Honeywell

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July 1, 2024

Honorable Robert G. Torricelli
Office of the Special Master
RGTspecialmaster@aol.com

Subject: **Results of the 2024 Sampling of In-situ Groundwater Beneath Riverbed Sediments Study Area 7**

Dear Senator Torricelli:

We are submitting the attached memo, titled *Results of the 2024 Sampling of In-situ Groundwater Beneath Riverbed Sediments* for Study Area 7 prepared by our hydrogeology consultant, Tetra Tech. Pursuant to the SA-7 Deep Overburden and Bedrock Groundwater Remedy Long-term Monitoring Plan (LTMP), one remaining location (PW-09-450) was sampled for total and hexavalent chromium. Hexavalent chromium at this location was not detected in the filtered or unfiltered sample with a reporting limit of 0.0055 ppm. In accordance with the LTMP, plume-pull back is considered complete and no further sampling of groundwater beneath the riverbed sediments is required.

Please contact me at 973-455-2877 should you have any questions or comments on this submittal.

Sincerely,

Eric Christodoulatos
Senior Remediation Manager

Enclosures:
Results of the 2024 Sampling of In-situ Groundwater Beneath Riverbed Sediments Study Area 7

cc: (electronic copies)
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Jeremy Karpatkin – Arnold & Porter LLP
Brittany Murray – City Hall
Dr. Benjamin Ross – Disposal Safety, Inc.
Chuck Anthony – Honeywell
Benny Dehghi – Honeywell
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Jeffrey Dublin – Hudson County Register
Darice Toon – Hudson County Department of Health & Health Services
Angela DeQuina – Hudson Regional Health Commission
Stacey Flanagan – Jersey City Department of Health & Human Services

Sean J. Gallagher – Jersey City Office of the City Clerk
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TETRA TECH

MEMO

To:	Eric Christodoulatos, Honeywell George Pfeiffer, Honeywell
Cc:	Jeremy Karpatkin, Arnold & Porter Dennis Nagg, WSP
From:	William Soukup
Date:	June 27, 2024
Subject:	Results of the 2024 Sampling of In-situ Groundwater Beneath Riverbed Sediments

In accordance with Section 3.3 of the SA-7 Deep Overburden and Bedrock Groundwater Remedy Long-term Monitoring Plan (LTMP), in-situ groundwater from within the lacustrine sand directly beneath the soft riverbed sediments in the Hackensack River is to be sampled every five years until hexavalent chromium concentrations are below the New Jersey Groundwater Quality Criteria (NJGWQC) of 0.07 ppm. The last sampling event took place in 2019 during which time location PW09-450 was sampled as it was the only remaining location of the original five which reported a hexavalent chromium concentration in the filtered sample above 0.07 ppm. Since the results from the 2019 sample remained above the NJGWQC, this location was resampled in 2024.

The in-situ groundwater sample was obtained on May 14, 2024 in the same manner as that used in the prior investigations. The sampling boat was positioned over the location using an on-board GPS navigation system. A GeoProbe sampling tool was then lowered through the water to the top of the riverbed sediments. From there it was pushed by hand through approximately 20 feet of soft organic muds to the top of the native lacustrine sand. The probe was then driven four additional feet into the sand using a pneumatic hammer. A small diameter solid rod was inserted though the hollow drive rods and used to hold the bottom of the sampler in position while the outer sheath was pulled back approximately 18 inches, exposing the stainless-steel screen. A peristaltic pump was then attached to flexible polypropylene tubing placed down the temporary well to a position across from the well screen. Groundwater samples were then collected after purging for approximately 45 minutes and directed into appropriate containers to be shipped to the lab.

The results of the laboratory analysis are provided in Table 1 below and shown on Figures 1 through 5 along with prior results. Total chromium was detected at 1.87 ppm in the unfiltered sample (Figure 1) but was less than the NJGWQC of 0.07 ppm in the filtered sample at 0.03 ppm (Table 1). Figure 2 shows that hexavalent chromium was reported as ND in the unfiltered sample with a reporting limit of 0.0055 ppm. Hexavalent chromium was also reported as ND in the filtered sample which represents a significant decrease relative to prior results. This improvement is supported by increases in the field-measured parameters of specific conductance and total dissolved solids (TDS) shown on Figures 3 and 4, respectively. For reference, pH levels are shown on Figure 5. These levels are now more consistent with those of the four adjacent (clean) sample locations which is indicative of brackish river water moving down into the shallow lacustrine sands due to a reversal of vertical gradients from pumping of the GWET system. The somewhat delayed cleanup of chromium at the PW-09-450 location relative to the other 4 locations is likely due to the relatively slow flushing of groundwater out of a localized, low-permeability silt lens in the lacustrine deposits.

In summary, periodic sampling of in-situ groundwater beneath the Hackensack River indicates that pumping of the GWET wells since 2008 has been successful in pulling back the deep overburden chromium plume. Based on these results and in accordance with the LTMP referenced above, plume pull-back is considered complete and no further sampling of groundwater beneath the riverbed sediments will be conducted.

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Table 1. Laboratory Data for Sample PW09-450

Sample ID	Sample Type	Parameter	Result	Units
PW09-450-051424	Unfiltered	Hexavalent Cr	<0.0055	mg/l
PW09-450-051424	Unfiltered	Total Cr	1.87	mg/l
PW09-450-051424-F	Filtered	Hexavalent Cr	<0.0055	mg/l
PW09-450-051424-F	Filtered	Total Cr	0.03	mg/l

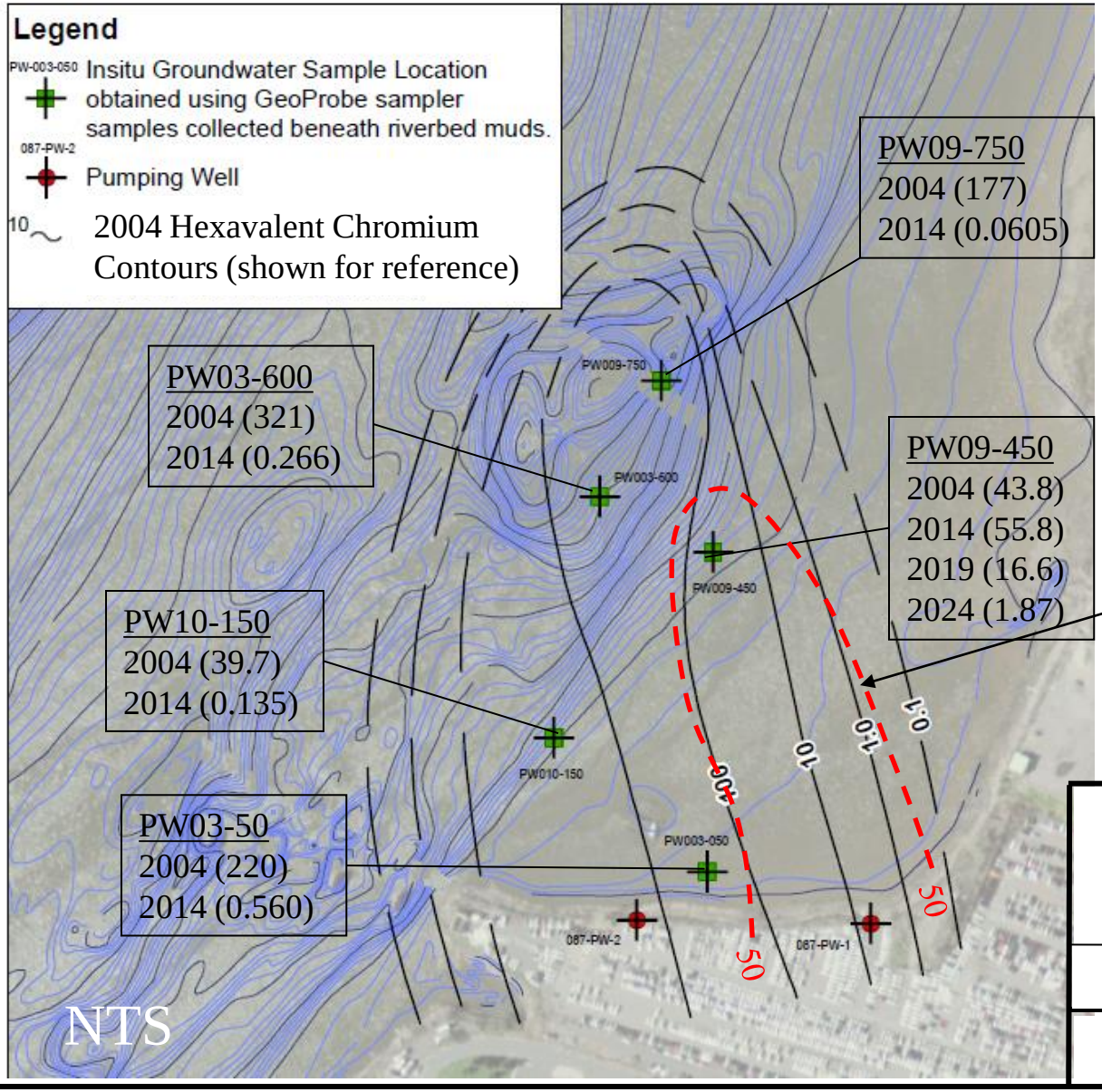

Figure 1
Total Chromium Concentrations
In Groundwater Beneath
Riverbed Sediments (ppm)

Study Area 7, Jersey City, NJ
Long Term Monitoring Plan

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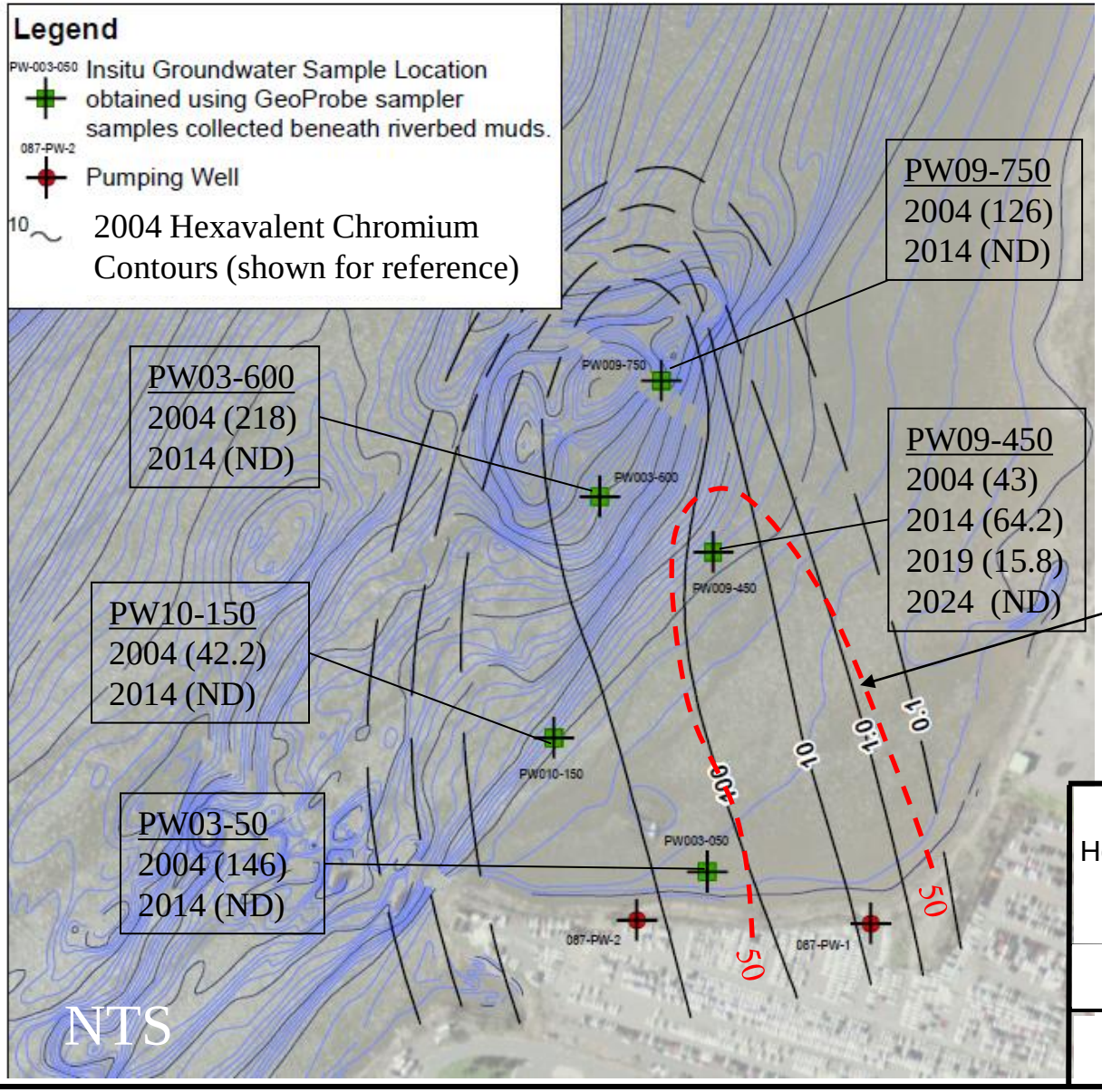

Figure 2
Hexavalent Chromium Concentrations In Groundwater Beneath Riverbed Sediments (ppm)

Study Area 7, Jersey City, NJ
Long Term Monitoring Plan

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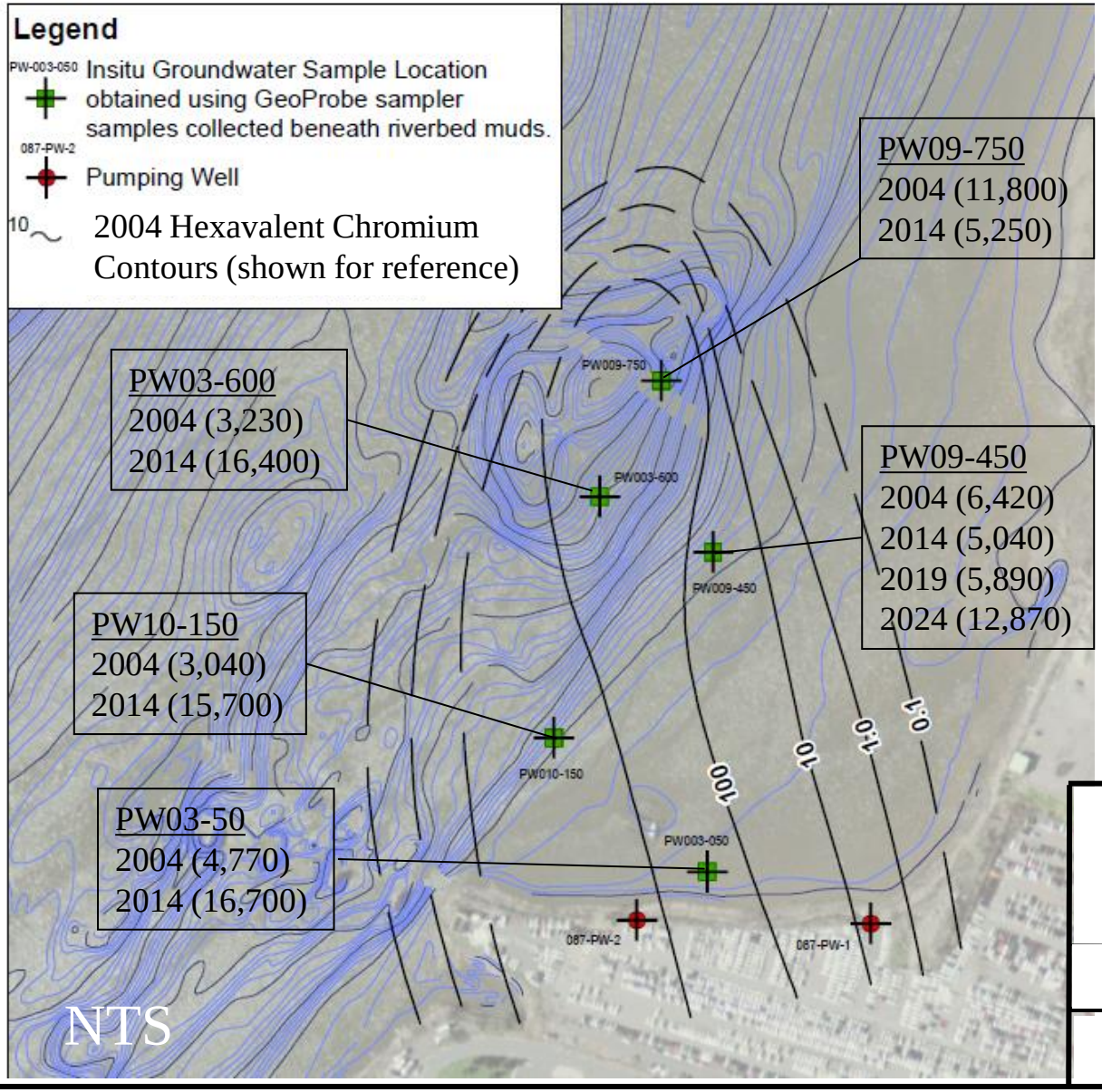

Figure 3
Total Dissolved Solids
In Groundwater Beneath
Riverbed Sediments (ppm)

Study Area 7, Jersey City, NJ
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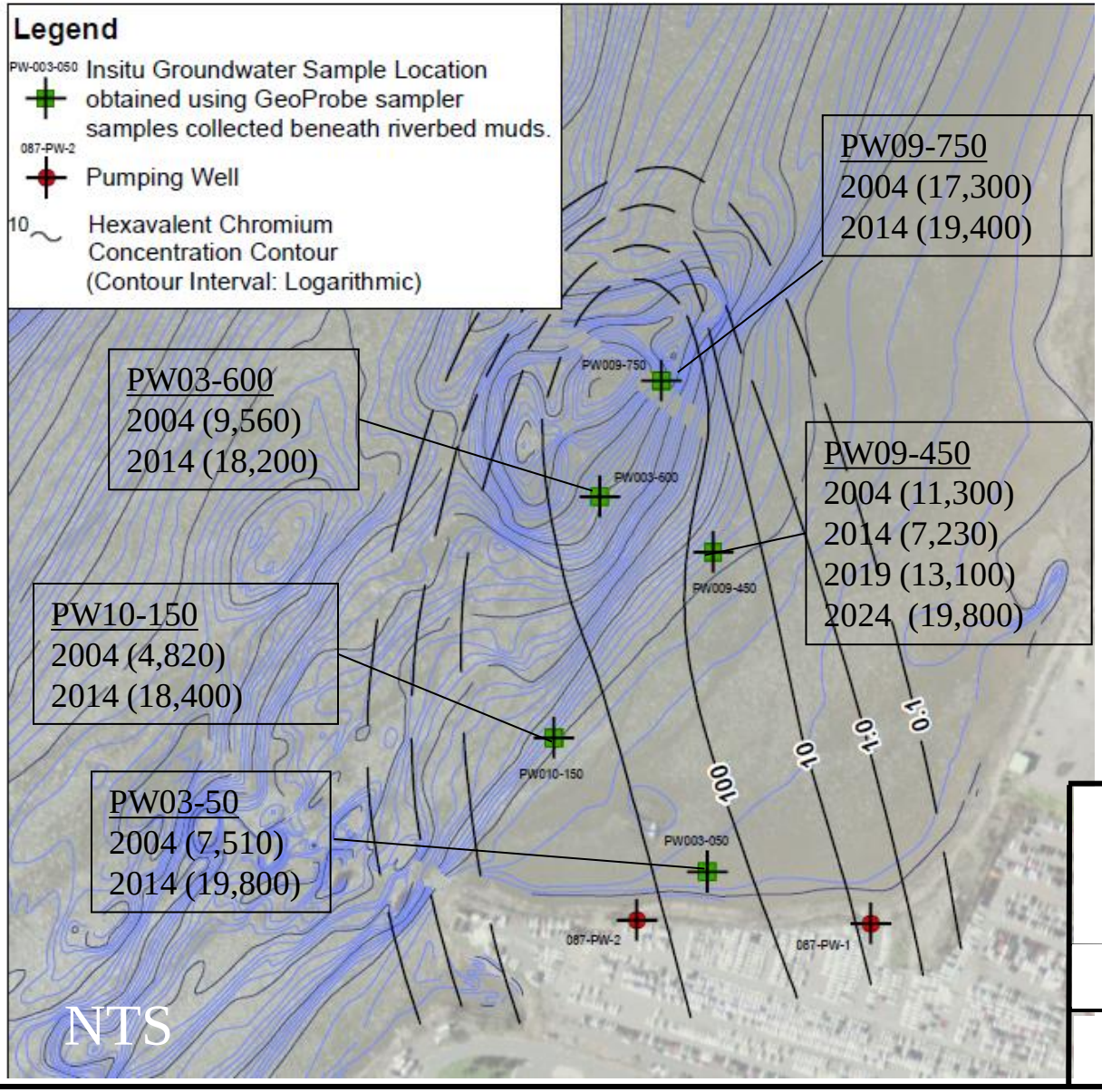

Figure 4
Specific Conductivity
In Groundwater Beneath
Riverbed Sediments (umhos/cm)

Study Area 7, Jersey City, NJ
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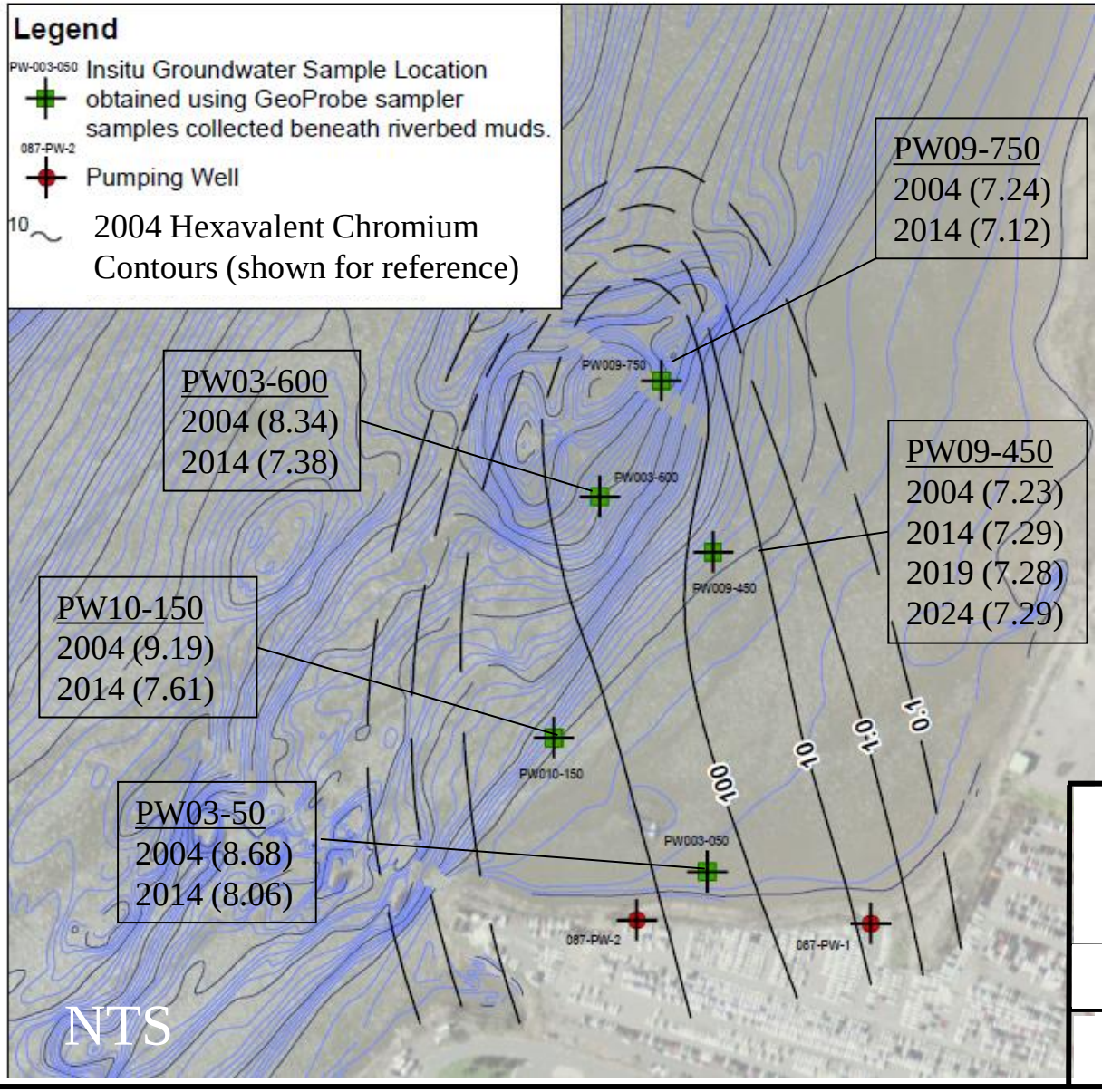

Figure 5

pH in Groundwater Beneath Riverbed Sediments (su)

Study Area 7, Jersey City, NJ
Long Term Monitoring Plan

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