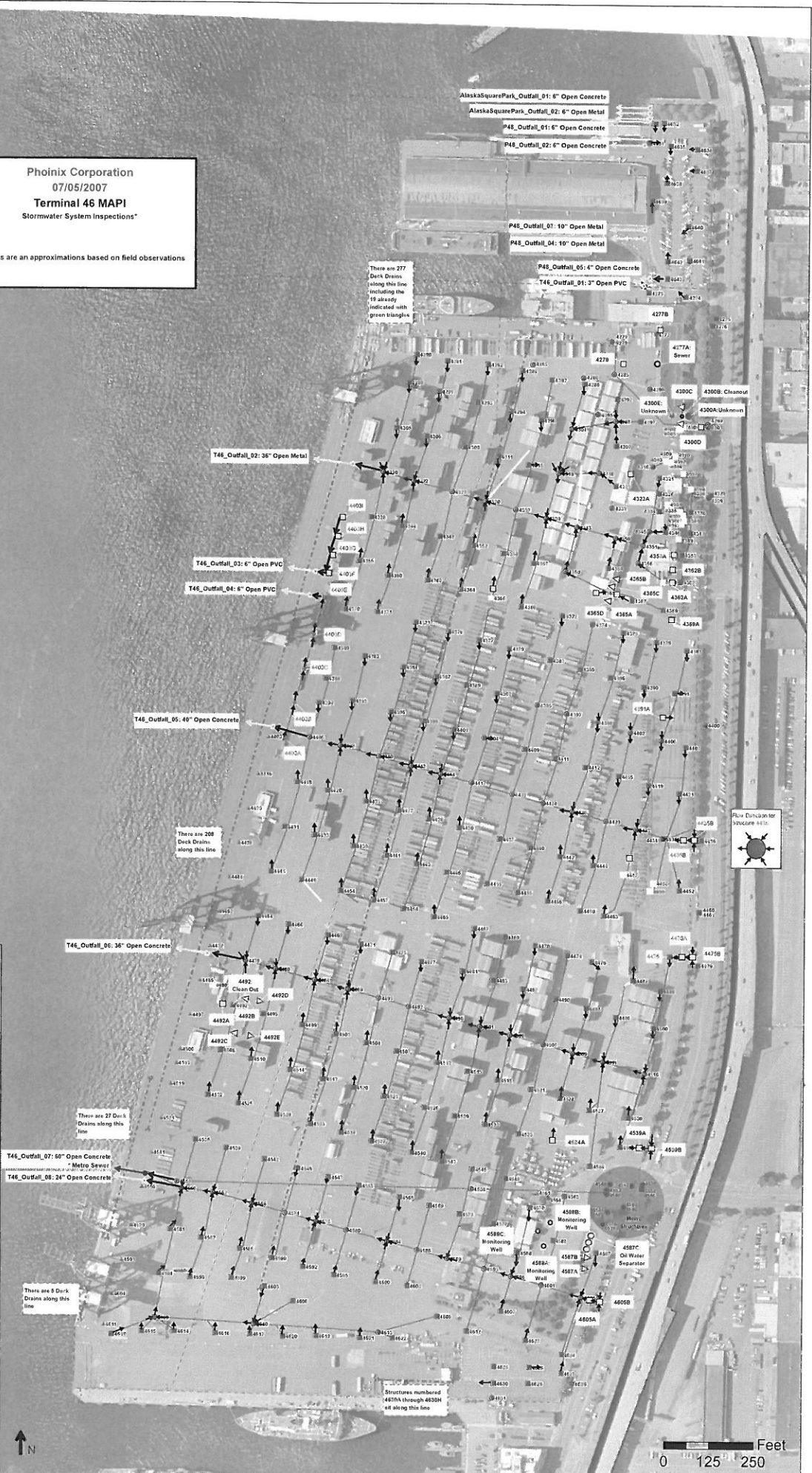
June 13, 2007 - Photo DSC-0040  
Looking east at outfall # T46\_Outfall\_08.



Phoenix Corporation  
07/05/2007  
Terminal 46 MAPI  
Stormwater System Inspections\*

\*Locations are an approximations based on field observations only.

- New Cleanout
  - Unknown
  - Line of Deck Drains
  - ← Sewer Outlet
  - New Catch Basin
  - △ New Roof Drain
  - New Manhole
  - New Monitoring Well
  - Metro Structures
  - Delete Pipe/Outlet
  - Delete Structure
  - Flow Direction
  - ← Storm Outfall
  - ← Metro Sewer Outfall
- point\_T37\_46
- catch basin
  - manhole
  - manhole, metro
  - cleanout
  - oil/water separator
  - roof drain
  - ▲ unknown
- polyline\_T37\_46
- pipe
  - gutter
  - - - property\_T37\_46



0 125 250 Feet

**PIER 48 OUTFALL VERIFICATION PHOTOS**

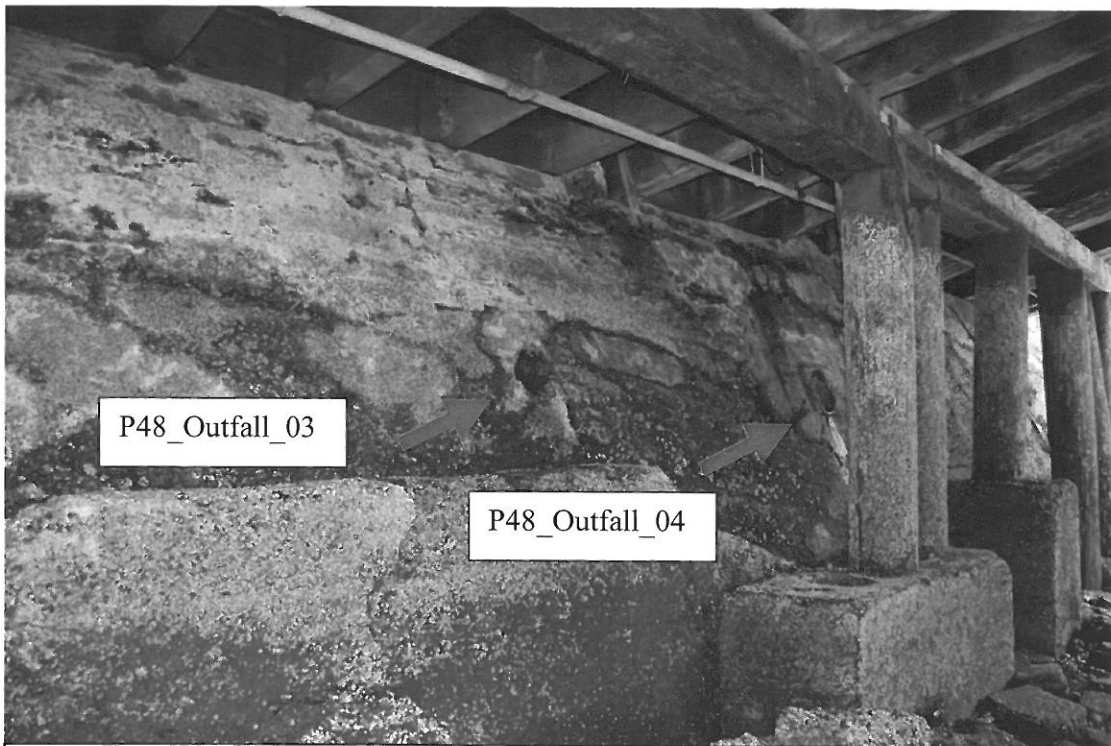
Pier 48 Outfalls				
Outfall #	Size (in)	Material	Type	Notes
1	6	concrete	open	storm outfall
2	6	concrete	open	storm outfall
3	10	metal	open	storm outfall
4	10	metal	open	storm outfall
5	4	concrete	open	storm outfall



June 13, 2007 - Photo DSC-0063  
Looking east at outfall # P48\_Outfall\_01.



June 13, 2007 - Photo DSC-0061  
Looking east at outfall # P48\_Outfall\_02.

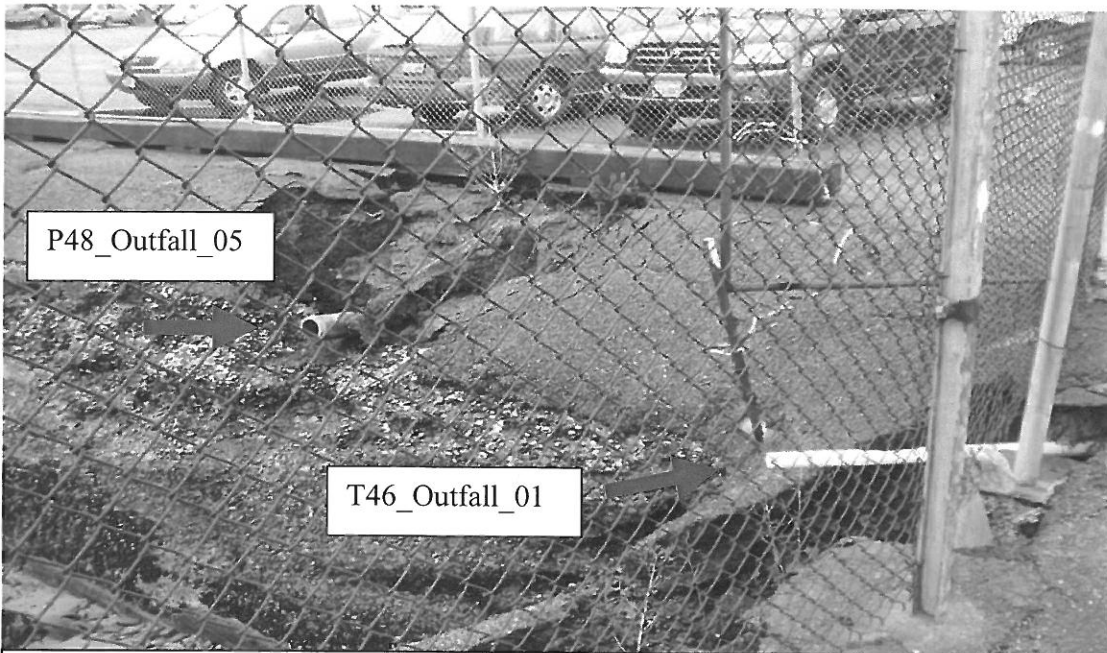


June 13, 2007 - Photo DSC-0057  
Looking southeast at outfalls # P48\_Outfall\_03 and P48\_Outfall\_04.





June 13, 2007 - Photo DSC-0055  
Looking east at outfall # P48\_Outfall\_04.



June 13, 2007 - Photo DSCF-0466  
Looking east at outfalls # P48\_Outfall\_05 and T46\_Outfall\_01.

**Pier 48 Map**

Refer to Terminal 46 Map on page 19.

**Alaska Square Park OUTFALL VERIFICATION PHOTOS**

Alaska Square Park Outfalls				
Outfall #	Size (in)	Material	Type	Notes
1	6	concrete	open	storm outfall
2	6	metal	open	storm outfall



June 13, 2007 - Photo DSC-0065  
 Looking east at outfall # Alaska Square Park\_Outfall\_01.





June 13, 2007 - Photo DSC-0064  
Looking east at outfall # Alaska Square Park\_Outfall\_02.



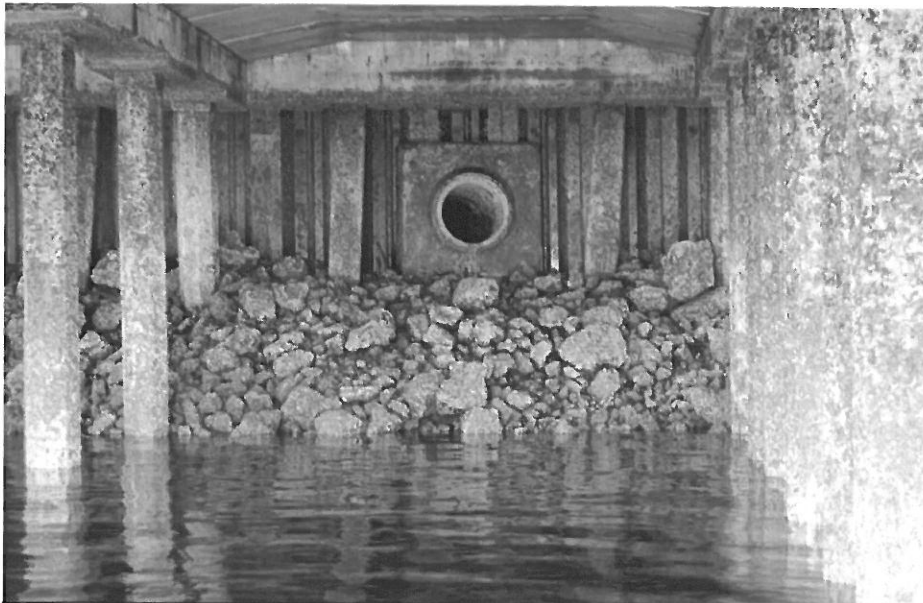
June 13, 2007 - Photo DSC-0066  
Looking southeast at outfalls # Alaska Square Park\_Outfall\_01 and Outfall\_02.

**Alaska Square Park Map**

Refer to Terminal 46 map on page 19.

**TERMINAL 18 OUTFALL VERIFICATION PHOTOS**

Terminal 18 Outfalls				
Outfall #	Size (in)	Material	Type	Notes
1	36	concrete	open	storm outfall
2	30	concrete	open	storm outfall
3	24	concrete	sealed	not in use
4	36	concrete	open	storm outfall
5	18	concrete	sealed	not in use
6	6	concrete	sealed	not in use
7	10	concrete	sealed	not in use
8	36	concrete	open	storm outfall
9	4	metal	with hinged lid	storm outfall
10	18	concrete	open	storm outfall
11	12	concrete	open	storm outfall
12	18	concrete	with hinged lid	storm outfall
13	18	concrete	with hinged lid	storm outfall
14	6	metal	with hinged lid	storm outfall
15	20	metal	with hinged lid	storm outfall
16	18	metal	open	storm outfall
17	18	metal	open	storm outfall
18	42	concrete	open	storm outfall
19	24	metal	open	storm outfall
20	8	concrete	open	storm outfall
21	12	metal	open	storm outfall
22	20	concrete	with hinged lid	storm outfall



June 13, 2007 - Photo DSC-0069  
 Looking west at outfall # T18\_Outfall\_01.

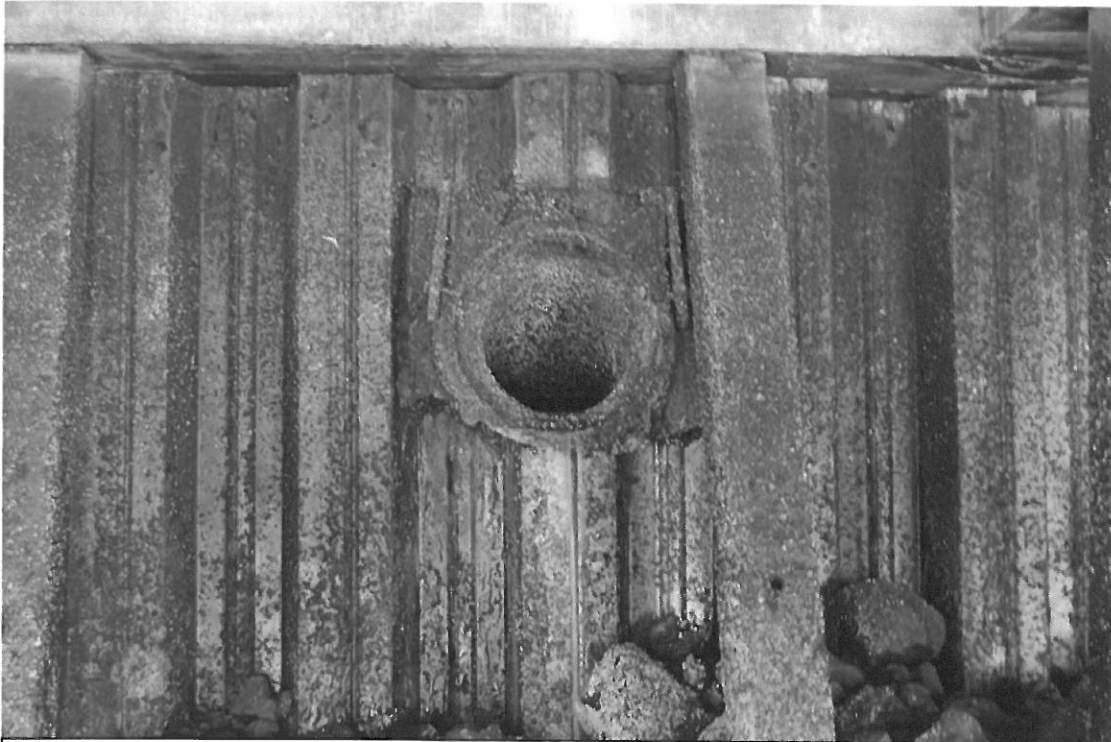




June 13, 2007 - Photo DSC-0075  
Looking west at outfall # T18\_Outfall\_02.



June 13, 2007 - Photo DSC-0076  
Looking northwest at outfall # T18\_Outfall\_03, 1st of 4 sealed outfalls.



June 13, 2007 - Photo DSC-0077  
Looking west at outfall # T18\_Outfall\_04.



June 13, 2007 - Photo DSC-0080  
Looking southwest at outfall # T18\_Outfall\_05, 2<sup>nd</sup> of 4 sealed outfalls.

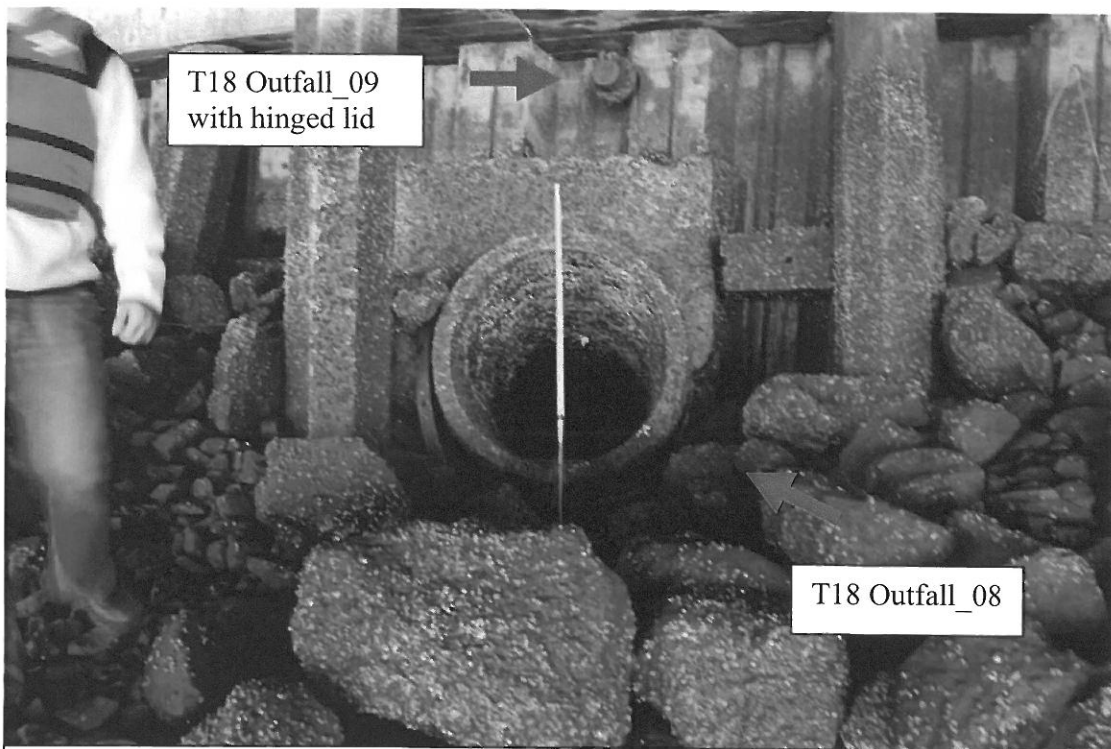




June 13, 2007 - Photo DSC-0081  
Looking west at outfall # T18\_Outfall\_06, 3<sup>rd</sup> of 4 sealed outfalls.



June 13, 2007 - Photo DSC-0082  
Looking west at outfall # T18\_Outfall\_07, 4<sup>th</sup> of 4 sealed outfalls.



June 13, 2007 - Photo DSC-0083  
Looking west at outfalls # T18\_Outfall\_08 and Outfall\_09.



June 13, 2007 - Photo DSC-0087  
Looking southwest at outfall # T18\_Outfall\_10.





June 14, 2007 - Photo DSC-0002  
Looking west at outfall # T18\_Outfall\_11.



June 14, 2007 - Photo DSC-0020  
Looking west at outfall # T18\_Outfall\_12.





June 14, 2007 - Photo DSC-0020  
Looking west at outfall # T18\_Outfall\_13.



June 14, 2007 - Photo DSC-0014  
Looking west at outfall # T18\_Outfall\_14.





June 14, 2007 - Photo DSC-0012  
Looking west at outfall # T18\_Outfall\_15.



June 14, 2007 - Photo DSC-0010  
Looking west at outfall # T18\_Outfall\_16.





June 14, 2007 - Photo DSC-0007  
Looking west at outfall # T18\_Outfall\_17.



June 14, 2007 - Photo DSC-0004  
Looking west at outfall # T18\_Outfall\_18.





June 14, 2007 - Photo DSC-0103  
Looking west at outfall # T18\_Outfall\_19.



June 14, 2007 - Photo DSC-0101  
Looking west at outfall # T18\_Outfall\_20.





June 14, 2007 - Photo DSC-0001  
Looking west at outfall # T18\_Outfall\_21.



June 14, 2007 - Photo DSC-0099  
Looking west at outfall # T18\_Outfall\_22.



t18\_t10  
T-18 -060808.dwg Polyline  
Layer

—	C_0BKG_STRM_PIPE
—	C_0GRD_STRM_PIPE
—	C_0UDG_STRM_PIPE
—	C_0UND_STRM_PIPE
—	C_1UDG_STRM_PIPE
- - -	C_0GRD_STRM_FLSH
.....	C_1UDG_STRM_GUTR
.....	C_1GRD_STRM_STCR
.....	C_0UND_STRM_PIPE_ROOF
- - -	C_1GRD_STRM_PIPE_ROOF
.....	C_0UDG_JWSS_PIPE

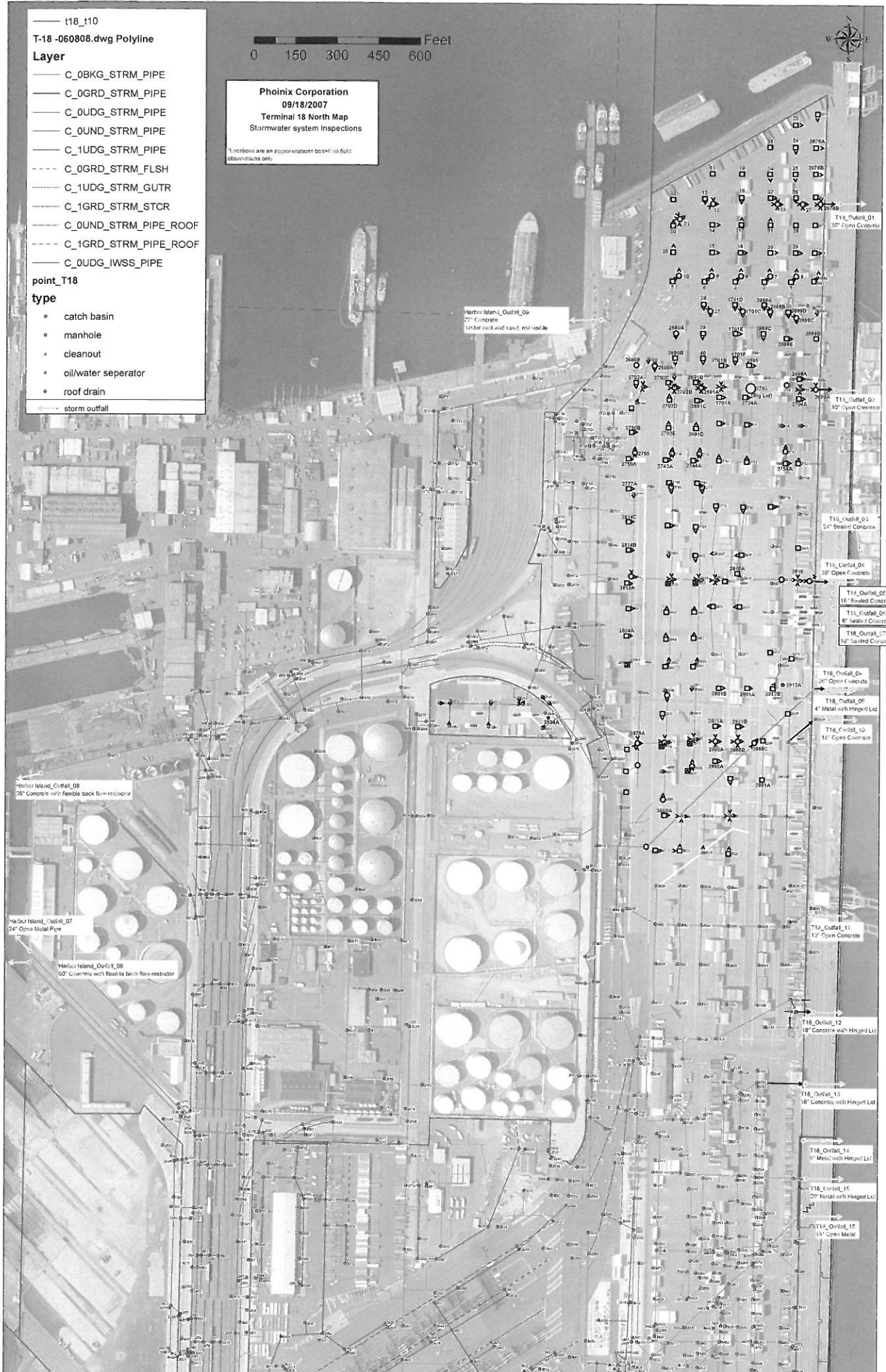
point\_T18  
type

- catch basin
- manhole
- ▲ cleanout
- oil/water separator
- roof drain
- storm outfall

0 150 300 450 600 Feet

**Phoenix Corporation**  
09/18/2007  
**Terminal 18 North Map**  
Stormwater system inspections

Flowlines are an approximation based on field observations only



Harbor Island\_Outfall\_08  
30" Concrete with flexible back flow restrictor

Harbor Island\_Outfall\_07  
24" Open Metal Pipe

Harbor Island\_Outfall\_06  
30" Concrete with flexible back flow restrictor

Harbor Island\_Outfall\_06  
30" Concrete  
with back flow restrictor

T18\_Outfall\_01  
30" Open Concrete

T18\_Outfall\_02  
30" Open Concrete

T18\_Outfall\_03  
24" Sealed Concrete

T18\_Outfall\_04  
30" Open Concrete

T18\_Outfall\_05  
18" Sealed Concrete

T18\_Outfall\_06  
6" Sealed Concrete

T18\_Outfall\_07  
12" Sealed Concrete

T18\_Outfall\_08  
30" Open Concrete

T18\_Outfall\_09  
18" Sealed Concrete

T18\_Outfall\_10  
18" Open Concrete

T18\_Outfall\_11  
12" Open Concrete

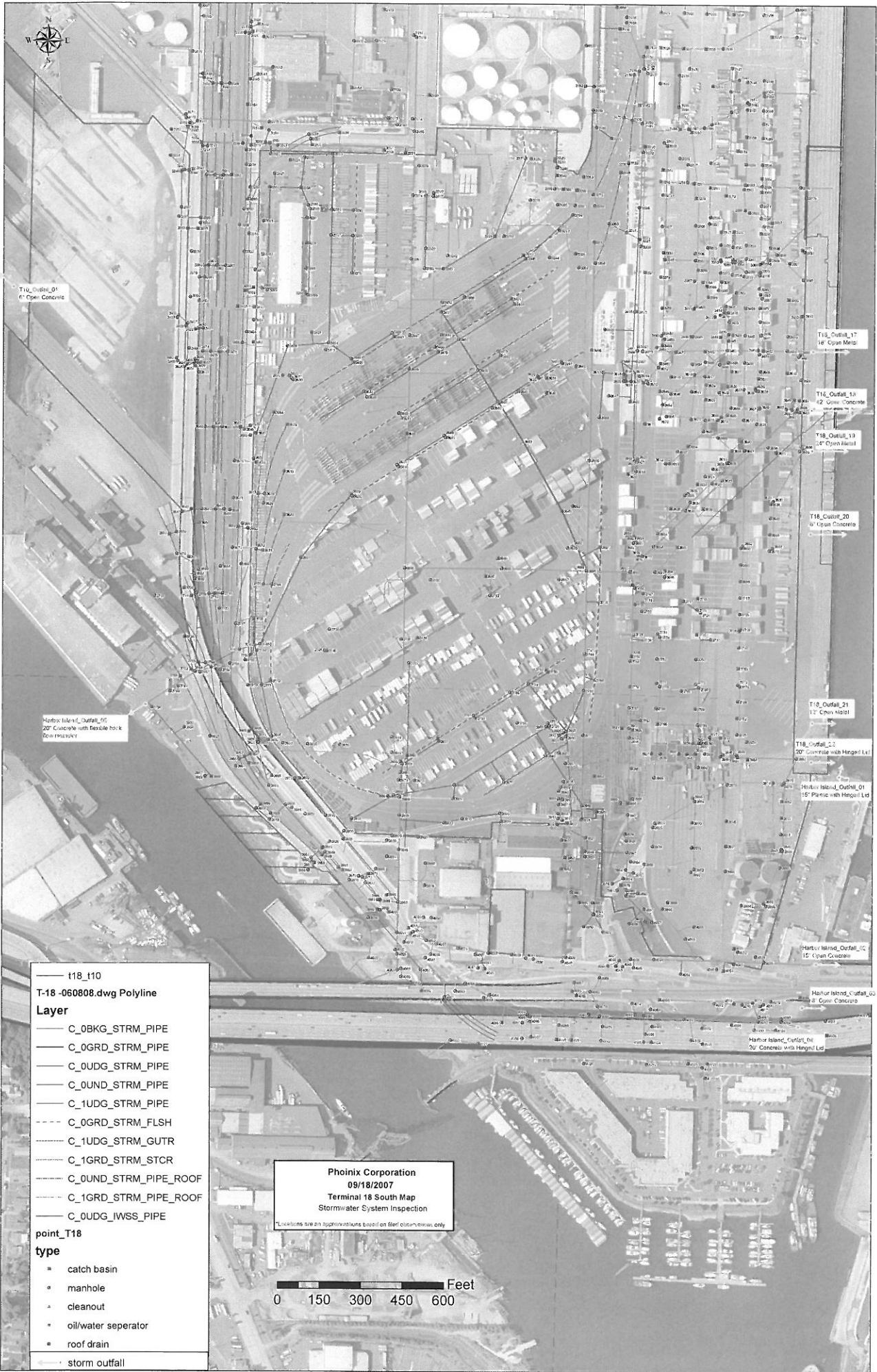
T18\_Outfall\_12  
18" Concrete with Hinged Lid

T18\_Outfall\_13  
18" Concrete with Hinged Lid

T18\_Outfall\_14  
6" Metal with Hinged Lid

T18\_Outfall\_15  
20" Metal with Hinged Lid

T18\_Outfall\_16  
18" Open Metal



T18\_Outfall\_01  
6" Open Concrete

T18\_Outfall\_17  
16" Open Metal

T18\_Outfall\_18  
12" Open Concrete

T18\_Outfall\_19  
14" Open Metal

T18\_Outfall\_20  
4" Open Concrete

T18\_Outfall\_21  
12" Open Metal

T18\_Outfall\_22  
20" Concrete with Hinged Lid

Harbor Island\_Outfall\_01  
15" Plastic with Hinged Lid

Harbor Island\_Outfall\_02  
15" Open Concrete

Harbor Island\_Outfall\_03  
8" Open Concrete

Harbor Island\_Outfall\_04  
20" Concrete with Hinged Lid

Harbor Island\_Outfall\_05  
20" Concrete with Flexible back  
20" Manhole

- T18\_T10  
T-18 -060808.dwg Polyline  
Layer
- C\_OBKG\_STRM\_PIPE
  - C\_OGRD\_STRM\_PIPE
  - C\_OUDG\_STRM\_PIPE
  - C\_OUND\_STRM\_PIPE
  - C\_1UDG\_STRM\_PIPE
  - - - C\_OGRD\_STRM\_FLSH
  - - - C\_1UDG\_STRM\_GUTR
  - - - C\_1GRD\_STRM\_STCR
  - - - C\_OUND\_STRM\_PIPE\_ROOF
  - - - C\_1GRD\_STRM\_PIPE\_ROOF
  - C\_OUDG\_IWSS\_PIPE
- point\_T18  
type
- catch basin
  - manhole
  - cleanout
  - oil/water seperator
  - roof drain
  - storm outfall

Phoenix Corporation  
09/18/2007  
Terminal 18 South Map  
Stormwater System Inspection

\*Locations are an approximations based on field observations only

0 150 300 450 600 Feet

**WEST DUWAMISH WATERWAY**  
**Outfall Verification Photos and Map**

- Harbor Island
- Terminal 102
- Terminal 10
- Terminal 5
- Terminal 103



**HARBOR ISLAND OUTFALL VERIFICATION PHOTOS**

Harbor Island Outfalls				
Outfall #	Size (in)	Material	Type	Notes
1	15	plastic	with hinged lid	storm outfall
2	15	concrete	open	storm outfall
3	8	concrete	open	storm outfall
4	20	concrete	with hinged lid	storm outfall
5	20	concrete	with back flow restrictor	storm outfall
6	60	concrete	with back flow restrictor	storm outfall
7	24	metal	open	storm outfall
8	36	concrete	with back flow restrictor	storm outfall
9	*	*	*	storm outfall

\* Could not see the actual pipe but the general area of the outfall was verified.



June 14, 2007 - Photo DSC-0100

Looking south at outfall # Harbor Island Outfall\_01 located SE of Terminal 18.



June 14, 2007 - Photo DSC-0007  
Looking West at Harbor Island Outfall\_02 located SE of Terminal 18.

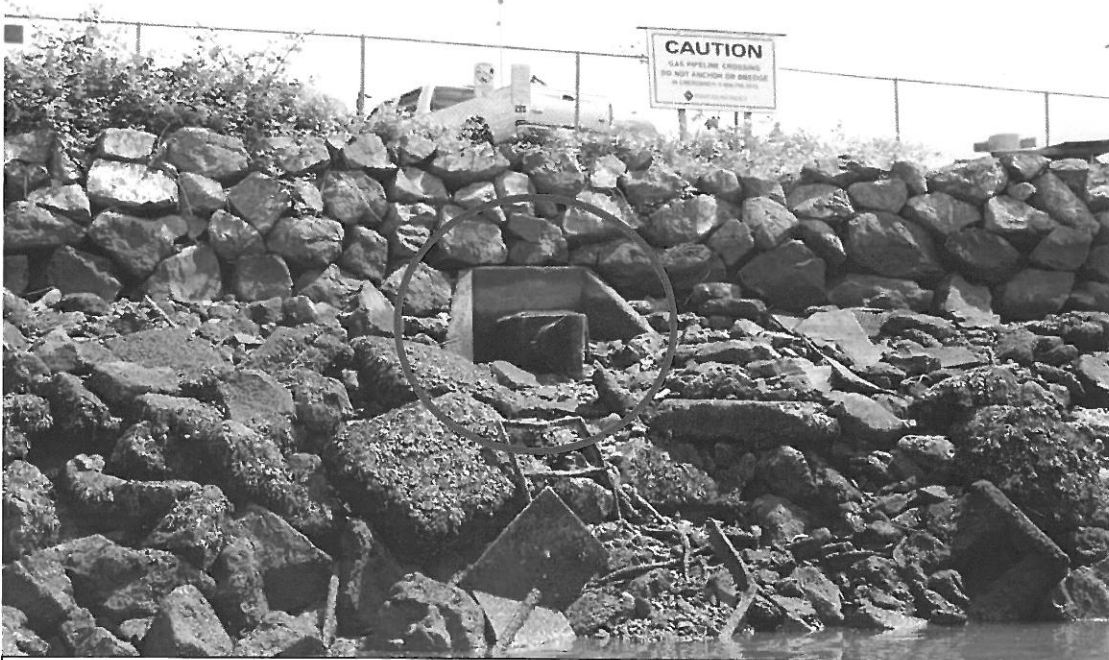


June 14, 2007 - Photo DSC-0004  
Looking West at Harbor Island Outfall\_03 located SE of Terminal 18.





June 14, 2007 - Photo DSC-0001  
Looking West at Harbor Island Outfall\_04 located SE of Terminal 18.



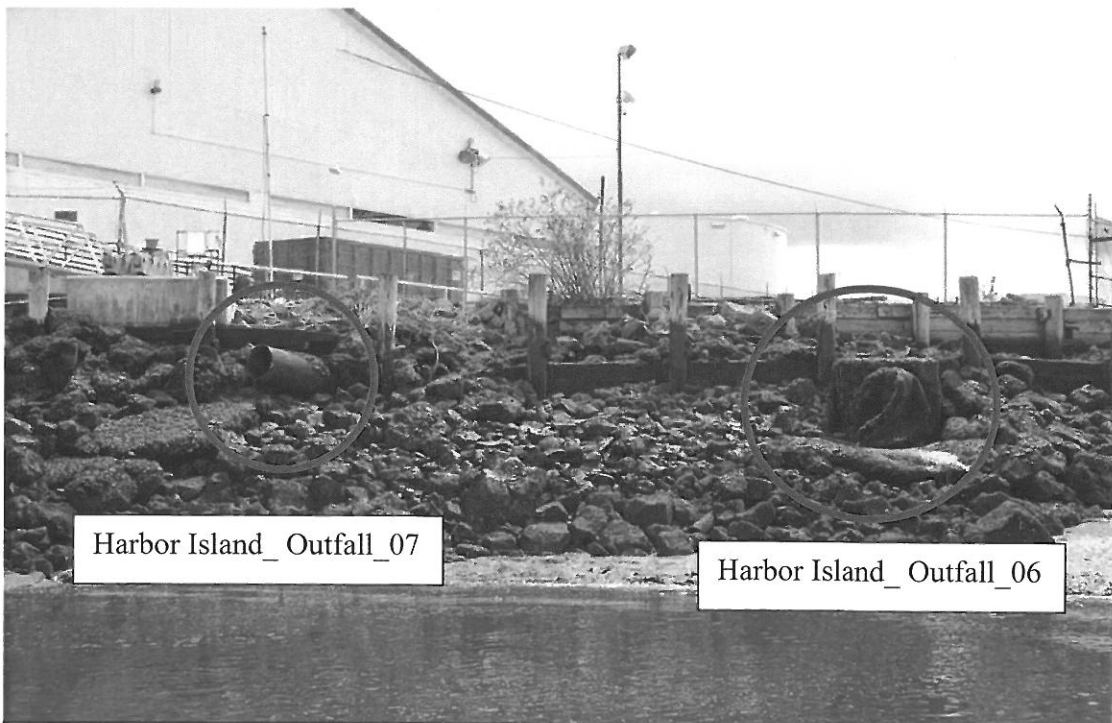
June 14, 2007 - Photo DCS-0040  
Looking east at outfall # Harbor Island\_Outfall\_05.





June 14, 2007 - Photo DCS-0037

Looking northeast at outfalls # Harbor Island\_Outfall\_06 and Outfall\_07.



June 14, 2007 - Photo DCS-0036

Looking northeast at outfalls # Harbor Island\_Outfall\_06 and Outfall\_07.



June 14, 2007 - Photo DCS-0030  
Looking east at outfall # Harbor Island\_Outfall\_08.



June 14, 2007 - Photo DCS-0025  
Looking south at the general area of outfall # Harbor Island\_Outfall\_09. This outfall was evident by the water flowing from the bank and the associated structures on the surface. The size of this outfall could not be determined.

## **Harbor Island Map**

Refer to Terminal 18 North and South maps on pages 38 and 39.

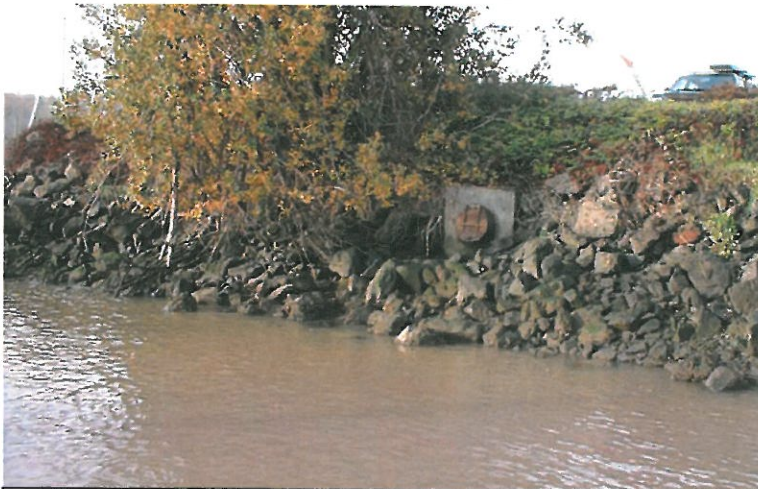


**TERMINAL 102 OUTFALL VERIFICATION PHOTOS**

Terminal 102 Outfalls				
Outfall #	Size (in)	Material	Type	Notes
1	6	concrete	open	storm outfall
2	18	concrete	with hinged lid	storm outfall
3	12	concrete	with hinged lid	storm outfall
4	18	concrete	with hinged lid	storm outfall



November 10, 2006 - Photo 100-0002  
 Looking west at trench drain and outfall # T102\_Outfall\_01.



November 10, 2006 - Photo 100-0003  
 Looking west at outfall # T102\_Outfall\_02.



November 10, 2006 - Photo 100-0004  
Looking northwest at outfall # T102\_Outfall\_03.



November 10, 2006 - Photo 100-0005  
Looking west at outfall # T102\_Outfall\_04.







**TERMINAL 10 OUTFALL VERIFICATION PHOTOS**

Harbor Island Outfalls				
Outfall #	Size (in)	Material	Type	Notes
1	6	concrete	open	storm outfall



June 14, 2007 – Photo DCS –0038  
 Looking south at outfall # T10\_Outfall\_01.

**Terminal 10 Map**

Refer to Terminal 18 South map on page 39.

**TERMINAL 5 OUTFALL VERIFICATION PHOTOS**

Terminal 5 Outfalls				
Outfall #	Size (in)	Material	Type	Notes
1	84	concrete	open	storm outfall
2	6	metal	open	storm outfall
3	18	metal	open	storm outfall
4	6	pvc	open	storm outfall
5	6	metal	open	storm outfall
6	36	concrete	open	storm outfall
7	12	metal	open	storm outfall
8	18	*	*	*
9	18	metal	open	storm outfall
10	36	metal	with hinged lid	storm outfall
11	18	metal	open	storm outfall
12	36	metal	with hinged lid	storm outfall
13	36	metal	with hinged lid	storm outfall
14	96	concrete	open	storm outfall

\* Could not verify outfall during the boat inspection on October 4, 2006.

- No pictures were taken of T5\_Outfall\_01 because pipe was under water at the time of the boat inspection.

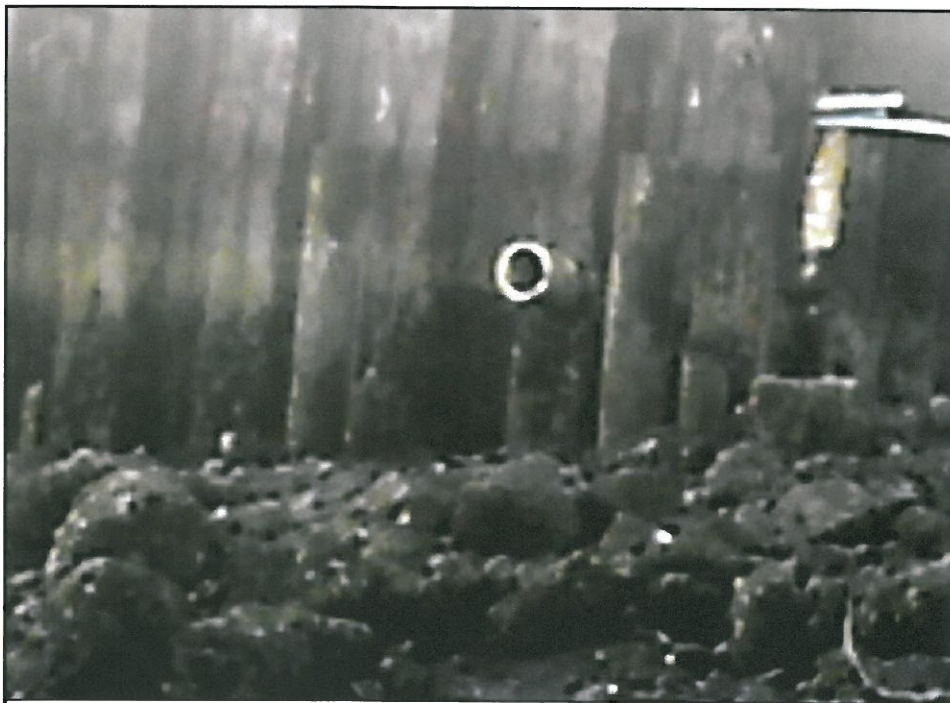


October 4, 2006 – Photo 100-0023  
Looking south at outfall # T5\_Outfall\_02.





October 4, 2006 – Photo 100-0020  
Looking south at outfall # T5\_Outfall\_03.



October 4, 2006 – Photo 100-0025  
Looking south at outfall # T5\_Outfall\_04.



October 4, 2006 – Photo 100-0027  
Looking southwest at outfall # T5\_Outfall\_05.

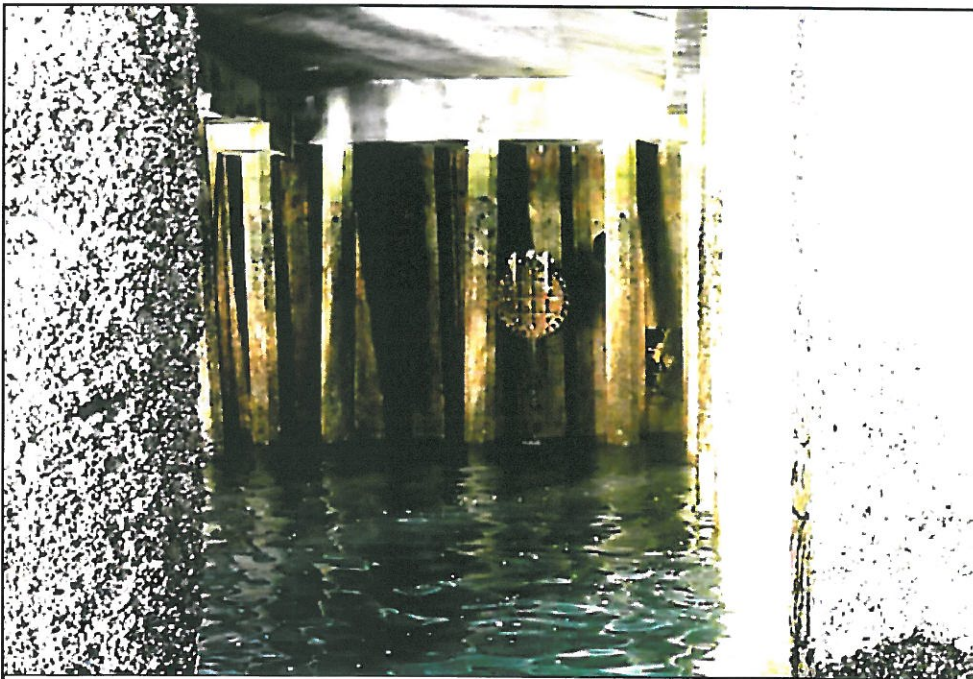


October 4, 2006 – Photo 100-0029  
Looking west at outfall # T5\_Outfall\_06.



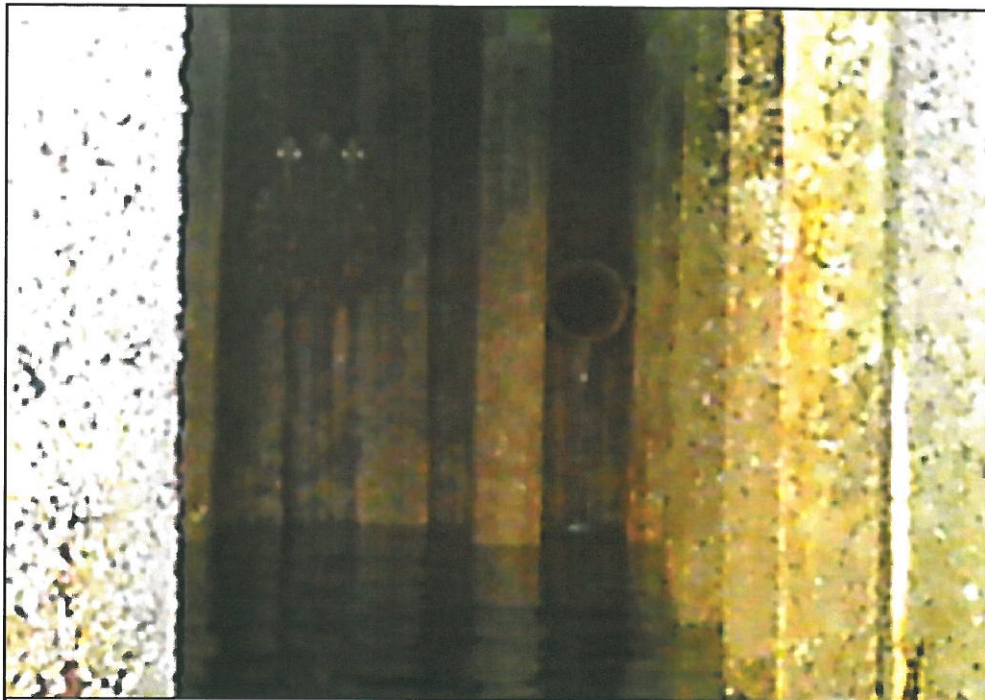


October 4, 2006 – Photo 100-0032  
Looking west at outfall # T5\_Outfall\_07.



October 4, 2006 – Photo 100-0036  
Looking west at outfall # T5\_Outfall\_10.

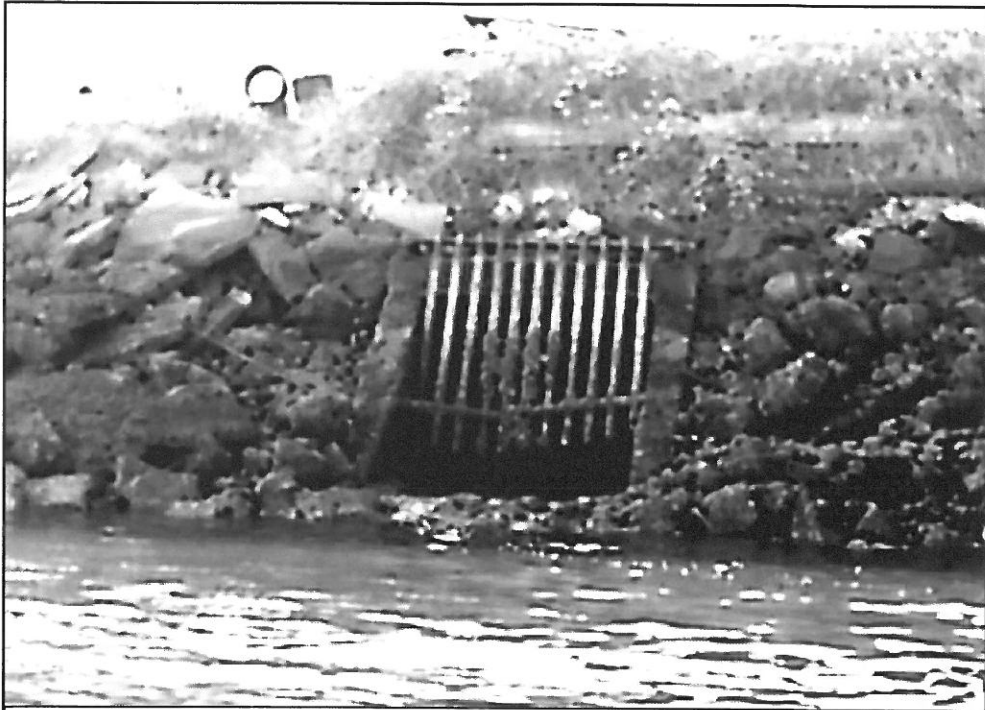




October 4, 2006 – Photo 100-0040  
Looking west at outfall # T5\_Outfall\_12.



October 4, 2006 – Photo 100-0044  
Looking west at outfall # T5\_Outfall\_13.



October 4, 2006 – Photo 100-0045  
Looking southwest at outfall # T5\_Outfall\_14.





Point features	Line features
Storm, Catch Basin	Storm, Pipe
Storm, Manhole	Storm, Roof Pipe
Storm, Cleanout	Storm, Perforated Pipe
Storm, Deck Drain	Storm, Trench Drain
Storm, Floor Drain	Storm, Gutter
Storm, Roof Drain	Storm, Flush Gutter
Storm, Detention Vault	Storm, Grass Swale
Storm, Lift Station	Storm, Asphalt Swale
Storm, Trench Drain	Storm, Concrete Ditch
Storm, Oil Water Separator	Storm, Berm
Storm, Trash Separator	Storm, STCR
Storm, Shut Off Valve	Storm, Abandoned
Storm, Unknown	Sewer, Pipe
Storm, Divide	Combined, Pipe
Sewer, Manhole	IWSS, Pipe
Sewer, Cleanout	IWSS, Flush Gutter
Sewer, Lift Station	Sewer, Unknown
Sewer, Unknown	Combined, Catch Basin
Combined, Catch Basin	Combined, Manhole
Combined, Manhole	Combined, Cleanout
Combined, Cleanout	<Null>, Catch Basin
<Null>, Catch Basin	<Null>, Manhole
<Null>, Manhole	<Null>, Oil Water Separator
<Null>, Oil Water Separator	<Null>, Roof Drain
<Null>, Roof Drain	Storm, Outfall
Storm, Outfall	Sewer, Outfall
Sewer, Outfall	Combined, Outfall
Combined, Outfall	<Null>, Outfall
<Null>, Outfall	Water, Manhole
Water, Manhole	





**TERMINAL 103 OUTFALL VERIFICATION PHOTOS**

Terminal 103 Outfalls				
Outfall #	Size (in)	Material	Type	Notes
1	?	?	?	*
2	?	?	?	*
3	*	*	*	*
4	*	*	*	*

\* Could not locate outfalls during the boat inspection on June 14, 2007. During the facility inspection on July 31, 2007; the facility manager confirmed 4 outfalls.



June 14, 2007 – Photo DCS-0046

Looking northwest at the area of the shoreline where outfall T103\_Outfall\_01 was reported to be by the facility manager. As the photo shows access to this outfall will likely be limited.





June 14, 2007 – Photo DCS-0045

Looking northwest at the general area of the shoreline of outfall T103\_Outfall\_02.



June 14, 2007 – Photo DCS-0043

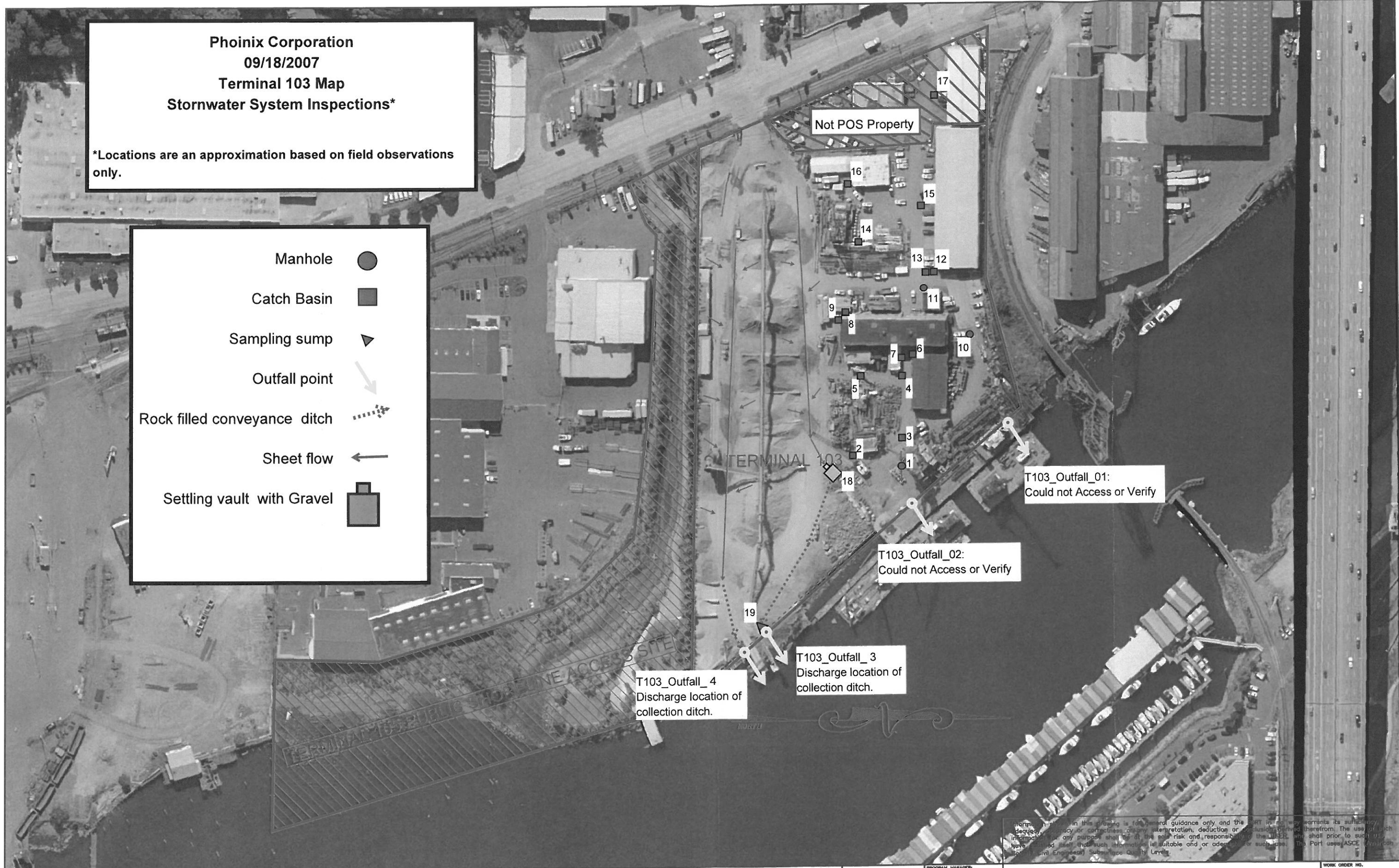
Looking west at the location of the discharge areas T103\_outfall\_03 (on left side of photo) and T103\_Outfall\_04 (on right side of photo).



Phoinix Corporation  
09/18/2007  
Terminal 103 Map  
Stormwater System Inspections\*

\*Locations are an approximation based on field observations only.

Manhole	●
Catch Basin	■
Sampling sump	▼
Outfall point	↘
Rock filled conveyance ditch	⋯
Sheet flow	←
Settling vault with Gravel	▣



Information shown in this drawing is for general guidance only and the user is responsible for verifying the accuracy of the information. The user shall be responsible for any and all consequences, including but not limited to, liability, arising from the use of this information. The user shall be responsible for any and all consequences, including but not limited to, liability, arising from the use of this information. The user shall be responsible for any and all consequences, including but not limited to, liability, arising from the use of this information.

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REVISIONS									
NO.	DATE	BY	DESCRIPTION	APP'D	NO.	DATE	BY	DESCRIPTION	APP'D

PROGRAM MANAGER:  
W. T. WHITE  
DESIGN ENGINEER:  
GARY ENSLEY  
DRAWN BY:  
BRADEN MONSON  
SCALE:  
NTS  
DATE:  
7/27/2004  
CHECKED BY:  
APPROVED BY:

Port of Seattle  
SEAPORT FACILITIES

PROJECT: TERMINAL 103 AND TERMINAL 105 PUBLIC SHORELINE ACCESS SITE

SHEET TITLE: BOUNDARY

WORK ORDER NO.  
000000

CONSULTANT'S NO.

PORT OF SEATTLE NO.  
6



**UPPER DUWAMISH WATERWAY**  
**Outfall Verification Photos and Maps**

- Terminal 108
- Terminal 106
- Terminal 104
- Terminal 107
- Terminal 115

**TERMINAL 108 OUTFALL VERIFICATION PHOTOS**

Terminal 108 Outfalls				
Outfall #	Size (in)	Material	Type	Notes
1	32	metal	open	storm outfall
2	24	concrete	open	storm outfall
3	288	concrete	open	storm outfall



June 14, 2007 - Photo DSC-0060  
Looking northeast at outfall # T108\_Outfall\_01.



June 14, 2007 - Photo DSC-0058  
Looking east at outfall # T108\_Outfall\_02.





June 14, 2007 - Photo DSC-0063  
Looking east at outfall # T108\_Outfall\_03.

T108\_Outfall\_03:  
12 ft^2 x2 Concrete Open Box

T108\_Outfall\_01:  
32" Concrete Open Pipe

T108\_Outfall\_02:  
24" Concrete Open Pipe

- Point features**
- Storm, Catch Basin
  - Storm, Manhole
  - Storm, Cleanout
  - Storm, Deck Drain
  - Storm, Floor Drain
  - Storm, Roof Drain
  - Storm, Detention Vault
  - Storm, Lift Station
  - Storm, Trench Drain
  - Storm, Oil Water Separator
  - Storm, Trash Separator
  - Storm, Shut Off Valve
  - Storm, Vent
  - ▲ Storm, Unknown
  - Storm, Divide
  - Sewer, Manhole
  - Sewer, Cleanout
  - Sewer, Lift Station
  - ▲ Sewer, Unknown
  - Combined, Catch Basin
  - Combined, Manhole
  - Combined, Cleanout
  - Combined, Oil Water Separator
  - <Null>, Catch Basin
  - <Null>, Manhole
  - <Null>, Oil Water Separator
  - <Null>, Roof Drain
  - Storm, Outfall
  - Storm, Off Property Connection
  - Storm, Network Driver
  - Sewer, Network Driver
  - Combined, Off Property Connection
  - Water, Manhole
- Line features**
- Storm, Pipe
  - Storm, Roof Pipe
  - Storm, Perforated Pipe
  - Storm, Trench Drain
  - Storm, Gutter
  - Storm, Flush Gutter
  - === Storm, Grass Swale
  - === Storm, Asphalt Swale
  - === Storm, Concrete Ditch
  - Storm, Berm
  - Storm, STCR
  - Storm, Abandoned
  - Sewer, Pipe
  - Combined, Pipe
  - IWSS, Pipe
  - IWSS, Flush Gutter
  - Sheetflow
- Property**
- Pollutant Generating Sources
  - Tenant
  - Basins
  - Terminals and piers
  - Parks and jetties



<b>T108 Stormwater</b>		DATE: June 2007	PROJECT NO: 040143D
Port of Seattle		CHECKED BY: ACM	FIGURE NO: 1
Seattle, Washington		DRAWN BY: ACM	
		REVISIONS: ACM	

T108-01-05



**TERMINAL 106 OUTFALL VERIFICATION PHOTOS**

Terminal 106 Outfall				
Outfall #	Size (in)	Material	Type	Notes
1	12	concrete	open	storm outfall

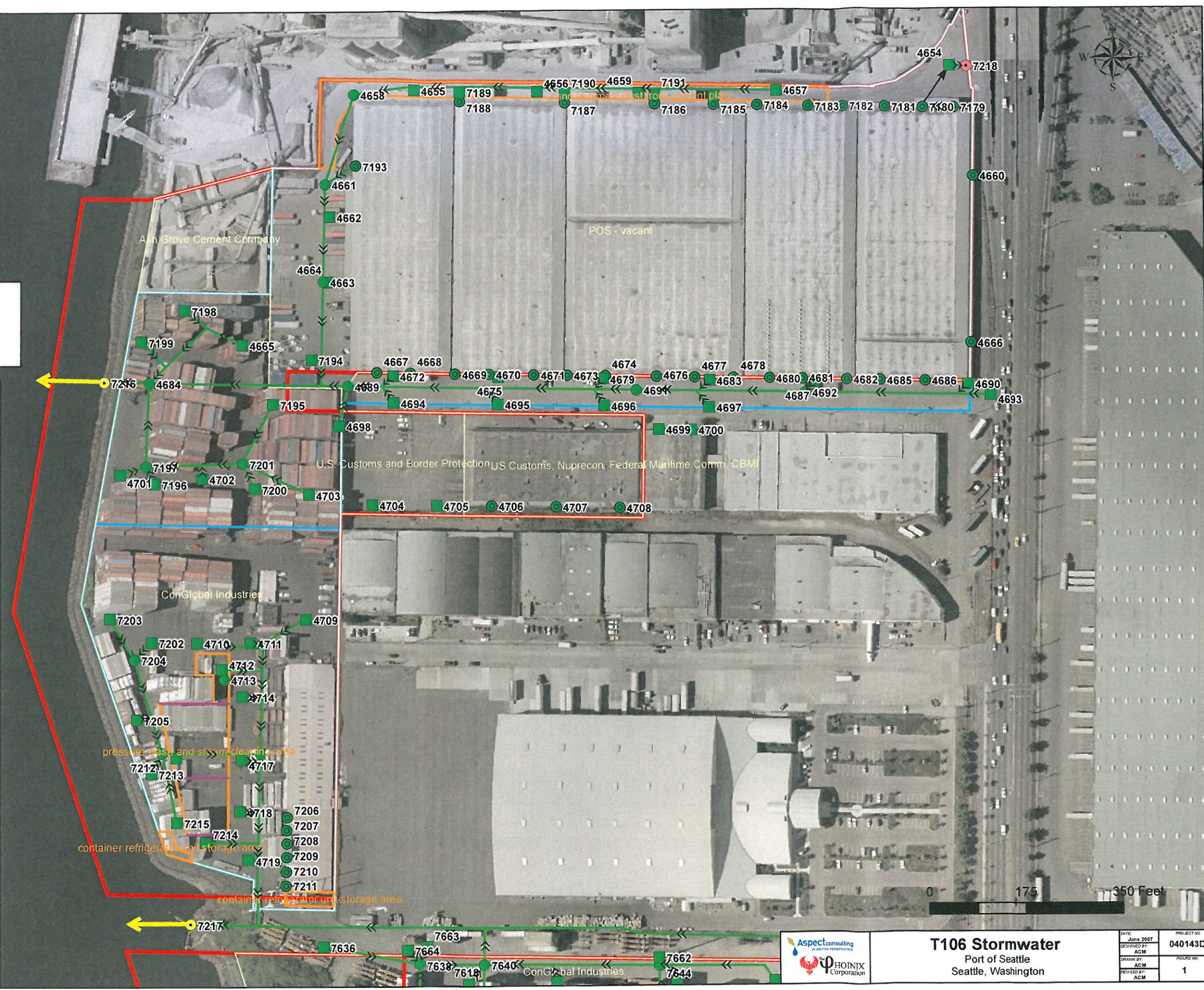


June 20, 2007 - Photo DSCF-0653  
Looking east at outfall # T106\_Outfall\_01.



T106\_Outfall\_01:  
12" Concrete Open  
Outfall is covered by rocks

- |   |   |
|---|---|
| <b>Point features</b>   | <b>Line features</b>  |
| <ul style="list-style-type: none"> <li>Storm, Catch Basin</li> <li>Storm, Manhole</li> <li>Storm, Cleanout</li> <li>Storm, Deck Drain</li> <li>Storm, Floor Drain</li> <li>Storm, Roof Drain</li> <li>Storm, Detention Vault</li> <li>Storm, Lift Station</li> <li>Storm, Trench Drain</li> <li>Storm, Oil Water Separator</li> <li>Storm, Trash Separator</li> <li>Storm, Shut Off Valve</li> <li>Storm, Vent</li> <li>Storm, Unknown</li> <li>Storm, Divide</li> <li>Sewer, Manhole</li> <li>Sewer, Cleanout</li> <li>Sewer, Lift Station</li> <li>Sewer, Unknown</li> <li>Combined, Catch Basin</li> <li>Combined, Manhole</li> <li>Combined, Cleanout</li> <li>Combined, Oil Water Separator</li> <li>&lt;Null&gt;, Catch Basin</li> <li>&lt;Null&gt;, Manhole</li> <li>&lt;Null&gt;, Oil Water Separator</li> <li>&lt;Null&gt;, Roof Drain</li> <li>Storm, Outfall</li> <li>Storm, Off Property Connection</li> <li>Storm, Network Driver</li> <li>Sewer, Network Driver</li> <li>Combined, Off Property Connection</li> <li>Water, Manhole</li> </ul> | <ul style="list-style-type: none"> <li>Storm, Pipe</li> <li>Storm, Roof Pipe</li> <li>Storm, Perforated Pipe</li> <li>Storm, Trench Drain</li> <li>Storm, Gutter</li> <li>Storm, Flush Gutter</li> <li>Storm, Grass Swale</li> <li>Storm, Asphalt Swale</li> <li>Storm, Concrete Ditch</li> <li>Storm, Berm</li> <li>Storm, STCR</li> <li>Storm, Abandoned</li> <li>Sewer, Pipe</li> <li>Combined, Pipe</li> <li>IWSS, Pipe</li> <li>IWSS, Flush Gutter</li> <li>Sheetflow</li> <li>Pollutant Generating Sources</li> <li>Tenant</li> <li>Basins</li> </ul> |
| <b>Property</b>   |   |
| <ul style="list-style-type: none"> <li>Terminals and piers</li> <li>Parks and jetties</li> </ul>  |   |





**TERMINAL 104 OUTFALL VERIFICATION PHOTOS**

Terminal 104 Outfall				
Outfall #	Size (in)	Material	Type	Notes
1	18	concrete	open	storm outfall
2	6	concrete	open	storm outfall

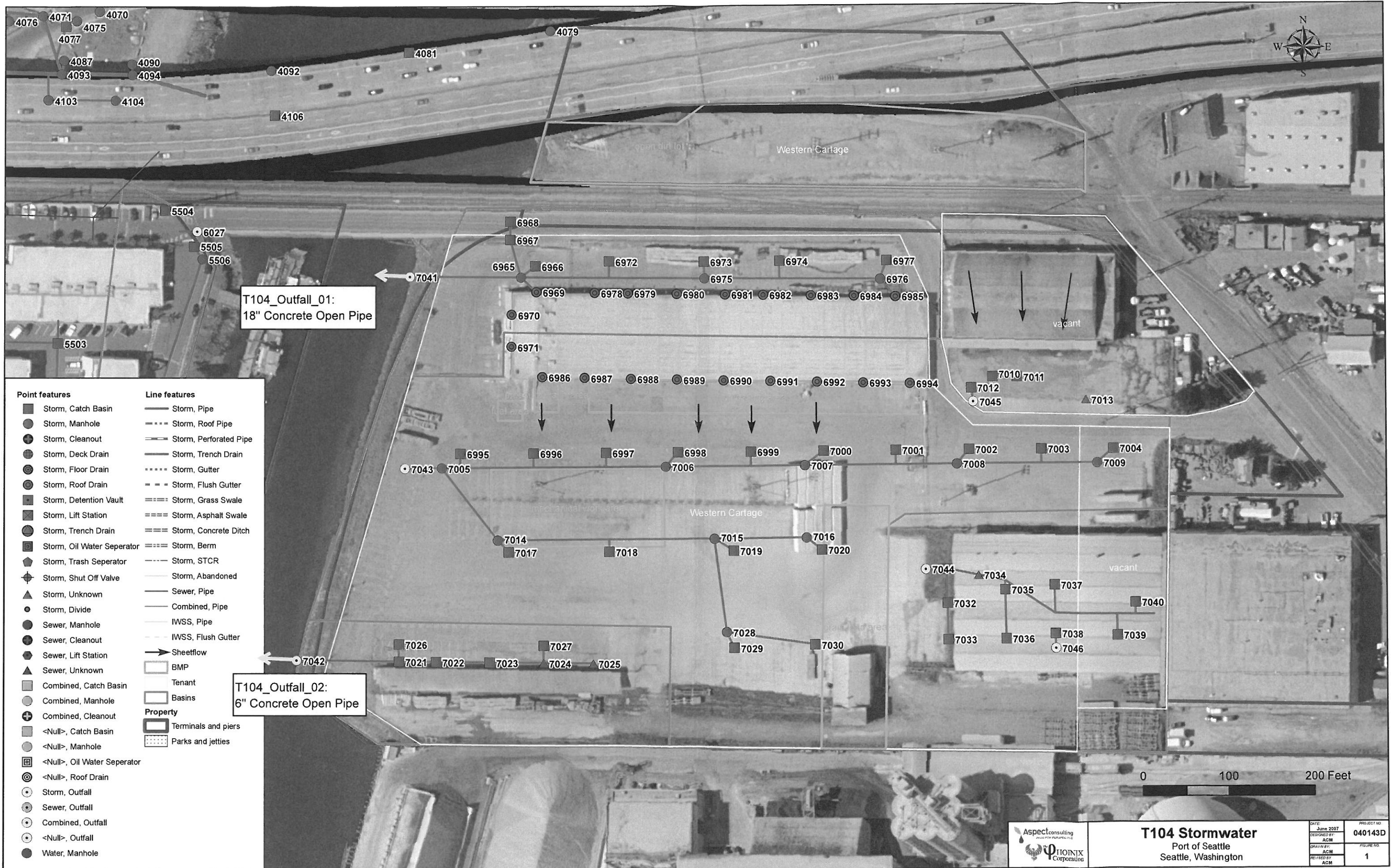


April 3, 2007 - Photo 100-0292  
 Looking east at outfall # T104\_Outfall\_01.



June 13, 2007 - Photo DSC-0105  
 Looking east at outfall # T104\_Outfall\_02.





Point features	Line features
Storm, Catch Basin	Storm, Pipe
Storm, Manhole	Storm, Roof Pipe
Storm, Cleanout	Storm, Perforated Pipe
Storm, Deck Drain	Storm, Trench Drain
Storm, Floor Drain	Storm, Gutter
Storm, Roof Drain	Storm, Flush Gutter
Storm, Detention Vault	Storm, Grass Swale
Storm, Lift Station	Storm, Asphalt Swale
Storm, Trench Drain	Storm, Concrete Ditch
Storm, Oil Water Separator	Storm, Berm
Storm, Trash Separator	Storm, STCR
Storm, Shut Off Valve	Storm, Abandoned
Storm, Unknown	Sewer, Pipe
Storm, Divide	Combined, Pipe
Sewer, Manhole	IWSS, Pipe
Sewer, Cleanout	IWSS, Flush Gutter
Sewer, Lift Station	Sheelflow
Sewer, Unknown	BMP
Combined, Catch Basin	Tenant
Combined, Manhole	Basins
Combined, Cleanout	Property
<Null>, Catch Basin	Terminals and piers
<Null>, Manhole	Parks and jetties
<Null>, Oil Water Separator	
<Null>, Roof Drain	
Storm, Outfall	
Sewer, Outfall	
Combined, Outfall	
<Null>, Outfall	
Water, Manhole	



**T104 Stormwater**  
 Port of Seattle  
 Seattle, Washington

DATE: June 2007	PROJECT NO: 040143D
DESIGNED BY: ACM	FIGURE NO: 1
DRAWN BY: ACM	
REVIEWED BY: ACM	

T104-01-01



**TERMINAL 107 OUTFALL VERIFICATION PHOTOS**

Terminal 107 Outfalls				
Outfall #	Size (in)	Material	Type	Notes
0	---	---	---	There are no outfalls in Terminal 107 or Terminal 107 Park

