Proposal for Concurrence of Containment Remedy
LMAC Area

Umicore USA, Inc.
17180 Airport Road
Maxton, Scotland County, North Carolina

Prepared for

Umicore USA, Inc.
Raleigh, North Carolina

Prepared by

Duncklee & Dunham, P.C.
Cary, North Carolina

February 29, 2012

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February 29, 2012

Ms. Janet K. Macdonald, P.G.
North Carolina Department of Environment and Natural Resources
Division of Waste Management - Superfund Section
Inactive Hazardous Sites Branch – REC Program
1646 Mail Service Center
Raleigh, North Carolina 27699-1646

Reference: **Request for Concurrence of Containment Remedy**
LMAC Area - Umicore USA Inc. - NONCD0002833
Maxton, Scotland County

Dear Ms. Macdonald:

As required by Section .0306(i)(2) of the Inactive Hazardous Sites Branch (IHSB), Registered Environmental Consultants Program rules, Umicore USA Inc. (Umicore) and Duncklee & Dunham, P.C. (Duncklee & Dunham) have prepared this request for concurrence of a containment remedy. This remedy will be proposed in a forthcoming Remedial Action Plan (RAP) for cobalt impacted soil on the LMAC Area adjacent to the Umicore plant facility (Figure 1).

Remedial Investigation Findings

As presented in the Remedial Investigation Report (*Remedial Investigation Report, Umicore USA Inc. - Maxton Facility, 17180 Airport Road (LMAC Area) Maxton, Scotland County, North Carolina, NONCD0002833, September 6, 2011*, RIR 2011), the LMAC Area has been assessed for possible contaminants, the extent of impacts, saturated and unsaturated zone stratigraphy, soil attenuation capabilities, and the efficacy of treatability products to fix cobalt to the soil. The following results were determined:

- The Umicore facility began production of cobalt powders and cobalt containing chemical products in 1980 and continued the process until 2009. Intermttently, during 29 years, surface water runoff from the facility carried cobalt contaminated water and sediment onto the LMAC Area.
- Soil sampling undertaken to delineate the cobalt impacted soil at six-inch, 18-inch, 36-inch, and six-foot intervals (Figures 10, 11, 12, and 13, respectively in the RIR 2011) indicate the volume

of contaminated soil equal to or greater than 150 mg/kg is approximately 1,100 cubic yards (about 1,630 tons).

- A discontinuous perched groundwater zone was identified and assessed by eight monitoring wells. When wells in this unit contained water sufficient for sampling, cobalt was detected ranging from 47 µg/L to 4,600 µg/L (Figure 14 and 15 in RIR 2011). On most occasions, these very shallow wells have been dry. A groundwater potentiometric map generated from one data set when enough wells did contain water showed this feature to be a perched zone in the study area (Figure 7 in RIR 2011).
- The first uniform and consistent water bearing hydrogeologic unit is a water table aquifer that was assessed by four 30-foot wells (Figures 3, 4, and 5 in RIR 2011). Each of these wells has been sampled ten times (Table 1). Cobalt has been detected in DMW-2 at 11 µg/L and DMW-4 at 13 µg/L in July 2009 immediately following well construction and is suspected to have been carried down by drilling through the contaminated perch zone. Neither DMW-1 nor DMW-3 has shown cobalt above 2L in ten sampling events. DMW-2 has only detected cobalt three times in ten sampling events and DMW-4 has detected cobalt four times in ten sampling events (at levels of only 1.1 to 1.6 µg/L). No pattern has been seen indicating contaminated groundwater after 29 years of the overlying soil receiving cobalt-contaminated runoff from the facility.
- The constituent of concern is cobalt in soil.
- The K_d values exhibited in the unsaturated zone soil will attenuate cobalt vertically. Levels of cobalt under a level of 300 mg/kg should not leach to groundwater.

  Three soil layers were found and evaluated in the attenuation study: 1) a shallow unconfined sand unit, 2) an underlying silty clay semi-confining unit, and 3) an intermediate depth sand beneath the silty clay.

  Soil samples with a cobalt target range of 30 to 300 mg/kg were selected for K_d testing. The K_d values found in the surficial sandy unit ranged from 0 to 10 mL/g. The K_d values of the uncontaminated and underlying clay and sand units ranged from 10 to 550 mL/g.

  The data shows cobalt levels at or below the industrial level of 300 mg/kg will attenuate in unsaturated zone soils before reaching the water table depth of 16 to 18 feet below grade. Furthermore, the K_d results for the LMAC Area soil and the lack of cobalt contamination in the shallow groundwater (shallow aquifer wells DMW-1 through DMW-4) indicate the soil can attenuate cobalt levels greater than 300 mg/kg.
- Based on the treatability tests on shallow soil and the proposed excavation and removal of cobalt contaminated soil greater than 150 mg/kg, a 2% dose of Enviro-Mag® can fixate cobalt in the soil and prevent leaching to shallow groundwater. The 2% dose controlled the leachable cobalt concentrations to below the 0.0010 mg/L reporting limit through 10 sequential extractions with simulated acidic rainwater for an estimated leaching period of about 800 years (Appendix H of RIR 2011).

Proposed Remedy

The remedial goal selected is designed to meet the industrial preliminary health based soil remediation goal (IPSRG) of 60 mg/kg for cobalt based on the U. S. Environmental Protection Agency (EPA) industrial screening level and adjusted using a hazard quotient (HQ) of 0.2 versus EPA's HQ of 1 to account for the lack of other non-carcinogens per critical group. The calculated IPSRG therefore

becomes 300 mg/kg. Per Umicore's request, a safety factor has been incorporated to halve this level for a proposed cleanup level of 150 mg/kg.

After incorporating site and impacted soil conditions with the screening criteria, the excavation of cobalt impacted soil remedial option was selected. This option consist of excavating cobalt impacted soil equal to or greater than 150 mg/kg and remediate deeper cobalt contaminated areas with two percent Enviro-Mag®. This remedy will protect groundwater from cobalt leaching from the contaminated soil with land use restriction and groundwater monitoring. Figures 9 through 15 show the analytical results in cross-section. The proposed areas for excavation of 150 mg/kg and greater cobalt contaminated soil are shown on the cross-sections.

This remedy includes post-remediation construction of a sediment basin for trapping soil and sediment particles transported in the runoff from on-site and a discharge ditch from the basin to mitigate erosion from the basin overflow (Figures 7 and 8). As needed, the sediment will be removed from the basin and disposed in a properly permitted landfill.

The excavation of the cobalt impacted soil equal to or greater than 150 mg/kg will bring the contaminant level down to where the cobalt attenuation process has been demonstrated to prevent impact to the groundwater and meet 2L Standards. The associated cobalt fixation process can stabilize highly contaminated areas and prevent impact to the groundwater for 800 years of leaching as shown by bench-scale testing. There is minimal risk that a future breakthrough of the cobalt could reach the shallow groundwater and prevent the long-term effectiveness of excavation of cobalt-impacted soil.

The excavation of cobalt impacted soil is preferred by Umicore for the site soil because the minimal risk of future impact of the groundwater. The remedy is not the least expensive of the options evaluated up front, but the long-term operations and maintenance costs are lower and the safety factor is important for Umicore.

Land Use Restriction

Umicore proposes a remedy utilizing land use restrictions on the LMAC Area. The assessed area is the outlined area pointing southwest and the Umicore LMAC property is the large area extending northwest to southeast.

The LMAC Area and LMAC property is underdeveloped woodland. The property is surrounded by the Umicore facility to the north and east, undeveloped woodland to the west owned by the Laurinburg Maxton Airport Commission (LMAC), and the Laurinburg-Maxton airport to the south (Figure 2 and Table 2 of the Remedial Investigation Plan 2010).

Umicore plans to restrict use of the LMAC Area to industrial use and will restrict:

- Excavating soil to depths of six feet without evaluating environmental compliance and worker safety and Umicore's authorization,
- Planting or removal of vegetation including edible plants,
- Recreational use in the form of hunting or off-road motorized vehicles,
- Installation of water supply wells,

- Construction of buildings or other man-made structures without evaluating environmental compliance and worker safety and Umicore's authorization.

Umicore will meet the 2L groundwater standards through the proposed remedy and will monitor as specified in the RAP to demonstrate that the remedy is protecting the groundwater.

In summary, Duncklee & Dunham believes that the excavation of cobalt contaminated soil at and above 150 mg/kg with spot application of cobalt fixing chemical in areas that cannot be excavated will provide protection of the groundwater from leaching. The K_d results for the soil and the lack of cobalt contamination in the shallow groundwater after 29 years of contaminated facility surface water ponding in the LMAC Area indicate the soil can attenuate cobalt levels greater than 300 mg/kg and prevent a cobalt contaminated aquifer from developing. The lower concentration of cobalt contaminated soil left behind and the control of additional sediment and surface water away from the area also minimizes future impact.

This document includes the executed signatures that signify concurrence proposal of contaminant remedy approval by Umicore as the Remediating Party, Duncklee & Dunham, P.C. as the Registered Environmental Consultant, and David L. Duncklee as the Registered Site Manager (Appendix A). If you have any questions, please do not hesitate to contact Dave Duncklee at dave@dunckleedunham.com or (919) 858-9898.

Sincerely,

Duncklee & Dunham, P.C.

David L. Duncklee, P.G., R.S.M.
Senior Project Manager

ec: Mr. Dick Laird – Umicore
Ms. Ravila Gupta – Umicore

P:\Umicore\Maxton - 200917\10.0 RAP\LMAC\10.1 Process and Final Plan\10.1.1 Remedy Concurrence\Request-12069.docx

Figures

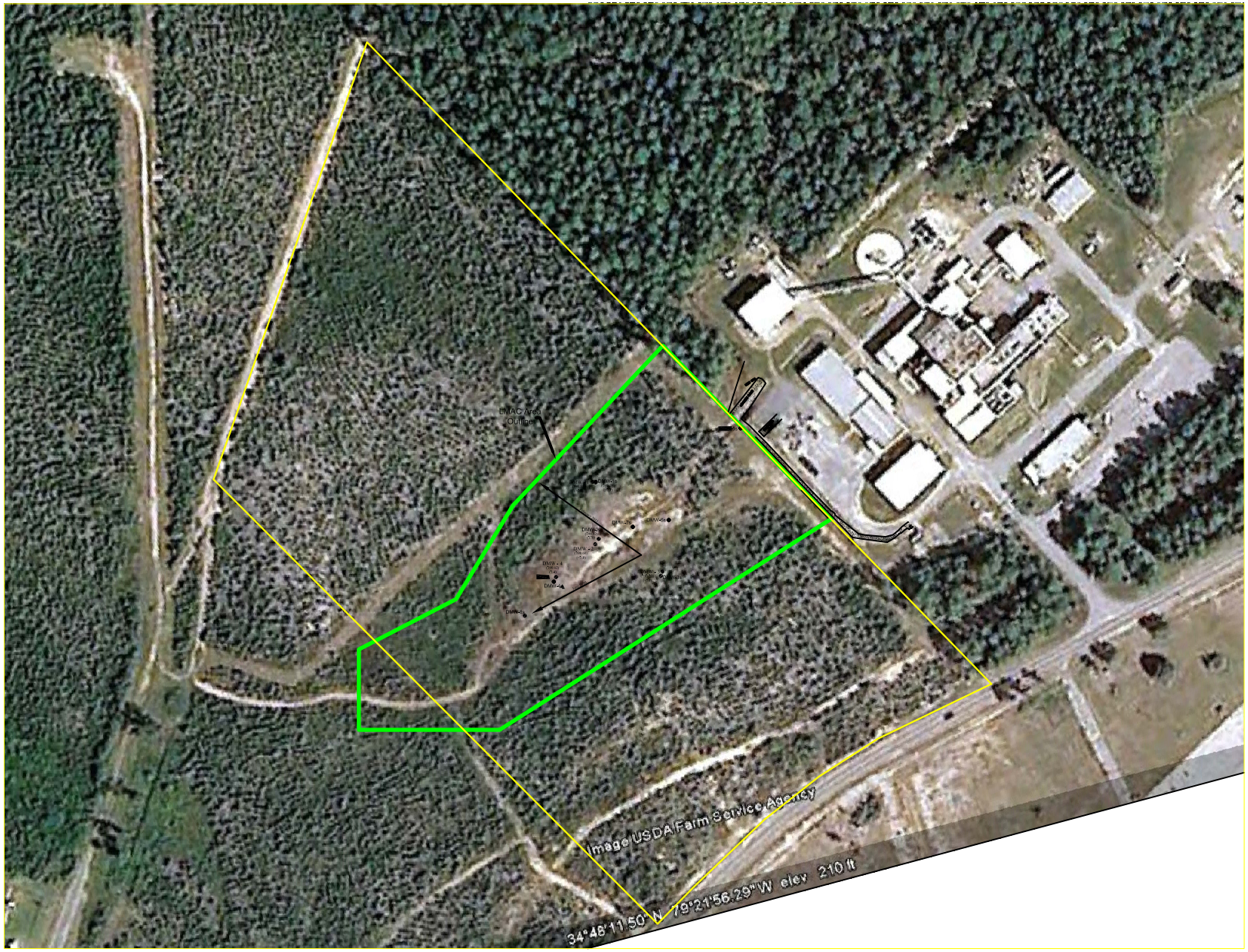
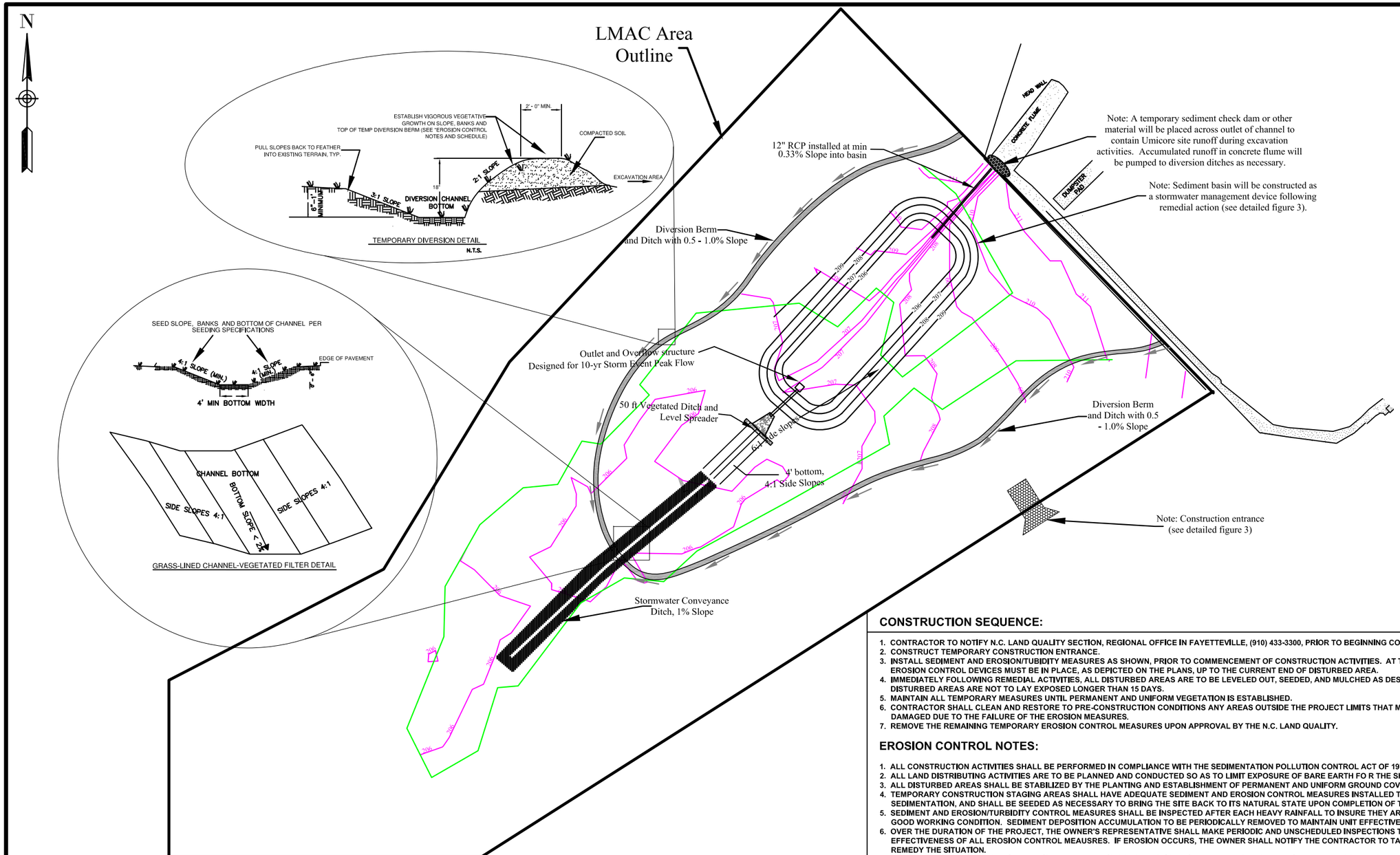

EMAC Area
Outline
Image USDA Farm Service Agency
34°48'11.50" N 79°21'56.29" W elev 210 ft

Figure 1

There is no Figure 2 through Figure 6.



CONSTRUCTION SEQUENCE:

1. CONTRACTOR TO NOTIFY N.C. LAND QUALITY SECTION, REGIONAL OFFICE IN FAYETTEVILLE, (910) 433-3300, PRIOR TO BEGINNING CONSTRUCTION.
2. CONSTRUCT TEMPORARY CONSTRUCTION ENTRANCE.
3. INSTALL SEDIMENT AND EROSION/TUBIDITY MEASURES AS SHOWN, PRIOR TO COMMENCEMENT OF CONSTRUCTION ACTIVITIES. AT THE END OF EACH DAY, EROSION CONTROL DEVICES MUST BE IN PLACE, AS DEPICTED ON THE PLANS, UP TO THE CURRENT END OF DISTURBED AREA.
4. IMMEDIATELY FOLLOWING REMEDIAL ACTIVITIES, ALL DISTURBED AREAS ARE TO BE LEVELED OUT, SEEDED, AND MULCHED AS DESCRIBED IN THE ESC PLAN. DISTURBED AREAS ARE NOT TO LAY EXPOSED LONGER THAN 15 DAYS.
5. MAINTAIN ALL TEMPORARY MEASURES UNTIL PERMANENT AND UNIFORM VEGETATION IS ESTABLISHED.
6. CONTRACTOR SHALL CLEAN AND RESTORE TO PRE-CONSTRUCTION CONDITIONS ANY AREAS OUTSIDE THE PROJECT LIMITS THAT MAY INADVERTANTLY BE DAMAGED DUE TO THE FAILURE OF THE EROSION MEASURES.
7. REMOVE THE REMAINING TEMPORARY EROSION CONTROL MEASURES UPON APPROVAL BY THE N.C. LAND QUALITY.

EROSION CONTROL NOTES:

1. ALL CONSTRUCTION ACTIVITIES SHALL BE PERFORMED IN COMPLIANCE WITH THE SEDIMENTATION POLLUTION CONTROL ACT OF 1973.
2. ALL LAND DISTRIBUTING ACTIVITIES ARE TO BE PLANNED AND CONDUCTED SO AS TO LIMIT EXPOSURE OF BARE EARTH FO R THE SHORTEST POSSIBLE TIME.
3. ALL DISTURBED AREAS SHALL BE STABILIZED BY THE PLANTING AND ESTABLISHMENT OF PERMANENT AND UNIFORM GROUND COVER.
4. TEMPORARY CONSTRUCTION STAGING AREAS SHALL HAVE ADEQUATE SEDIMENT AND EROSION CONTROL MEASURES INSTALLED TO PREVENT OFF SITE SEDIMENTATION, AND SHALL BE SEEDED AS NECESSARY TO BRING THE SITE BACK TO ITS NATURAL STATE UPON COMPLETION OF THE THE PROJECT.
5. SEDIMENT AND EROSION/TURBIDITY CONTROL MEASURES SHALL BE INSPECTED AFTER EACH HEAVY RAINFALL TO INSURE THEY ARE FUNCTIONAL AND IN GOOD WORKING CONDITION. SEDIMENT DEPOSITION ACCUMULATION TO BE PERIODICALLY REMOVED TO MAINTAIN UNIT EFFECTIVENESS.
6. OVER THE DURATION OF THE PROJECT, THE OWNER'S REPRESENTATIVE SHALL MAKE PERIODIC AND UNSCHEDULED INSPECTIONS TO EVALUATE THE EFFECTIVENESS OF ALL EROSION CONTROL MEAUSRES. IF EROSION OCCURS, THE OWNER SHALL NOTIFY THE CONTRACTOR TO TAKE ADEQUATE STEPS TO REMEDY THE SITUATION.
7. CULVERTS, DITCH-LINES, OR RIP-RAP DISTURBED BY THIS CONSTRUCTION WILL BE REPLACED OR REPAIRED BY THE CONTRACTOR TO AN EQUAL OR BETTER CONDITION TO THAT PRIOR TO THE DISTURBANCE.

Legend

- Contour for Sediment Basin
- Topography Contour Line
- Tree Line

0 80 160

Graphic Scale: 1" = 80'

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Stormwater Conveyance Measure Following Soil Remediation

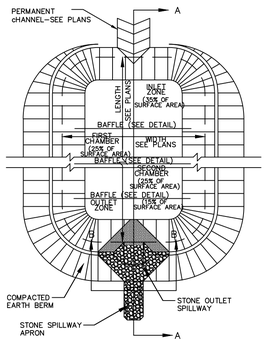
Umicore Facility Investigation Areas
Maxton, North Carolina

References: Base Map Provided by Unicore, Whompler Survey Data

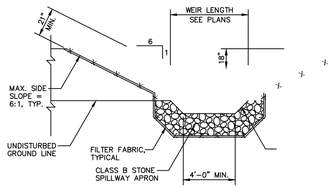
Drawn By: amr/wmf	Checked By:	Project Number: 200917	Date: February 2012
Scale: 1" = 80'	Size: 11" x 17"	Layers: 0,1,58,85,86	Filename: P:\Umicore\Maxton - 200917\8 Field and Technical\8.8 CAD and GIS Maps\LMAC\LMAC CAD\Ditch Construction Cross Sections

Figure

7



PLAN VIEW

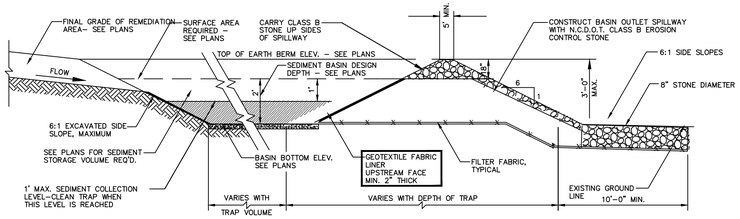


SECTION B–B

NOTES:

WEIR DIMENSION SCHEDULE	
MINIMUM WEIR LENGTH (FT.)	DRAINAGE AREA (ACRES)
4.0	5
6.0	10
8.0	15
10.0	

4
5 12.0



SECTION A–A

SEDIMENT BASIN

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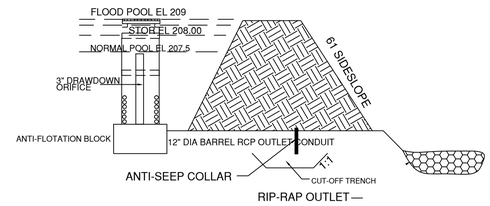
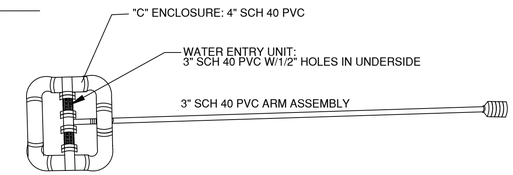
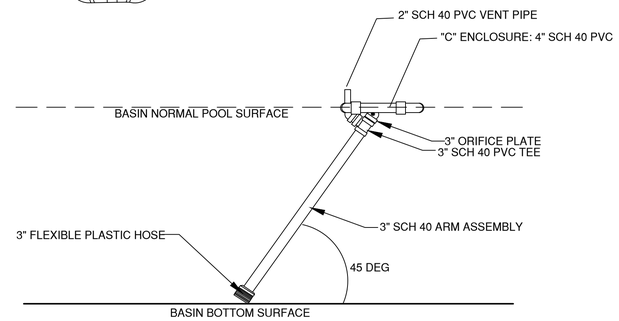
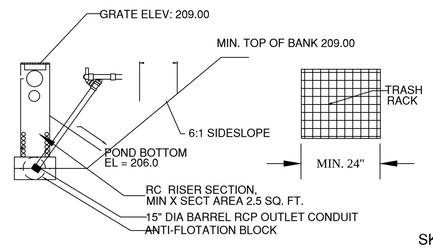


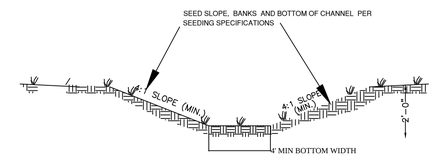
OUTLET DEVICE DETAIL







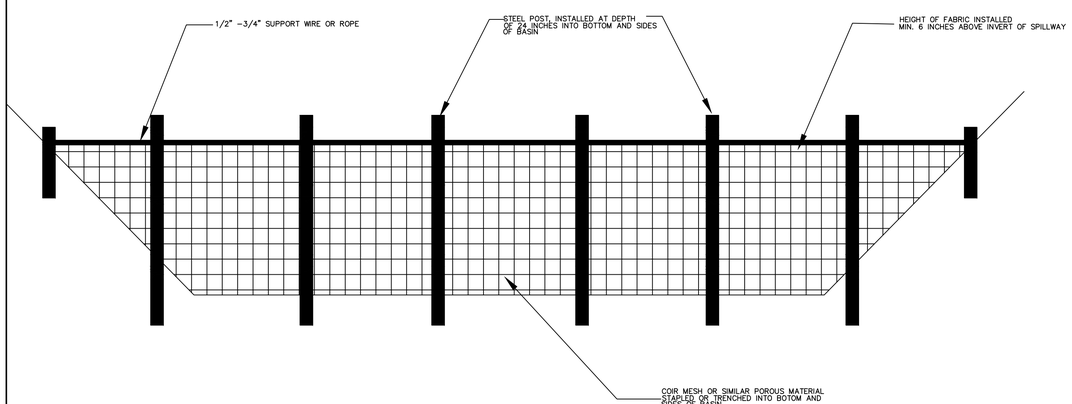
SKIMMER DEWATERING DEVICE DETAIL (OPTIONAL)



GRASS-LINED CHANNEL-VEGETATED FILTER CROSS-SECTION

EROSION CONTROL MAINTENANCE REQUIREMENTS:

1. CONSTRUCTION ENTRANCE MUST BE MAINTAINED TO PREVENT MUD OR SEDIMENT FROM LEAVING SITE. PERIODIC TOP DRESSING WITH TWO INCH STONE MAY BE REQUIRED.
2. ALL EROSION AND SEDIMENT CONTROL PRACTICES WILL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF PRODUCING RAINFALL, BUT IN NO CASE LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS WILL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
3. SEDIMENT WILL BE REMOVED FROM WITHIN DIVERSION CHANNEL WHEN IT BECOMES ABOUT 0.5 FEET DEEP
4. ALL SEEDED AREAS WILL BE FERTILIZED, RESEEDED AS NECESSARY, AND MULCHED ACCORDING TO SPECIFICATIONS IN THE SEEDING SCHEDULE TO MAINTAIN A VIGOROUS, DENSE VEGETATIVE COVER.
5. SEDIMENT WILL BE REMOVED FROM THE SEDIMENT BASIN INLET WHEN STORAGE CAPACITY HAS BEEN APPROXIMATELY 50% FILLED. GRAVEL WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS PROPERLY.
6. THE SEDIMENT BASIN WILL BE CLEANED OUT WHEN THE LEVEL OF SEDIMENT REACHES 2.0 FEET BELOW THE TOP OF THE RISER. GRAVEL WILL BE CLEANED OR REPLACED WHEN THE SEDIMENT POOL NO LONGER DRAINS PROPERLY.



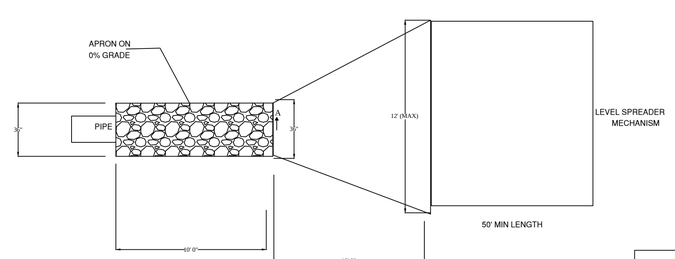
CONSTRUCTION SEQUENCE:

1) GRADE BASIN SO THAT BOTTOM IS LEVEL FROM FRONT TO BACK AND SIDE TO SIDE.
2) INSTALL POSTS OR SAW HORSES ACROSS WIDTH OF BASIN (SEE INSTALLATION DETAILS FOR SILT FENCE)
3) INSTALL POSTS TO A DEPTH OF 24 INCHES, PLACE AT MAXIMUM 4 FT ON CENTER, AND INSTALLED INTO SIDES OF BASIN AS WELL.
4) INSTALL POSTS SUCH THAT TOP OF BAFFLE FABRIC IS 6 INCHES HIGHER THAN INVERT OF THE OUTLET STRUCTURE AND TWO INCHES LOWER THAN THE TOP OF THE BERMS.
5) INSTALL AT LEAST THREE ROWS OF BAFFLES BETWEEN THE INLET AND OUTLET LOCATIONS. SPACE BASED ON LAYOUT SHOWN IN SITE PLAN. PLACE FILL IN 6"-8" CONTINUOUS LIFTS OVER LENGTH OF FILL AREA AND COMPACT USING CONSTRUCTION HAULING EQUIPMENT. CONSTRUCT EMBANKMENT AT AN ELEVATION 10% HIGHER THAN DESIGN FOR SETTLEMENT.
6) INSTALL SUPPORT WIRE OR ROPE ACROSS THE TOP OF THE POSTS TO PRVENT SAGGING IN THE BAFFLES.
7) WRAP COIR MESH BACKED BY JUTE MESH OR LIKE POROUS MATERIAL OVER THE TOP WIRE. FABRIC SHALL HAVE 5-10% OPENINGS IN WEAVE.
8) ATTACH FABRIC TO TOP WIRE AND POSTS WITH ZIP TIES, WIRES, OR STAPLES.
9) ANCHOR BOTTOM AND SIDES OF FABRIC IN A TRENCH ADVANCED ALONG THE BOTTOM AND SIDES OF THE BASIN, OR PINNED INTO THE GROUND WITH 8-INCH EROSION CONTROL MATTING STAPLES.
10) USE ONE CONTINUOUS PIECE OF FABRIC FOR EACH BAFFLE; DO NOT SPLICE.

MAINTENANCE:

1. INSPECT BAFFLES WEEKLY AND AFTER EACH SIGNIFICANT (> 0.5 IN.) RAINFALL EVENT AND REPAIR AS NEEDED.
2. MAINTAIN ACCESS AT ALL TIMES TO BAFFLES. IF THE FABRIC COLLAPSES, TEARS, DECOMPOSES, OR BECOMES INEFFECTIVE, REPLACE IMMEDIATLEY. STABILIZE EXCAVATED MATERIAL APPROPRIATELY.
3. REMOVE SEDIMENT DEPOSITS FROM THE UPSTREAM SIDE OF EACH BAFFLE WHEN SEDIMENT HEIGHT REACHES 50% OF THE BAFFLE HEIGHT.
4. WHEN CONTRIBUTING DRAINAGE AREA HAS BEEN ADEQUATELY STABILIZED, REMOVE ALL BAFFLE MATERIALS AND DISPOSE OF SEDIMENT APPROPRIATELY. BRING DISTURBED AREA TO FINAL GRADE.

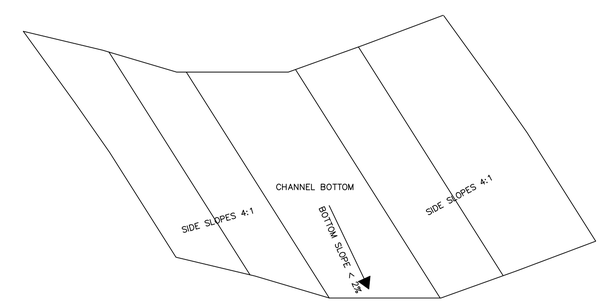
POUROUS BAFFLE DETAIL



PLAN VIEW

CONSTRUCTION SPECIFICATIONS

1. EXCAVATE SUBGRADE BELOW EXT ELEVATION TO ALLOW FOR THICKNESS OF FILTER FABRIC AND RIPRAP
2. INSTALL RIPRAP TO MINIMUM THICKNESS OF 18 INCHES
3. CONSTRUCT APRON ON ZERO GRADE. CROSS SECTION OF APRON TO BE LEVEL OR SLIGHTLY DEPRESSED IN THE MIDDLE. BLEND RIPRAP SMOOTHLY TO THE SURROUNDING GRADE
4. APRON SHALL BE STRAIGHT AND PROPERLY ALIGNED WITH RECEIVING CHANNEL
5. COMPACT FILL USED IN SUBGRADE TO THE DENSITY OF THE SURROUNDING UNDISTURBED MATERIAL. SUBGRADE SHALL BE SMOOTH ENOUGH AND FREE OF MATERIALS TO PROTECT FABRIC FROM TEARING
6. INSTALL A CONTINUOUS SECTION OF EXTRA STRENGTH, 6-IN THICK FILTER FABRIC ON SMOOTH, COMPACTED FOUNDATION.
7. PROTECT FILTER FABIC FROM TEARING WHILE PLACING RIPRAP WITH MACHINERY. REPAIR ANY DAMAGE IMMEDIATELY BY REMOVING RIPRAP AND INSTALLING ANOTHER SECTION OF FABRIC.
8. UPSTREAM SECTION OF FABRIC SHALL OVERLAP DOWNSTREAM SECTION A MINIMUM OF 1 FT.
9. TOP OF RIPRAP APRON SHALL BE LEVEL WITH RECEIVING CHANNEL
10. RIPRAP SHALL NOT RESTRICT THE CHANNEL OR PRODUCE AN OVERFALL.
11. AFTER INSTALLATION, STABILIZE DISTURBED AREAS WITH TEMPORARY COVERS AND INSTALL PERMANENT MEASURES AS DESCRIBED IN PLAN.
12. EXCAVATE A VERTICAL TRENCH ON THE LOWER EDGE OF TEH DISSIPATION DEVICE FOR LEVEL SPREADER INSTALLATION.
13. INSTALL MATTING FOR LEVEL SPREADER AT A MINIMUM WIDTH OF 4 FT EXTENDING SIX INCHES OVER THE LIP AT A MINIMUM DEPTH OF 6 INCHES WITHIN THE TRENCH.
14. THE UPPER EDGE OF THE LEVEL SPREADER SHALL BUTT UP AGAINST A STRIP OF SMOOTH CUT SOD, AND BE ANCHORED IN PLACE WITH CLOSELY SPACED HEAVY DUTY WIRE STAPLES A MINIMUM OF 12 INCHES IN LENGTH
15. ENSURE THAT THE LEVEL SPREADER IS LEVEL FOR UNIFORM DISTRIBUTION OF RUNOFF.
16. CONSTRUCT THE LEVEL SPREADER WITHIN UNDISTURBED SOIL (NOT WITHIN FILL).
17. CONSTRUCT A 20-FT TRANSITION SECTION FROM THE RIP-RAP DISSIPATOR TO BLEND SMOOTHLY TO THE WIDTH AND DEPTH OF SPREADER.
18. DISPERSE RUNOFF FROM THE SPREADER ACROSS A PROPERLY STABILIZED SLOPE WITH A MAXIMUM SLOPE OF 10%.
19. SEED AND MULCH DISTURBED AREAS AROUND THE SPREADER IMMEDIATELY AFTER CONSTRUCTION.



SEEDING SCHEDULE

ALL DISTURBED AREAS SHALL BE STABILIZED WITH A PERMANENT VEGETATIVE COVER. THE CONTRACTOR MAY USE METHODS AND SCHEDULES SHOWN BELOW; HOWEVER, IT IS RECOMMENDED THAT A SPECIALIST BE CONSULTED WITH ATTENTION GIVEN TO SITE SPECIFIC CONDITIONS.

A. CULTIVATE AREA TO A DEPTH OF 5".
B. APPLY AGRICULTURAL LIME AT THE RATE OF 4000 LBS. PER ACRE.
C. APPLY 10-20-20 COMMERCIAL FERTILIZER AT THE RATE OF 500 LBS PER ACRE.
D. SOW GRASS SEEDS AT THE FOLLOWING RATES:

KIND	RATE PER ACRE
COMMON BERMUDA GRASS (UNHULLED)	20 LBS.
COMMON BERMUDA GRASS (HULLED)	12 LBS.
PENSACOLA BAHIGRASS	50 LBS.
KOREAN LESPEDEZA	25 LBS
TALL FASCUE	30 LBS.

E. MULCH WITH STRAW AT THE RATE OF 3250 TO 4350 LBS PER ACRE.
F. ANCHOR STRAW WITH ASPHALT EMULSION TACK COAT APPLIED AT THE RATE OF 300 GALLONS PER ACRE IN LOCATIONS AS AUTHORIZED BY THE ENGINEER.

Stormwater Management Details

LMAC Remediation Area
Maxton, North Carolina

Drawn By:	Checked By:	Project Number:	Date:	References:	Scale:	Size:	Layers:
amr	bdt	200917	February 2012	NC DLR ESC Design Manual	NTS	22" x 34"	

P:\Umicore\Maxton - 200917\8 Field and Technical\8.8 CAD and GIS Maps\LMAC\LMAC CAD\UMICORE TOPO SURVEY 12-19-11

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Figure

8

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NC Geo. License No. C-261

Cross Section Trace Lines

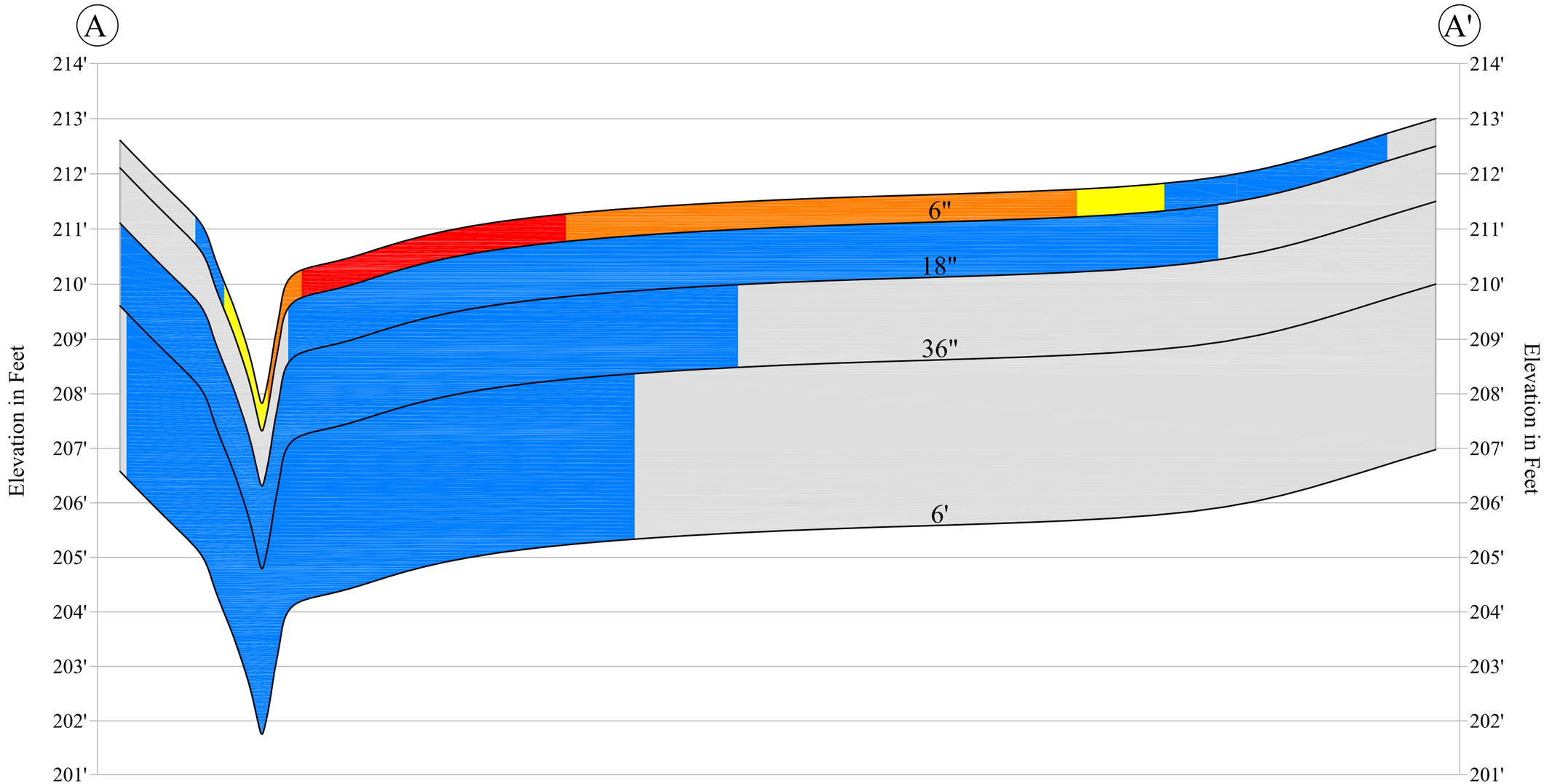
Umicore Facility Investigation Areas
Maxton, North Carolina

References:
Base Map Provided by Umicore, Field Notes

Drawn By: ccw/wmf	Checked By: bdt	Project Number: 200917	Date: 10-8-2010
Scale: 1" = 80'	Size: 11" x 17"	Layers: 0,60	Filename: P:\Umicore\Umicore - 200917\8 Field and Technical Documentation\8.8 CAD and GIS Maps\LMAC\LMAC CAD\Mast LMAC Area Site Map

Figure

9



Legend

- 4.6 = Residential PSRG (IHSB) Feb. 2011
- 100 = 1/3 Site Specific Industrial PSRG Aug. 2011
- 150 = 1/2 Site Specific Industrial PSRG Aug. 2011
- 300 = Site Specific Industrial PSRG Aug. 2011
- No Detections

Note: IHSB = Inactive Hazardous Sites Branch. PSRG = IHSB Preliminary Health Based Soil Remediation Goal. The IHSB Industrial PSRG is 60 mg/kg (HQ=0.2) assuming the presence of five non-carcinogens; PSRG is based on EPA's Industrial Screening Level of 300 mg/kg (HQ=1.0). A Site-Specific Industrial RG for cobalt is 300 mg/kg since cobalt is the only non-carcinogen. A safety factor of two was used for a more conservative cleanup level of 150 mg/kg.

Horizontal Scale: 1" = 40'
Vertical Scale: As Shown

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Topographic Cross Section of LMAC Area A - A'

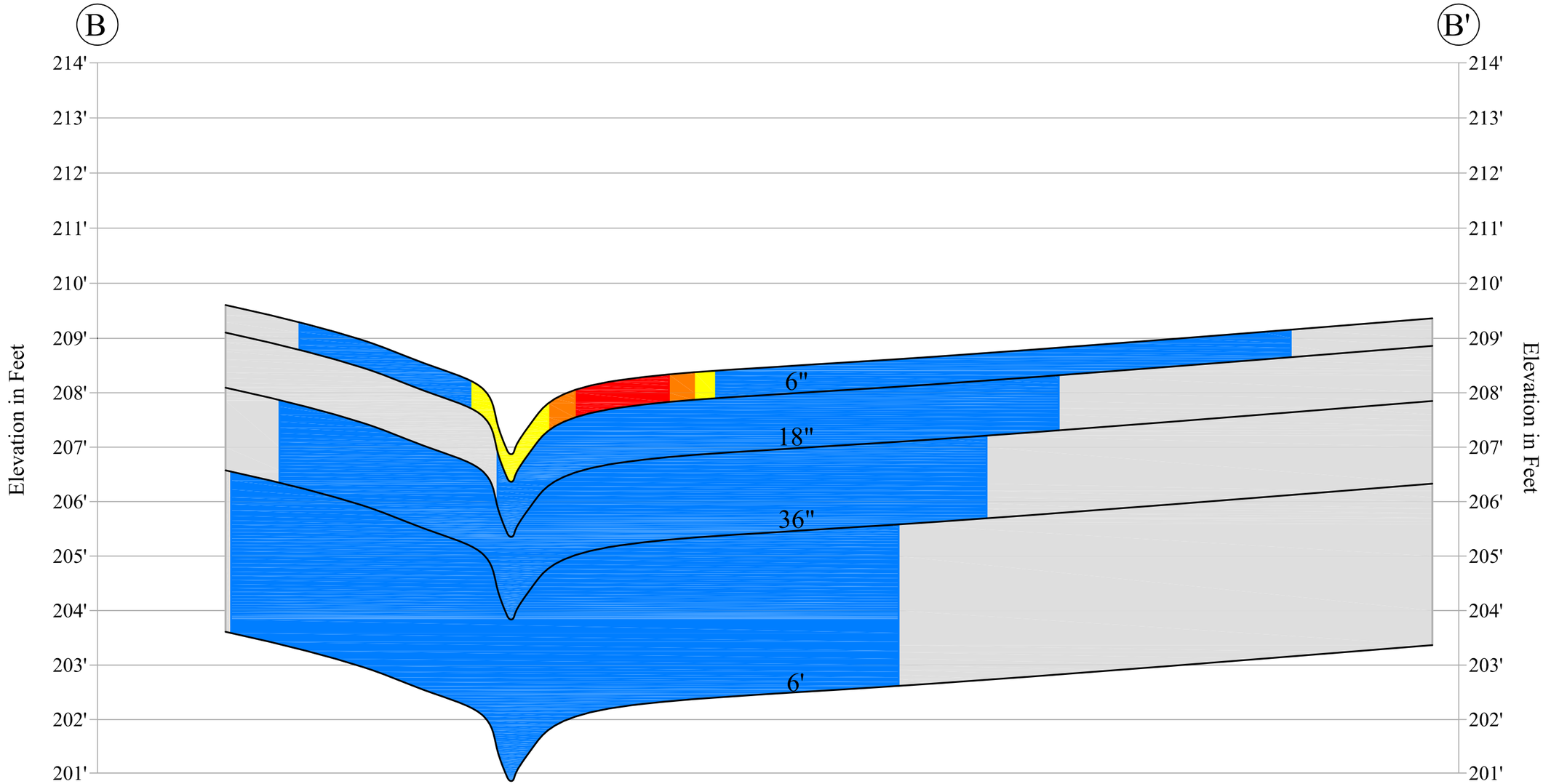
Umicore Facility Investigation Areas
Maxton, North Carolina

References: Whompler Survey Data, D&D Analytical Data

Drawn By: wmf	Checked By:	Project Number: 200917	Date: 1-19-2012
Scale: As Shown	Size: 11" x 17"	Layers: 0,1,60	Filename: P:\Umicore\Maxton - 2009178 Field and Technical\8.8 CAD and GIS Maps\LMAC\LMAC CAD\Cross Section with concentrations

Figure

10



Legend

- 4.6 = Residential PSRG (IHSB) Feb. 2011
- 100 = 1/3 Site Specific Industrial PSRG Aug. 2011
- 150 = 1/2 Site Specific Industrial PSRG Aug. 2011
- 300 = Site Specific Industrial PSRG Aug. 2011
- No Detections

Note: IHSB = Inactive Hazardous Sites Branch. PSRG = IHSB Preliminary Health Based Soil Remediation Goal. The IHSB Industrial PSRG is 60 mg/kg (HQ=0.2) assuming the presence of five non-carcinogens; PSRG is based on EPA's Industrial Screening Level of 300 mg/kg (HQ=1.0). A Site-Specific Industrial RG for cobalt is 300 mg/kg since cobalt is the only non-carcinogen. A safety factor of two was used for a more conservative cleanup level of 150 mg/kg.

Horizontal Scale: 1" = 40'
Vertical Scale: As Shown

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Topographic Cross Section of LMAC Area B - B'

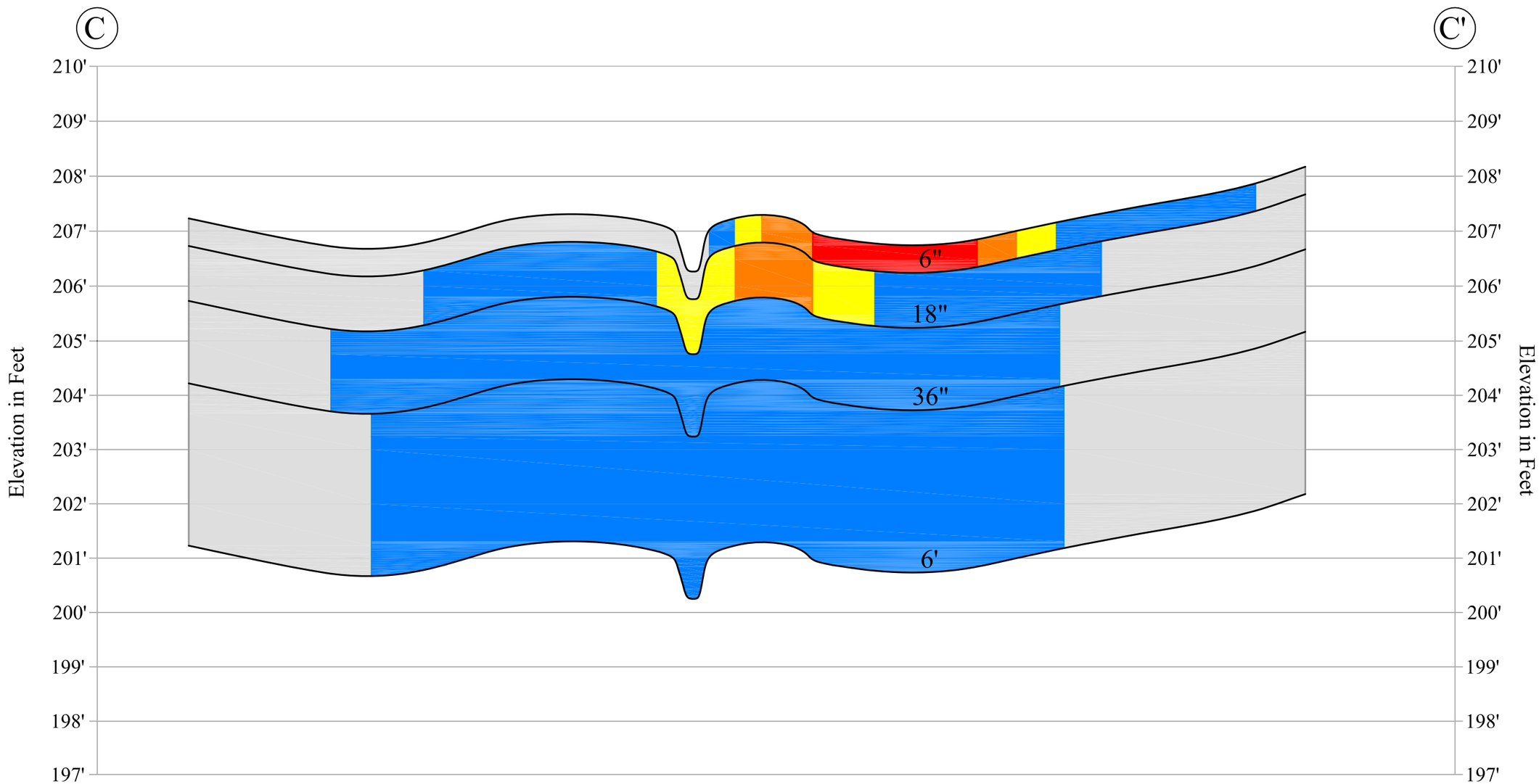
Umicore Facility Investigation Areas
Maxton, North Carolina

References: Whompler Survey Data, D&D Analytical Data

Drawn By: wmf	Checked By:	Project Number: 200917	Date: 1-19-2012
Scale: As Shown	Size: 11" x 17"	Layers: 0,1,62	Filename: P:\Umicore\Maxton - 200917\8 Field and Technical\8.8 CAD and GIS Maps\LMAC\LMAC CAD\Cross Section with concentrations

Figure

11



Legend

- 4.6 = Residential PSRG (IHSB) Feb. 2011
- 100 = 1/3 Site Specific Industrial PSRG Aug. 2011
- 150 = 1/2 Site Specific Industrial PSRG Aug. 2011
- 300 = Site Specific Industrial PSRG Aug. 2011
- No Detections

Note: IHSB = Inactive Hazardous Sites Branch. PSRG = IHSB Preliminary Health Based Soil Remediation Goal. The IHSB Industrial PSRG is 60 mg/kg (HQ=0.2) assuming the presence of five non-carcinogens; PSRG is based on EPA's Industrial Screening Level of 300 mg/kg (HQ=1.0). A Site-Specific Industrial RG for cobalt is 300 mg/kg since cobalt is the only non-carcinogen. A safety factor of two was used for a more conservative cleanup level of 150 mg/kg.

Horizontal Scale: 1" = 40'
Vertical Scale: As Shown

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Topographic Cross Section of LMAC Area C - C'

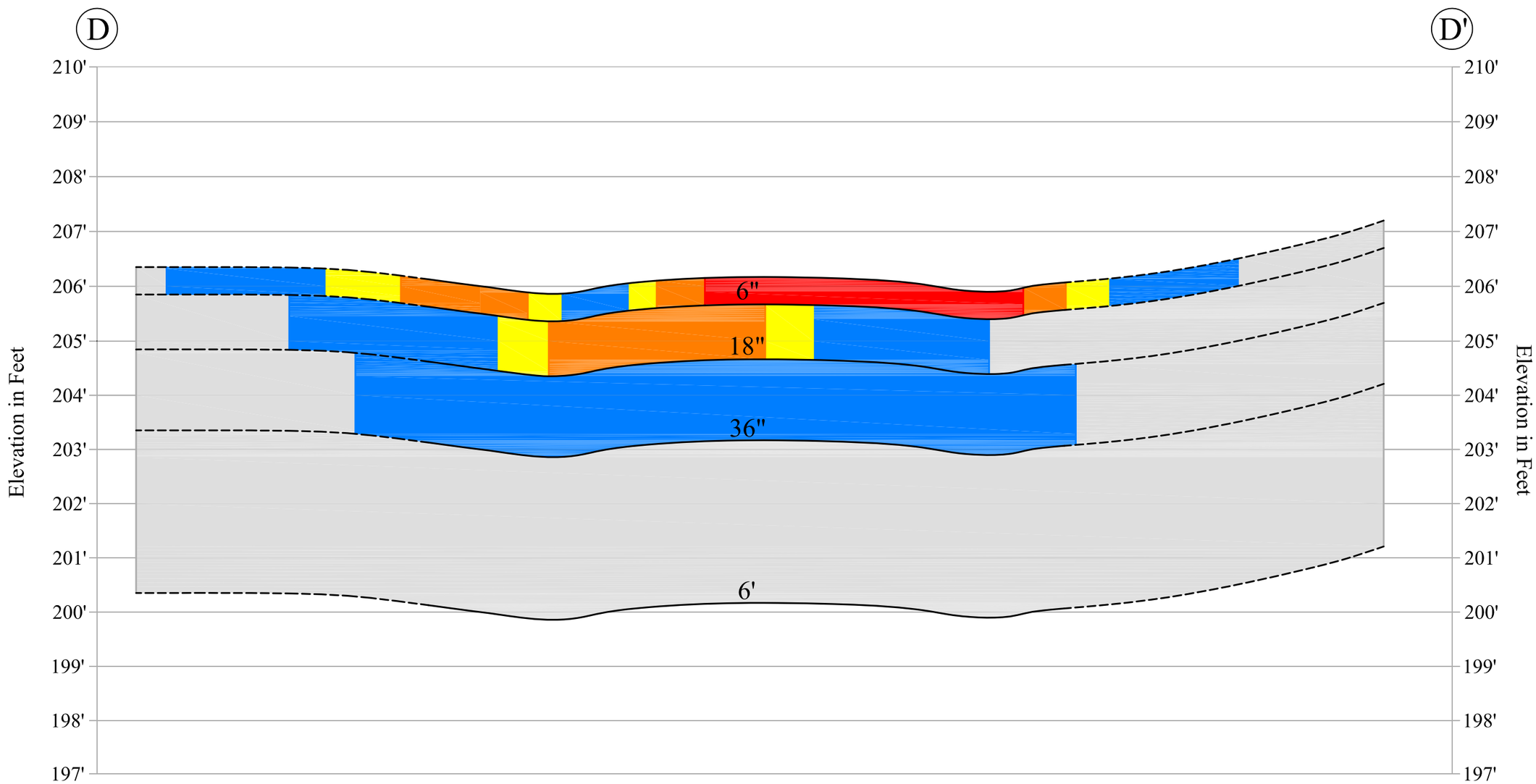
Umicore Facility Investigation Areas
Maxton, North Carolina

References: Whompler Survey Data, D&D Analytical Data

Drawn By: wmf	Checked By:	Project Number: 200917	Date: 1-19-2012
Scale: As Shown	Size: 11" x 17"	Layers: 0,1,63	Filename: P:\Umicore\Maxton - 200917\8 Field and Technical\8.8 CAD and GIS Maps\LMAC\LMAC CAD\Cross Section with concentrations

Figure

12



Legend

- 4.6 = Residential PSRG (IHSB) Feb. 2011
- 100 = 1/3 Site Specific Industrial PSRG Aug. 2011
- 150 = 1/2 Site Specific Industrial PSRG Aug. 2011
- 300 = Site Specific Industrial PSRG Aug. 2011
- No Detections

Note: IHSB = Inactive Hazardous Sites Branch. PSRG = IHSB Preliminary Health Based Soil Remediation Goal. The IHSB Industrial PSRG is 60 mg/kg (HQ=0.2) assuming the presence of five non-carcinogens; PSRG is based on EPA's Industrial Screening Level of 300 mg/kg (HQ=1.0). A Site-Specific Industrial RG for cobalt is 300 mg/kg since cobalt is the only non-carcinogen. A safety factor of two was used for a more conservative cleanup level of 150 mg/kg.

Horizontal Scale: 1" = 40'
Vertical Scale: As Shown

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Topographic Cross Section of LMAC Area D - D'

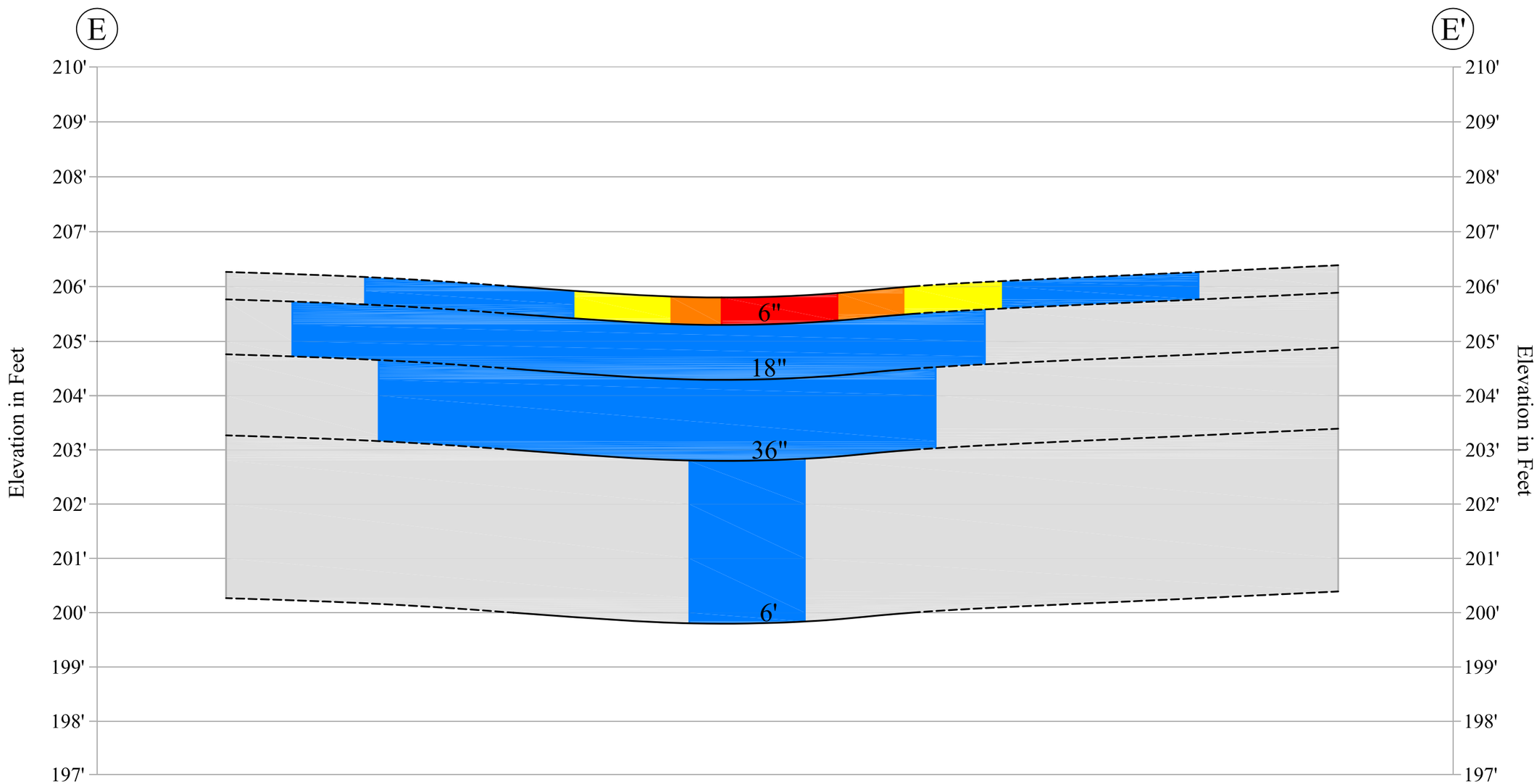
Umicore Facility Investigation Areas
Maxton, North Carolina

References: Whompler Survey Data, D&D Analytical Data

Drawn By: wmf	Checked By:	Project Number: 200917	Date: 1-19-2012
Scale: As Shown	Size: 11" x 17"	Layers: 0,1,64	Filename: P:\Umicore\Maxton - 200917\8 Field and Technical\8.8 CAD and GIS Maps\LMAC\LMAC CAD\Cross Section with concentrations

Figure

13



Legend

- 4.6 = Residential PSRG (IHSB) Feb. 2011
- 100 = 1/3 Site Specific Industrial PSRG Aug. 2011
- 150 = 1/2 Site Specific Industrial PSRG Aug. 2011
- 300 = Site Specific Industrial PSRG Aug. 2011
- No Detections

Note: IHSB = Inactive Hazardous Sites Branch. PSRG = IHSB Preliminary Health Based Soil Remediation Goal. The IHSB Industrial PSRG is 60 mg/kg (HQ=0.2) assuming the presence of five non-carcinogens; PSRG is based on EPA's Industrial Screening Level of 300 mg/kg (HQ=1.0). A Site-Specific Industrial RG for cobalt is 300 mg/kg since cobalt is the only non-carcinogen. A safety factor of two was used for a more conservative cleanup level of 150 mg/kg.

Horizontal Scale: 1" = 40'
Vertical Scale: As Shown

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Topographic Cross Section of LMAC Area E - E'

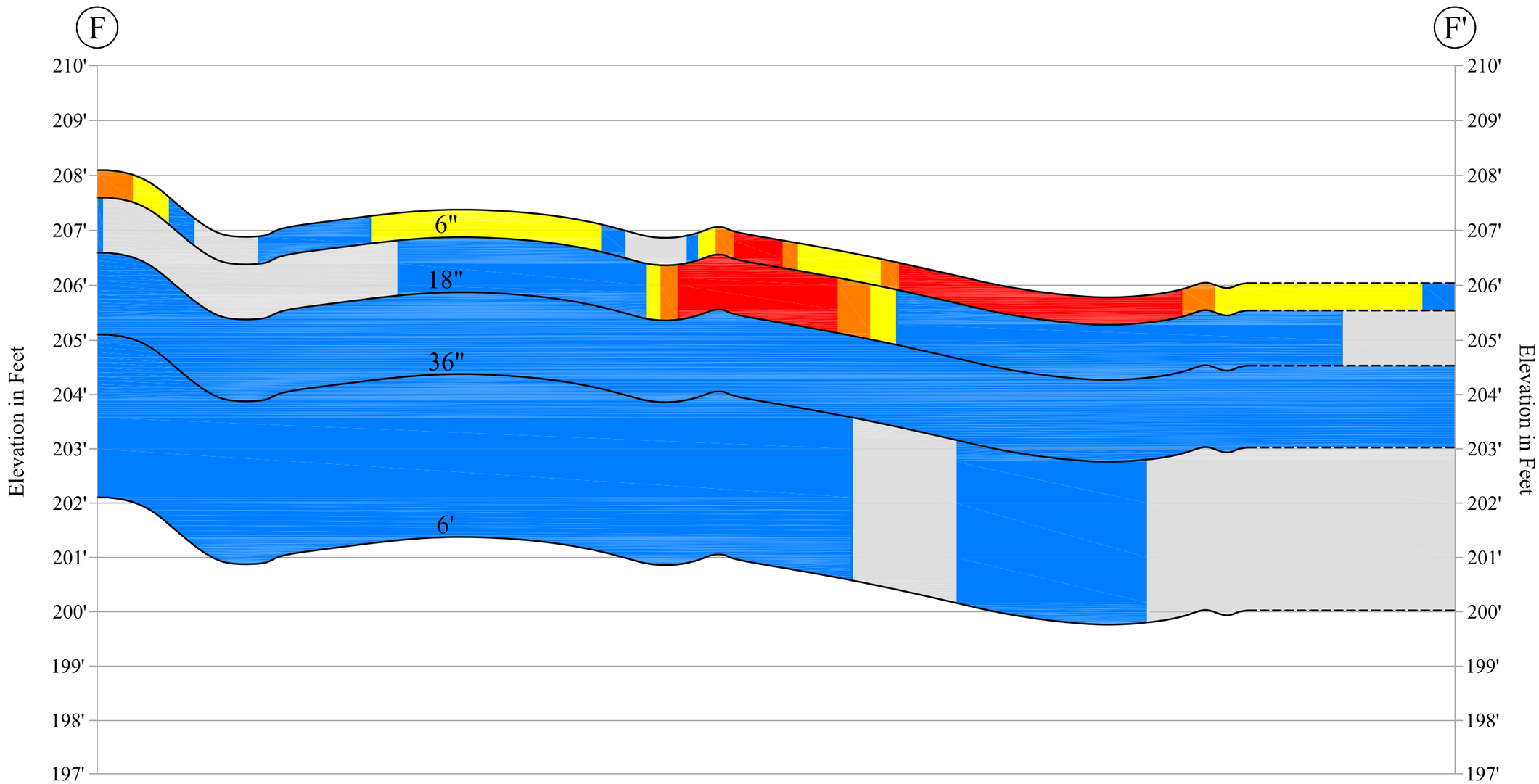
Umicore Facility Investigation Areas
Maxton, North Carolina

References: Whompler Survey Data, D&D Analytical Data

Drawn By: wmf	Checked By:	Date: 1-19-2012	Project Number: 200917
Scale: As Shown	Size: 11" x 17"	Filename: P:\Umicore\Maxton - 200917\8 Field and Technical\8.8 CAD and GIS Maps\LMAC\LMAC CAD\Cross Section with concentrations	Layers: 0,1,65

Figure

14



Legend

- 4.6 = Residential PSRG (IHSB) Feb. 2011
- 100 = 1/3 Site Specific Industrial PSRG Aug. 2011
- 150 = 1/2 Site Specific Industrial PSRG Aug. 2011
- 300 = Site Specific Industrial PSRG Aug. 2011
- No Detections

Note: IHSB = Inactive Hazardous Sites Branch. PSRG = IHSB Preliminary Health Based Soil Remediation Goal. The IHSB Industrial PSRG is 60 mg/kg (HQ=0.2) assuming the presence of five non-carcinogens; PSRG is based on EPA's Industrial Screening Level of 300 mg/kg (HQ=1.0). A Site-Specific Industrial RG for cobalt is 300 mg/kg since cobalt is the only non-carcinogen. A safety factor of two was used for a more conservative cleanup level of 150 mg/kg.

Horizontal Scale: 1" = 80'
Vertical Scale: As Shown

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Topographic Cross Section of LMAC Area F - F'

Umicore Facility Investigation Areas
Maxton, North Carolina

References: Whompler Survey Data, D&D Analytical Data

Drawn By: wmf	Checked By:	Date: 1-19-2012	Filename: P:\Umicore\Maxton - 20091718 Field and Technical\8.8 CAD and GIS Maps\LMAC\LMAC CAD\Cross Section with concentrations
Scale: As Shown	Size: 11" x 17"	Layers: 0,1,66	
		Project Number: 200917	

Figure

15

Tables

Table 1: Historical Summary of Metals and Other Inorganics in Ground Water, LMAC Area, Umicore, Maxton, North Carolina

Sample Location	Aquifer Type	Method	9056	9056	6010B/6020	6010B	6010B	6010B	6010B	6010B/ 6020
		Parameter	Chloride	Sulfate	Cobalt	Iron	Manganese	Potassium	Sodium	Thallium
		Date/2L Standard	250	250	0.001 a	0.3	0.05	NS	NS	0.0002a
DMW-1	Shallow	7/30/2009	NT	NT	<0.010	**0.11**	<0.010	<0.50	**11**	NT
		9/2/2009	**4.0**	**11**	<0.010	**2.2**	<0.010	<0.50	**13**	NT
		1/7/2010	**3.7**	**12**	<0.010	<0.10	<0.010	<0.50	**16**	NT
		4/13/2010	**5.0**	**18**	<0.010	**1.2**	<0.010	<0.50	**11**	NT
		7/1/2010	**4.2**	**9.2**	<0.010	**0.56**	<0.010	<0.50	**11**	NT
		2/3/2011	**4.4**	**6.2**	<0.0010	**<0.10**	<0.010	<0.50	**7.2**	NT
		2/3/2011 Dup	**4.5**	**6.4**	<0.0010	<0.10	<0.010	<0.50	**7.5**	NT
		4/7/2011	**4.1**	**5.4**	<0.0010	<0.10	<0.020	<0.50	**6.9**	NT
		4-7-11 Dup	**4.1**	**5.5**	<0.0010	<0.10	<0.020	<0.50	**7.0**	NT
		7/27/2011	**5.0**	**7.6**	0.00036 J	0.5 P1	**0.0013 J**	<0.14	**8.5**	NT
		10/13/2011	**4.5**	**4.9**	<0.00026	**0.030 J**	**0.0017 J**	**0.150 J**	**7.6**	<0.00019
		10/13/2011 Dup	**4.5**	**5.4**	<0.00026	**0.027 J**	<0.010	**0.130 J**	**6.2**	<0.00019
		2/9/2012	**5.0**	**5.3**	<0.00026	**0.026 J**	<0.0015	**0.270 J**	**7.9**	<0.00019
		2/9/2012 Dup	**5.0**	**5.4**	<0.00026	**0.028 J**	**0.002 J**	<0.120	**7.8**	<0.00019
DMW-1s	Perched	4/4/2010	**2.7**	**16**	<0.010	NT	NT	0.71	**14**	NT
		4/4/2010 Dup	**4.1**	**12**	<0.010	NT	NT	0.67	**14**	NT
		7/1/2010	**3.0**	**15**	<0.010	<0.1	0.034	<0.5	**15**	NT
		2/3/2011	**2.6**	**18**	<0.0010	**0.69**	<0.010	<0.5	**15**	NT
DMW-2	Shallow	7/30/2009	NT	NT	**0.011**	**0.63**	<0.010	NT	**6.1**	NT
		9/2/2009	**8.3**	<5.0	<0.010	<0.10	<0.010	<0.50	**5.6**	NT
		1/7/2010	**6.7**	<5.0	<0.010	<0.10	<0.010	<0.50	**4.7**	NT
		4/13/2010	**7.7**	<5.0	<0.010	<0.10	<0.010	<0.50	**5.0**	NT
		7/1/2010	**7.0**	<5.0	<0.010	<0.1	<0.010	<0.50	**4.9**	NT
		2/3/2011	**5.7**	<5.0	<0.0010	<0.1	<0.010	<0.50	**4.1**	NT
		4/7/2011	**6.3**	**4.2**	<0.0010	<0.1	<0.020	<0.50	**5.4**	NT
		7/27/2011	**5.9**	**1.3**	**0.0055 J**	**0.021 J**	**0.0013 J**	<0.14	**3.9**	<0.00019
		10/13/2011	**4.7**	**0.740 J**	**0.0074**	**0.059 J**	**0.0025 J**	**0.290 J**	**3.0**	<0.00019
		2/9/2012	**5.1**	**3.4**	<0.00026	**0.041 J**	<0.0015	**0.350 J**	**3.4**	<0.00019
DMW-2s	Perched	4/7/2010	**25.0**	**5.8**	**0.76**	NT	**0.11**	1.7	**9.9**	NT
		7/1/2010	**10.0**	<5.0	**0.32**	0.14	0.025	1.4	**8.4**	NT
		2/3/2011	**3.9**	**5.8**	**0.17**	**4.3**	0.045	1.1	**6.7**	NT
DMW-3	Shallow	7/30/2009	NT	NT	<0.010	NT	NT	NT	NT	NT
		7/30/2009 DUP	NT	NT	<0.010	NT	NT	NT	NT	NT
		9/2/2009	**5.8**	<5.0	<0.010	<0.10	<0.010	<0.50	**3.8**	NT
		1/7/2010	**6.5**	<5.0	<0.010	<0.10	<0.010	<0.50	**5.4**	NT
		4/13/2010	**7.2**	<5.0	<0.010	**0.41**	0.01	<0.50	**4.1**	NT
		7/1/2010	**6.7**	<5.0	<0.010	**0.39**	<0.010	<0.50	**4.8**	NT
		2/3/2011	**7.3**	<5.0	<0.0010	<0.10	<0.010	<0.50	**4.6**	NT
		4/7/2011	**8.0**	<5.0	<0.0010	<0.1	<0.020	<0.50	**5.4**	NT
		7/27/2011	**7.6**	1.1 J	0.00044 J	<0.019	<0.0011	**0.14**	**5.1**	NT
		7/27/11 EB	<1.5	<0.46	<0.00019	<0.019	<0.0011	<0.14	<0.12	<0.00019
		10/13/2011	**6.4**	**0.470 J**	<0.00026	<0.026	**0.0015 J**	**0.130 J**	**4.2**	<0.00019
		10/13/2011 EB	<0.150	<0.460	<0.00026	<0.026	<0.0015	<0.120	**0.320 J**	<0.00019
		2/9/2012	**7.6**	**0.530 J**	<0.00026	<0.026	**0.002 J**	**0.320 J**	**5.2**	<0.00019
		2/9/2012 EB	<0.053	<0.400	<0.00026	<0.026	<0.0015	<0.120	<0.120	<0.00019
DMW-3s	Perched	4/7/2010	**4.2**	**15.0**	<0.010	NT	NT	<0.50	**13**	NT
		7/1/2010	**6.3**	**14.0**	<0.010	**4.4**	**0.030**	<0.50	**14**	NT
		2/3/2011	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NT

Notes:

All values expressed in milligrams per liter (mg/L)

2L Standard = North Carolina groundwater standards as promulgated by 15A North Carolina Administrative Code, Subchapter 2L.

NS- No Standard NT - Not Tested EB- Equipment Blank

"a" - indicates this value is currently a Interim Maximum Allowable Concentration (IMAC) and is enforceable under 15A NCAC 2L Standards.

Bold values indicate result is above Laboratory Reporting Limits

Bold and shaded only values indicate result is above the 2L standard.

Aquifer Type - Refers to either the perched aquifer or the shallow aquifer.

Table 1: Historical Summary of Metals and Other Inorganics in Ground Water, LMAC Area, Umicore, Maxton, North Carolina

Sample Location	Aquifer Type	Method	9056	9056	6010B/6020	6010B	6010B	6010B	6010B	6010B/ 6020
		Parameter	Chloride	Sulfate	Cobalt	Iron	Manganese	Potassium	Sodium	Thallium
		Date/2L Standard	250	250	0.001 a	0.3	0.05	NS	NS	0.0002a
DMW-4	Shallow	7/30/2009	NT	NT	**0.013**	NT	NT	NT	NT	NT
		9/2/2009	**6.1**	<5.0	<0.010	**0.67**	**0.018**	<0.50	**5.4**	NT
		1/7/2010	**5.4**	<5.0	<0.010	**0.12**	<0.010	**0.83**	**7.5**	NT
		4/13/2010	**5.5**	<5.0	<0.010	**0.13**	<0.010	**1.0**	**6.1**	NT
		7/1/2010	**5.1**	<5.0	<0.010	<0.10	<0.010	**1.8**	**5.7**	NT
		2/3/2011	**5.4**	<5.0	**0.0014**	**0.33**	<0.010	**1.2**	**4.8**	NT
		4/7/2011	**5.3**	<5.0	<0.0010	<0.10	<0.020	**1.7**	**5.5**	NT
		7/27/2011	**5.6**	**2.4**	**0.0016**	**0.024 J**	**0.0025 J**	**1.3**	**6.5**	<0.00019
		10/13/2011	**6.2**	**1.6**	<0.00026	<0.026	**0.0032 J**	**3.3**	**7.7**	<0.00019
		2/9/2012	**5.9**	**1.4**	**0.0011**	<0.026	**0.003 J**	**0.6**	**6.8**	<0.00019
DMW-4s	Perched	4/7/2010	NT	NT	**0.530**	NT	NT	**0.80**	**7.9**	NT
		7/1/2010	**5.4**	<5.0	**0.30**	**1.0**	**0.099**	**0.55**	**6.6**	NT
		2/3/2011	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NT
DMW-5s	Perched	4/7/2010	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NT
		7/1/2010	**7.5**	<5.0	**2.9**	**2.4**	**0.14**	**3.5**	**19**	NT
		2/3/2011	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NT
DMW-6s	Perched	4/7/2010	Dry	Dry	Dry	Dry	DRY	DRY	DRY	NT
		7/1/2010	**6.8**	**9.4**	**0.047**	**0.75**	**0.069**	**0.71**	**8.7**	NT
		2/3/2011	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NT
DMW-7s	Perched	4/7/2010	**16**	**7.0**	**4.6**	NT	NT	**27**	**20**	NT
		7/1/2010	**10**	**7.7**	**0.33**	**0.33**	**0.038**	**1.5**	**15**	NT
		2/3/2011	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NT
DMW-8s	Perched	2/3/2011	DRY	DRY	DRY	DRY	DRY	DRY	DRY	NT
P-1	Perched	3/3/2009	**6.0**	**15.0**	**0.02**	**3.4**	**0.064**	NT	**28.0**	NT
		6/18/2009**	**5.4**	**7.7**	**0.026**	**2.9**	**0.085**	NT	**15.0**	NT
P-2	Perched	3/3/2009	**13.0**	**16.0**	**1.6**	**14.0**	**0.38**	NT	**51.0**	NT
		6/18/2009**	**5.0**	**8.5**	**0.9**	**0.34**	**0.048**	NT	**6.3**	NT
P-3	Perched	3/3/2009	<1.0	**5.5**	**0.014**	**0.7**	**0.075**	NT	**2.4**	NT
		6/18/2009**	**3.0**	<5	<0.010	<0.10	<0.010	NT	**13.0**	NT
P-4	Perched	3/3/2009**	**1.5**	**7.3**	**0.049**	**0.85**	**0.11**	NT	**7.7**	NT
P-7	Perched	6/18/2009**	**10.0**	**14.0**	<0.010	**10.0**	**0.18**	NT	**10.0**	NT

Notes:

All values expressed in milligrams per liter (mg/L)

2L Standard = North Carolina groundwater standards as promulgated by 15A North Carolina Administrative Code, Subchapter 2L.

NS- No Standard NT - Not Tested

"a" - indicates this value is currently a Interim Maximum Allowable Concentration (IMAC) and is enforceable under 15A NCAC 2L Standards.

Shaded values indicate result is above Laboratory Reporting Limits

Bold and shaded only values indicate result is above the 2Lstandard.

Aquifer Type - Refers to either the shallow unconfined (i.e., perched water table zone), intermediate, or deep aquifer zones that have been identified thus far.

** - Indicates well was abandoned following sampling on the date shown. P-1, P-2, P-3, P-4 and P-7 were abandoned by S&ME.

Appendix A

REC PROGRAM DOCUMENT CERTIFICATION FORM - PAGE 1 OF 2
IHSB SITE NAME Umicore Maxton
DATE & NAME OF DOCUMENT 2/29/12 Proposal for Concurrence of Contaminant Remedy LMAC Area
TYPE OF SUBMITTAL (circle all that apply): Report, Work plan, Work Phase Comp. Statement, Schedule Change

REMEDIATING PARTY DOCUMENT CERTIFICATION STATEMENT (.0306(B)(2))

"I certify under penalty of law that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this certification, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material and information contained herein is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for willfully submitting false, inaccurate or incomplete information."

Umicore USA Inc
Name of Remediating Party

R C
Signature of Remediating Party

3-14-12
Date

NOTARIZATION

North Carolina (Enter State)

Wake **COUNTY**

I, Cynthia F. Dietrich, a Notary Public of ~~said~~ Granville County and State, do hereby certify that Richard Laird did personally appear and sign before me this day, produced proper identification in the form of NC driver license, was duly sworn or affirmed, and declared that, to the best of his or her knowledge and belief, after thorough investigation, the information contained in the above certification is true and accurate, and he or she then signed this Certification in my presence.

WITNESS my hand and official seal this 14th day of March, 2012.

Cynthia F. Dietrich
Notary Public (signature)

(OFFICIAL SEAL)

My commission expires: 7/23/2015

CYNTHIA F. DIETRICH
NOTARY PUBLIC
GRANVILLE COUNTY
STATE OF NORTH CAROLINA
MY COMMISSION EXPIRES 7-23-2015

REC PROGRAM DOCUMENT CERTIFICATION FORM - PAGE 2 OF 2
IHSB SITE NAME Umicore Maxton
DATE & NAME OF DOCUMENT 2/29/12 Proposal for Concurrence of Contaminant Remedy LMAC Area
TYPE OF SUBMITTAL (circle all that apply): Report, Work plan, Work Phase Comp. Statement, Schedule Change

REGISTERED SITE MANAGER CERTIFICATION OF SIGNATURES

As the Registered Environmental Consultant for the Site for which this filing is made, I certify that the signatures included herewith are genuine and authentic original handwritten signatures and/or true, accurate, and complete copies of the genuine and authentic original handwritten signatures of the persons who purport to sign for this filing. I further certify that I have collected through reliable means the originals and/or copies of said signatures from the persons authorized to sign for this filing who, in fact, signed the originals thereof. Those persons and I understand and agree that any copies of signatures have the same legally binding effect as original handwritten signatures, and I certify that any person for whom I am submitting a copy of their signature has provided me with their express consent to submit said copy. Additionally, I certify that I am authorized to attest to the genuineness and authenticity of the signatures, both originals and any copies, being submitted herewith and that by signing below, I do in fact attest to the genuineness and authenticity of all the signatures, both originals and copies, being submitted for this filing.

David L. Duncklee
Name of Registered Site Manager

Signature of Registered Site Manager — Date 3/15/12

REGISTERED SITE MANAGER DOCUMENT CERTIFICATION STATEMENT (.0306(b)(1))

"I certify under penalty of law that I am personally familiar with the information contained in this submittal, including any and all supporting documents accompanying this certification, and that the material and information contained herein is, to the best of my knowledge and belief, true, accurate and complete and complies with the Inactive Hazardous Sites Response Act G.S. 130A-310, et seq, and the remedial action program Rules 15A NCAC 13C .0300. I am aware that there are significant penalties for willfully submitting false, inaccurate or incomplete information."

David L. Duncklee
Name of Registered Site Manager

Signature of Registered Site Manager — Date 3/15/12

NOTARIZATION

NC (Enter State)

Wake **COUNTY**

I, Nina K Jarrad, a Notary Public of said County and State, do hereby certify that David Duncklee did personally appear and sign before me this day, produced proper identification in the form of NCDL, was duly sworn or affirmed, and declared that, he or she is the duly authorized environmental consultant of the remediating party of the property referenced above and that, to the best of his or her knowledge and belief, after thorough investigation, the information contained in the above certifications is true and accurate, and he or she then signed these Certifications in my presence.

WITNESS my hand and official seal this 15th day of March, 2012

(OFFICIAL SEAL)

Notary Public (signature)

My commission expires: June 15th 2013

NINA K JARRAD NOTARY PUBLIC WAKE COUNTY, NC

Document Certification Form No. DC - II
(Revised 8/11)