

## **Appendix H**

### **Compliance Averaging Memorandum for Nickel in Soil**

# Memorandum

To	Ian Curtis, NJDEP	Page 1
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Subject	Forrest Street Properties Compliance Averaging for Nickel in Soil	
From	Claire Hunt	
Date	June 13, 2023	

## 1.0 Introduction

This memorandum provides documentation of attainment of compliance for nickel (Ni) in soil with the Garfield Avenue Group (GAG) site-specific Impact to Groundwater Soil Remediation Standard (IGWSRS-GAG) for a soil sample set from Forrest Street Properties (FSP), in accordance with the New Jersey Department of Environmental Protection’s (NJDEP’s) Technical Guidance for the *Attainment of Remediation Standards and Site-Specific Criteria* (July 2021, Version 2.0).

Boring logs, laboratory reports, and data validation reports for samples discussed in this memorandum are included as part of the *Remedial Action Report, Forrest Street Properties (AOC FSP-1C, AOC FSP-1D, AOC FSP-1E, AOC FSP-1F, AOC FSP-1G, AOC FSP-1H, AOC FSP-1I, AOC FSP-1J, and AOC FSP-1K) Soil, Current-Use, Draft*, dated January 16, 2023, except where otherwise noted.

## 2.0 Compliance Averaging Evaluation of Ni Compared to IGWSRS-GAG

### 2.1 Nickel Concentrations Greater than IGWSRS-GAG

The following soil samples (**Table 1**) with Ni concentrations greater than the IGWSRS-GAG for Ni of 170 milligrams per kilogram (mg/kg) remain in place within FSP.

**Table 1: Soil Samples Remaining with Ni Concentrations Greater than the IGWSRS**

Location ID	Sample ID	Depth Interval (ft bgs)	Sample Elevation (ft NAVD88)	Ni (mg/kg)
EF-112A	EF-112A-2.0-2.5	2.0 - 2.5	8.5 - 8.0	316
FS6	FS6-0.0-0.5	0.0 - 0.5	10.3 - 9.8	299
FS6	FS6-2.0-2.5	2.0 - 2.5	8.3 - 7.8	280

**Notes:**

bgs - below ground surface  
 ft - foot or feet  
 NAVD88 – North American Vertical Datum of 1988

**Figure 1** and **Figure 2** depict boring/sample locations, as well as analytical results, for soil samples where Ni remains in place within FSP at concentrations greater than the IGWSRS-GAG.

**2.2 Delineation – IGWSRS-GAG**

Soil samples with Ni concentrations greater than the IGWSRS-GAG that remain in place within FSP are delineated as presented in **Table 2**, **Table 3**, and **Table 4**:

**Table 2: Delineation of Sample EF-112A-2.0-2.5**

Location ID	Depth Interval (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Ni Result (mg/kg)	Direction
EF-112A	4.0 - 4.5	6.5 - 6.0	3/12/2014	15.5	Vertical
EF-73A	0.0 - 0.5	9.5 - 9.0	6/1/2015	16.0	West
FS4 <sup>1</sup>	1.0 - 1.5	9.1 - 8.6	3/21/2014	19.4	South
FS7	2.0 - 2.5	8.5 - 8.0	2/24/2014	31.5	North
NFS-PDI-CC12BR	2.5 - 3.0	8.0 - 7.5	11/14/2016	14.7	East

**Notes:**

<sup>1</sup>The boring log for this sampling location is provided in **Attachment 1**; the laboratory report and data validation report associated with this sampling location are provided in **Attachment 2** and **Attachment 3**, respectively.

**Table 3: Delineation of Sample FS6-0.0-0.5**

Location ID	Depth Interval (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Ni Result (mg/kg)	Direction
EF-73A	0.0 - 0.5	9.5 - 9.0	6/1/2015	16.0	West
FS4 <sup>1</sup>	1.0 - 1.5	9.1 - 8.6	3/21/2014	19.4	South
FS6	4.0 - 4.5	6.3 - 5.8	2/24/2014	12.0	Vertical
FS7	0.0 - 0.5	10.5 - 10.0	2/24/2014	89.6	North
NFS-PDI-CC12BR	0.0 - 0.5	10.7 - 10.2	9/9/2016	46.8	East

**Notes:**

<sup>1</sup>The boring log for this sampling location is provided in **Attachment 1**; the laboratory report and data validation report associated with this sampling location are provided in **Attachment 2** and **Attachment 3**, respectively.

**Table 4: Delineation of Sample FS6-2.0-2.5**

Location ID	Depth Interval (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Ni Result (mg/kg)	Direction
EF-73A	0.0 - 0.5	9.5 - 9.0	6/1/2015	16.0	West
FS4 <sup>1</sup>	1.0 - 1.5	9.1 - 8.6	3/21/2014	19.4	South
FS6	4.0 - 4.5	6.3 - 5.8	2/24/2014	12.0	Vertical
FS7	2.0 - 2.5	8.5 - 8.0	2/24/2014	31.5	North
NFS-PDI-CC12BR	2.5 - 3.0	8.0 - 7.5	11/14/2016	14.7	East

**Notes:**

<sup>1</sup>The boring log for this sampling location is provided in **Attachment 1**; the laboratory report and data validation report associated with this sampling location are provided in **Attachment 2** and **Attachment 3**, respectively.

**2.3 Functional Area – IGWSRS-GAG**

The length of the functional area for the impact to groundwater pathway is limited to 100 feet in the direction of groundwater flow. Historically, shallow groundwater flow at the Site has been observed to be from northwest to southeast. Perpendicular to groundwater flow, the functional area is limited to the delineated extent of contamination. The extents of the functional areas within the site boundary are shown on **Figure 1** and **Figure 2**.

Vertically, the remaining in-place samples located from the 2 feet above the groundwater surface (elevation [El.] 8.2 ft NAVD88) to the ground surface are considered part of Functional Area 1 for the calculations. The remaining in-place samples located from the groundwater surface (El. 6.2 ft NAVD88) to 2 feet above the groundwater surface (El. 8.2 ft NAVD88) are considered to be part of Functional Area 2 for the calculations. The results for samples that straddle both of these functional areas (including El. 8.2 ft NAVD88) are included in both calculations. Functional Areas 1 and 2 are oriented according to the regional groundwater flow direction (northwest to southeast). Because of localized groundwater flow variation, compliance averaging was completed assuming groundwater water flow in three additional directions.

**2.4 Compliance Averaging - IGWSRS-GAG**

Compliance with the Ni IGWSRS-GAG is demonstrated through spatial averaging. Theissen polygons were created within Functional Area 1 and Functional Area 2 as shown on **Figure 1** and **Figure 2**, respectively. The sample selection process is as follows:

1. The samples for Ni that fall within a functional area (horizontally and vertically), including samples that are associated with a functional area but are located beyond the physical limits of a functional area, are identified.
2. The maximum concentration is selected at each sample location for use in the weighted averages (refer to **Tables 5 through 12** below). The maximum of either the concentration for detections or the Method Detection Limit/Reporting Limit (MDL/RL) for non-detects is selected.

**Table 5: Samples Used to Determine Weighted Average Ni Concentration for Sample FS6-0.0-0.5 (Functional Area 1) – Regional Groundwater Flow Direction**

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Ni Result (mg/kg)	Area (sf)	Area x Maximum Ni Result (sf*mg/kg)
FS7	0.0 - 0.5 ft	10.5 - 10.0	2/24/2014	89.6	115	10,304
FS6	0.0 - 0.5 ft	10.3 - 9.8	2/24/2014	299	629	188,071
EF-112A	2.0 - 2.5 ft	8.5 - 8.0	3/12/2014	316	136	42,976
FS3 <sup>1</sup>	1.0 - 1.5 ft	9.1 - 8.6	3/20/2014	12.4	124	1,538
FS4 <sup>1</sup>	1.0 - 1.5 ft	9.1 - 8.6	3/21/2014	19.4	257	4,986
EF-73A	0.0 - 0.5 ft	9.5 - 9.0	6/1/2015	16.0	827	13,232
FSI4A	0.5 - 1.0 ft	10.0 - 9.5	6/13/2015	28.9	596	17,224
EF-110A <sup>1</sup>	0.8 - 1.3 ft	10.3 - 9.8	6/20/2015	23.2	230	5,336
EF-111A <sup>1</sup>	0.4 - 0.9 ft	10.0 - 9.5	6/27/2015	21.0	305	6,405
NFS-PDI-CC12B	0.0 - 0.5 ft	10.7 - 10.2	9/9/2016	46.8	87	4,072
NFS-PDI-CC12BR	0.5 - 1.0 ft	10.0 - 9.5	11/14/2016	15.8	55	869
<b>Total</b>					<b>3,361</b>	<b>295,013</b>

**Notes:**

**sf – square foot or feet**

<sup>1</sup>The laboratory report and data validation report associated with this sampling location are provided in **Attachment 2** and **Attachment 3**, respectively.

Weighted Average Ni Concentration for Functional Area 1 = 295,013 sf x mg/kg / 3,361 sf = 88 mg/kg.

**Table 6: Samples Used to Determine Weighted Average Ni Concentration for Samples EF-112A-2.0-2.5 and FS6-2.0-2.5 (Functional Area 2) – Regional Groundwater Flow Direction**

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Ni Result (mg/kg)	Area (sf)	Area x Maximum Ni Result (sf*mg/kg)
EF-06 <sup>1</sup>	2.5 - 3.0	7.8 - 7.3	4/12/2011	27.0	18	486
FS7	2.0 - 2.5	8.5 - 8.0	2/24/2014	31.5	115	3,623
FS6	2.0 - 2.5	8.3 - 7.8	2/24/2014	280	629	176,120
EF-112A	2.0 - 2.5	8.5 - 8.0	3/12/2014	316	136	42,976
FS3 <sup>1</sup>	3.0 - 3.5	7.1 - 6.6	3/20/2014	15.5	124	1,922
FS4 <sup>1</sup>	3.0 - 3.5	7.1 - 6.6	3/21/2014	15.7	245	3,847
EF-73A	2.0 - 2.5	7.5 - 7.0	6/1/2015	28.2	821	23,152
FSI4A	2.0 - 2.5	8.5 - 8.0	6/13/2015	15.6	596	9,298
EF-110A <sup>1</sup>	3.0 - 3.5	8.1 - 7.6	6/20/2015	14.6	230	3,358
EF-111A <sup>1</sup>	3.0 - 3.5	7.4 - 6.9	6/27/2015	15.2	305	4,636
NFS-PDI-CC12B	4.0 - 4.5	6.7 - 6.2	9/9/2016	15.2	87	1,322
NFS-PDI-CC12BR	2.5 - 3.0	8.0 - 7.5	11/14/2016	14.7	55	809
Total					3,361	271,549

**Notes:**

<sup>1</sup>The laboratory report and data validation report associated with this sampling location are provided in **Attachment 2** and **Attachment 3**, respectively.

Weighted Average Ni Concentration for Functional Area 2 = 271,549 sf x mg/kg / 3,361 sf = 81 mg/kg.

**Table 7: Samples Used to Determine Weighted Average Ni Concentration for Sample FS6-0.0-0.5 (Functional Area 3) – Localized Groundwater Flow Direction from North to South**

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Ni Result (mg/kg)	Area (sf)	Area x Maximum Ni Result (sf*mg/kg)
EF-110A <sup>1</sup>	0.8 - 1.3	10.3 - 9.8	6/20/2015	23.2	840	19,488
EF-111A <sup>1</sup>	0.4 - 0.9	10.0 - 9.5	6/27/2015	21.0	766	16,086
EF-112A	2.0 - 2.5	8.5 - 8.0	3/12/2014	316	145	45,820
EF-73A	0.0 - 0.5	9.5 - 9.0	6/1/2015	16.0	509	8,144
FS10	2.0 - 2.5	8.6 - 8.1	3/4/2014	94.5	185	17,483
FS21	2.0 - 2.5	8.4 - 7.9	6/4/2015	14.5	70	1,015
FS3 <sup>1</sup>	1.0 - 1.5	9.1 - 8.6	3/20/2014	12.4	269	3,336
FS4 <sup>1</sup>	1.0 - 1.5	9.1 - 8.6	3/21/2014	19.4	339	6,577
FS6	0.5 - 1.0	9.8 - 9.3	2/24/2014	299	629	188,071
FS7	0.0 - 0.5	10.5 - 10.0	2/24/2014	89.6	683	61,197
FSI4A	0.5 - 1.0	10.0 - 9.5	6/13/2015	28.9	577	16,675
NFS-PDI-CC12B	0.0 - 0.5	10.7 - 10.2	9/9/2016	46.8	370	17,316
NFS-PDI-CC12BR	0.5 - 1.0	10.0 - 9.5	11/14/2016	15.8	211	3,334
				Total	5,593	404,542

**Notes:**

<sup>1</sup>The laboratory report and data validation report associated with this sampling location are provided in **Attachment 2** and **Attachment 3**, respectively.

Weighted Average Ni Concentration for Functional Area 3 = 404,542 sf x mg/kg / 5,593 sf = 72 mg/kg.

**Table 8: Samples Used to Determine Weighted Average Ni Concentration for Samples EF-112A-2.0-2.5 and FS6-2.0-2.5 (Functional Area 4) – Localized Groundwater Flow Direction from North to South**

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Ni Result (mg/kg)	Area (sf)	Area x Maximum Ni Result (sf*mg/kg)
EF-110A <sup>1</sup>	3.0 - 3.5	8.1 - 7.6	6/20/2015	14.6	618	9,023
EF-111A <sup>1</sup>	3.0 - 3.5	7.4 - 6.9	6/27/2015	15.2	589	8,953
EF-112A	2.0 - 2.5	8.5 - 8.0	3/12/2014	316	145	45,820
EF-73A	2.0 - 2.5	7.5 - 7.0	6/1/2015	28.2	509	14,354
FS10	4.0 - 4.5	6.6 - 6.1	3/4/2014	20.0	185	3,700
FS21	2.0 - 2.5	8.4 - 7.9	6/4/2015	14.5	70	1,015
FS3 <sup>1</sup>	3.0 - 3.5	7.1 - 6.6	3/20/2014	15.5	269	4,170
FS4 <sup>1</sup>	3.0 - 3.5	7.1 - 6.6	3/21/2014	15.7	339	5,322
FS6	2.0 - 2.5	8.3 - 7.8	2/24/2014	280	629	176,120
FS7	2.0 - 2.5	8.5 - 8.0	2/24/2014	31.5	683	21,515
FSI4A	2.0 - 2.5	8.5 - 8.0	6/13/2015	15.6	577	9,001
NFS-PDI-CC12B	4.0 - 4.5	6.7 - 6.2	9/9/2016	15.2	370	5,624
NFS-PDI-CC12BR	2.5 - 3.0	8.0 - 7.5	11/14/2016	14.7	211	3,102
P4-FOR-CC10B <sup>1</sup>	3.0 - 3.5	7.7 - 7.2	6/23/2016	8.9	398	3,542
Total					5,592	311,260

**Notes:**

<sup>1</sup>The laboratory report and data validation report associated with this sampling location are provided in **Attachment 2** and **Attachment 3**, respectively.

Weighted Average Ni Concentration for Functional Area 4 = 311,260 sf x mg/kg / 5,592 sf = 56 mg/kg.



**Table 9: Samples Used to Determine Weighted Average Ni Concentration for Sample FS6-0.0-0.5 (Functional Area 5) – Localized Groundwater Flow Direction from West to East**

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Ni Result (mg/kg)	Area (sf)	Area x Maximum Ni Result (sf*mg/kg)
EF-111A <sup>1</sup>	0.4 - 0.9	10.0 - 9.5	6/27/2015	21.0	84	1,764
EF-112A	2.0 - 2.5	8.5 - 8.0	3/12/2014	316	145	45,820
EF-73A	0.0 - 0.5	9.5 - 9.0	6/1/2015	16.0	501	8,016
FS10	2.0 - 2.5	8.6 - 8.1	3/4/2014	94.5	46	4,347
FS3 <sup>1</sup>	1.0 - 1.5	9.1 - 8.6	3/20/2014	12.4	74	918
FS4 <sup>1</sup>	1.0 - 1.5	9.1 - 8.6	3/21/2014	19.4	541	10,495
FS6	0.5 - 1.0	9.8 - 9.3	2/24/2014	299	629	188,071
FS7	0.0 - 0.5	10.5 - 10.0	2/24/2014	89.6	500	44,800
FSI3	1.0 - 1.5	9.3 - 8.8	4/12/2014	18.0	1,080	19,440
FSI4A	0.5 - 1.0	10.0 - 9.5	6/13/2015	28.9	156	4,508
NFS-PDI-CC12B	0.0 - 0.5	10.7 - 10.2	9/9/2016	46.8	412	19,282
NFS-PDI-CC12BR	0.5 - 1.0	10.0 - 9.5	11/14/2016	15.8	576	9,101
<b>Total</b>					<b>4,744</b>	<b>356,562</b>

**Notes:**

<sup>1</sup>The laboratory report and data validation report associated with this sampling location are provided in **Attachment 2** and **Attachment 3**, respectively.

Weighted Average Ni Concentration for Functional Area 5 = 356,562 sf x mg/kg / 4,744 sf = 75 mg/kg.

**Table 10: Samples Used to Determine Weighted Average Ni Concentration for Samples EF-112A-2.0-2.5 and FS6-2.0-2.5 (Functional Area 6) – Localized Groundwater Flow Direction from West to East**

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Ni Result (mg/kg)	Area (sf)	Area x Maximum Ni Result (sf*mg/kg)
EF-06 <sup>1</sup>	2.5 - 3.0	7.8 - 7.3	4/12/2011	27.0	210	5,670
EF-111A <sup>1</sup>	3.0 - 3.5	7.4 - 6.9	6/27/2015	15.2	84	1,277
EF-112A	2.0 - 2.5	8.5 - 8.0	3/12/2014	316	145	45,820
EF-73A	2.0 - 2.5	7.5 - 7.0	6/1/2015	28.2	481	13,564
FS10	4.0 - 4.5	6.6 - 6.1	3/4/2014	20.0	46	920
FS3 <sup>1</sup>	3.0 - 3.5	7.1 - 6.6	3/20/2014	15.5	74	1,147
FS4 <sup>1</sup>	3.0 - 3.5	7.1 - 6.6	3/21/2014	15.7	351	5,511
FS6	2.0 - 2.5	8.3 - 7.8	2/24/2014	280	629	176,120
FS7	2.0 - 2.5	8.5 - 8.0	2/24/2014	31.5	500	15,750
FSI3	3.5 - 4.0	6.8 - 6.3	4/12/2014	14.7	1,080	15,876
FSI4A	2.0 - 2.5	8.5 - 8.0	6/13/2015	15.6	156	2,434
NFS-PDI-CC12B	4.0 - 4.5	6.7 - 6.2	9/9/2016	15.2	412	6,262
NFS-PDI-CC12BR	2.5 - 3.0	8.0 - 7.5	11/14/2016	14.7	576	8,467
<b>Total</b>					<b>4,744</b>	<b>298,818</b>

**Notes:**

<sup>1</sup>The laboratory report and data validation report associated with this sampling location are provided in **Attachment 2** and **Attachment 3**, respectively.

Weighted Average Ni Concentration for Functional Area 6 = 298,818 sf x mg/kg / 4,744 sf = 63 mg/kg.

**Table 11: Samples Used to Determine Weighted Average Ni Concentration for Sample FS6-0.0-0.5 (Functional Area 7) – Localized Groundwater Flow Direction from Southwest to Northeast**

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Ni Result (mg/kg)	Area (sf)	Area x Maximum Ni Result (sf*mg/kg)
EF-111A <sup>1</sup>	0.4 - 0.9	10.0 - 9.5	6/27/2015	21.0	110	2,310
EF-112A	2.0 - 2.5	8.5 - 8.0	3/12/2014	316	145	45,820
EF-73A	0.0 - 0.5	9.5 - 9.0	6/1/2015	16.0	860	13,760
FS10	2.0 - 2.5	8.6 - 8.1	3/4/2014	94.5	1,097	103,667
FS21	2.0 - 2.5	8.4 - 7.9	6/4/2015	14.5	797	11,557
FS3 <sup>1</sup>	1.0 - 1.5	9.1 - 8.6	3/20/2014	12.4	134	1,662
FS4 <sup>1</sup>	1.0 - 1.5	9.1 - 8.6	3/21/2014	19.4	220	4,268
FS6	0.5 - 1.0	9.8 - 9.3	2/24/2014	299	629	188,071
FS7	0.0 - 0.5	10.5 - 10.0	2/24/2014	89.6	683	61,197
FS8	0.0 - 0.5	10.7 - 10.2	2/28/2014	145 RA	430	62,350
FS9	2.0 - 2.5	8.7 - 8.2	3/5/2014	117	304	35,568
FSI3	1.0 - 1.5	9.3 - 8.8	4/12/2014	18.0	446	8,028
FSI4A	0.5 - 1.0	10.0 - 9.5	6/13/2015	28.9	2	58
NFS-PDI-CC12B	0.0 - 0.5	10.7 - 10.2	9/9/2016	46.8	405	18,954
NFS-PDI-CC12BR	0.5 - 1.0	10.0 - 9.5	11/14/2016	15.8	96	1,517
NFS-PDI-CC14B	2.5 - 3.0	8.3 - 7.8	9/16/2016	60.5	354	21,417
				Total	6,712	580,204

**Notes:**

<sup>1</sup>The laboratory report and data validation report associated with this sampling location are provided in **Attachment 2** and **Attachment 3**, respectively.

Weighted Average Ni Concentration for Functional Area 7 = 580,204 sf x mg/kg / 6,712 sf = 86 mg/kg.

**Table 12: Samples Used to Determine Weighted Average Ni Concentration for Samples EF-112A-2.0-2.5 and FS6-2.0-2.5 (Functional Area 8) – Localized Groundwater Flow Direction from Southwest to Northeast**

Location ID	Sample Depth (ft bgs)	Sample Elevation (ft NAVD88)	Date Collected	Maximum Ni Result (mg/kg)	Area (sf)	Area x Maximum Ni Result (sf*mg/kg)
EF-06 <sup>1</sup>	2.5 - 3.0	7.8 - 7.3	4/12/2011	27.0	1	27
EF-111A <sup>1</sup>	3.0 - 3.5	7.4 - 6.9	6/27/2015	15.2	110	1,672
EF-112A	2.0 - 2.5	8.5 - 8.0	3/12/2014	316	145	45,820
EF-73A	2.0 - 2.5	7.5 - 7.0	6/1/2015	28.2	860	24,252
FS10	4.0 - 4.5	6.6 - 6.1	3/4/2014	20.0	1,045	20,900
FS21	2.0 - 2.5	8.4 - 7.9	6/4/2015	14.5	729	10,571
FS3 <sup>1</sup>	3.0 - 3.5	7.1 - 6.6	3/20/2014	15.5	134	2,077
FS4 <sup>1</sup>	3.0 - 3.5	7.1 - 6.6	3/21/2014	15.7	219	3,438
FS6	2.0 - 2.5	8.3 - 7.8	2/24/2014	280	629	176,120
FS7	2.0 - 2.5	8.5 - 8.0	2/24/2014	31.5	683	21,515
FS8	4.0 - 4.5	6.7 - 6.2	2/28/2014	25.5 RA	430	10,965
FS9	4.0 - 4.5	6.7 - 6.2	3/5/2014	10.7	213	2,279
FSI3	3.5 - 4.0	6.8 - 6.3	4/12/2014	14.7	446	6,556
FSI4A	2.0 - 2.5	8.5 - 8.0	6/13/2015	15.6	2	31
FSTP1-WaterLine1	4.0 - 4.5	6.7 - 6.2	2/11/2014	22.8 J	466	10,625
NFS-PDI-CC12B	4.0 - 4.5	6.7 - 6.2	9/9/2016	15.2	405	6,156
NFS-PDI-CC12BR	2.5 - 3.0	8.0 - 7.5	11/14/2016	14.7	96	1,411
NFS-PDI-CC14B	2.5 - 3.0	8.3 - 7.8	9/16/2016	60.5	100	6,050
Total					6,713	350,465

**Notes:**

<sup>1</sup>The laboratory report and data validation report associated with this sampling location are provided in **Attachment 2** and **Attachment 3**, respectively.

Weighted Average Ni Concentration for Functional Area 8 = 350,465 sf x mg/kg / 6,713 sf = 52 mg/kg.

### 3.0 Conclusions

The spatially weighted average Ni concentration within Functional Area 1 (Regional Groundwater Flow Direction Northwest to Southeast) at the Forrest Street Properties for FS6-0.0-0.5 is 88 mg/kg, which is compliant with the 170 mg/kg IGWSRS-GAG.

The spatially weighted average Ni concentration within Functional Area 2 (Regional Groundwater Flow Direction Northwest to Southeast) at the Forrest Street Properties for EF-112A-2.0-2.5 and FS6-2.0-2.5 is 81 mg/kg, which is compliant with the 170 mg/kg IGWSRS-GAG.

The spatially weighted average Ni concentration within Functional Area 3 (Localized Groundwater Flow Direction from North to South) at the Forrest Street Properties for FS6-0.0-0.5 is 72 mg/kg, which is compliant with the 170 mg/kg IGWSRS-GAG.

The spatially weighted average Ni concentration within Functional Area 4 (Localized Groundwater Flow Direction from North to South) at the Forrest Street Properties for EF-112A-2.0-2.5 and FS6-2.0-2.5 is 56 mg/kg, which is compliant with the 170 mg/kg IGWSRS-GAG.

The spatially weighted average Ni concentration within Functional Area 5 (Localized Groundwater Flow Direction from West to East) at the Forrest Street Properties for FS6-0.0-0.5 is 75 mg/kg, which is compliant with the 170 mg/kg IGWSRS-GAG.

The spatially weighted average Ni concentration within Functional Area 6 (Localized Groundwater Flow Direction from West to East) at the Forrest Street Properties for EF-112A-2.0-2.5 and FS6-2.0-2.5 is 63 mg/kg, which is compliant with the 170 mg/kg IGWSRS-GAG.

The spatially weighted average Ni concentration within Functional Area 7 (Localized Groundwater Flow Direction from Southwest to Northeast) at the Forrest Street Properties for FS6-0.0-0.5 is 86 mg/kg, which is compliant with the 170 mg/kg IGWSRS-GAG.

The spatially weighted average Ni concentration within Functional Area 8 (Localized Groundwater Flow Direction from Southwest to Northeast) at the Forrest Street Properties for EF-112A-2.0-2.5 and FS6-2.0-2.5 is 52 mg/kg, which is compliant with the 170 mg/kg IGWSRS-GAG.

To be conservative, the highest spatially weighted average Ni Concentrations for FS6-0.0-0.5 (88 mg/kg within Functional Area 1) and EF-112A-2.0-2.5 and FS6-2.0-2.5 (81 mg/kg within Functional Area 2) are used to document compliance within IGWSRS-GAG.

**Attachments:**

**Figures:**

- Figure 1** Compliance Averaging Evaluation, Nickel in Soil - IGWSRS-GAG, Forrest Street Properties, Functional Area 1
- Figure 2** Compliance Averaging Evaluation, Nickel in Soil - IGWSRS-GAG, Forrest Street Properties, Functional Area 2
- Figure 3** Compliance Averaging Evaluation, Nickel in Soil - IGWSRS-GAG, Forrest Street Properties, Functional Area 3
- Figure 4** Compliance Averaging Evaluation, Nickel in Soil - IGWSRS-GAG, Forrest Street Properties, Functional Area 4
- Figure 5** Compliance Averaging Evaluation, Nickel in Soil - IGWSRS-GAG, Forrest Street Properties, Functional Area 5
- Figure 6** Compliance Averaging Evaluation, Nickel in Soil - IGWSRS-GAG, Forrest Street Properties, Functional Area 6
- Figure 7** Compliance Averaging Evaluation, Nickel in Soil - IGWSRS-GAG, Forrest Street Properties, Functional Area 7
- Figure 8** Compliance Averaging Evaluation, Nickel in Soil - IGWSRS-GAG, Forrest Street Properties, Functional Area 8

**Attachment 1** Boring Logs

**Attachment 2** Laboratory Analytical Reports (*Provided Separately*)


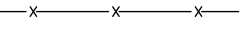


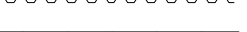


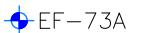
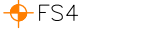



**Attachment 3** Data Validation Reports (*Provided Separately*)

Forrest Street Properties Compliance Averaging for Nickel in Soil  
PPG, Jersey City, New Jersey

## Figures

File: C:\Users\NicholsM1\AECOM\PPG - GDS\910 CAD\20 SHEETS\PAR\FSP RAR\2022 RAR\CAM\2023-06-12\_FSP\_CAM.dwg Layout: CAM\_Fig. 1 User: NicholsM1 Plotted: Jun 12, 2023 - 2:40pm Xref's:

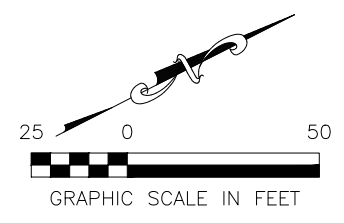
**LEGEND**

-  PROPERTY LINE
-  FENCE
-  EDGE OF CONCRETE
-  FORREST STREET PROPERTIES SITE BOUNDARY
-  EXISTING SHEET PILE
-  EXISTING BUILDING
-  GROUND SURFACE ELEVATION CONTOURS 1' INTERVAL, 5' INDEX
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - FORREST STREET PROPERTIES
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - OUTSIDE FORREST STREET PROPERTIES SITE BOUNDARY
-  LOCATION OF SOIL SAMPLE WITH NI CONCENTRATION GREATER THAN THE IGWSRS-GAG WITHIN FUNCTIONAL AREA
-  THIESSEN POLYGON
-  FUNCTIONAL AREA 1

**NOTES:**  
 1. Ni RESULTS ARE SHOWN IN mg/kg.

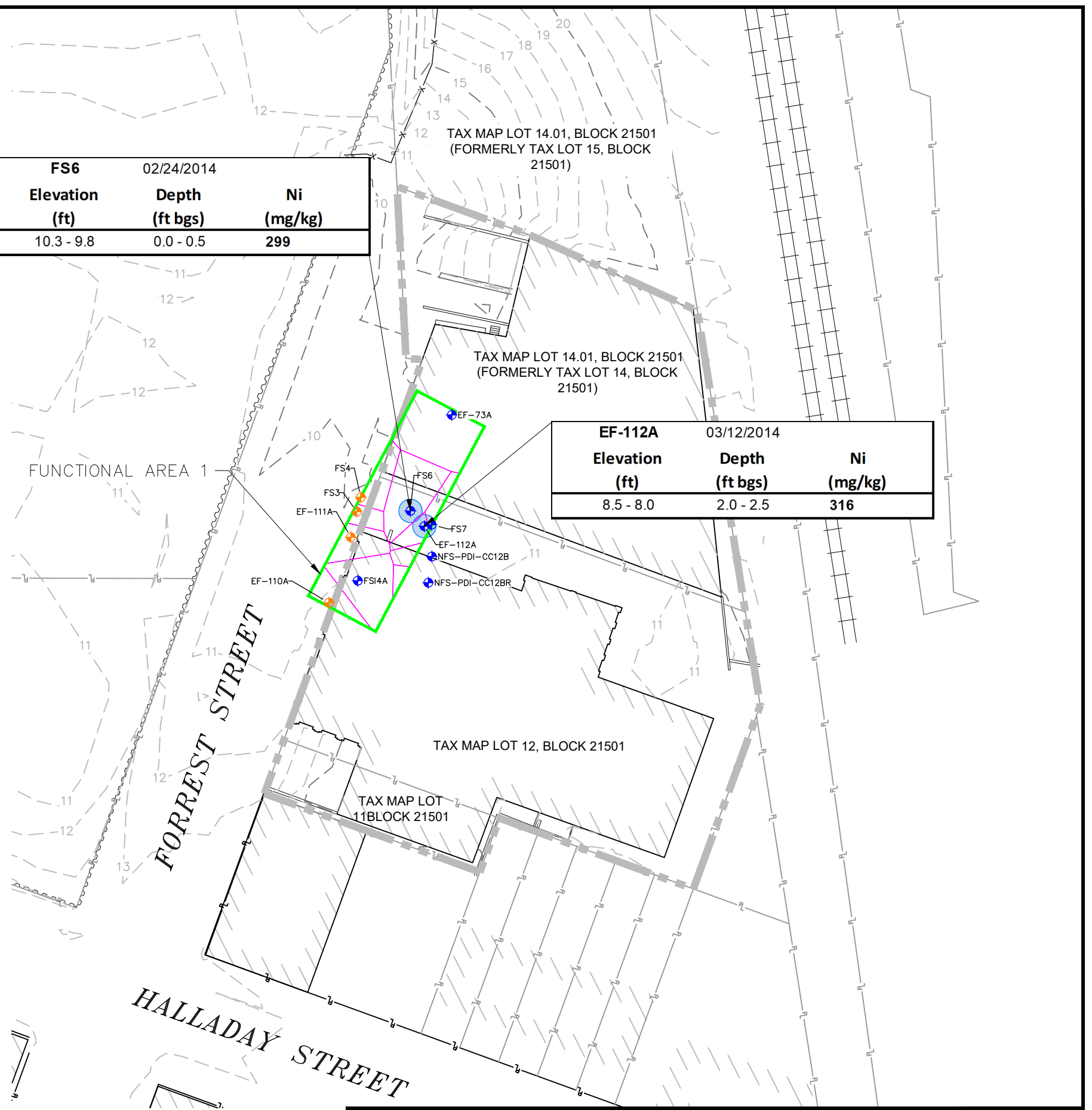
bgs  
ft  
IGWSRS-GAG      BELOW GROUND SURFACE FEET  
 SITE-SPECIFIC IMPACT TO GROUNDWATER SOIL REMEDIATION STANDARD - GARFIELD AVENUE GROUP (ALTERNATIVE REMEDIATION STANDARD AS PROPOSED IN THE SUPPLEMENTAL SOIL REMEDIAL INVESTIGATION REPORT, FINAL (REVISION 1), DATED AUGUST 30, 2018, AND APPROVED BY NJDEP ON OCTOBER 22, 2018).

mg/kg  
Ni  
NJDEP      MILLIGRAMS PER KILOGRAM  
 NICKEL  
 NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION



<b>FS6</b>	02/24/2014	
<b>Elevation (ft)</b>	<b>Depth (ft bgs)</b>	<b>Ni (mg/kg)</b>
10.3 - 9.8	0.0 - 0.5	299

<b>EF-112A</b>	03/12/2014	
<b>Elevation (ft)</b>	<b>Depth (ft bgs)</b>	<b>Ni (mg/kg)</b>
8.5 - 8.0	2.0 - 2.5	316


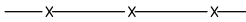





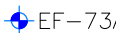






PPG GARFIELD AVENUE GROUP SITES JERSEY CITY, NEW JERSEY	<b>COMPLIANCE AVERAGING EVALUATION          NICKEL IN SOIL - IGWSRS-GAG          FORREST STREET PROPERTIES          FUNCTIONAL AREA 1</b>
DATE: 06/12/2023    DRWN: MDN	<b>FIGURE 1</b>



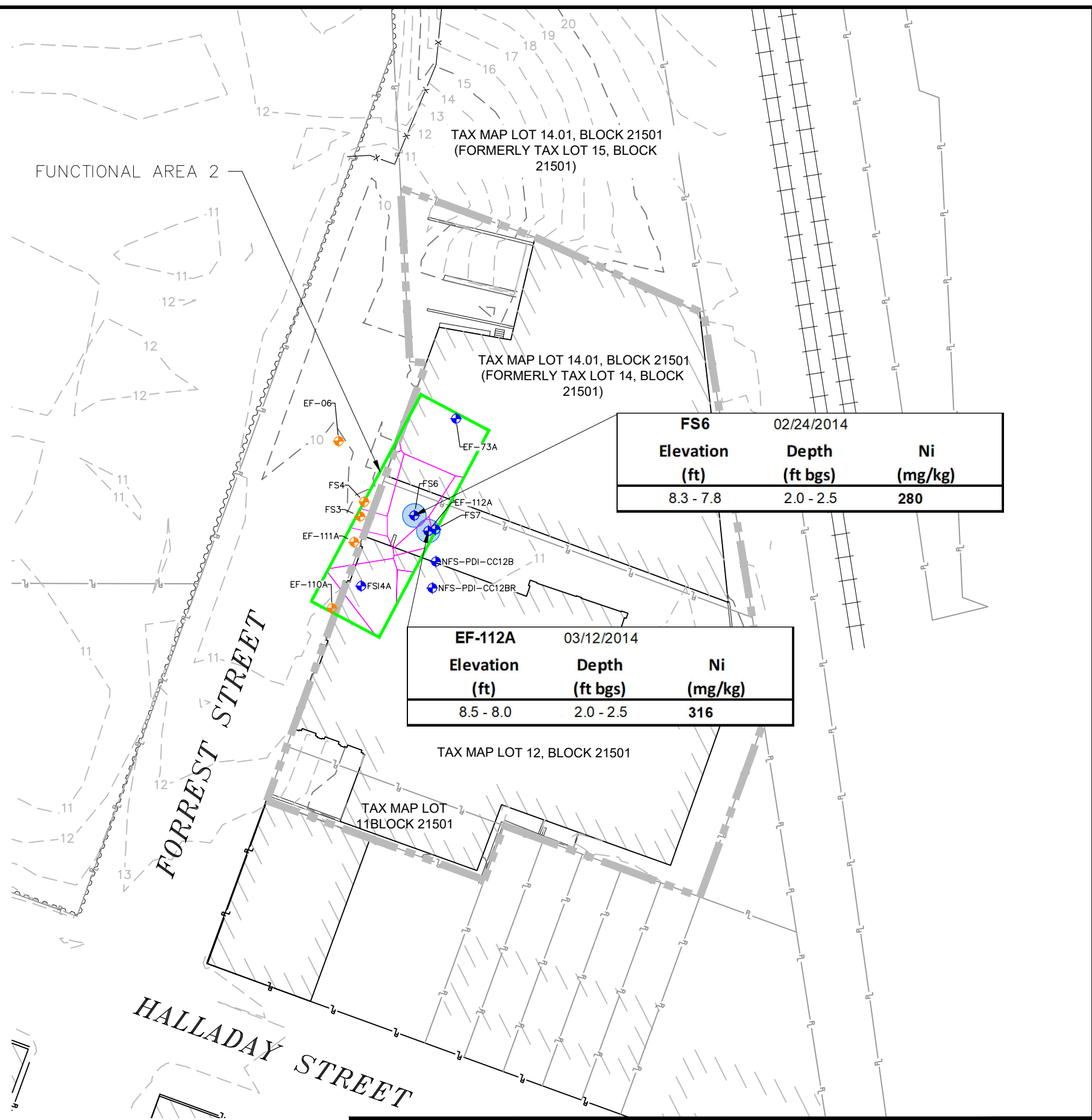
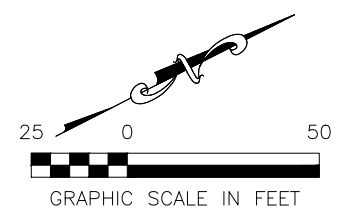
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**LEGEND**

-  PROPERTY LINE
-  FENCE
-  EDGE OF CONCRETE
-  FORREST STREET PROPERTIES SITE BOUNDARY
-  EXISTING SHEET PILE
-  EXISTING BUILDING
-  GROUND SURFACE ELEVATION CONTOURS 1' INTERVAL, 5' INDEX
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - FORREST STREET PROPERTIES
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - OUTSIDE FORREST STREET PROPERTIES SITE BOUNDARY
-  LOCATION OF SOIL SAMPLE WITH NI CONCENTRATION GREATER THAN THE IGWSRS-GAG WITHIN FUNCTIONAL AREA
-  THIESSEN POLYGON
-  FUNCTIONAL AREA 2

**NOTES:**  
 1. Ni RESULTS ARE SHOWN IN mg/kg.

bgs BELOW GROUND SURFACE  
 ft FEET  
 IGWSRS-GAG SITE-SPECIFIC IMPACT TO GROUNDWATER SOIL REMEDIATION STANDARD - GARFIELD AVENUE GROUP (ALTERNATIVE REMEDIATION STANDARD AS PROPOSED IN THE SUPPLEMENTAL SOIL REMEDIAL INVESTIGATION REPORT, FINAL (REVISION 1), DATED AUGUST 30, 2018, AND APPROVED BY NJDEP ON OCTOBER 22, 2018).  
 mg/kg MILLIGRAMS PER KILOGRAM  
 Ni NICKEL  
 NJDEP NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION


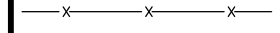




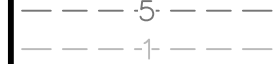
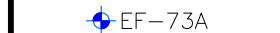


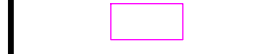



FS6 02/24/2014		
Elevation (ft)	Depth (ft bgs)	Ni (mg/kg)
8.3 - 7.8	2.0 - 2.5	280

EF-112A 03/12/2014		
Elevation (ft)	Depth (ft bgs)	Ni (mg/kg)
8.5 - 8.0	2.0 - 2.5	316

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**LEGEND**

-  PROPERTY LINE
-  FENCE
-  EDGE OF CONCRETE
-  FORREST STREET PROPERTIES SITE BOUNDARY
-  EXISTING SHEET PILE
-  EXISTING BUILDING
-  GROUND SURFACE ELEVATION CONTOURS 1' INTERVAL, 5' INDEX
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - FORREST STREET PROPERTIES
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - OUTSIDE FORREST STREET PROPERTIES SITE BOUNDARY
-  LOCATION OF SOIL SAMPLE WITH NI CONCENTRATION GREATER THAN THE IGWSRS-GAG WITHIN FUNCTIONAL AREA
-  THIESSEN POLYGON
-  FUNCTIONAL AREA 3

**NOTES:**

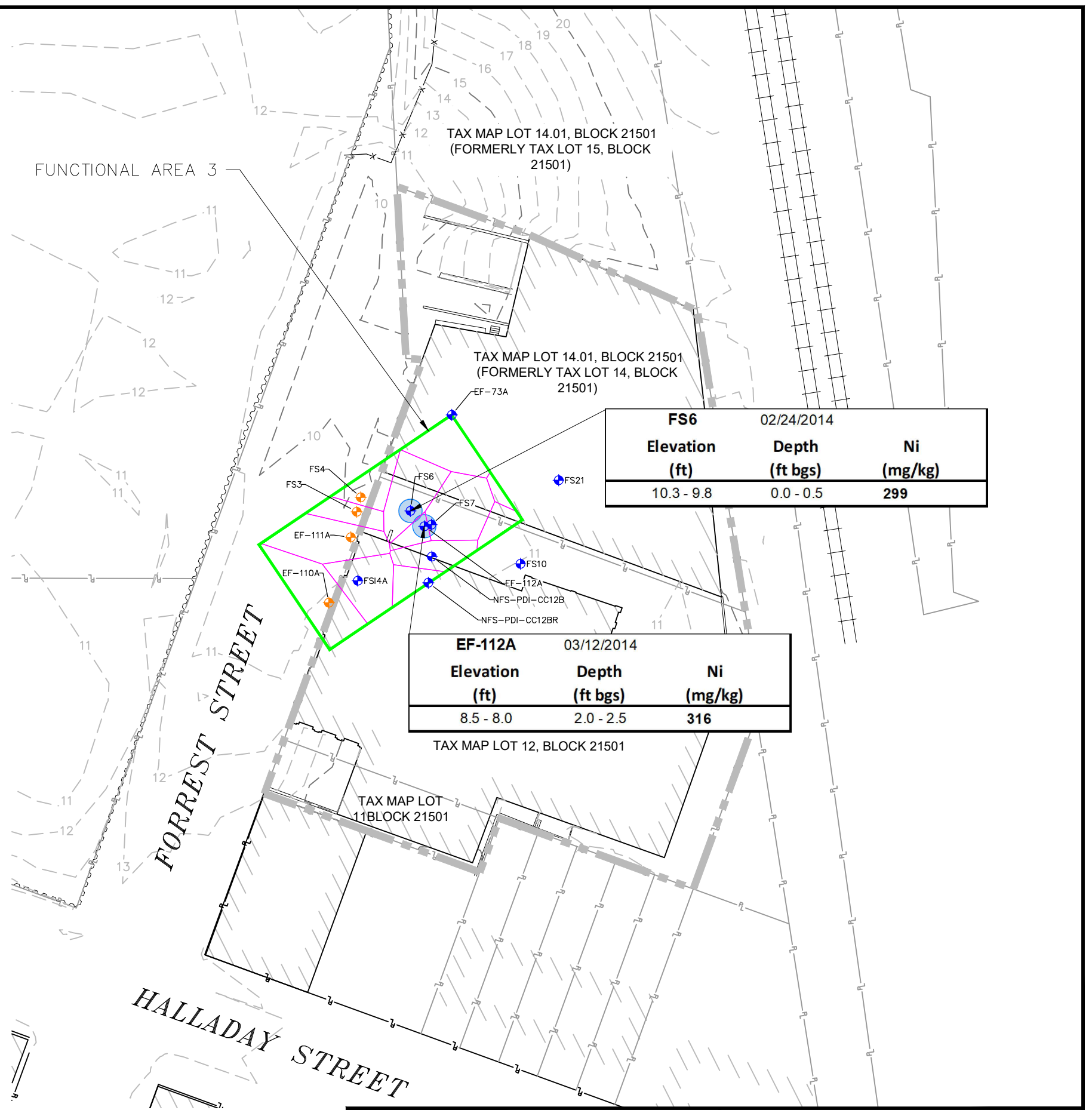
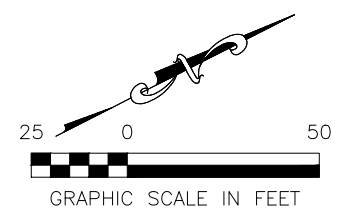
1. Ni RESULTS ARE SHOWN IN mg/kg.

bgs  
ft  
IGWSRS-GAG

BELOW GROUND SURFACE  
FEET  
SITE-SPECIFIC IMPACT TO GROUNDWATER SOIL  
REMEDATION STANDARD - GARFIELD AVENUE GROUP  
(ALTERNATIVE REMEDIATION STANDARD AS PROPOSED IN  
THE SUPPLEMENTAL SOIL REMEDIAL INVESTIGATION  
REPORT, FINAL (REVISION 1), DATED AUGUST 30, 2018,  
AND APPROVED BY NJDEP ON OCTOBER 22, 2018).

mg/kg  
Ni  
NJDEP

MILLIGRAMS PER KILOGRAM  
NICKEL  
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL  
PROTECTION




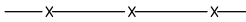




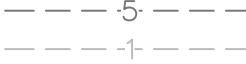
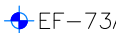




FS6 02/24/2014		
Elevation (ft)	Depth (ft bgs)	Ni (mg/kg)
10.3 - 9.8	0.0 - 0.5	299

EF-112A 03/12/2014		
Elevation (ft)	Depth (ft bgs)	Ni (mg/kg)
8.5 - 8.0	2.0 - 2.5	316

PPG GARFIELD AVENUE GROUP SITES JERSEY CITY, NEW JERSEY	<b>COMPLIANCE AVERAGING EVALUATION                  NICKEL IN SOIL - IGWSRS-GAG                  FORREST STREET PROPERTIES                  FUNCTIONAL AREA 3</b>
DATE: 06/12/2023    DRWN: MDN	<b>FIGURE 3</b>

File: C:\Users\NicholsM1\AECOM\PPG - GDS\910 CAD\20 SHEETS\RAR\FSP RAR\2022 RAR\CAM\2023-06-12\_FSP\_CAM.dwg Layout: CAM\_Fig. 4 User: NicholsM1 Plotted: Jun 12, 2023 - 2:28pm Xref's:

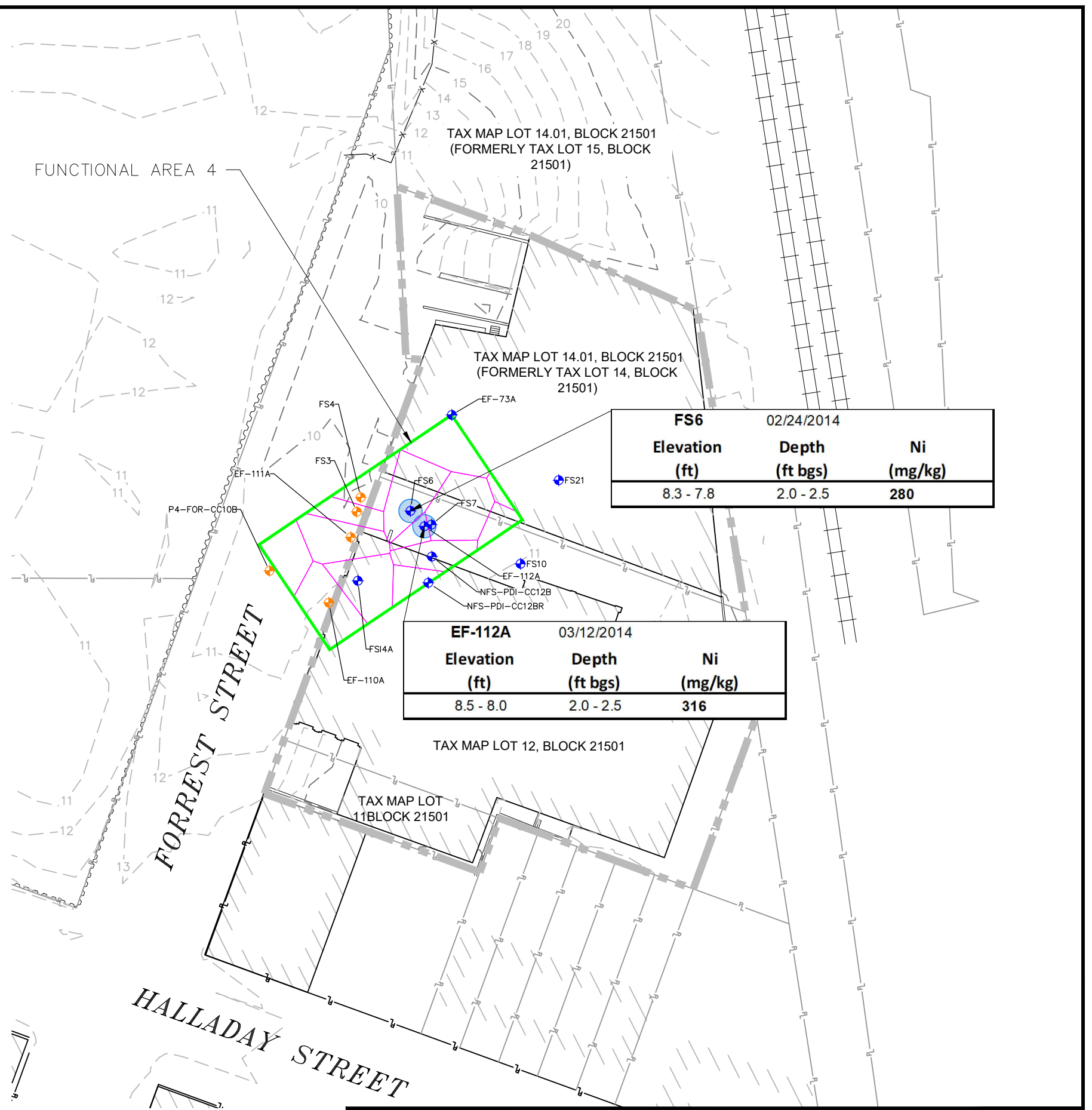
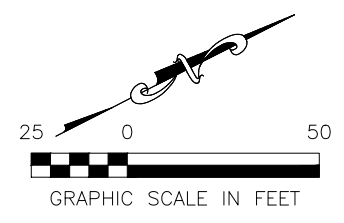
**LEGEND**

-  PROPERTY LINE
-  FENCE
-  EDGE OF CONCRETE
-  FORREST STREET PROPERTIES SITE BOUNDARY
-  EXISTING SHEET PILE
-  EXISTING BUILDING
-  GROUND SURFACE ELEVATION CONTOURS 1' INTERVAL, 5' INDEX
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-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - OUTSIDE FORREST STREET PROPERTIES SITE BOUNDARY
-  LOCATION OF SOIL SAMPLE WITH NI CONCENTRATION GREATER THAN THE IGWSRS-GAG WITHIN FUNCTIONAL AREA
-  THIESSEN POLYGON
-  FUNCTIONAL AREA 4

**NOTES:**  
 1. Ni RESULTS ARE SHOWN IN mg/kg.

bgs  
ft  
IGWSRS-GAG      BELOW GROUND SURFACE  
FEET  
SITE-SPECIFIC IMPACT TO GROUNDWATER SOIL  
REMEDICATION STANDARD - GARFIELD AVENUE GROUP  
(ALTERNATIVE REMEDIATION STANDARD AS PROPOSED IN  
THE SUPPLEMENTAL SOIL REMEDIAL INVESTIGATION  
REPORT, FINAL (REVISION 1), DATED AUGUST 30, 2018,  
AND APPROVED BY NJDEP ON OCTOBER 22, 2018).


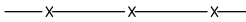




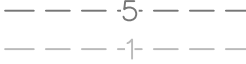
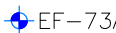




mg/kg  
Ni  
NJDEP      MILLIGRAMS PER KILOGRAM  
NICKEL  
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL  
PROTECTION





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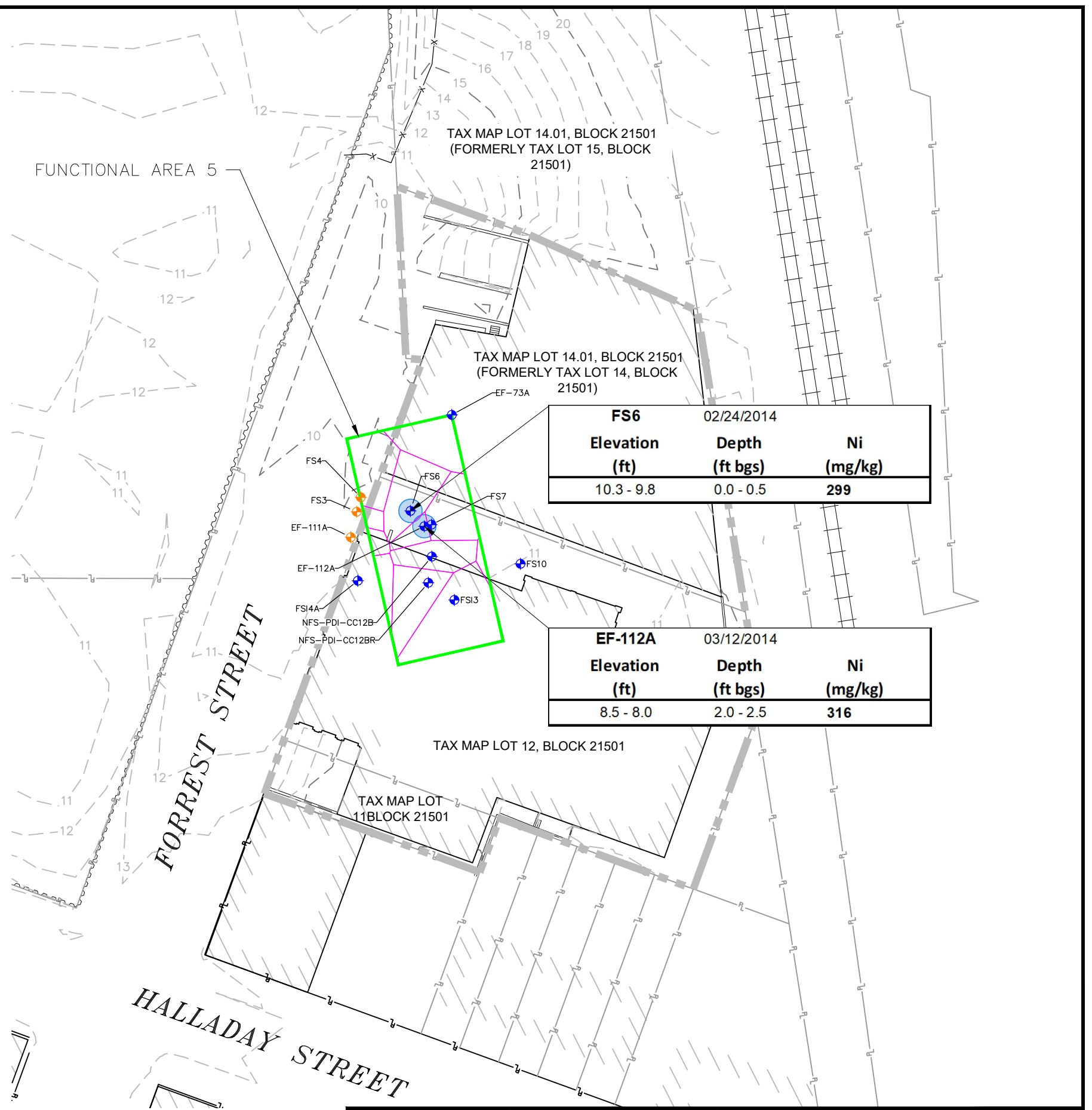
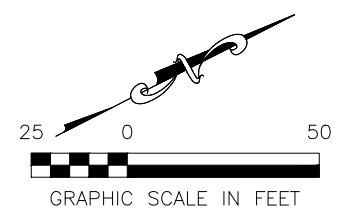
-  PROPERTY LINE
-  FENCE
-  EDGE OF CONCRETE
-  FORREST STREET PROPERTIES SITE BOUNDARY
-  EXISTING SHEET PILE
-  EXISTING BUILDING
-  GROUND SURFACE ELEVATION CONTOURS 1' INTERVAL, 5' INDEX
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - FORREST STREET PROPERTIES
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - OUTSIDE FORREST STREET PROPERTIES SITE BOUNDARY
-  LOCATION OF SOIL SAMPLE WITH NI CONCENTRATION GREATER THAN THE IGWSRS-GAG WITHIN FUNCTIONAL AREA
-  THIESSEN POLYGON
-  FUNCTIONAL AREA 5

**NOTES:**

1. Ni RESULTS ARE SHOWN IN mg/kg.

bgs BELOW GROUND SURFACE  
ft FEET  
IGWSRS-GAG SITE-SPECIFIC IMPACT TO GROUNDWATER SOIL REMEDIATION STANDARD - GARFIELD AVENUE GROUP (ALTERNATIVE REMEDIATION STANDARD AS PROPOSED IN THE SUPPLEMENTAL SOIL REMEDIAL INVESTIGATION REPORT, FINAL (REVISION 1), DATED AUGUST 30, 2018, AND APPROVED BY NJDEP ON OCTOBER 22, 2018).

mg/kg MILLIGRAMS PER KILOGRAM  
Ni NICKEL  
NJDEP NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION




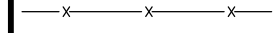




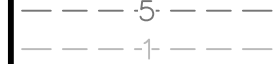
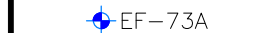




FS6 02/24/2014		
Elevation (ft)	Depth (ft bgs)	Ni (mg/kg)
10.3 - 9.8	0.0 - 0.5	299

EF-112A 03/12/2014		
Elevation (ft)	Depth (ft bgs)	Ni (mg/kg)
8.5 - 8.0	2.0 - 2.5	316

PPG GARFIELD AVENUE GROUP SITES JERSEY CITY, NEW JERSEY	<b>COMPLIANCE AVERAGING EVALUATION</b> NICKEL IN SOIL - IGWSRS-GAG FORREST STREET PROPERTIES FUNCTIONAL AREA 5
DATE: 06/12/2023    DRWN: MDN	<b>FIGURE 5</b>

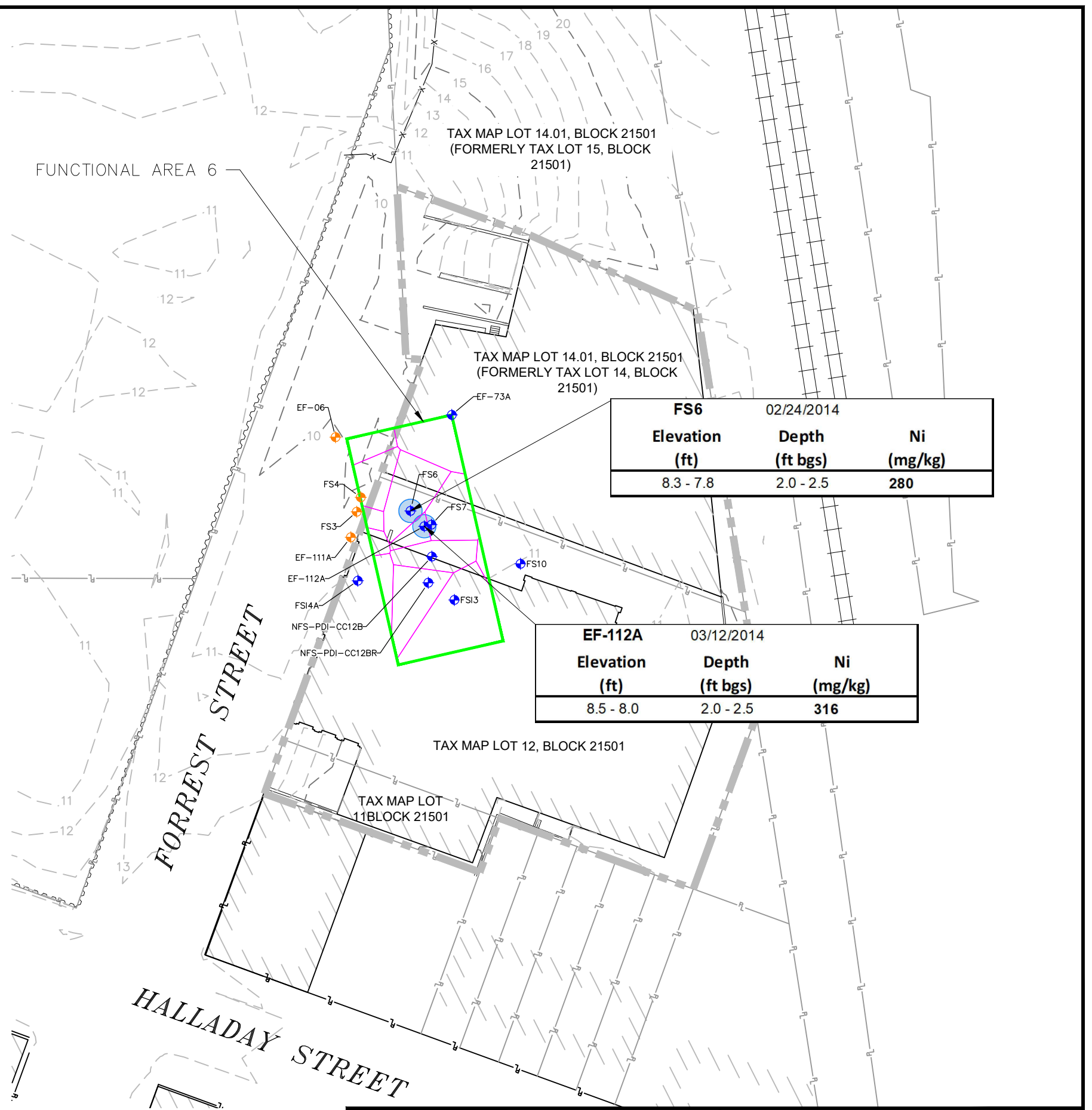
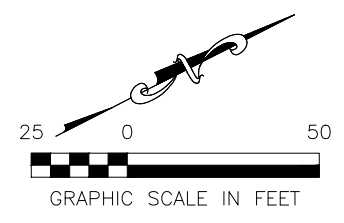
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**LEGEND**

-  PROPERTY LINE
-  FENCE
-  EDGE OF CONCRETE
-  FORREST STREET PROPERTIES SITE BOUNDARY
-  EXISTING SHEET PILE
-  EXISTING BUILDING
-  GROUND SURFACE ELEVATION CONTOURS 1' INTERVAL, 5' INDEX
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - FORREST STREET PROPERTIES
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - OUTSIDE FORREST STREET PROPERTIES SITE BOUNDARY
-  LOCATION OF SOIL SAMPLE WITH NI CONCENTRATION GREATER THAN THE IGWSRS-GAG WITHIN FUNCTIONAL AREA
-  THIESSEN POLYGON
-  FUNCTIONAL AREA 6

**NOTES:**  
 1. Ni RESULTS ARE SHOWN IN mg/kg.

bgs BELOW GROUND SURFACE  
 ft FEET  
 IGWSRS-GAG SITE-SPECIFIC IMPACT TO GROUNDWATER SOIL REMEDIATION STANDARD - GARFIELD AVENUE GROUP (ALTERNATIVE REMEDIATION STANDARD AS PROPOSED IN THE SUPPLEMENTAL SOIL REMEDIAL INVESTIGATION REPORT, FINAL (REVISION 1), DATED AUGUST 30, 2018, AND APPROVED BY NJDEP ON OCTOBER 22, 2018).  
 mg/kg MILLIGRAMS PER KILOGRAM  
 Ni NICKEL  
 NJDEP NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION




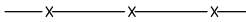




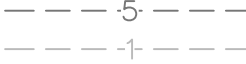
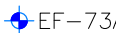




FS6 02/24/2014		
Elevation (ft)	Depth (ft bgs)	Ni (mg/kg)
8.3 - 7.8	2.0 - 2.5	280

EF-112A 03/12/2014		
Elevation (ft)	Depth (ft bgs)	Ni (mg/kg)
8.5 - 8.0	2.0 - 2.5	316

PPG GARFIELD AVENUE GROUP SITES JERSEY CITY, NEW JERSEY	<b>COMPLIANCE AVERAGING EVALUATION</b> <b>NICKEL IN SOIL - IGWSRS-GAG</b> <b>FORREST STREET PROPERTIES</b> <b>FUNCTIONAL AREA 6</b>
DATE: 06/12/2023    DRWN: MDN	<b>FIGURE 6</b>

File: C:\Users\NicholsM1\AECOM\PPG - GDS\910 CAD\20 SHEETS\PAR\FSP\PAR\_2022 PAR\CAM\_2023-06-12\_FSP\_CAM.dwg Layout: CAM\_Fig. 7 User: NicholsM1 Plotted: Jun 12, 2023 - 2:28pm Xref's:

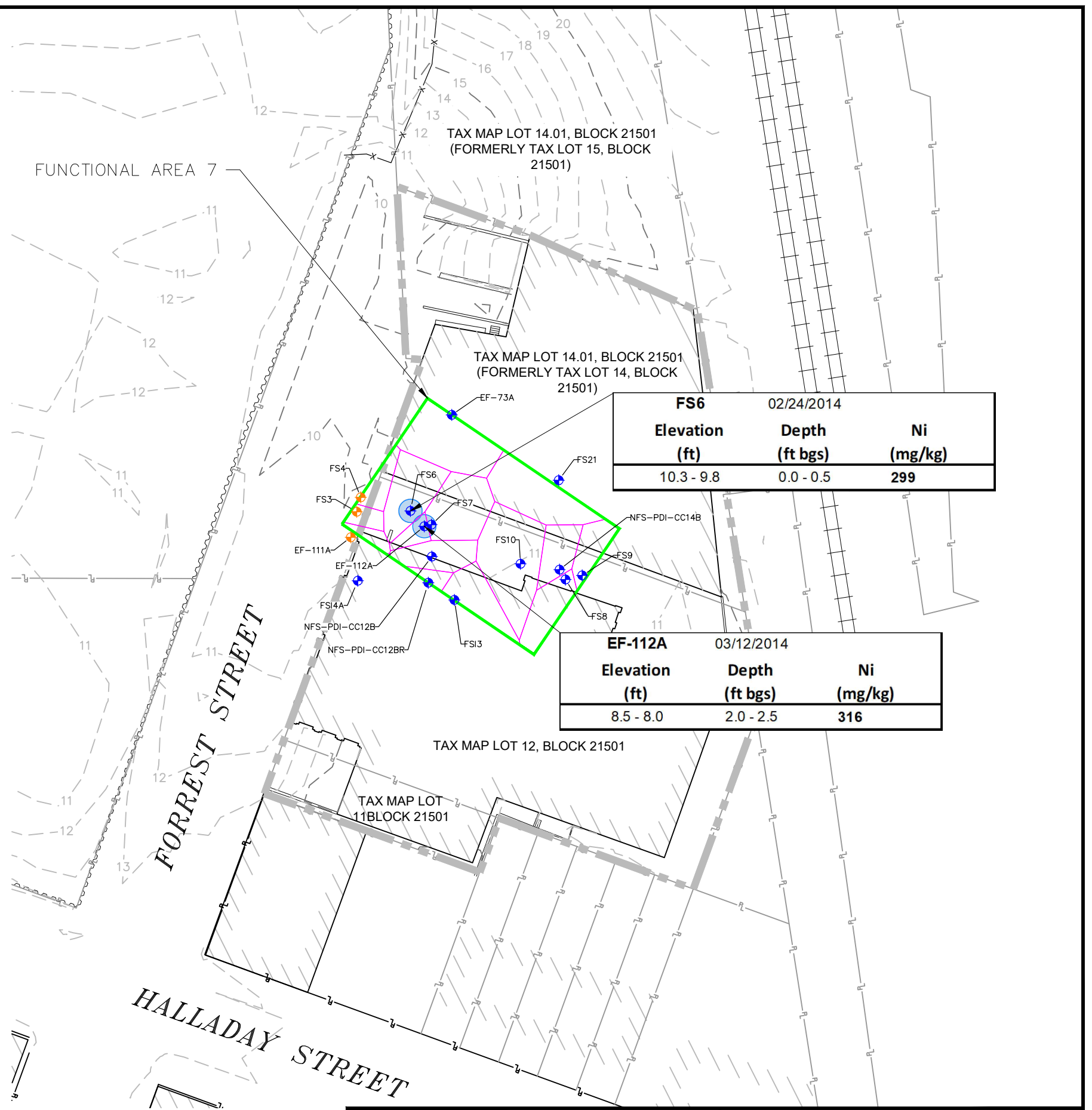
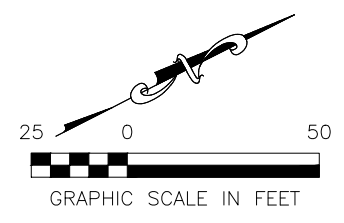
**LEGEND**

-  PROPERTY LINE
-  FENCE
-  EDGE OF CONCRETE
-  FORREST STREET PROPERTIES SITE BOUNDARY
-  EXISTING SHEET PILE
-  EXISTING BUILDING
-  GROUND SURFACE ELEVATION CONTOURS 1' INTERVAL, 5' INDEX
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - FORREST STREET PROPERTIES
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - OUTSIDE FORREST STREET PROPERTIES SITE BOUNDARY
-  LOCATION OF SOIL SAMPLE WITH NI CONCENTRATION GREATER THAN THE IGWSRS-GAG WITHIN FUNCTIONAL AREA
-  THIESSEN POLYGON
-  FUNCTIONAL AREA 7

**NOTES:**  
 1. Ni RESULTS ARE SHOWN IN mg/kg.

bgs  
ft  
IGWSRS-GAG      BELOW GROUND SURFACE  
FEET  
SITE-SPECIFIC IMPACT TO GROUNDWATER SOIL  
REMEDATION STANDARD - GARFIELD AVENUE GROUP  
(ALTERNATIVE REMEDIATION STANDARD AS PROPOSED IN  
THE SUPPLEMENTAL SOIL REMEDIAL INVESTIGATION  
REPORT, FINAL (REVISION 1), DATED AUGUST 30, 2018,  
AND APPROVED BY NJDEP ON OCTOBER 22, 2018).

mg/kg  
Ni  
NJDEP      MILLIGRAMS PER KILOGRAM  
NICKEL  
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL  
PROTECTION



FS6      02/24/2014		
Elevation (ft)	Depth (ft bgs)	Ni (mg/kg)
10.3 - 9.8	0.0 - 0.5	299


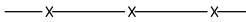




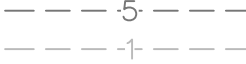
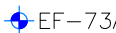




EF-112A      03/12/2014		
Elevation (ft)	Depth (ft bgs)	Ni (mg/kg)
8.5 - 8.0	2.0 - 2.5	316

PPG GARFIELD AVENUE GROUP SITES JERSEY CITY, NEW JERSEY	<b>COMPLIANCE AVERAGING EVALUATION          NICKEL IN SOIL - IGWSRS-GAG          FORREST STREET PROPERTIES          FUNCTIONAL AREA 7</b>
DATE: 06/12/2023    DRWN: MDN	<b>FIGURE 7</b>



File: C:\Users\NicholsM1\AECOM\PPG - GDS\910 CAD\20 SHEETS\PAR\FSP RAR\2022 RAR\CAM\2023-06-12\_FSP\_CAM.dwg Layout: CAM\_Fig. 8 User: NicholsM1 Plotted: Jun 12, 2023 - 2:28pm Xref's:

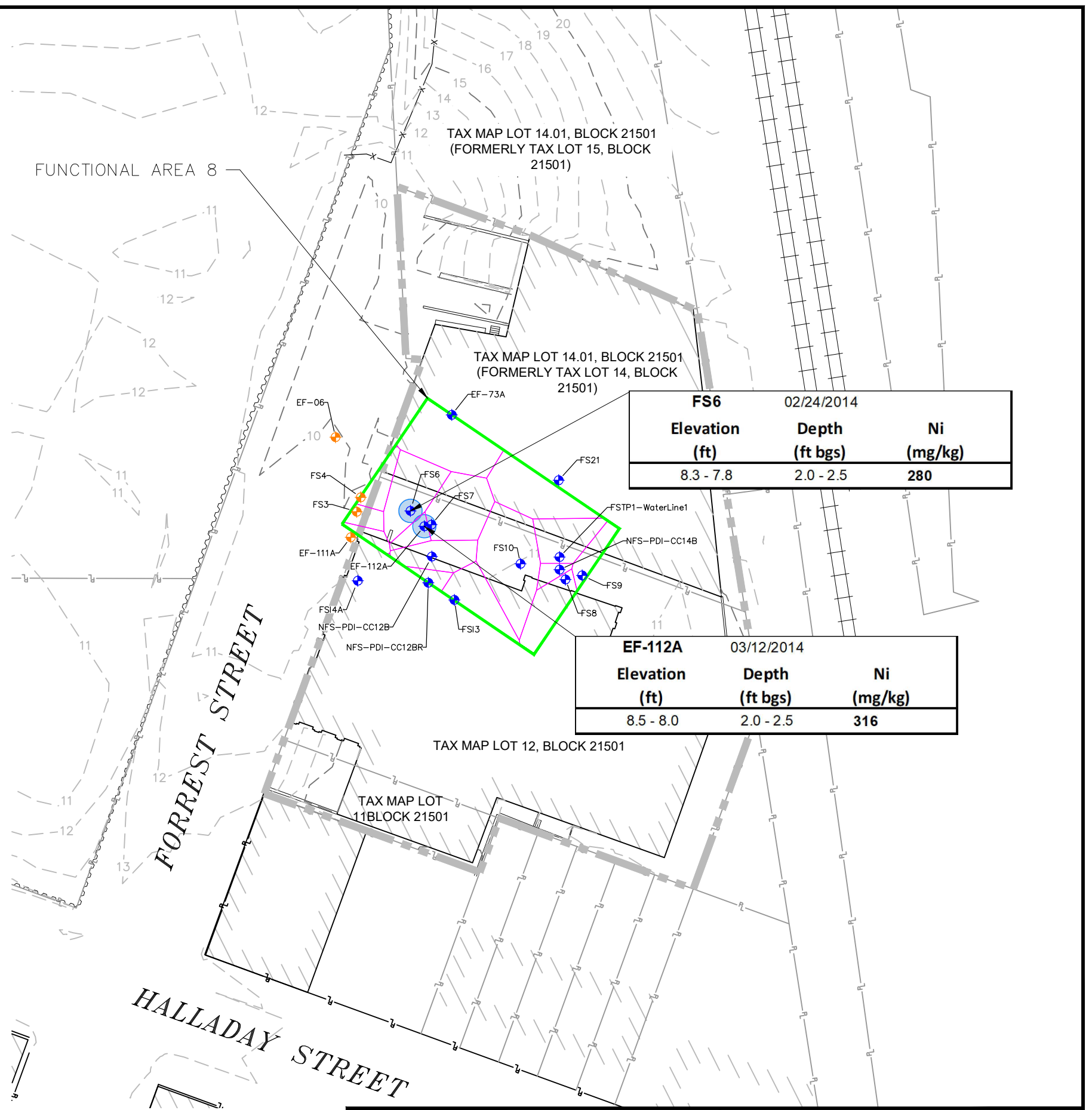
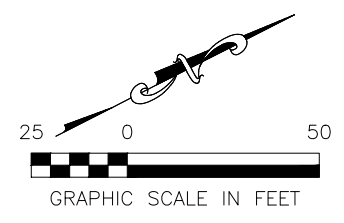
**LEGEND**

-  PROPERTY LINE
-  FENCE
-  EDGE OF CONCRETE
-  FORREST STREET PROPERTIES SITE BOUNDARY
-  EXISTING SHEET PILE
-  EXISTING BUILDING
-  GROUND SURFACE ELEVATION CONTOURS 1' INTERVAL, 5' INDEX
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - FORREST STREET PROPERTIES
-  SOIL SAMPLE LOCATION - REMAINING-IN-PLACE IN SOIL - OUTSIDE FORREST STREET PROPERTIES SITE BOUNDARY
-  LOCATION OF SOIL SAMPLE WITH NI CONCENTRATION GREATER THAN THE IGWSRS-GAG WITHIN FUNCTIONAL AREA
-  THIESSEN POLYGON
-  FUNCTIONAL AREA 8

**NOTES:**  
 1. Ni RESULTS ARE SHOWN IN mg/kg.

bgs  
ft  
IGWSRS-GAG      BELOW GROUND SURFACE  
FEET  
SITE-SPECIFIC IMPACT TO GROUNDWATER SOIL  
REMEDATION STANDARD - GARFIELD AVENUE GROUP  
(ALTERNATIVE REMEDIATION STANDARD AS PROPOSED IN  
THE SUPPLEMENTAL SOIL REMEDIAL INVESTIGATION  
REPORT, FINAL (REVISION 1), DATED AUGUST 30, 2018,  
AND APPROVED BY NJDEP ON OCTOBER 22, 2018).

mg/kg  
Ni  
NJDEP      MILLIGRAMS PER KILOGRAM  
NICKEL  
NEW JERSEY DEPARTMENT OF ENVIRONMENTAL  
PROTECTION



FS6      02/24/2014		
Elevation (ft)	Depth (ft bgs)	Ni (mg/kg)
8.3 - 7.8	2.0 - 2.5	280

EF-112A      03/12/2014		
Elevation (ft)	Depth (ft bgs)	Ni (mg/kg)
8.5 - 8.0	2.0 - 2.5	316

PPG GARFIELD AVENUE GROUP SITES JERSEY CITY, NEW JERSEY	<b>COMPLIANCE AVERAGING EVALUATION          NICKEL IN SOIL - IGWSRS-GAG          FORREST STREET PROPERTIES          FUNCTIONAL AREA 8</b>
DATE: 06/12/2023      DRWN: MDN	<b>FIGURE 8</b>

Forrest Street Properties Compliance Averaging for Nickel in Soil  
PPG, Jersey City, New Jersey

## **Attachment 1**

### **Boring Logs**



<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611753.901
<b>Date Started Drilling:</b> 4/13/2011	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683586.835
<b>Date Finished Drilling:</b> 4/13/2011	<b>Core Size:</b> 12 in	<b>Boring Total Depth:</b> 25 ft
<b>Logged By:</b> B. Daniels, M. Merdinger	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> 5
<b>Physical Location:</b>		<b>Surface Elevation:</b> 10.3 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID	
				ASPHALT		Black Asphalt		
1	5	0.5		FILL		Very Dark Grey (Gley 1 3/N) Silty fine to medium angular GRAVEL, little fine to medium Sand, trace Fill Material (brick, slag) and COPR (10%), loose, moist. Light Coal Tar odor.	EF-B06-0.5	
2							EF-B06-2.0	
3								EF-B06-2.5
4		0.2					EF-B06-4.0	
5	1.9	0		FILL		Stained Black medium to coarse angular GRAVEL, little Silt and medium Sand, loose, wet, sheen. Very string Coal Tar odor. Black-stained to Light Olive Brown (2.5YR 5/3) SILT, little medium Sand, slightly mottled, soft to semi-firm, wet, sheen. Coal Tar odor. No Recovery		
6							EF-B06-6.0	
7					VOID			
8								
9								
10	2.9	0.6		FILL		Olive Brown (2.5YR 5/3) and Yellowish Brown (10YR 5/4) mottled SILT, little fine Sand, semi-cohesive, semi-firm, wet, slight sheen. Coal Tar odor.	EF-B06-10.0	
11								
12					SP-SM			Reddish Brown (2.5YR 4/3) fine SAND and SILT, little fine to medium rounded Gravel, loose, wet. No odor.
13		1		VOID		No Recovery		
14								
15	4.5	0.5		SP-SM		Reddish Brown (2.5YR 4/3) fine SAND and SILT, little fine to medium rounded Gravel, loose, wet. No odor.		
16								
17								EF-B06-17.0
18				0				
19		0						
20	5	0.6		VOID		No Recovery		
21					SW-SM		Reddish Brown (2.5YR 4/3) fine to coarse SAND and SILT, loose, wet. No odor.	
22								EF-B06-22.0
23				0.1				
24		0.1						
25						End of boring at 25 ft.		

**Notes:**  
 bgs - below surface grade COPR - chromite ore processing residue UNdno - non-organic undisturbed native deposits MGP - manufactured gas plant  
 MM - meadow mat GGM - green grey mud UNdorg - organic undisturbed native deposits CCPW - chromate chemical production waste

**Comments:** COPR (10%) identified from 0.5-5.0 ft bgs.

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611817.1
<b>Date Started Drilling:</b> 6/20/2015 8:20:00 AM	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683551.8
<b>Date Finished Drilling:</b> 6/19/2015 3:00:00 PM	<b>Core Size:</b> 2 in	<b>Boring Total Depth:</b> 40 ft
<b>Logged By:</b> EW	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b>		<b>Surface Elevation:</b> 11.1 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1	3.5	0.0		CONCRETE		CONCRETE, no staining	
		0.0	dry	FILL		GRAVEL, dry, no odor, no staining	
		0.0	dry	FILL		medium to coarse SAND, with fine gravel, (7.5YR 3/2) dark brown, dry, no odor, no staining	EF110A-0.8-1.3
		0.0	dry	FILL		medium SAND, with coal, (7.5YR 2.5/1) black, dry, no odor, no staining	
		0.0	slightly moist	FILL		fine to medium SAND, trace fine gravel trace silt, (10YR 5/4) yellowish brown, slightly moist, no odor, no staining	
2				NR		NO RECOVERY	EF110A-2.0-2.5
3							EF110A-3.0-3.5
4				NR		NO RECOVERY	
5	4	0.0	wet	FILL		fine SAND, and silt, (10YR 5/2) grayish brown, wet, no odor, no staining	EF110A-5.0-5.5
6							
7		0.0	moist	FILL		medium SAND, and gravel, (10YR 5/1) gray, moist, no odor, no staining	EF110A-7.0-7.5
8		0.0	moist	SM		medium SAND, trace fine gravel, (5YR 4/3) reddish brown, moist, no odor, no staining, UNDno. Soils consistent with UNDno.	EF110A-8.0-8.5
9				NR		NO RECOVERY	
10	5	0.0	moist	SM		medium SAND, trace fine gravel, (5YR 4/3) reddish brown, moist, no odor, no staining, UNDno. Soils consistent with UNDno.	EF110A-10.0-10.5
11							
12		0.0	wet	SM		medium SAND, with fine to medium gravel, (5YR 4/3) reddish brown, wet, no odor, no staining, UNDno. Soils consistent with UNDno.	EF110A-12.0-12.5
13							
14							EF110A-14.0-14.5
15	4.2	0.0	wet	SM		medium SAND, (5YR 4/3) reddish brown, wet, no odor, no staining, UNDno. Soils consistent with UNDno.	EF110A-16.0-16.5
16							
17							
18							
19				NR		NO RECOVERY	EF110A-18.0-18.5
20		0.0	wet	SM		medium SAND, (5YR 4/3) reddish brown, wet, no odor, no staining, UNDno. Soils consistent with UNDno.	EF110A-20.0-20.5
21							

**Notes:**  
 bgs - below surface grade COPR - chromite ore processing residue UNDno - non-organic undisturbed native deposits MGP - manufactured gas plant  
 MM - meadow mat GGM - green grey mud UNDorg - organic undisturbed native deposits CCPW - chromate chemical production waste

**Comments:** 1) No COPR or GGM present in any interval of this boring. 2) UNDno= 'Undisturbed native deposits, Non-Organic'.

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611817.1
<b>Date Started Drilling:</b> 6/20/2015 8:20:00 AM	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683551.8
<b>Date Finished Drilling:</b> 6/19/2015 3:00:00 PM	<b>Core Size:</b> 2 in	<b>Boring Total Depth:</b> 40 ft
<b>Logged By:</b> EW	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b>		<b>Surface Elevation:</b> 11.1 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
5							EF110A-22.0-22.5
23							
24							EF110A-24.0-24.5
25		0.0	wet	SM		medium SAND, (5YR 4/3) reddish brown, wet, no odor, no staining, UNDno. Soils consistent with UNDno.	EF110A-26.0-26.5
26							
27	5						
28							EF110A-28.0-28.5
29							
30		0.0	wet	SM		medium SAND, (5YR 4/3) reddish brown, wet, no odor, no staining, UNDno. Soils consistent with UNDno.	EF110A-30.0-30.5
31							
32	5						EF110A-32.0-32.5
33							
34							EF110A-34.0-34.5
35		0.0	wet	SM		medium SAND, (5YR 4/3) reddish brown, wet, no odor, no staining, UNDno. Soils consistent with UNDno.	EF110A-36.0-36.5
36							
37	5						EF110A-38.0-38.5
38							
39							EF110A-39.5-40.0
40							

**Notes:**

bgs - below surface grade COPR - chromite ore processing residue UNDno - non-organic undisturbed native deposits MGP - manufactured gas plant  
 MM - meadow mat GGM - green grey mud UNDorg - organic undisturbed native deposits CCPW - chromate chemical production waste

**Comments:** 1) No COPR or GGM present in any interval of this boring. 2) UNDno= 'Undisturbed native deposits, Non-Organic'.

PPG - 2012-08 RA PPG\_LOGS\_A\_GDT - 12/6/16 08:17




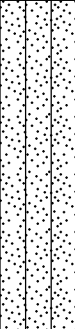
<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611795.9
<b>Date Started Drilling:</b> 6/27/2015 8:30:00 AM	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683573.2
<b>Date Finished Drilling:</b> 6/27/2015 2:45:00 PM	<b>Core Size:</b> 2 in	<b>Boring Total Depth:</b> 40 ft
<b>Logged By:</b> EW	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b> Forrest Street -EF-111A		<b>Surface Elevation:</b> 10.4 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
1-2	3.5	0.0		FILL		CONCRETE.	
		0.0	dry	FILL		medium to coarse SAND, trace fine gravel, trace ceramics, (5YR 3/1) very dark gray, dry, no odor, no staining.	EF-111A-0.4-0.9
		0.0	dry	FILL			fine to medium SAND, with ash and cinders, trace coal, (5YR 4/1) dark gray, dry, no odor, no staining.
		0.0	dry	FILL		fine SAND, trace silt little medium gravel, (7.5YR 3/2) dark brown, slightly moist, no odor, no staining.	EF-111A-2.0-2.5
3-4				NR		NO RECOVERY.	EF-111A-3.0-3.5
5-8	5	0.0	wet	FILL		fine SAND, trace silt, little medium gravel, (7.5YR 3/2) dark brown, wet, no odor, no staining.	EF-111A-5.0-5.5
							EF-111A-7.0-7.5
		0.0	wet	SM		UNDno fine to medium SAND, trace fine gravel, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	EF-111A-8.0-8.5
10-14	3.5	0.0	wet	SM		UNDno fine to medium SAND, trace fine gravel, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	EF-111A-10.0-10.5
		0.0	wet	SM		UNDno medium SAND, with fine gravel, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	
		0.0	wet	SM		UNDno medium SAND, trace fine gravel, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	EF-111A-12.0-12.5
						NO RECOVERY.	EF-111A-13.0-13.5
15-19	3.5	0.0	wet	SM		UNDno medium SAND, with fine to medium gravel, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	EF-111A-15.0-15.5
							EF-111A-17.0-17.5
						NO RECOVERY.	EF-111A-18.0-18.5
20-21		0.0	wet	SM		UNDno medium SAND, (5YR 4/3) reddish brown, wet, no odor, no staining. Soils consistent with UNDno.	EF-111A-20.0-20.5

**Notes:**  
 bgs - below surface grade    COPR - chromite ore processing residue    UNDno - non-organic undisturbed native deposits    MGP - manufactured gas plant  
 MM - meadow mat    GGM - green grey mud    UNDorg - organic undisturbed native deposits    CCPW - chromate chemical production waste

Comments:

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611795.9
<b>Date Started Drilling:</b> 6/27/2015 8:30:00 AM	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683573.2
<b>Date Finished Drilling:</b> 6/27/2015 2:45:00 PM	<b>Core Size:</b> 2 in	<b>Boring Total Depth:</b> 40 ft
<b>Logged By:</b> EW	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b> Forrest Street -EF-111A		<b>Surface Elevation:</b> 10.4 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
23	3.5						EF-111A-22.0-22.5
24				NR		NO RECOVERY.	EF-111A-23.0-23.5
25		0.0	wet	SM		UNDno medium SAND,(5YR 4/3) reddish brown,wet,no odor,no staining.Soils consistent with UNDno.	EF-111A-25.0-25.5
26				NR		NO RECOVERY.	
27	0.8						
28							
29							
30		0.0	wet	SM		UNDno medium SAND,(5YR 4/3) reddish brown,wet,no odor,no staining.Soils consistent with UNDno.	EF-111A-30.0-30.5
31							
32	3.5						EF-111A-32.0-32.5
33							EF-111A-33.0-33.5
34				NR		NO RECOVERY.	
35		0.0	wet	SM		UNDno medium SAND,(5YR 4/3) reddish brown,wet,no odor,no staining. Soils consistent with UNDno.	EF-111A-35.0-35.5
36							
37	5						EF-111A-37.0-37.5
38							
39							EF-111A-39.0-39.5
40							EF-111A-39.5-40.0

**Notes:**  
 bgs - below surface grade    COPR - chromite ore processing residue    UNDno - non-organic undisturbed native deposits    MGP - manufactured gas plant  
 MM - meadow mat    GGM - green grey mud    UNDorg - organic undisturbed native deposits    CCPW - chromate chemical production waste

Comments:

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611787.1
<b>Date Started Drilling:</b> 3/20/2014 12:20:00 PM	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683580.5
<b>Date Finished Drilling:</b> 3/20/2014 2:35:00 PM	<b>Core Size:</b> 3 in	<b>Boring Total Depth:</b> 40 ft
<b>Logged By:</b> EW	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b> Forrest Street - FS3		<b>Surface Elevation:</b> 10.1 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID	
0-1		0.0		CONCRETE		CONCRETE, no staining.		
1-2	4	0.0	slightly moist	FILL		fine to medium SAND, some fine gravel, (7.5YR 4/1) dark gray, non plastic, loose, slightly moist, no odor, no staining.	FS3-1.0-1.5	
2-3		0.0	dry to slight moist	FILL		fine SAND, some silt, (7.5YR 2.5/3) very dark brown, non plastic, stiff, dry to slightly moist, no odor, no staining.	FS3-3.0-3.5	
3-4		0.0		FILL		SILT, trace fine sand, (7.5YR 3/1) very dark gray, non plastic, soft, moist, no odor, no staining.		
4-5					NR		NO RECOVERY	
5-6	5	0.0	wet	FILL		fine SAND, with silt, (10YR 5/4) yellowish brown, non plastic, soft, wet, no odor, no staining.	FS3-5.0-5.5	
6-7							FS3-7.0-7.5	
7-9		0.0	wet	FILL		fine SILT, and fine sand, (10YR 6/6) brownish yellow, non plastic, soft, wet, no odor, no staining.	FS3-9.0-9.5	
9-11	4	0.0	wet	FILL		fine SILT, and fine sand, (10YR 6/6) brownish yellow, non plastic, soft, wet, no odor, no staining.	FS3-11.0-11.5	
11-12		0.0	moist	SM		fine to medium SAND, some fine gravel, (5YR 4/3) reddish brown, non plastic, loose, moist, no odor, no staining, red fine sands. Soils consistent with UNDno.	FS3-13.0-13.5	
12-14					NR		NO RECOVERY	
14-15		0.0	moist	SM		fine to medium SAND, some fine gravel, (5YR 4/3) reddish brown, non plastic, loose, moist, no odor, no staining, red fine sands. Soils consistent with UNDno.	FS3-15.0-15.5	
15-16	1			NR		NO RECOVERY		
16-17								
17-18								
18-19								
19-20		0.0	wet	SM		medium SAND, trace fine gravel, (5YR 4/4) reddish brown, non plastic, soft, wet, no odor, no staining, red fine sands. Soils consistent with UNDno.	FS3-20.0-20.5	
20-21								

**Notes:**  
 bgs - below surface grade  
 MM - meadow mat  
 COPR - chromite ore processing residue  
 GGM - green grey mud  
 UNDno - non-organic undisturbed native deposits  
 UNDorg - organic undisturbed native deposits  
 MGP - manufactured gas plant  
 CCPW - chromate chemical production waste

Comments: No COPR/GGM identified.

PPG - 2012-09 RA PPG LOGS - A.GDT - 10/18/16 10:53

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611787.1
<b>Date Started Drilling:</b> 3/20/2014 12:20:00 PM	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683580.5
<b>Date Finished Drilling:</b> 3/20/2014 2:35:00 PM	<b>Core Size:</b> 3 in	<b>Boring Total Depth:</b> 40 ft
<b>Logged By:</b> EW	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b> Forrest Street - FS3		<b>Surface Elevation:</b> 10.1 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
23-24	5						FS3-22.0-22.5
24-25							FS3-24.0-24.5
25-26		0.0	wet	SM		medium SAND, trace fine gravel, (5YR 4/4) reddish brown, non plastic, soft, wet, no odor, no staining, red fine sands. Soils consistent with UNDno.	FS3-26.0-26.5
26-27							
27-28	5						FS3-28.0-28.5
28-29							
29-30							
30-31		0.0	wet	SM		medium SAND, trace fine gravel, (5YR 4/4) reddish brown, non plastic, soft, wet, no odor, no staining, red fine sands. Soils consistent with UNDno.	FS3-30.0-30.5
31-32							
32-33	3						FS3-32.0-32.5
33-34				NR		NO RECOVERY	
34-35							
35-36		0.0	wet	SM		medium SAND, trace fine gravel, (5YR 4/4) reddish brown, non plastic, soft, wet, no odor, no staining, red fine sands. Soils consistent with UNDno.	FS3-35.0-35.5
36-37							
37-38	3						FS3-37.0-37.5
38-39				NR		NO RECOVERY	
39-40							

**Notes:**  
 bgs - below surface grade    COPR - chromite ore processing residue    UNDno - non-organic undisturbed native deposits    MGP - manufactured gas plant  
 MM - meadow mat    GGM - green grey mud    UNDorg - organic undisturbed native deposits    CCPW - chromate chemical production waste

Comments: No COPR/GGM identified.

PPG - 2012-09 RA PPG\_LOGS\_A\_GDT - 10/18/16 10:53

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611782.3
<b>Date Started Drilling:</b> 3/21/2014 9:00:00 AM	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683584.9
<b>Date Finished Drilling:</b> 3/21/2014 9:00:00 AM	<b>Core Size:</b> 3 in	<b>Boring Total Depth:</b> 40 ft
<b>Logged By:</b> EW	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b> Forrest Street - FS4		<b>Surface Elevation:</b> 10.1 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
0-1		0.0		CONCRETE		CONCRETE, no staining.	
1-2	5	0.0	dry to slight moist	FILL		fine to medium SAND, some fine to medium gravel, trace coal, (10YR 2/2) very dark brown, non plastic, stiff, dry to slightly moist, no odor, no staining.	FS4-1.0-1.5
2-3							FS4-3.0-3.5
3-4							
4-5		0.0	slightly moist	FILL		fine SAND, some silt, (10YR 4/2) dark grayish brown, non plastic, medium stiff, slightly moist, no odor, no staining.	
5-6	5	0.0	slightly moist	FILL		fine SAND, some silt, (10YR 4/2) dark grayish brown, non plastic, medium stiff, slightly moist, no odor, no staining.	FS4-5.0-5.5
6-7		0.0	moist to wet	FILL		fine silty SAND, (10YR 5/2) grayish brown, non plastic, soft, moist to wet, no odor, no staining.	
7-8		0.0	wet	FILL		fine silty SAND, (7.5YR 4/3) brown, non plastic, medium stiff, wet, no odor, no staining.	FS4-7.0-7.5
8-9		0.0	slightly moist	FILL		SILT, trace fine sand, (10YR 5/4) yellowish brown, non plastic, medium stiff, slightly moist, no odor, no staining.	FS4-9.0-9.5
9-10	1.5	0.0	moist to wet	FILL		fine to medium SAND, trace silt, some medium to coarse gravel, (10YR 8/2) very pale brown, non plastic, medium stiff, moist to wet, no odor, no staining.	FS4-11.0-11.5
10-11							
11-12					NR		NO RECOVERY
12-13							
13-14							
14-15	0.5	0.0	moist	SM		UNDno fine to medium SAND, (5YR 4/4) reddish brown, loose, moist, no odor, no staining, red fine sands. Soils consistent with UNDno.	FS4-15.0-15.5
15-16				NR		NO RECOVERY	
16-17							
17-18							
18-19							
19-20							
20-21		0.0	wet	SM		UNDno medium SAND, with medium gravel, (5YR 4/3) reddish brown, non plastic, loose, wet, no odor, no staining, red fine sands. Soils consistent with UNDno.	FS4-20.0-20.5
21-22							

**Notes:**  
 bgs - below surface grade COPR - chromite ore processing residue UNDno - non-organic undisturbed native deposits MGP - manufactured gas plant  
 MM - meadow mat GGM - green grey mud UNDorg - organic undisturbed native deposits CCPW - chromate chemical production waste

Comments: No COPR/GGM identified.

PPG - 2012-08 RA PPG LOGS - A.GDT. - 10/18/16 10:53



<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Geoprobe	<b>Coordinates (NJSPNAD83) x:</b> 611782.3
<b>Date Started Drilling:</b> 3/21/2014 9:00:00 AM	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683584.9
<b>Date Finished Drilling:</b> 3/21/2014 9:00:00 AM	<b>Core Size:</b> 3 in	<b>Boring Total Depth:</b> 40 ft
<b>Logged By:</b> EW	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b> Forrest Street - FS4		<b>Surface Elevation:</b> 10.1 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID
23-24	5						FS4-22.0-22.5
24-25							FS4-24.0-24.5
25-26		0.0	wet	SM		fine to medium SAND, (5YR 4/3) reddish brown, non plastic, soft to medium stiff, wet, no odor, no staining, red fine sands. Green water identified at 26.0-28.0 ft bgs. Soils consistent with UNDno.	FS4-26.0-26.5
26-27	4						FS4-28.0-28.5
27-28							
28-29				NR		NO RECOVERY	
29-30							
30-31		0.0	saturated	SM		medium SAND, (5YR 4/3) reddish brown, non plastic, soft to medium stiff, saturated, red fine sands. Soils consistent with UNDno.	FS4-30.0-30.5
31-32	3						FS4-32.0-32.5
32-33							
33-34				NR		NO RECOVERY	
34-35							
35-36		0.0	wet	SM		medium SAND, (5YR 3/4) dark reddish brown, non plastic, soft to medium stiff, wet, no odor, no staining, red fine sands. Soils consistent with UNDno.	FS4-35.0-35.5
36-37	2.6	0.0	saturated	SM		medium SAND, (5YR 4/3) reddish brown, non plastic, soft to medium stiff, saturated, red fine sands. Soils consistent with UNDno.	FS4-37.0-37.5
37-38							
38-39				NR		NO RECOVERY	
39-40							

**Notes:**  
 bgs - below surface grade    COPR - chromite ore processing residue    UNDno - non-organic undisturbed native deposits    MGP - manufactured gas plant  
 MM - meadow mat    GGM - green grey mud    UNDorg - organic undisturbed native deposits    CCPW - chromate chemical production waste

Comments: No COPR/GGM identified.

<b>Project Name:</b> PPG Garfield Ave	<b>Drilling Company:</b> SGS North America	
<b>Project Number:</b> 60240739	<b>Drilling Method:</b> Direct Push	<b>Coordinates (NJSPNAD83) x:</b> 611793.06
<b>Date Started Drilling:</b> 6/23/2016 9:20:00 AM	<b>Rig Type:</b>	<b>Coordinates (NJSPNAD83) y:</b> 683534.95
<b>Date Finished Drilling:</b> 6/23/2016 10:25:00 AM	<b>Core Size:</b> 3.0 in	<b>Boring Total Depth:</b> 15 ft
<b>Logged By:</b> HBB	<b>Project Manager:</b> Scott Mikaelian	<b>Depth to Water:</b> NA
<b>Physical Location:</b> Actual - Forrest PDI		<b>Surface Elevation:</b> 10.65 ft NAVD88

Depth Range (ft bgs)	Recovery (ft/ft)	PID (ppm)	Moisture Content	USCS	Graphic Log	Surface Cover and Thickness:	Sample ID	
0	4	0.0		ASPHALT		Asphalt and gravel sub-base.		
1			moist	FILL		fine to medium SAND, trace ash, (7.5YR 4/2) brown, medium dense, moist, no odor, no staining.	P4-FOR-CC10B-1.0-1.5	
2								
3			wet	FILL		SILT, trace clay, (5YR 4/3) reddish brown, medium dense, wet, no odor, no staining.	P4-FOR-CC10B-3.0-3.5	
4				NR		NO RECOVERY		
5	4.5	0.0	saturated	FILL		fine SAND, some silt, (5YR 4/3) reddish brown, medium dense, saturated, no odor, no staining, water at 5.0 feet.	P4-FOR-CC10B-5.0-5.5	
6								
7			saturated	FILL		fine SAND, (7.5YR 4/2) brown, medium dense, saturated, fuel oil-like odor, black staining, sheen.	P4-FOR-CC10B-7.0-7.5	
8			saturated	FILL		medium to coarse GRAVEL, trace fine sand, (5Y 5/1) gray, loose, saturated, no odor, no staining.	P4-FOR-CC10B-9.0-9.5	
9				NR		NO RECOVERY		
10	4	0.0	saturated	FILL		medium to coarse GRAVEL, little silt, trace fine sand, (5Y 5/1) gray, loose, saturated, no odor, no staining.	P4-FOR-CC10B-10.5-11.0	
11								
12				SM		fine silty SAND, (5YR 4/3) reddish brown, medium dense, no odor, no staining. Soils consistent with UNDno.	P4-FOR-CC10B-11.0-11.5	
13								
14				NR		NO RECOVERY		
15								

**Notes:**  
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 MM - meadow mat    GGM - green grey mud    UNDorg - organic undisturbed native deposits    CCPW - chromate chemical production waste

**Comments:** 1) 3 attempts were made to obtain best recovery 2) MM/UND confirmed to be 1 ft thick 3) No CCPW (COPR or GGM) present in any interval of this boring.

Forrest Street Properties Compliance Averaging for Nickel in Soil  
PPG, Jersey City, New Jersey

## **Attachment 2**

### **Laboratory Analytical Reports (*Provided Separately*)**

Forrest Street Properties Compliance Averaging for Nickel in Soil  
PPG, Jersey City, New Jersey

## **Attachment 3**

### **Data Validation Reports (*Provided Separately*)**