Appendices

A

Site Survey from WSP

TOPOGRAPHIC AND PLANIMETRIC CERTIFICATION

I, DAVID K. BRUBAKER, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT THIS AIRBORNE/GROUND SURVEY WAS PERFORMED AT THE 95 PERCENT CONFIDENCE LEVEL (2 SIGMA) TO MEET FEDERAL GEOGRAPHIC DATA COMMITTEE STANDARDS; THAT THE HORIZONTAL ACCURACY IS 1.25', THAT THE VERTICAL ACCURACY IS 1.00' INSIDE THE ASH MAPPING BOUNDARY; THAT THE VERTICAL ACCURACY IS 2.00' OUTSIDE OF THE ASH MAPPING BOUNDARY; AND THAT THE ORIGINAL DATA (FLIGHT) WAS OBTAINED ON JULY 27, 2014; THAT THE SURVEY WAS COMPLETED ON NOVEMBER 4, 2014; THAT CONTOURS SHOWN AS [BROKEN LINES] MAY NOT MEET THE STATED STANDARD; AND ALL COORDINATES ARE BASED ON NAD83; AND ALL ELEVATIONS ARE BASED ON NAVD 88.

MONITORING WELL CERTIFICATION

I, DAVID K. BRUBAKER, CERTIFY THAT THIS PROJECT WAS COMPLETED UNDER MY DIRECT AND RESPONSIBLE CHARGE FROM AN ACTUAL SURVEY MADE UNDER MY SUPERVISION; THAT THIS GROUND SURVEY WAS PERFORMED AT THE 95 PERCENT CONFIDENCE LEVEL (2 SIGMA) TO MEET FEDERAL GEOGRAPHIC DATA COMMITTEE STANDARDS; THAT THE MONITOR WELL LOCATION HORIZONTAL ACCURACY IS 0.10', AND THE VERTICAL ACCURACY IS 0.01', AND THAT THE BORING LOCATIONS HORIZONTAL ACCURACY IS 1.0' AND THE VERTICAL ACCURACY IS 0.10'; AND THAT THE ORIGINAL DATA (FIELD SURVEY) WAS OBTAINED IN OCTOBER & NOVEMBER OF 2104; THAT THE FIELD SURVEY WAS COMPLETED ON NOVEMBER 4, 2014; AND ALL COORDINATES ARE BASED ON NAD83; AND ALL ELEVATIONS ARE BASED ON NAVD 88.

THE FOLLOWING INFORMATION WAS USED TO OBTAIN NAD83/NAVD88 U.S. SURVEY FEET FOR THIS PROJECT:

CLASS OF SURVEY: URBAN LAND SURVEYS (CLASS A)
POSITIONAL ACCURACY: 0.01'
TYPE OF GPS FIELD PROCEDURE: SC VRS NETWORK
DATE OF SURVEY: AUGUST 2014 – NOVEMBER 4, 2014
DATUM/EPOCH: NAD83
PUBLISHED/FIXED-CONTROL USED: LAWRENCE
GEOID MODEL: GEOID12A
COMBINED GRID FACTOR: 0.99986770
UNITS: U.S. SURVEY FEET

PRELIMINARY MAP

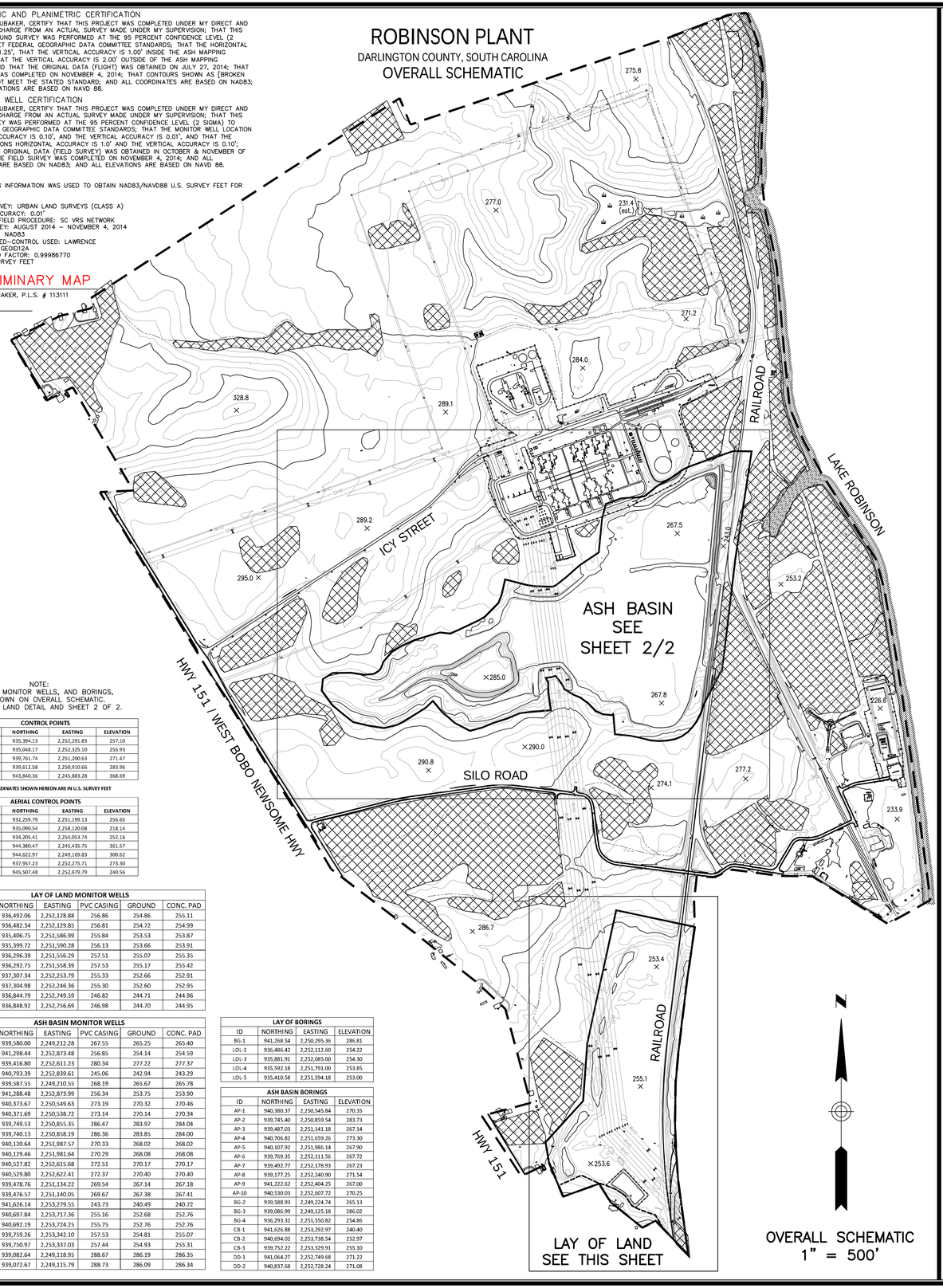
DAVID K. BRUBAKER, P.L.S. # 113111

DATE

ROBINSON PLANT

DARLINGTON COUNTY, SOUTH CAROLINA

OVERALL SCHEMATIC



NOTE:
CONTROL, MONITOR WELLS, AND BORINGS, NOT SHOWN ON OVERALL SCHEMATIC.
SEE LAY OF LAND DETAIL AND SHEET 2 OF 2.

CONTROL POINTS			
ID	NORTHING	EASTING	ELEVATION
TRV 1 NAIL	935,394.13	2,252,291.83	257.10
TRV 2 NAIL	935,048.17	2,252,335.10	256.93
TRV 12 REBAR	939,761.74	2,251,200.63	271.47
TRV 13 REBAR	939,612.58	2,250,910.66	283.96
NGS LAWRENCE	943,840.36	2,245,883.28	368.69

ALL COORDINATES SHOWN HEREON ARE IN U.S. SURVEY FEET

AERIAL CONTROL POINTS			
ID	NORTHING	EASTING	ELEVATION
AT-1	932,259.79	2,251,199.13	256.65
AT-2	935,090.54	2,258,120.08	218.14
AT-3	934,205.41	2,254,053.74	252.16
AT-4	944,380.47	2,245,435.75	361.57
AT-5	944,622.97	2,249,169.83	300.62
AT-6	937,957.23	2,252,275.71	273.30
AT-7	945,507.48	2,252,679.79	240.56

LAY OF LAND MONITOR WELLS					
ID	NORTHING	EASTING	PVC CASING	GROUND	CONC. PAD
MW-105S	936,492.06	2,252,128.88	256.86	254.86	255.11
MW-105D	936,482.34	2,252,129.85	256.81	254.72	254.99
MW-106S	935,406.75	2,251,586.99	255.84	253.53	253.87
MW-106D	935,399.72	2,251,590.28	256.13	253.66	253.91
MW-116S	936,296.39	2,251,556.29	257.51	255.07	255.35
MW-116D	936,292.75	2,251,558.39	257.53	255.17	255.42
MW-117S	937,307.34	2,252,253.79	255.33	252.66	252.91
MW-117D	937,304.98	2,252,246.36	255.30	252.60	252.95
MW-118S	936,844.79	2,252,749.59	246.82	244.71	244.96
MW-118D	936,848.92	2,252,756.69	246.98	244.70	244.95

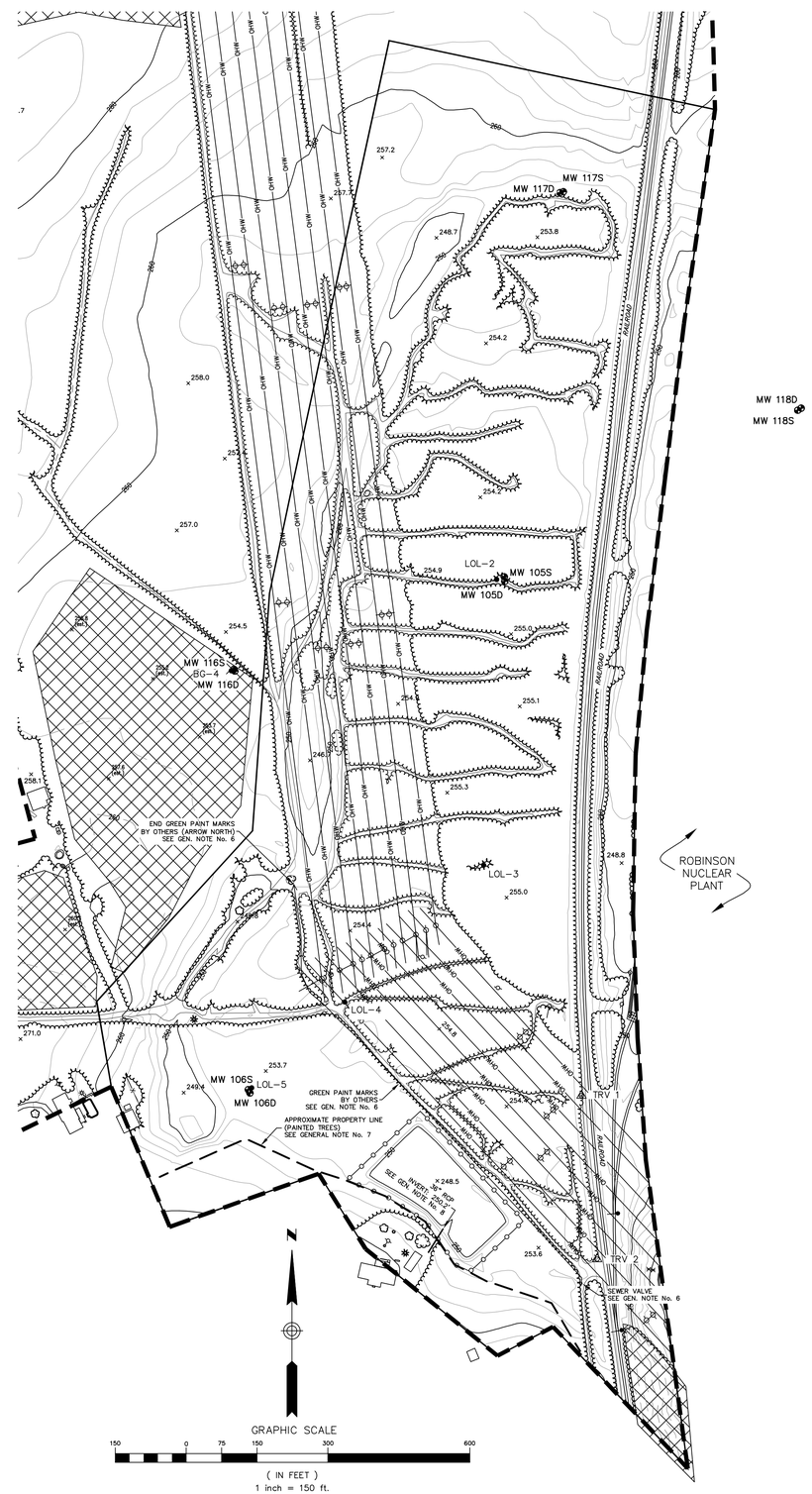
ASH BASIN MONITOR WELLS					
ID	NORTHING	EASTING	PVC CASING	GROUND	CONC. PAD
MW-1R	939,580.00	2,249,212.28	267.55	265.25	265.40
MW-2R	941,298.44	2,252,873.48	256.85	254.14	254.59
MW-3R	939,416.80	2,252,611.23	280.34	277.22	277.37
MW-7D	940,793.39	2,252,839.61	245.06	242.94	243.29
MW-101D	939,587.55	2,249,210.55	268.19	265.67	265.78
MW-102D	941,288.48	2,252,873.99	256.34	253.75	253.90
MW-107S	940,373.67	2,250,549.63	273.19	270.32	270.46
MW-107D	940,371.69	2,250,538.72	273.14	270.14	270.34
MW-108S	939,749.53	2,250,855.35	286.47	283.97	284.04
MW-108D	939,740.13	2,250,858.19	286.36	283.85	284.00
MW-109S	940,120.64	2,251,987.57	270.33	268.02	268.02
MW-109D	940,129.46	2,251,981.64	270.29	268.08	268.08
MW-110S	940,527.82	2,252,615.68	272.51	270.17	270.17
MW-110D	940,529.80	2,252,622.41	272.37	270.40	270.40
MW-111S	939,478.76	2,251,134.22	269.54	267.14	267.18
MW-111D	939,476.57	2,251,140.05	269.67	267.38	267.41
MW-112S	941,626.14	2,253,279.55	243.73	240.49	240.72
MW-113S	940,697.84	2,253,717.36	255.16	252.68	252.76
MW-113D	940,692.19	2,253,724.25	255.75	252.76	252.76
MW-114S	939,759.26	2,253,342.10	257.53	254.81	255.07
MW-114D	939,750.97	2,253,337.03	257.44	254.93	255.31
MW-115S	939,082.64	2,249,118.95	288.67	286.19	286.35
MW-115D	939,072.67	2,249,115.79	288.73	286.09	286.34

LAY OF BORINGS			
ID	NORTHING	EASTING	ELEVATION
BG-1	941,284.14	2,250,295.36	286.81
LOL-2	936,486.42	2,252,112.60	254.22
LOL-3	935,881.91	2,252,085.00	254.30
LOL-4	935,592.18	2,251,791.00	253.85
LOL-5	935,410.58	2,251,594.18	253.00

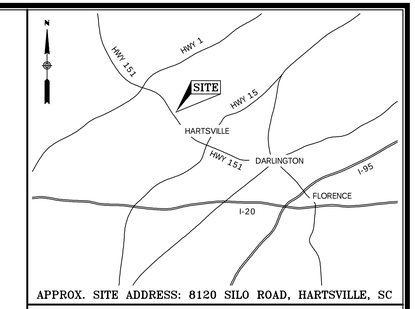
ASH BASIN BORINGS			
ID	NORTHING	EASTING	ELEVATION
AP-1	940,380.37	2,250,545.84	270.35
AP-2	939,745.40	2,250,859.54	283.73
AP-3	939,487.03	2,251,141.18	267.14
AP-4	940,706.82	2,251,659.26	273.30
AP-5	940,107.92	2,251,986.14	267.90
AP-6	939,769.35	2,252,111.56	267.72
AP-7	939,492.77	2,252,178.93	267.23
AP-8	939,177.25	2,252,240.90	271.54
AP-9	941,222.62	2,252,404.25	267.00
AP-10	940,530.03	2,252,607.72	270.25
BG-2	939,588.93	2,249,224.74	265.13
BG-3	939,086.99	2,249,125.18	286.02
BG-4	936,293.32	2,251,550.82	254.86
CB-1	941,626.88	2,253,292.97	240.40
CB-2	940,694.02	2,253,738.54	252.97
CB-3	939,752.22	2,253,329.91	255.10
DD-1	941,064.27	2,252,749.68	271.22
DD-2	940,837.68	2,252,728.24	271.08

OVERALL SCHEMATIC
1" = 500'

LAY OF LAND



GRAPHIC SCALE
150 0 75 150 300 600
(IN FEET)
1 inch = 150 ft.



APPROX. SITE ADDRESS: 8120 SILO ROAD, HARTSVILLE, SC

VICINITY MAP (NOT TO SCALE)

LEGEND

- MAPPING LIMITS
- ASH BOUNDARY MAPPING LIMITS
- TREE LINE
- BRUSH LINE
- OVERHEAD UTILITY LINES
- UTILITY POLE
- MW 115S MONITORING WELL
- AP-1, BG-1, CB-1, DD-1, LOL-2 BORING
- UNIDENTIFIED OBJECT#
- 5FT WIRE MESH FENCE
- RIP RAP
- NA MONITORING WELL NOT SURVEYED
- DRAINAGE DITCH CENTER LINE
- 281.3 SPOT ELEVATION
- 279.3 (est.) ESTIMATED SPOT ELEVATION
- TRV 1 CONTROL POINT
- DIRT PATH
- 6FT CHAINLINK FENCE
- GREEN PAINT MARKS BY OTHERS
- OBSCURED AREA – SEE NOTE 4

#UNIDENTIFIED OBJECTS FROM AERIAL MAPPING; SYMBOLS SHOWN WITHIN THE ASH BASIN ARE SPRINKLERS.

GENERAL NOTES

1. ALL DISTANCES ARE HORIZONTAL GROUND DISTANCE IN U.S. SURVEY FEET UNLESS OTHERWISE NOTED.
2. BASIS OF BEARINGS: NAD83.
3. VERTICAL DATUM: NAVD88.
4. CONTOUR INTERVAL INSIDE ASH MAPPING BOUNDARY IS 2'. CONTOUR INTERVAL OUTSIDE OF ASH MAPPING BOUNDARY IS 4'. DASHED CONTOURS OUTSIDE OF ASH MAPPING BOUNDARY IN THE OBSCURED AREAS ARE FOR REFERENCE ONLY AND HAVE NOT BEEN FIELD VERIFIED.
5. A PORTION OF THE PLANIMETRIC LOCATION SHOWN ON THIS MAP IS BASED ON PHOTOGRAMMETRIC MAPPING OF IMAGERY COLLECTED ON JULY 27, 2014. THE IMAGERY CAPTURED IS SUITABLE TO CREATE 1" = 100 SCALE MAPPING AND CONTOURS AT AN INTERVAL OF 2' AND 4'. THE MAPPING MEETS NATIONAL MAP ACCURACY STANDARDS FOR 100 SCALE MAPPING. DATA PROVIDED WHERE CLEAR AND VISIBLE ON THE IMAGERY IS WITHIN 2' OF ITS TRUE POSITION.
6. LOCATION OF UTILITIES WHETHER PUBLIC OR PRIVATE, IS BASED UPON FIELD LOCATION OF VISIBLE APPURTENANCES IN CONJUNCTION WITH INFORMATION PROVIDED BY THE OWNERS OF SAID UTILITIES AND ARE APPROXIMATE ONLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY LOCATION PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION. WSP CANNOT ASSUME RESPONSIBILITY FOR MISIDENTIFICATION OR OMISSION OF UNDERGROUND UTILITIES. DUE TO OSHA REQUIREMENTS PERTAINING TO CONFINED SPACE ENTRY, PIPE SIZES, INVERT ELEVATIONS, ETC., WILL ONLY BE PROVIDED IF FIELD PERSONNEL ARE ABLE TO OBTAIN WITHOUT BREAKING THE PLANE OF THE TOP OF THE STRUCTURE.
7. APPROXIMATE PROPERTY LINE SHOWN IN THE LAY OF LAND AREA IS BASED ON FIELD EVIDENCE OF PAINTED TREES AND MONUMENTATION. THIS SURVEY IS NOT A BOUNDARY SURVEY.
8. NO SOURCE FOR THE 36"RCP WAS FOUND DURING THE SURVEY.

REVISION	
DATE	DESCRIPTION
12/01/2014	ADDITIONAL AREA

ROBINSON PLANT

ASH BASIN CLOSER PROJECT

DARLINGTON COUNTY, SOUTH CAROLINA

PREPARED FOR

HDR ENGINEERING, INC.

WSP
Transportation & Infrastructure

www.wspgroup.com

Drawn By	JMS	Date	Job No.
Surveyed By	JMS	NOVEMBER 13, 2014	1470021
Checked By	DKB	Scale	Sheet No.
Book No.	ROBINSON01	1" = 500' / 150'	1 OF 2

LAY OF LAND MONITOR WELLS					
ID	NORTHING	EASTING	PVC CASING	GROUND	CONC. PAD
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MW-105D	936,482.34	2,252,129.85	256.81	254.72	254.99
MW-106S	935,406.75	2,251,586.99	255.84	253.53	253.87
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MW-116S	936,296.39	2,251,556.29	257.51	255.07	255.35
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MW-117S	937,307.34	2,252,253.79	255.33	252.66	252.91
MW-117D	937,304.98	2,252,246.36	255.30	252.60	252.95
MW-118S	936,844.79	2,252,749.59	246.82	244.71	244.96
MW-118D	936,848.92	2,252,756.69	246.98	244.70	244.95

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MW-108S	939,749.53	2,250,855.35	286.47	283.97	284.04
MW-108D	939,740.13	2,250,858.19	286.36	283.85	284.00
MW-109S	940,120.64	2,251,987.57	270.33	268.02	268.02
MW-109D	940,129.46	2,251,981.64	270.29	268.08	268.08
MW-110S	940,527.82	2,252,615.68	272.51	270.17	270.17
MW-110D	940,529.80	2,252,622.41	272.37	270.40	270.40
MW-111S	939,478.76	2,251,134.22	269.54	267.14	267.18
MW-111D	939,476.57	2,251,140.05	269.67	267.38	267.41
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PRELIMINARY

NOTE: SEE SHEET 1 OF 2 FOR GENERAL NOTES, AND OVERALL SCHEMATIC.

LAY OF BORINGS			
ID	NORTHING	EASTING	ELEVATION
BG-1	941,268.54	2,250,295.36	286.81
LOL-2	936,486.42	2,252,112.60	254.22
LOL-3	935,881.91	2,252,085.00	254.30
LOL-4	935,592.18	2,251,791.00	253.85
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LEGEND

- MAPPING LIMITS
- ASH BOUNDARY MAPPING LIMITS
- TREE LINE
- BRUSH LINE
- OHW — OVERHEAD UTILITY LINES
- UTILITY POLE
- MW 115S — MONITORING WELL
- AP-1, BG-1, CB-1, DD-1, LOL-2 — BORING
- UNIDENTIFIED OBJECT#
- 5FT WIRE MESH FENCE
- RIP RAP
- NA — MONITORING WELL NOT SURVEYED
- DRAINAGE DITCH CENTER LINE
- 281.3 — SPOT ELEVATION
- 279.3 (est.) — ESTIMATED SPOT ELEVATION
- TRV 1 — CONTROL POINT
- DIRT PATH
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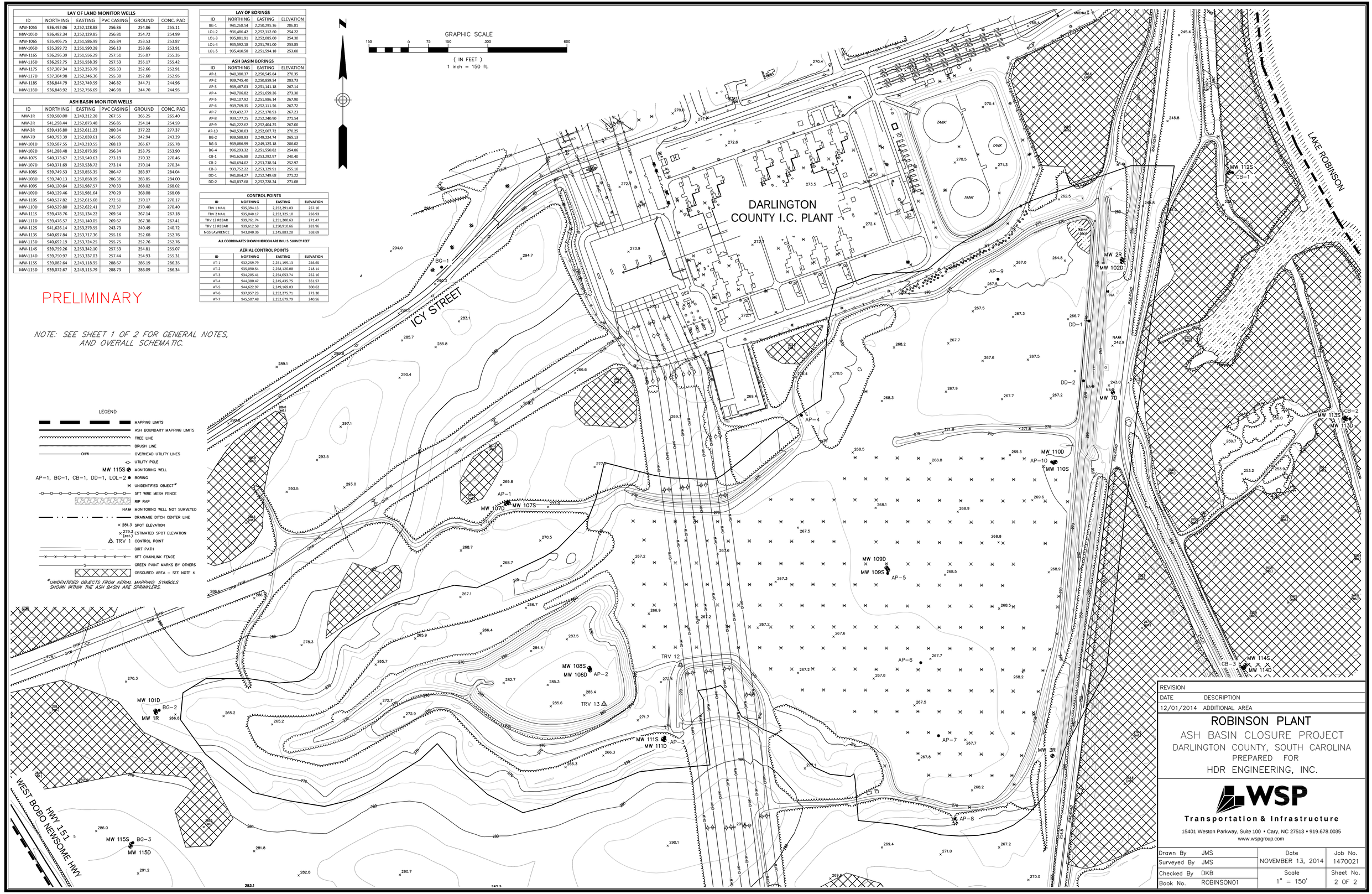
- OBSCURED AREA – SEE NOTE 4

#UNIDENTIFIED OBJECTS FROM AERIAL MAPPING; SYMBOLS SHOWN WITHIN THE ASH BASIN ARE SPRINKLERS.



REVISION	
DATE	DESCRIPTION
12/01/2014	ADDITIONAL AREA

ROBINSON PLANT

ASH BASIN CLOSURE PROJECT

DARLINGTON COUNTY, SOUTH CAROLINA

PREPARED FOR

HDR ENGINEERING, INC.

WSP

Transportation & Infrastructure

15401 Weston Parkway, Suite 100 • Cary, NC 27513 • 919.678.0035

www.wspgroup.com

Drawn By	JMS	Date	Job No.
Surveyed By	JMS	NOVEMBER 13, 2014	1470021
Checked By	DKB	Scale	Sheet No.
Book No.	ROBINSON01	1" = 150'	2 OF 2