



TETRA TECH EC, INC.

Memorandum

Date: June 8, 2007
To: Jacqueline Thiell Wetzsteon, PacifiCorp
From: Pamela Sargent
RE: Site Observations
May 16, 2006
Head of the Thea Foss Waterway Project

This technical memorandum presents a summary of the observed site conditions within the Head of the Thea Foss Waterway, Tacoma, Washington (Figure 1). The observations were made by Pamela Sargent, Principal Environmental Engineer, for Tetra Tech EC, Inc. (TtEC). She visited the site between approximately 10:30 am and 12:15 pm PDT on May 16, 2007 with supplemental observations made of the former SR 509 seep area on May 17, 2007. During this period, a low tide of -3.25 feet Mean Lower Low Water (MLLW) was predicted for 11:12 am PDT.

The purpose of this site visit was to observe the:

- General condition of the scour protection apron placed at the head of the waterway,
- General condition of the waterway slopes exposed at low tides,
- Former SR-509 seep area for evidence of sheens,

and to document the observed site conditions during the lowest daytime tides of the year as part of the Year 3 Operation, Maintenance and Monitoring activities for the Head of the Thea Foss Waterway Project.

Field Observations – May 16, 2007

Condition of the Scour Protection Apron Placed at the Head of the Waterway:

The condition of the scour protection apron at the south end of the waterway is shown in Figures 2 to 6. Water was flowing out of outfalls 237a and 237b during the site visit (Figure 7). The discharge from these outfalls was spreading out over the apron and flowing northward towards the turning basin. As previously noted in the Years 0, 1, and 2 low tide site observations, a small, shallow channel is present in the apron near the southeast corner of the waterway (Figure 7). The configuration and shallow depth of this channel appear unchanged from previous observations and the overall integrity of the cap has not been adversely impacted by the presence

of this localized feature. No corrective action is proposed at this time. However, this feature should continue to be monitored during future low tide events for changes.

General Condition of the Waterway Slopes Exposed at Low Tide:

Photographs of the east and west bank slopes exposed during low tide are shown in Figures 8 to 13. No slope erosion or sloughing was observed. As previously noted in the Years 0, 1 and 2 site observation memoranda, the coarser slope cap materials are covered with algae and barnacles. Mussels are also present on these materials. A layer of olive and gray silt is present over capping material on the lower portions of the east and west bank slopes.

Observations in the Vicinity of the Former SR-509 Seep Area:

Gas bubbles were observed in the vicinity of the former SR-509 seep area during the site visit but no sheens were observed in the former SR-509 seep area.

General Observations:

- The weather was partly sunny with light winds during this field visit.
- Extensive gas bubbles were observed throughout the head of the waterway but no sheens were observed (Figure 14).
- Crabs, starfish, a 12-14" salmon, geese, ducks, seagulls and terns observed at site during the site visit.
- Some miscellaneous debris (traffic cones, bicycles, plastic bottles, and clothing) was present at the site.
- Two bags of sand blast grit still remained on site at the north end of the bridge from the seismic retrofitting of the East 23rd Street Bridge (Figure 15).
- 2 pieces of pipe scaffolding were observed in the water near Outfalls 237a and 237b.
- Small quantities of sandblast grit (or something similar) were present on the sidewalk of the East 23rd Street Bridge (over the south end of the project site) (Figure 16).
- The new pilings installed under the east end of the SR-509 bridge are all starting to lean slightly in various directions (i.e. not vertical).
- The scour protection adjacent to outfall 243 (at Station 73+40 on the east side of the waterway under the SR-509 bridge) shows no signs of erosion or displacement (Figures 17 to 20). Water was flowing out of Outfall 243 during the site visit. The tideflex valve™ at the end of Outfall 243 is extensively covered with barnacles and at the time of the site visit there was a small diameter, approximately 20-foot long pile with cable or rope attached to end entangled in the metal clip at the top of the tideflex valve™ (Figure 17). The City of Tacoma was notified about this derelict pile (notified Rick Fuller via phone on May 16, 2007). The pile was gone when City personnel went to investigate the following day.
- A black shiny, oil-like substance was noted on the slope between Outfall 243 and Foss Landing localized around high tide line (Figure 18). There was no noticeable smell associated with the substance and this substance produced an orange to rust color slime on blue gloves when touched.

- The scour protection adjacent to Outfall 235 (at Station 73+20 on the west side of the waterway under the SR-509 bridge) shows no further signs of erosion or displacement beyond what was noted during January and February 2007 site visits (Figure 19). Water was flowing out of Outfall 235 during the site visit.
- As previously noted during January and February 2007 site visits, the small outfall scour protection in front of Outfall 235 (at Station 73+20 on the west side of the waterway under the SR-509 Bridge) has been displaced outward approximately 4 to 5 feet. There is a pool in front of the outfall ranging in depth from 12” to 24” deep. The pooling and small outfall scour protection material displacement appears to be the result of high velocity discharge or high flows from the outfall. As recommended, the area around Outfall 235 will be monitored during annual OMMP for further changes in pool depth or small outfall scour protection material displacement. Repairs to this area may be warranted if further changes occur to ensure the integrity of the underlying slope cap.
- At the former Standard Chemical Site, a baker tank is discharging into the stormwater system just upstream of Outfall 235 (Figure 20). Water in the pool in front of Outfall 235 was cloudy and a bit foamy (Figure 21).

Figures

Figure 1 – Head of the Thea Foss Waterway – Utilities’ Work Area (Looking North from East 23rd Street Bridge)

Figure 2 – Looking South Across Scour Apron at Area Just East of the Twin 96-inch Outfalls

Figure 3 – Looking South Towards East 23rd St Bridge - East Side of Twin 96-inch Outfalls

Figure 4 – Looking South Towards East 23rd St Bridge - West of the Twin 96-inch Outfalls

Figure 5 – Looking South at Twin 96-inch Outfalls

Figure 6 – Looking SE across the Scour Apron at the SE Corner of the Site

Figure 7 – Twin 96-inch Outfalls – Outfalls 237A and 237B

Figure 8 – At Outfall 243 Looking North along the East Side of the Waterway

Figure 9 – East Side of the Waterway Including Outfall 243 (From Just South of the SR-509 Bridge)

Figure 10 – Looking ENE Across Northern End of Scour Apron to East Slopes in Front of Berg Scaffolding (From just South of the City Pier).

Figure 11 – Looking SE from Just South of the City Pier Across Scour Apron

Figure 12 – Looking North Along West Side of Waterway from City Pier

Figure 13 – Looking South Along West Slope from SR-509 Bridge towards the City Pier

Figure 14 – Low Tide Gas Bubbles - Adjacent to the Central Portion of the Bottom of the Slope at the Former Standard Chemical Site

Figure 15 – Contractor Supplies and Equipment at West End of East 23rd St Bridge at SE Corner of Project Area

Figure 16 – Sandblast Grit on Sidewalk on East 23rd Street Bridge

Figure 17 – Close Up of Outfall 243

Figure 18 – Oil-Like Substance of Slope just North of Outfall 243

Figure 19 – Close-up of Outfall 235

Figure 20 – Baker Tank Discharge to Stormwater Inlet Just Upstream of Outfall 235

Figure 21 - Close-up of Pool In Front of Outfall 235 Showing Cloudy Water

FIGURES



Figure 1 – Head of the Thea Foss Waterway Utilities' Work Area (Looking North from the East 23rd Street Bridge)



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Figure 2 – Looking South Across Scour Apron at Area Just East of the Twin 96-inch Outfalls



Figure 3 – Looking South Towards East 23rd St Bridge - East Side of Twin 96-inch Outfalls



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Figure 4 – Looking South Towards
East 23rd St Bridge - West of the Twin
96-inch Outfalls



Figure 5 – Close-up of
Outfalls 237a & 237b
Looking South





Figure 6 - Looking SE across the Scour Apron at the SE Corner of the Site



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Figure 7 –
Close-up of Outfalls 237a and 237b
Looking Southwest



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Figure 8 – At Outfall 243 Looking North along the East Side of the Waterway



Figure 9 – East Side of the Waterway Including Outfall 243 (From Just South of the SR-509 Bridge)



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Figure 10 –
Looking
ENE
Across
North End
of Scour
Apron to
East
Slopes in
Front of
Berg
Scaffolding



Figure 11 –
Looking SE
from Just
South of the
City Pier
Across Scour
Apron



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Figure 12 –
Looking North Along
West Side of
Waterway from City
Pier

Figure 13 – Looking
South Along West Slope
from SR-509 Bridge
towards the City Pier

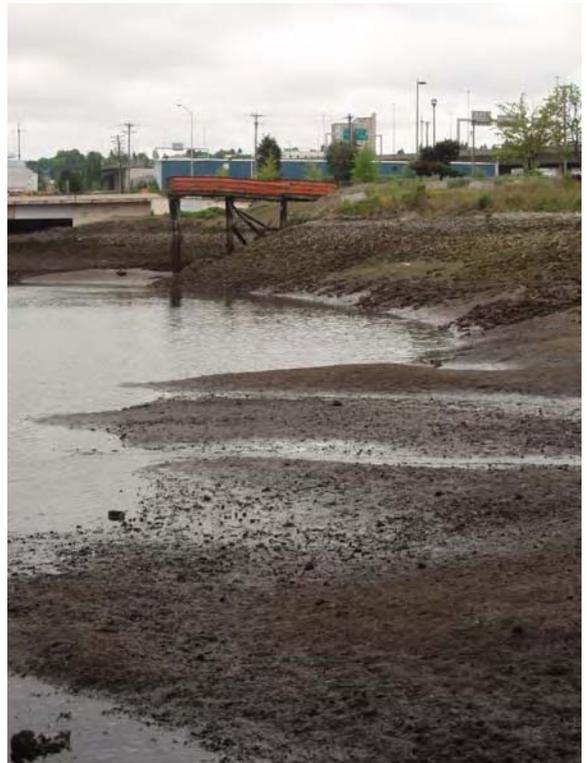


Figure 14 –
Low Tide
Gas
Bubbles -
Adjacent to
the Central
Portion of
the Bottom
of the Slope
- Former
Standard
Chemical
Site



Figure 15 –
Contractor
Supplies and
Equipment at
West End of
East 23rd St
Bridge at SE
Corner of
Project Area



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Figure 16 –
Sandblast Grit on
Sidewalk on East
23rd Street
Bridge

Figure 17 –
Close-up of
Outfall 243



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Figure 18 –
Oil-Like
Substance of
Slope just
North of
Outfall 243

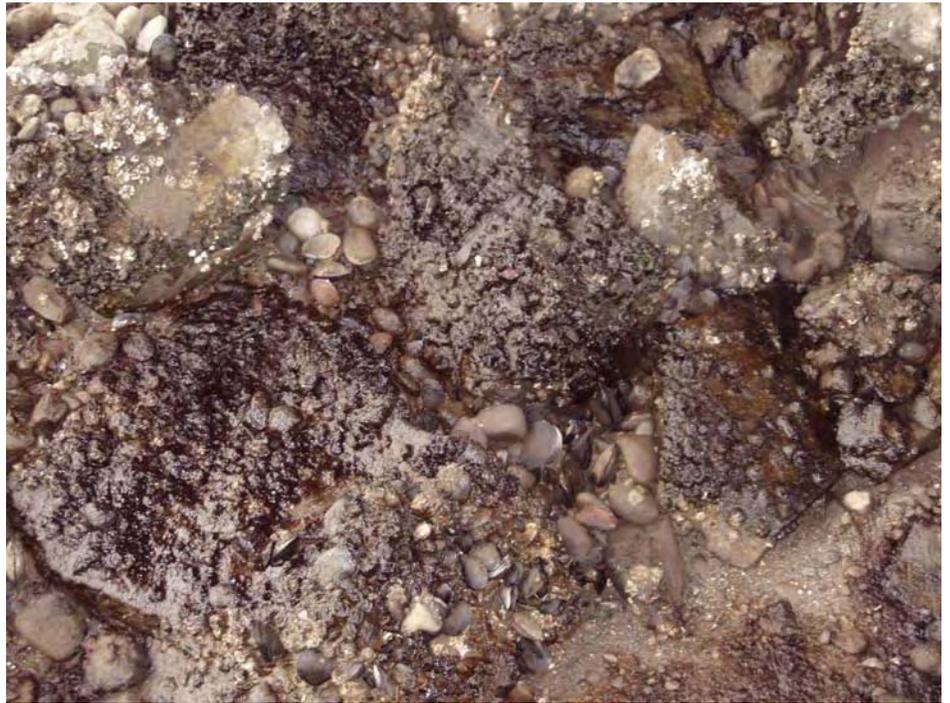


Figure 19 –
Close-up of
Outfall 235



Figure 20 –
Baker Tank
Discharge to
Stormwater
Inlet Just
Upstream of
Outfall 235



Figure 21 –
Close-up of
Pool In Front of
Outfall 235
Showing
Cloudy Water

