

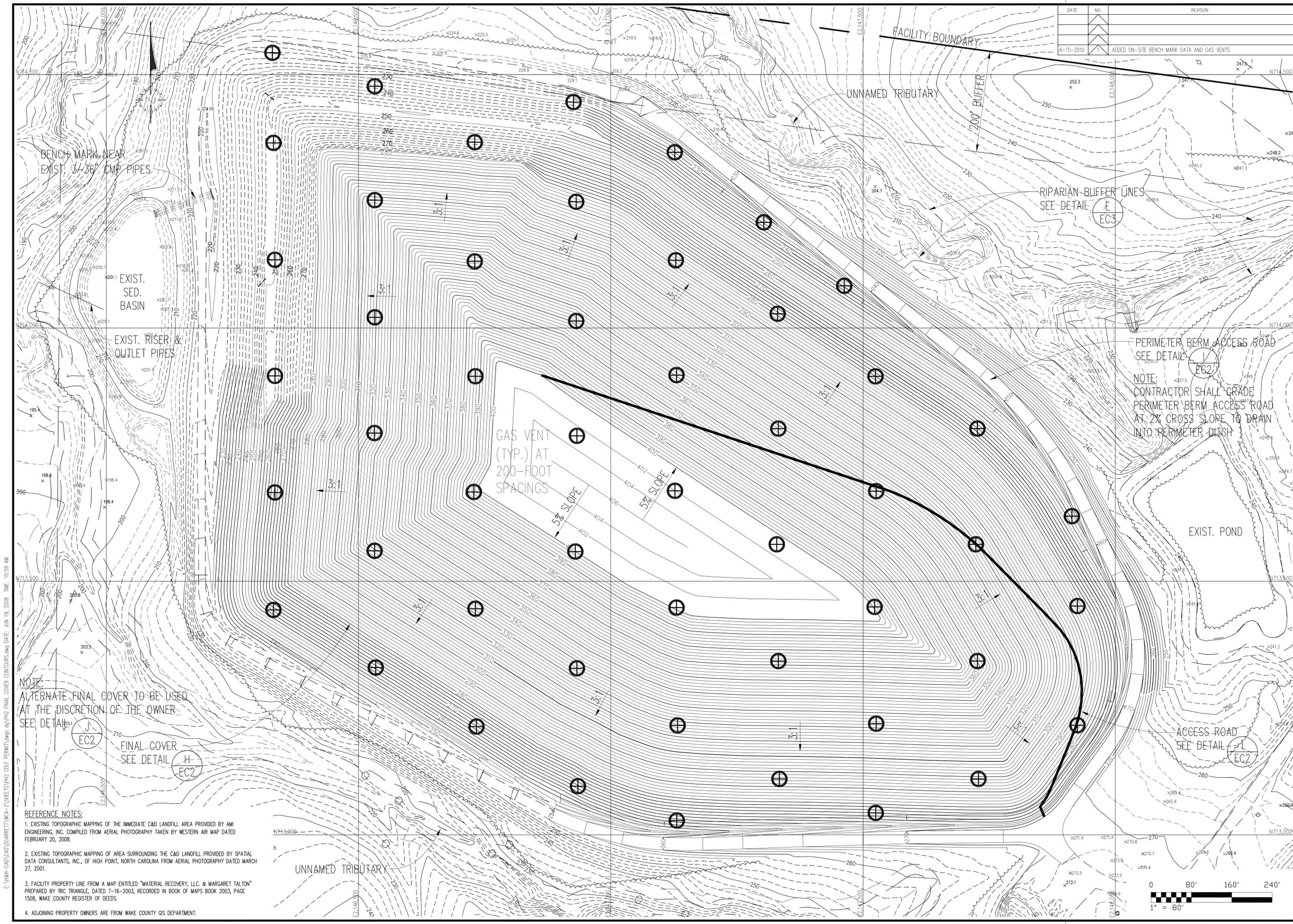
Doc ID 12583

Contains Drawings 9-21. See Doc ID 12363 for rest of application.

The wood waste storage and processing area as shown in the application is not approved at this time.

APPROVED
DIVISION OF WASTE MANAGEMENT
SOLID WASTE SECTION
DATE 1-28-11 BY D. Wilson

DTC/PTO 92-31
Attach 1, Part II, Doc 20



DATE	NO.	REVISION
6-15-2010		ADDED ON-SITE BENCH MARK DATA AND GAS VENTS

BENCH MARK NEAR EXIST. 34" 36" CMP PIPES

EXIST. SED. BASIN

EXIST. RISER & OUTLET PIPES

FACILITY BOUNDARY

UNNAMED TRIBUTARY

RIPARIAN BUFFER LINES SEE DETAIL EC3

PERIMETER BERM ACCESS ROAD SEE DETAIL EC2

NOTE: CONTRACTOR SHALL GRADE PERIMETER BERM ACCESS ROAD AT 2% CROSS SLOPE TO DRAIN INTO PERIMETER DITCH

GAS VENT (TYP.) AT 200-FOOT SPACINGS

EXIST. POND

ACCESS ROAD SEE DETAIL EC2

UNNAMED TRIBUTARY

NOTE: ALTERNATE FINAL COVER TO BE USED AT THE DISCRETION OF THE OWNER SEE DETAIL H

FINAL COVER SEE DETAIL H

- REFERENCE NOTES:
1. EXISTING TOPOGRAPHIC MAPPING OF THE IMMEDIATE C&D LANDFILL AREA PROVIDED BY AMI ENGINEERING, INC. COMPILED FROM AERIAL PHOTOGRAPHY TAKEN BY WESTERN AIR MAP DATED FEBRUARY 20, 2008.
 2. EXISTING TOPOGRAPHIC MAPPING OF AREA SURROUNDING THE C&D LANDFILL PROVIDED BY SPATIAL DATA CONSULTANTS, INC., OF HIGH POINT, NORTH CAROLINA FROM AERIAL PHOTOGRAPHY DATED MARCH 27, 2001.
 3. FACILITY PROPERTY LINE FROM A MAP ENTITLED "MATERIAL RECOVERY, LLC. & MARGARET TALTON" PREPARED BY TRC TRIANGLE, DATED 7-16-2003, RECORDED IN BOOK OF MAPS BOOK 2003, PAGE 1508, WAKE COUNTY REGISTER OF DEEDS.
 4. ADJOINING PROPERTY OWNERS ARE FROM WAKE COUNTY GIS DEPARTMENT.

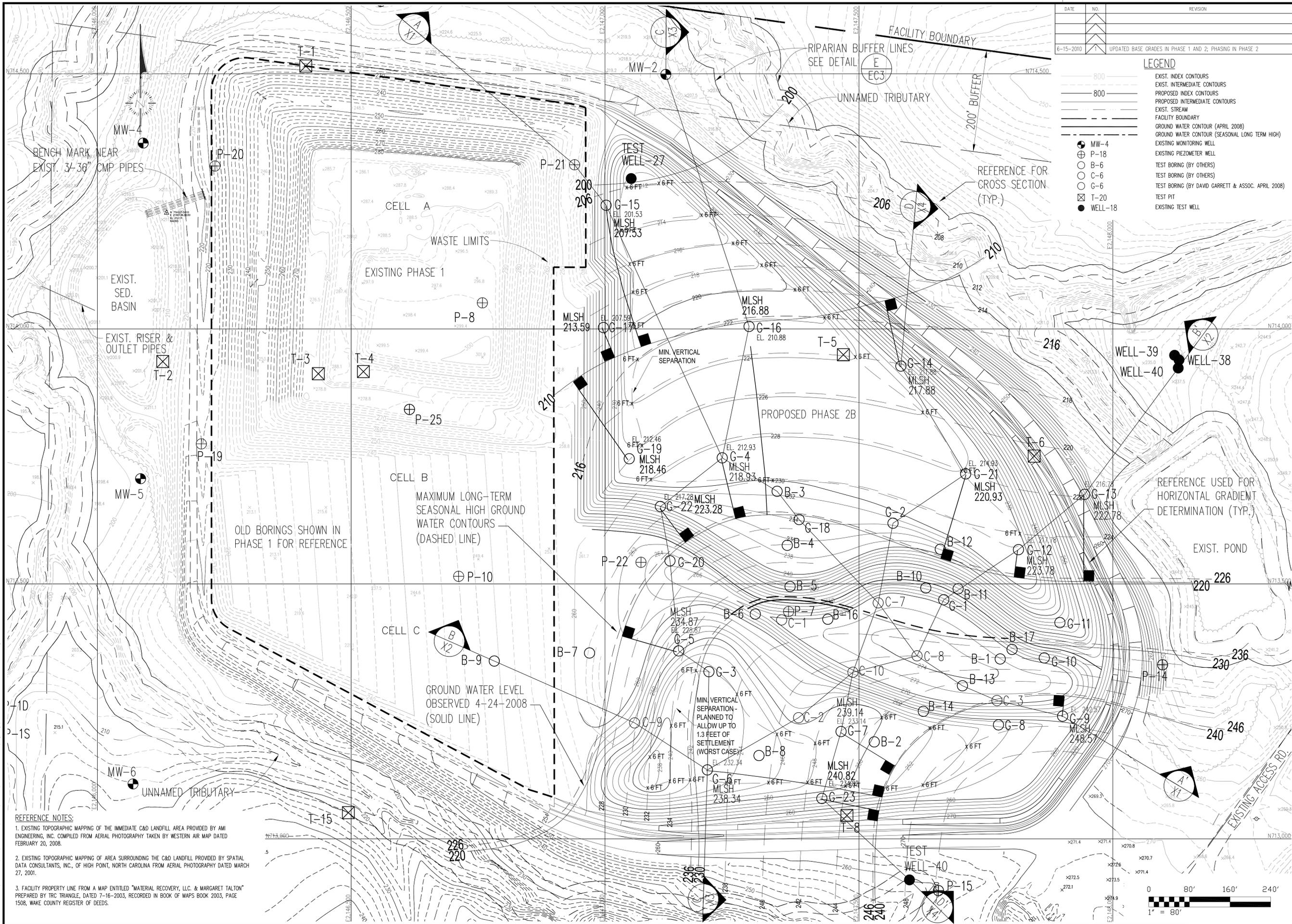


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 5105 Harbour Towne Drive, Raleigh, North Carolina 27604
 Email: david.garrett_pg@mindspring.com 919-231-1818 (Office and Fax) 919-418-4375 (mobile)

PROJECT TITLE:
**WCA WASTE CORPORATION, INC.
 BROWNFIELD RD. C&D LANDFILL
 PH2 PERMIT MODIFICATIONS (#92-31)
 WAKE COUNTY, NORTH CAROLINA**

DRAWING TITLE:
**CDLF PHASE 2
 FINAL COVER CONTOURS**

DESIGNED BY: G.D.G.	DRAWN BY: A.W.H.
CHECKED BY: G.D.G.	PROJECT NO.: WCA-2
SCALE: AS SHOWN	DATE: JUNE 2008
FILE NAME: PH2 FINAL COVER CONTOURS	DRAWING NO.:
SHEET NO. 9	DATE: E3



DATE	NO.	REVISION
6-15-2010	1	UPDATED BASE GRADES IN PHASE 1 AND 2; PHASING IN PHASE 2

- LEGEND**
- 800 --- EXIST. INDEX CONTOURS
 - 800 --- EXIST. INTERMEDIATE CONTOURS
 - 800 --- PROPOSED INDEX CONTOURS
 - 800 --- PROPOSED INTERMEDIATE CONTOURS
 - 800 --- EXIST. STREAM
 - 800 --- FACILITY BOUNDARY
 - 800 --- GROUND WATER CONTOUR (APRIL 2008)
 - 800 --- GROUND WATER CONTOUR (SEASONAL LONG TERM HIGH)
 - ⊕ EXISTING MONITORING WELL
 - ⊕ EXISTING PIEZOMETER WELL
 - ⊕ TEST BORING (BY OTHERS)
 - ⊕ TEST BORING (BY OTHERS)
 - ⊕ TEST BORING (BY DAVID GARRETT & ASSOC. APRIL 2008)
 - ⊕ TEST PIT
 - EXISTING TEST WELL

REFERENCE NOTES:

- EXISTING TOPOGRAPHIC MAPPING OF THE IMMEDIATE C&D LANDFILL AREA PROVIDED BY AMI ENGINEERING, INC. COMPILED FROM AERIAL PHOTOGRAPHY TAKEN BY WESTERN AIR MAP DATED FEBRUARY 20, 2008.
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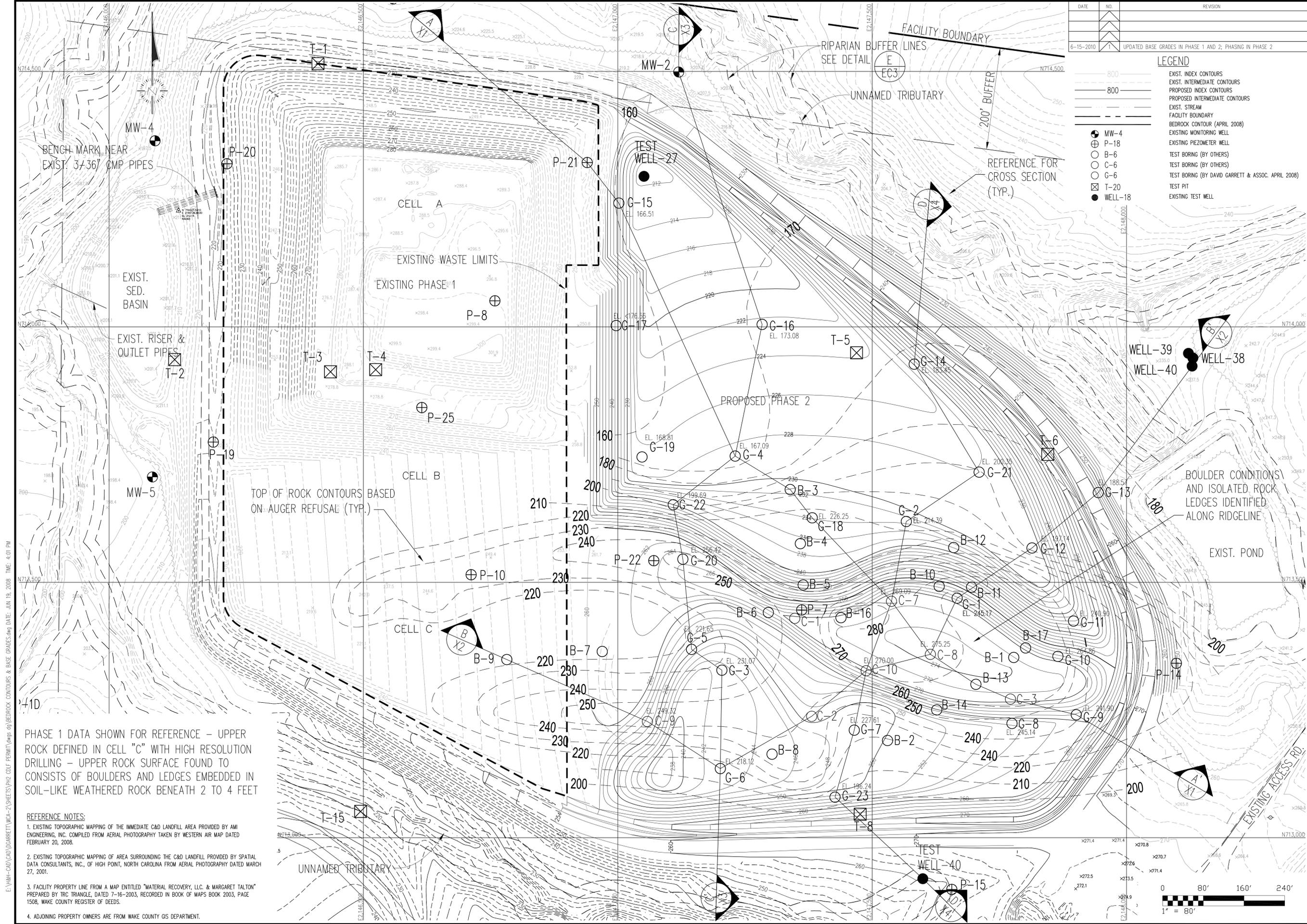
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PROJECT TITLE:
 WCA WASTE CORPORATION, INC.
 BROWNFIELD RD. C&D LANDFILL
 PH2 PERMIT MODIFICATIONS (#92-31)
 WAKE COUNTY, NORTH CAROLINA

DRAWING TITLE:
 GROUND WATER CONTOURS
 OBSERVED APR. 2008 AND
 MAX. W/ BASE GRADES

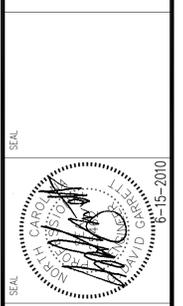
DESIGNED BY: G.D.G.	DRAWN BY: A.W.H.
CHECKED BY: G.D.G.	PROJECT NO.: WCA-2
SCALE: AS SHOWN	DATE: JUNE 2008
FILE NAME: GW CONTOURS & BASE GRADES	SHEET NO.:
10	E4



DATE	NO.	REVISION
6-15-2010	1	UPDATED BASE GRADES IN PHASE 1 AND 2; PHASING IN PHASE 2

- LEGEND**
- 800 --- EXIST. INDEX CONTOURS
 - 800 --- EXIST. INTERMEDIATE CONTOURS
 - 800 --- PROPOSED INDEX CONTOURS
 - 800 --- PROPOSED INTERMEDIATE CONTOURS
 - 800 --- EXIST. STREAM
 - 800 --- FACILITY BOUNDARY
 - 800 --- BEDROCK CONTOUR (APRIL 2008)
 - ⊕ EXISTING MONITORING WELL
 - ⊕ EXISTING PIEZOMETER WELL
 - ⊕ TEST BORING (BY OTHERS)
 - ⊕ TEST BORING (BY OTHERS)
 - ⊕ TEST BORING (BY DAVID GARRETT & ASSOC. APRIL 2008)
 - ⊕ TEST PIT
 - EXISTING TEST WELL

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PROJECT TITLE:
 WCA WASTE CORPORATION, INC.
 BROWNFIELD RD. C&D LANDFILL
 PH2 PERMIT MODIFICATIONS (#92-31)
 WAKE COUNTY, NORTH CAROLINA

DRAWING TITLE:
 BEDROCK CONTOURS
 WITH BASE GRADES

DESIGNED BY: G.D.G. DRAWN BY: A.W.H.
 CHECKED BY: G.D.G. PROJECT NO.: WCA-2
 SCALE: AS SHOWN DATE: JUNE 2008
 FILE NAME: BEDROCK CONTOURS & BASE GRADES
 SHEET NO. 11 DRAWING NO. E5

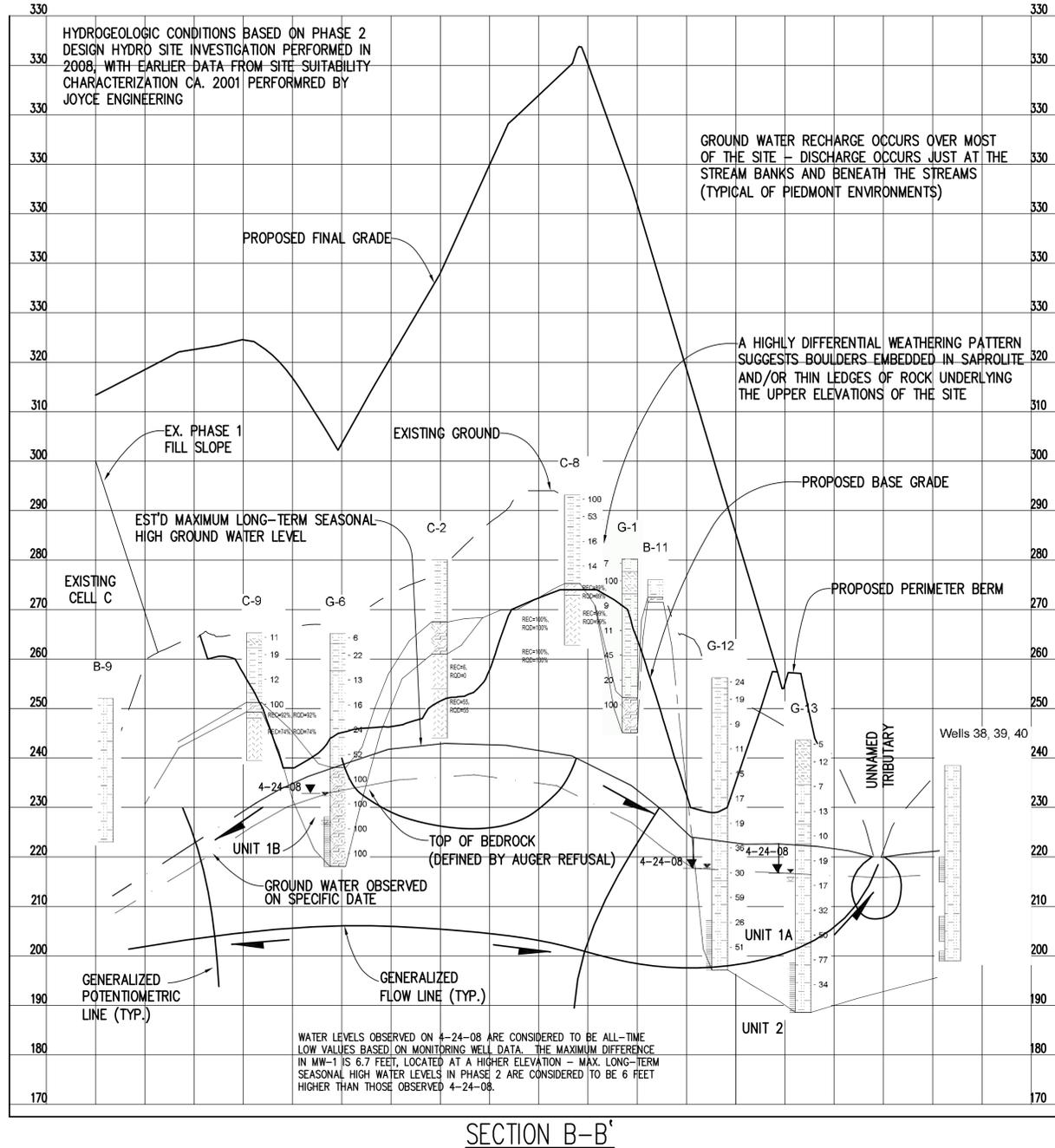
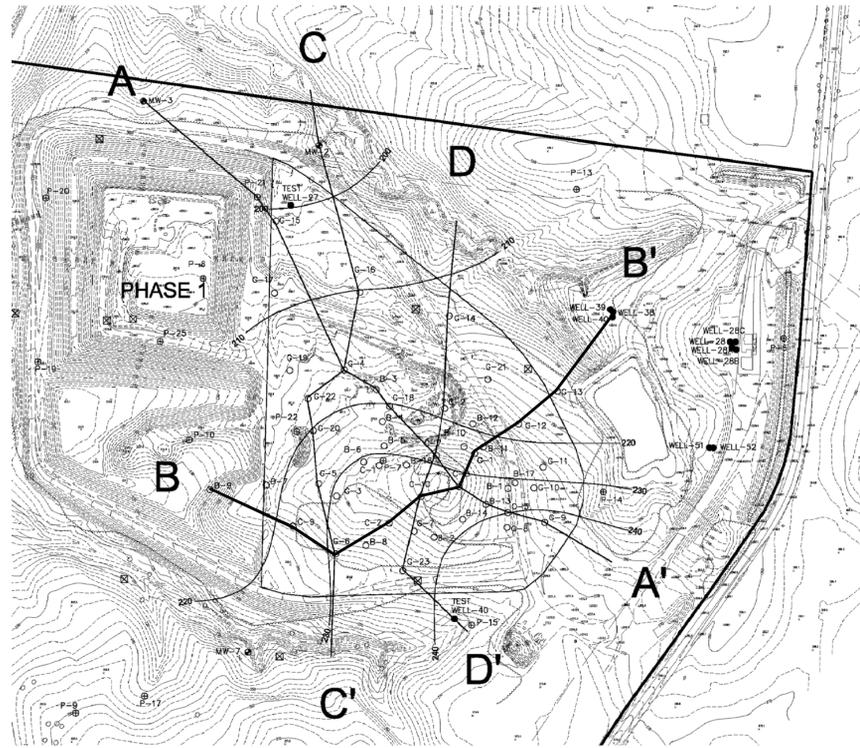
E:\1484-CAD\GARRETT\WCA-2\SHEETS\PH2\CONTOURS & BASE GRADES.dwg DATE: JUN 19, 2008 TIME: 4:01 PM

PHASE 1 DATA SHOWN FOR REFERENCE - UPPER ROCK DEFINED IN CELL "C" WITH HIGH RESOLUTION DRILLING - UPPER ROCK SURFACE FOUND TO CONSISTS OF BOULDERS AND LEDGES EMBEDDED IN SOIL-LIKE WEATHERED ROCK BENEATH 2 TO 4 FEET

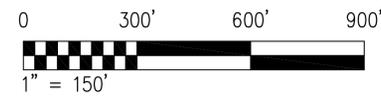
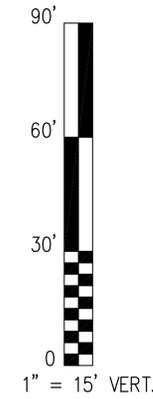
- REFERENCE NOTES:**
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 - ADJOINING PROPERTY OWNERS ARE FROM WAKE COUNTY GIS DEPARTMENT.

LEGEND

- GROUND LINE ALONG PROFILE
- MAXIMUM LONG-TERM SEASONAL HIGH GROUND WATER LEVEL
- SOIL BOUNDARY, E.G., TOP OF PARTIALLY WEATHERED ROCK
- TOP OF BEDROCK DEFINED BY "AUGER REFUSAL"
- SILTY SAND (SAPROLITE)
- SANDY SILT (SAPROLITE)
- SANDY CLAY OR CLAYEY SAND (SAPROLITE)
- SILTY CLAY (SAPROLITE)
- PARTIALLY WEATHERED ROCK (100+ BPF SAPROLITE, PENETRATED BY HOLLOW STEM AUGER)
- ROCK CORE WITH RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
- STANDARD PENETRATION RESISTANCE VALUE (ASTM D-1586)
- WATER LEVEL AT TIME OF COMPLETION OF PIEZOMETER
- WATER LEVEL AT LEAST 24 HOURS AFTER COMPLETION
- WELL SCREEN INTERVAL (ONE COLUMN SHOWN AT COUPLETS FOR CLARITY)
- GROUND WATER FLOW DIRECTION



SECTION B-B'



E:\VBA\CAD\CAD\GARRETT\WCA-2\SHEETS\PH2\COLF PERMIT\dwg\9 CROSS SECTIONS SH2 2 OF 4.dwg DATE: JUN 19, 2008 TIME: 4:05 PM

NO.	DATE	REVISION

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PROJECT TITLE:
WCA WASTE CORPORATION, INC.
BROWNFIELD RD. C&D LANDFILL
PH2 PERMIT MODIFICATIONS (#92-31)
 WAKE COUNTY, NORTH CAROLINA

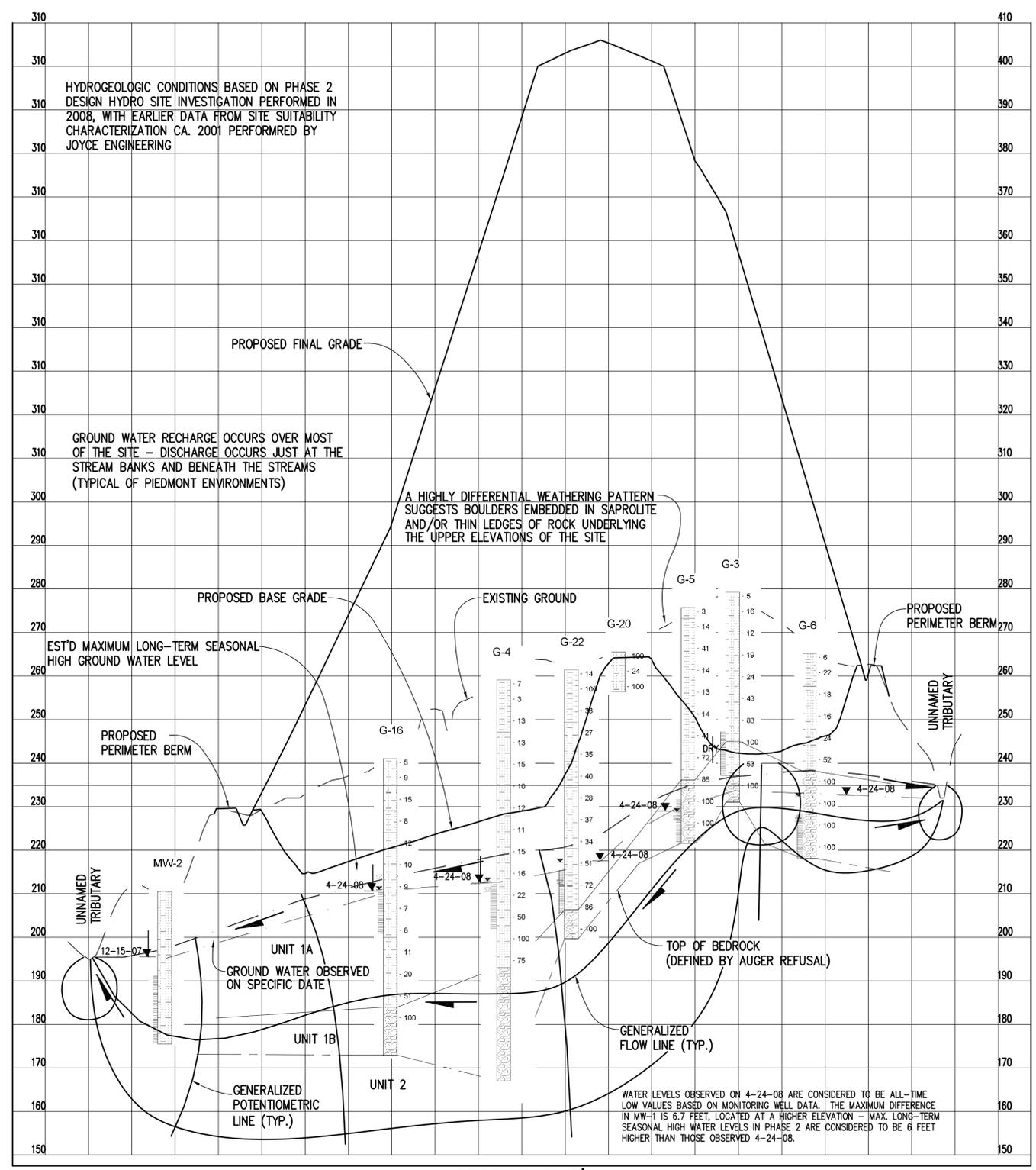
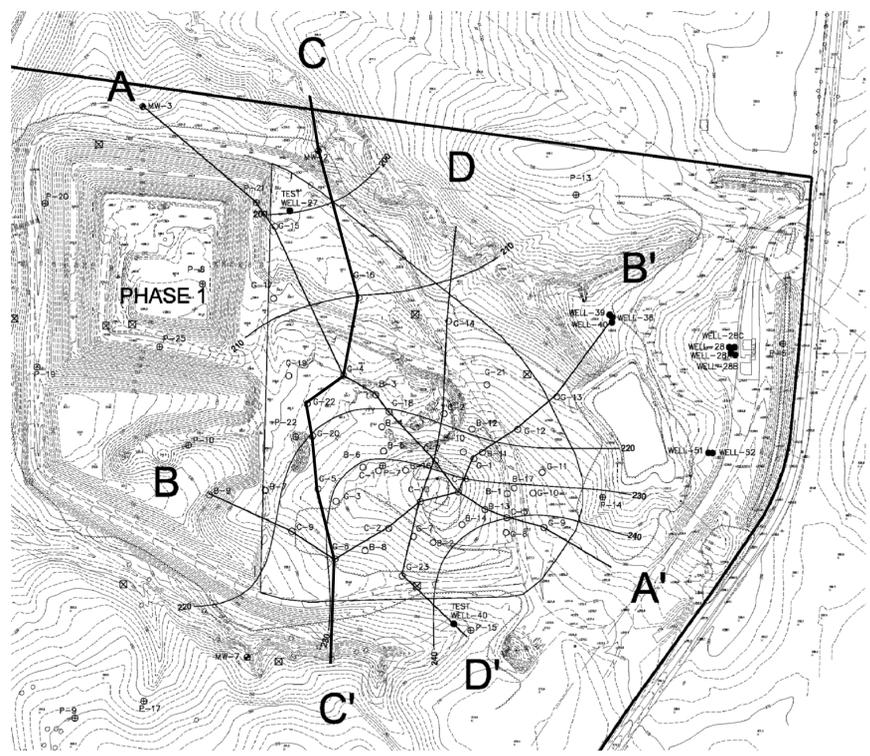
DRAWING TITLE:
HYDROGEOLOGICAL
CROSS SECTION B-B'
SHEET 2 OF 4

DESIGNED BY: G.D.G.	DRAWN BY: A.W.H.
CHECKED BY: G.D.G.	PROJECT NO.: WCA-2
SCALE: AS SHOWN	DATE: JUNE 2008
FILE NAME: CROSS SECTIONS SH2 2 OF 4	DRAWING NO.:
SHEET NO.: 13	DRAWING NO.: X2

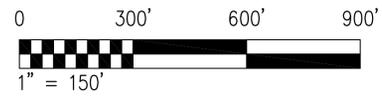
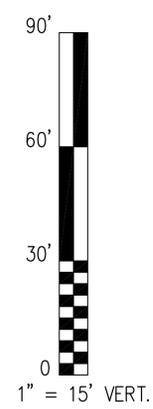
E:\H&H-CAD\CAD\GARBETT\WCA-2\SHEETS\PH2\DWG PERMIT\dwg 09\CROSS SECTIONS SH1 3 OF 4.dwg DATE: JUN 19, 2008 TIME: 4:06 PM

LEGEND

- GROUND LINE ALONG PROFILE
- MAXIMUM LONG-TERM SEASONAL HIGH GROUND WATER LEVEL
- SOIL BOUNDARY, E.G., TOP OF PARTIALLY WEATHERED ROCK
- TOP OF BEDROCK DEFINED BY "AUGER REFUSAL"
- SILTY SAND (SAPROLITE)
- SANDY SILT (SAPROLITE)
- SANDY CLAY OR CLAYEY SAND (SAPROLITE)
- SILTY CLAY (SAPROLITE)
- PARTIALLY WEATHERED ROCK (100+ BPF SAPROLITE, PENETRATED BY HOLLOW STEM AUGER)
- ROCK CORE WITH RECOVERY AND ROCK QUALITY DESIGNATION (ROD)
- STANDARD PENETRATION RESISTANCE VALUE (ASTM D-1586)
- WATER LEVEL AT TIME OF COMPLETION OF PIEZOMETER
- WATER LEVEL AT LEAST 24 HOURS AFTER COMPLETION
- WELL SCREEN INTERVAL (ONE COLUMN SHOWN AT COUPLETS FOR CLARITY)
- GROUND WATER FLOW DIRECTION

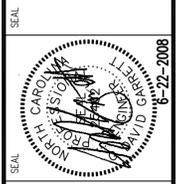


SECTION C-C'



NO.	DATE	REVISION

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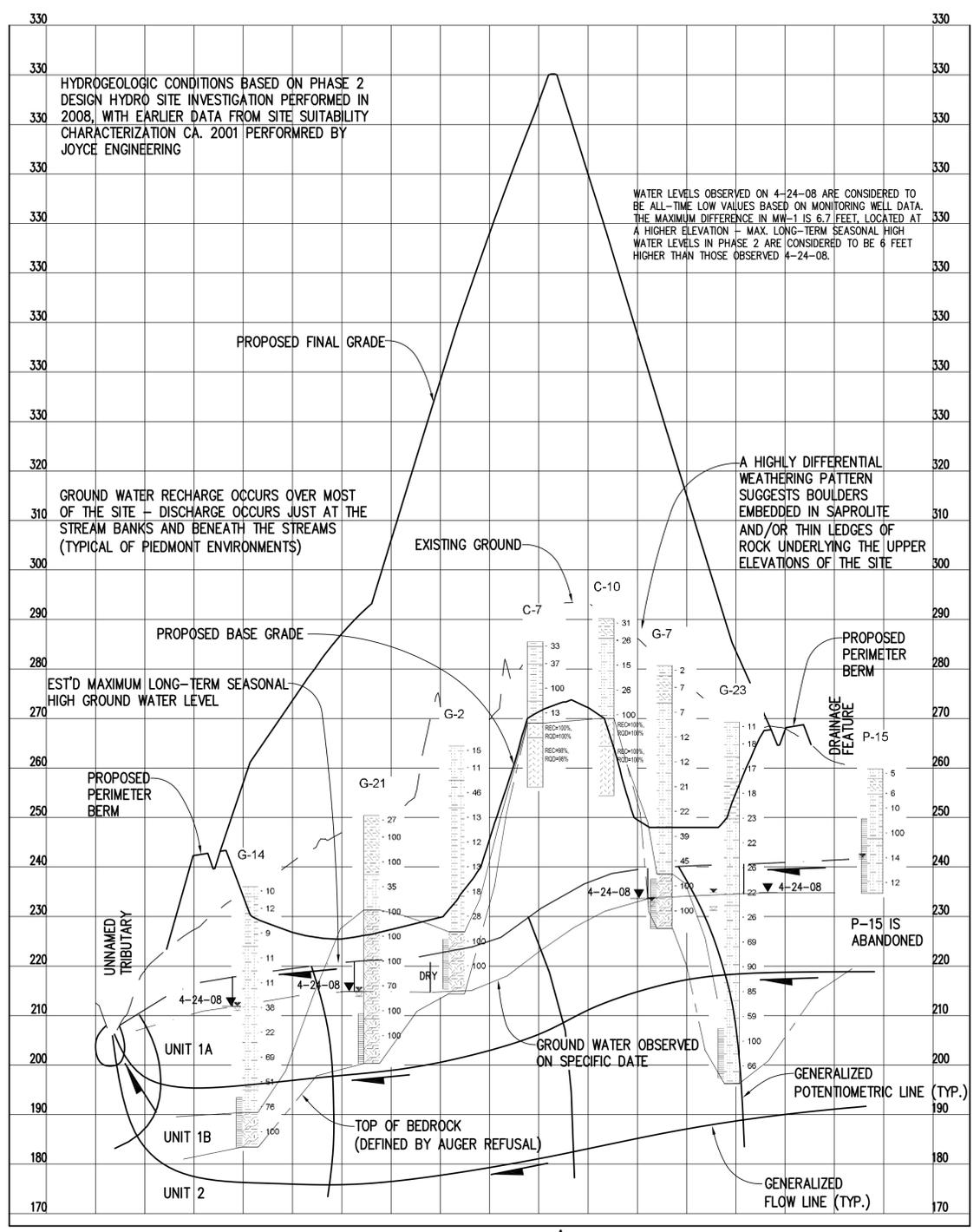
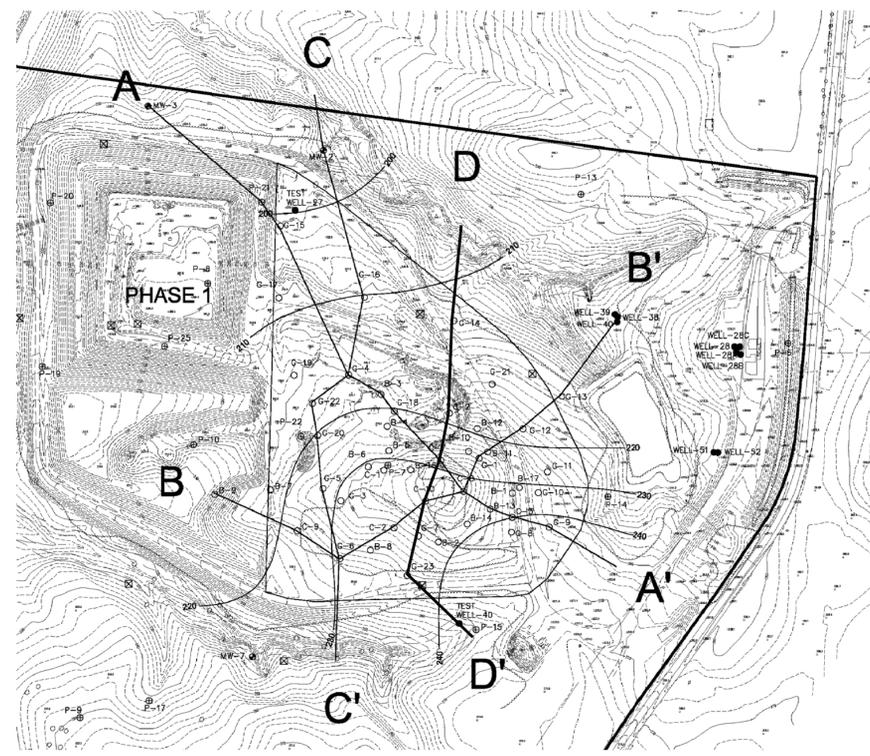


PROJECT TITLE:
 WCA WASTE CORPORATION, INC.
 BROWNFIELD RD. C&D LANDFILL
 PH2 PERMIT MODIFICATIONS (#92-31)
 WAKE COUNTY, NORTH CAROLINA

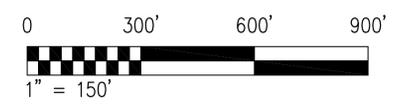
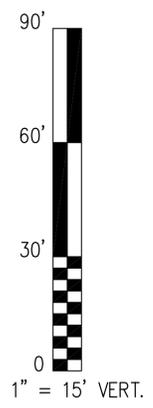
DRAWING TITLE:
 HYDROGEOLOGICAL
 CROSS SECTION C-C'
 SHEET 3 OF 4

DESIGNED BY: G.D.G.	DRAWN BY: A.W.H.
CHECKED BY: G.D.G.	PROJECT NO.: WCA-2
SCALE: AS SHOWN	DATE: JUNE 2008
FILE NAME: CROSS SECTIONS SH1 3 OF 4	DRAWING NO.:
SHEET NO.:	
14	X3

- LEGEND**
- GROUND LINE ALONG PROFILE
 - MAXIMUM LONG-TERM SEASONAL HIGH GROUND WATER LEVEL
 - SOIL BOUNDARY, E.G., TOP OF PARTIALLY WEATHERED ROCK
 - TOP OF BEDROCK DEFINED BY "AUGER REFUSAL"
 - SILTY SAND (SAPROLITE)
 - SANDY SILT (SAPROLITE)
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 - SILTY CLAY (SAPROLITE)
 - PARTIALLY WEATHERED ROCK (100+ BPF SAPROLITE, PENETRATED BY HOLLOW STEM AUGER)
 - ROCK CORE WITH RECOVERY AND ROCK QUALITY DESIGNATION (RQD)
 - STANDARD PENETRATION RESISTANCE VALUE (ASTM D-1586)
 - WATER LEVEL AT TIME OF COMPLETION OF PIEZOMETER
 - WATER LEVEL AT LEAST 24 HOURS AFTER COMPLETION
 - WELL SCREEN INTERVAL (ONE COLUMN SHOWN AT COUPLETS FOR CLARITY)
 - GROUND WATER FLOW DIRECTION

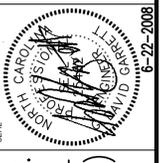


SECTION D-D'



NO.	DATE	REVISION

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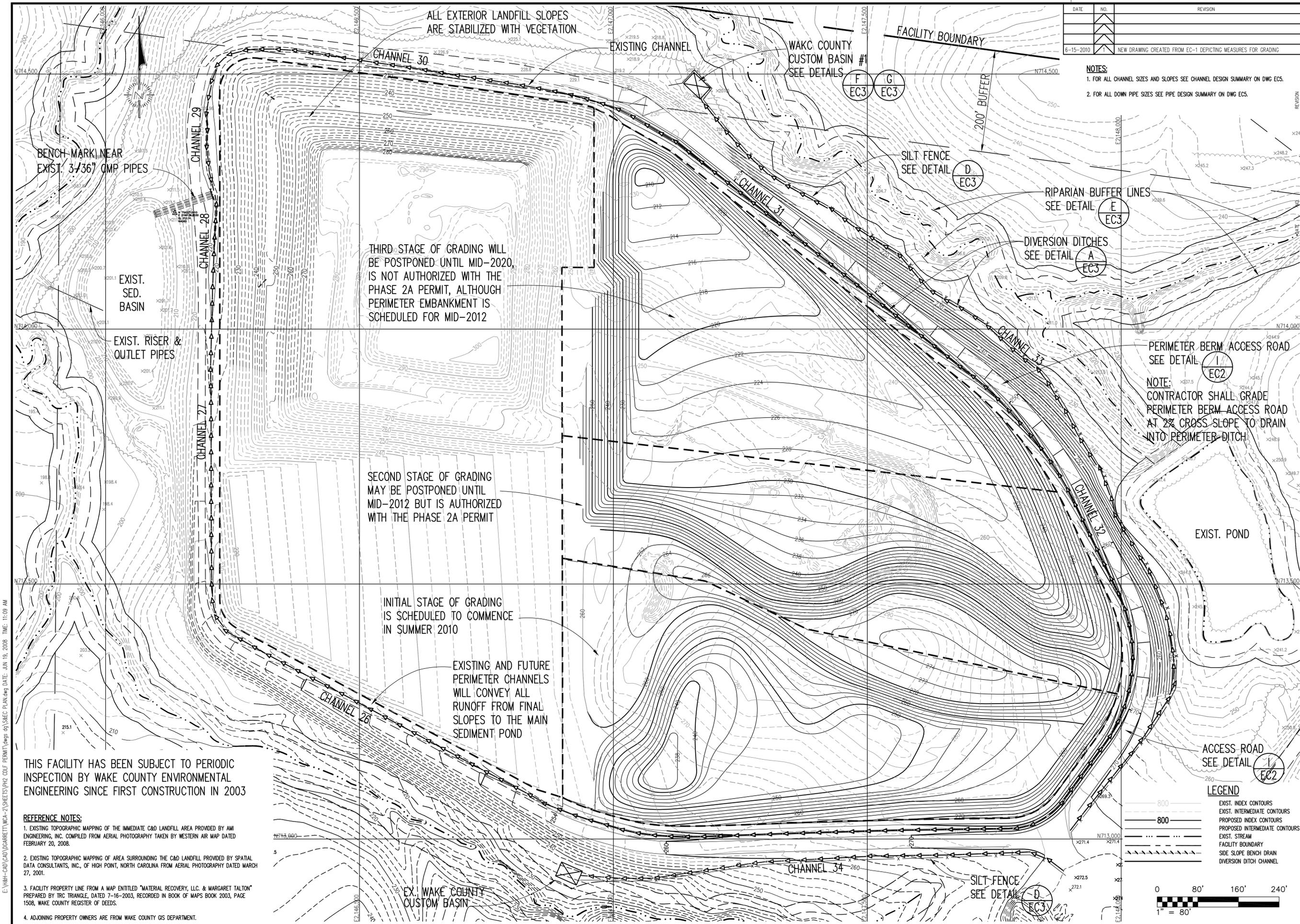


PROJECT TITLE:
 WCA WASTE CORPORATION, INC.
 BROWNFIELD RD. C&D LANDFILL
 PH2 PERMIT MODIFICATIONS (#92-31)
 WAKE COUNTY, NORTH CAROLINA

DRAWING TITLE:
 HYDROGEOLOGICAL
 CROSS SECTION D-D'
 SHEET 4 OF 4

DESIGNED BY: G.D.G.	DRAWN BY: A.W.H.
CHECKED BY: G.D.G.	PROJECT NO.: WCA-2
SCALE: AS SHOWN	DATE: JUNE 2008
FILE NAME: CROSS SECTIONS SH1 4 OF 4	SHEET NO.:
15	DRAWING NO.:
	X4

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DATE	NO.	REVISION
6-15-2010		NEW DRAWING CREATED FROM EC-1 DEPICTING MEASURES FOR GRADING

NOTES:
 1. FOR ALL CHANNEL SIZES AND SLOPES SEE CHANNEL DESIGN SUMMARY ON DWG EC5.
 2. FOR ALL DOWN PIPE SIZES SEE PIPE DESIGN SUMMARY ON DWG EC5.

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WCA WASTE CORPORATION, INC.
 BROWNFIELD RD. C&D LANDFILL
 PH2 PERMIT MODIFICATIONS (#92-31)
 WAKE COUNTY, NORTH CAROLINA

**BASE GRADING
 SEDIMENTATION & EROSION
 CONTROL PLAN**

DESIGNED BY: G.D.G. DRAWN BY: A.W.H.
 CHECKED BY: G.D.G. PROJECT NO.: WCA-2
 SCALE: AS SHOWN DATE: JUNE 2008
 FILE NAME: S&EC PLAN
 SHEET NO. 16A DRAWING NO. EC1A

THIS FACILITY HAS BEEN SUBJECT TO PERIODIC INSPECTION BY WAKE COUNTY ENVIRONMENTAL ENGINEERING SINCE FIRST CONSTRUCTION IN 2003

- REFERENCE NOTES:**
- EXISTING TOPOGRAPHIC MAPPING OF THE IMMEDIATE C&D LANDFILL AREA PROVIDED BY AMI ENGINEERING, INC. COMPILED FROM AERIAL PHOTOGRAPHY TAKEN BY WESTERN AIR MAP DATED FEBRUARY 20, 2008.
 - EXISTING TOPOGRAPHIC MAPPING OF AREA SURROUNDING THE C&D LANDFILL PROVIDED BY SPATIAL DATA CONSULTANTS, INC., OF HIGH POINT, NORTH CAROLINA FROM AERIAL PHOTOGRAPHY DATED MARCH 27, 2001.
 - FACILITY PROPERTY LINE FROM A MAP ENTITLED "MATERIAL RECOVERY, LLC. & MARGARET TALTON" PREPARED BY TRC TRIANGLE, DATED 7-16-2003, RECORDED IN BOOK OF MAPS BOOK 2003, PAGE 1508, WAKE COUNTY REGISTER OF DEEDS.
 - ADJOINING PROPERTY OWNERS ARE FROM WAKE COUNTY GIS DEPARTMENT.

THIRD STAGE OF GRADING WILL BE POSTPONED UNTIL MID-2020, IS NOT AUTHORIZED WITH THE PHASE 2A PERMIT, ALTHOUGH PERIMETER EMBANKMENT IS SCHEDULED FOR MID-2012

SECOND STAGE OF GRADING MAY BE POSTPONED UNTIL MID-2012 BUT IS AUTHORIZED WITH THE PHASE 2A PERMIT

INITIAL STAGE OF GRADING IS SCHEDULED TO COMMENCE IN SUMMER 2010

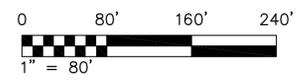
EXISTING AND FUTURE PERIMETER CHANNELS WILL CONVEY ALL RUNOFF FROM FINAL SLOPES TO THE MAIN SEDIMENT POND

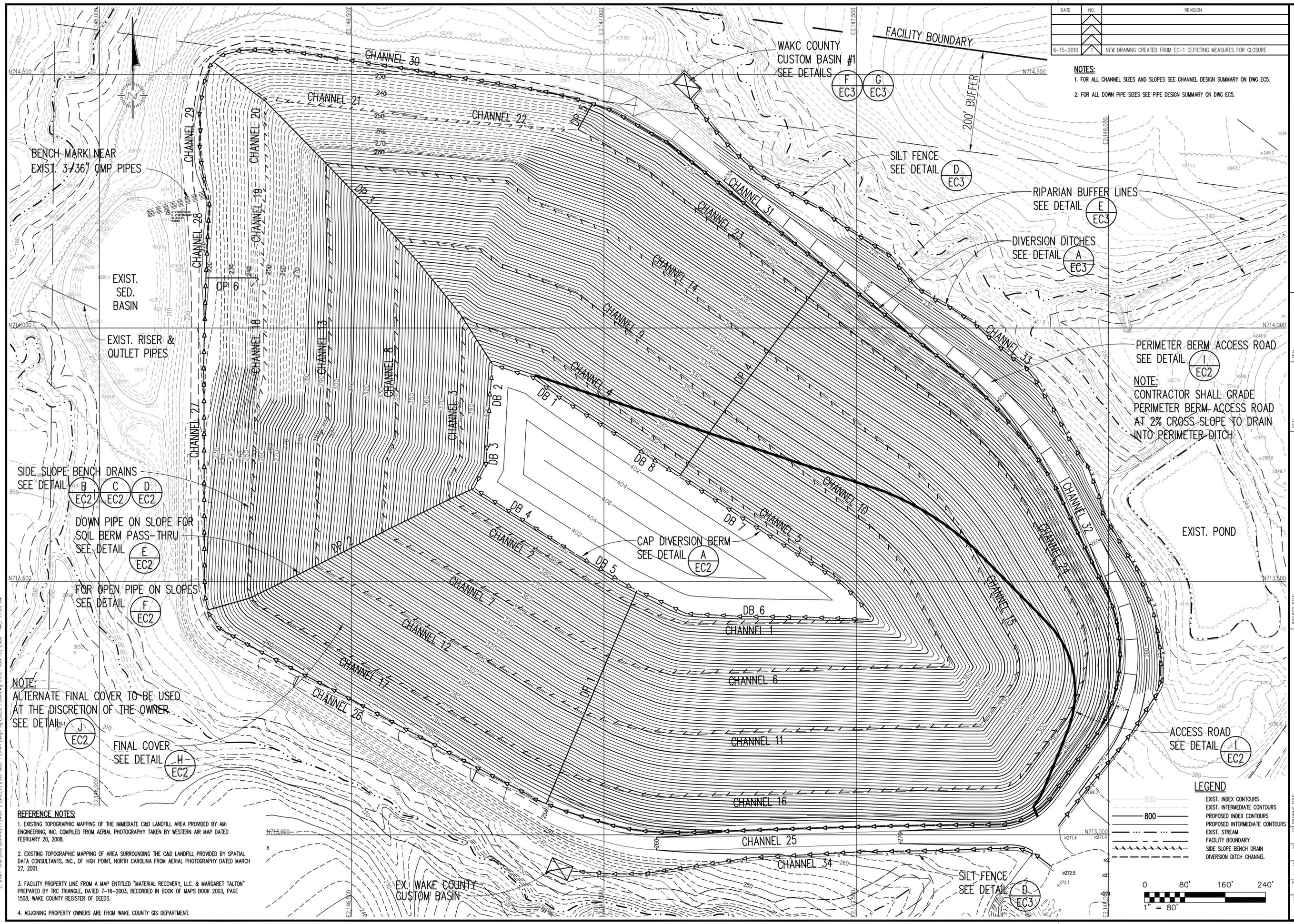
ALL EXTERIOR LANDFILL SLOPES ARE STABILIZED WITH VEGETATION

PERIMETER BERM ACCESS ROAD SEE DETAIL (1/EC2)
 NOTE: CONTRACTOR SHALL GRADE PERIMETER BERM ACCESS ROAD AT 2% CROSS-SLOPE TO DRAIN INTO PERIMETER DITCH

LEGEND

	EXIST. INDEX CONTOURS
	EXIST. INTERMEDIATE CONTOURS
	PROPOSED INDEX CONTOURS
	PROPOSED INTERMEDIATE CONTOURS
	EXIST. STREAM
	FACILITY BOUNDARY
	SIDE SLOPE BENCH DRAIN
	DIVERSION DITCH CHANNEL





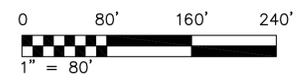
DATE	NO.	REVISION
6-15-2010	1	NEW DRAWING CREATED FROM EC-1 DEPICTING MEASURES FOR CLOSURE

NOTES:
 1. FOR ALL CHANNEL SIZES AND SLOPES SEE CHANNEL DESIGN SUMMARY ON DWG EC5.
 2. FOR ALL DOWN PIPE SIZES SEE PIPE DESIGN SUMMARY ON DWG EC5.

PERIMETER BERM ACCESS ROAD
 SEE DETAIL (1)
 EC2
 NOTE:
 CONTRACTOR SHALL GRADE
 PERIMETER BERM ACCESS ROAD
 AT 2% CROSS-SLOPE TO DRAIN
 INTO PERIMETER DITCH

LEGEND

	EXIST. INDEX CONTOURS
	EXIST. INTERMEDIATE CONTOURS
	PROPOSED INDEX CONTOURS
	PROPOSED INTERMEDIATE CONTOURS
	EXIST. STREAM
	FACILITY BOUNDARY
	SIDE SLOPE BENCH DRAIN
	DIVERSION DITCH CHANNEL



REFERENCE NOTES:
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 4. ADJOINING PROPERTY OWNERS ARE FROM WAKE COUNTY GIS DEPARTMENT.

SIDE SLOPE BENCH DRAINS
 SEE DETAIL (B)
 EC2 (C)
 EC2 (D)
 EC2
 DOWN PIPE ON SLOPE FOR
 SOIL BERM PASS-THRU
 SEE DETAIL (E)
 EC2
 FOR OPEN PIPE ON SLOPES
 SEE DETAIL (F)
 EC2

NOTE:
 ALTERNATE FINAL COVER TO BE USED
 AT THE DISCRETION OF THE OWNER.
 SEE DETAIL (J)
 EC2
 FINAL COVER
 SEE DETAIL (H)
 EC2

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WCA WASTE CORPORATION, INC.
 BROWNFIELD RD. C&D LANDFILL
 PH2 PERMIT MODIFICATIONS (#92-31)
 WAKE COUNTY, NORTH CAROLINA

**FINAL CLOSURE
 SEDIMENTATION & EROSION
 CONTROL PLAN**

DESIGNED BY: G.D.G. DRAWN BY: A.W.H.
 CHECKED BY: G.D.G. PROJECT NO.: WCA-2
 SCALE: AS SHOWN DATE: JUNE 2008
 FILE NAME: S&EC PLAN
 SHEET NO. DRAWING NO.
16B EC1B

DATE	NO.	REVISION

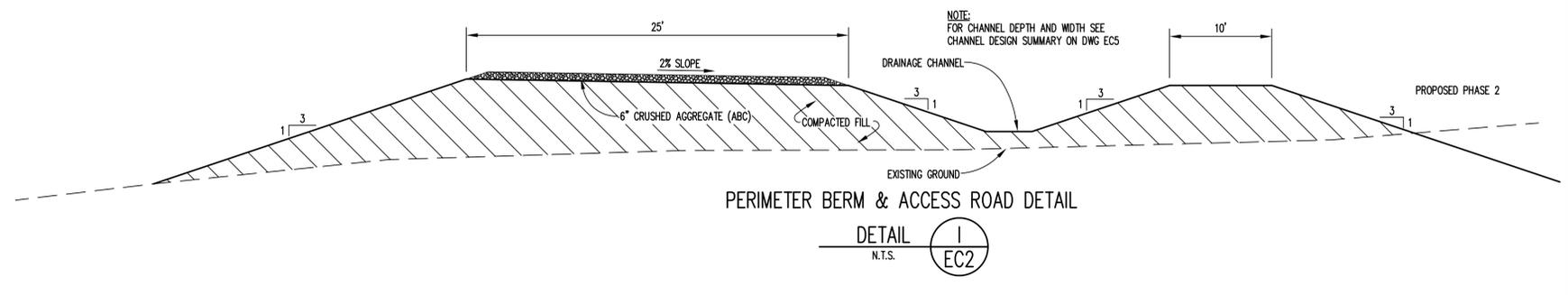
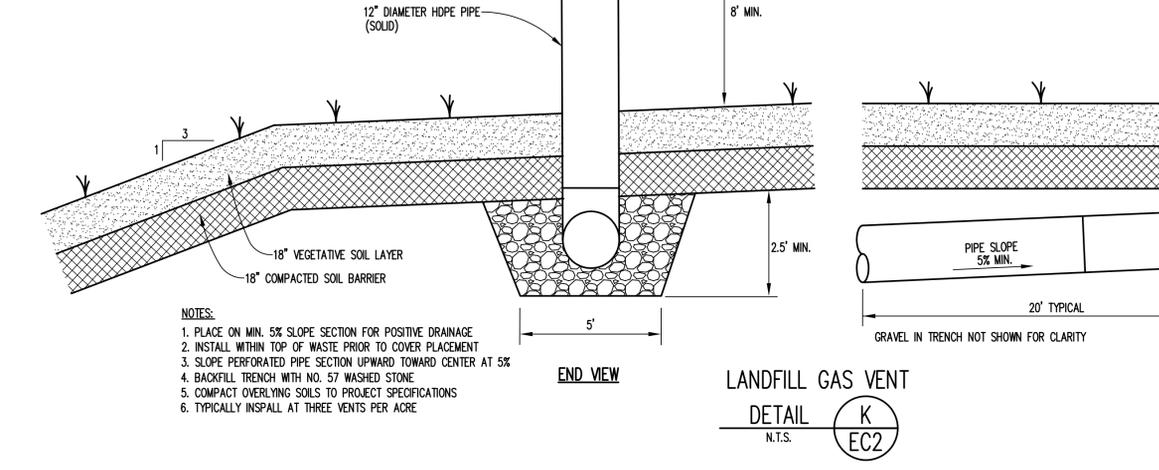
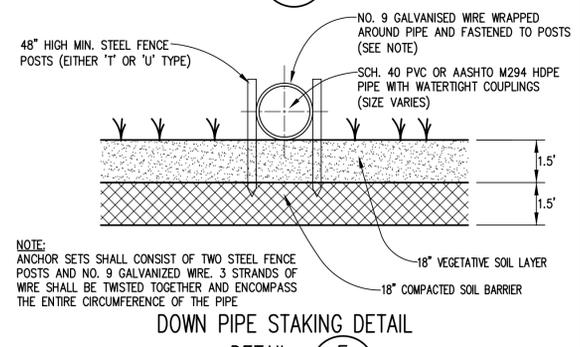
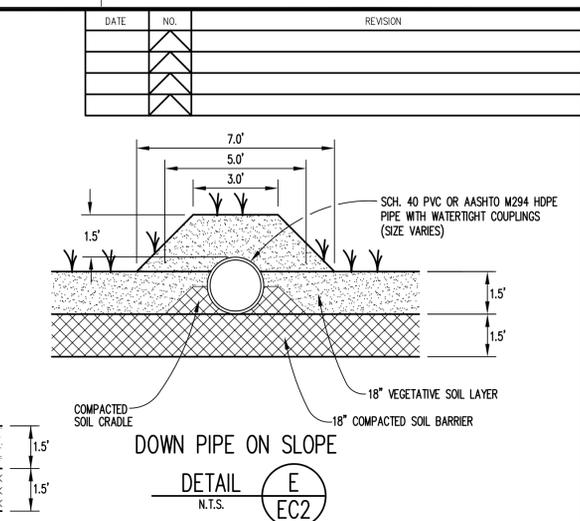
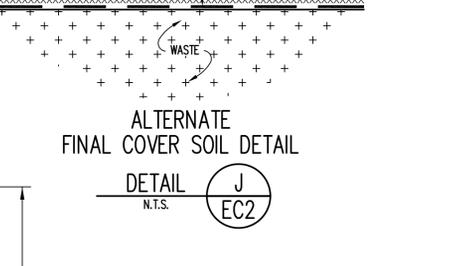
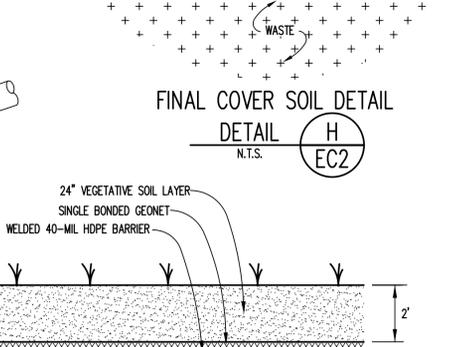
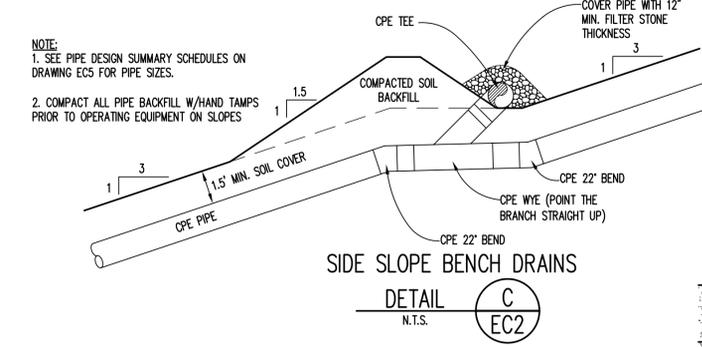
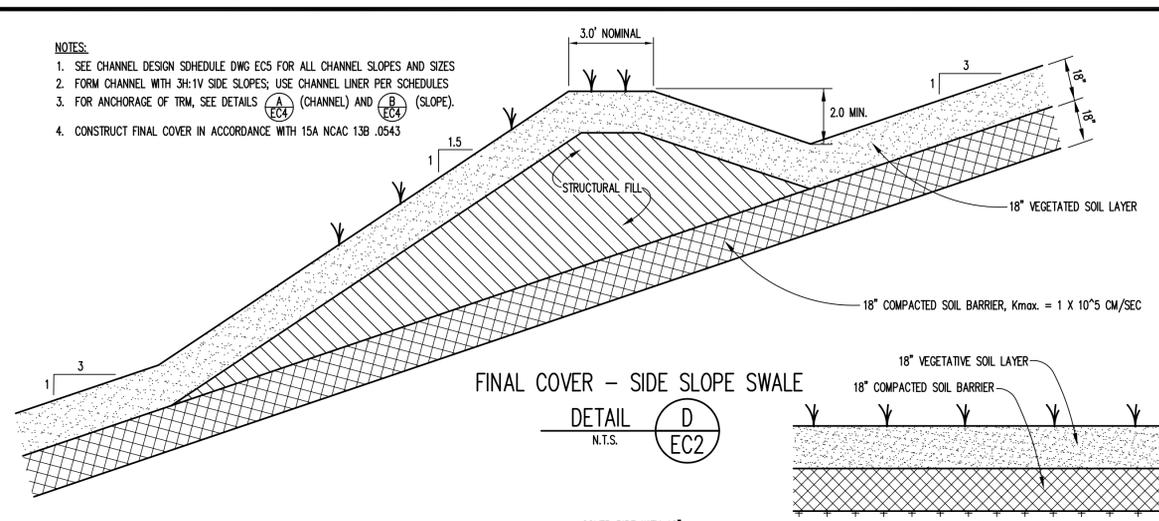
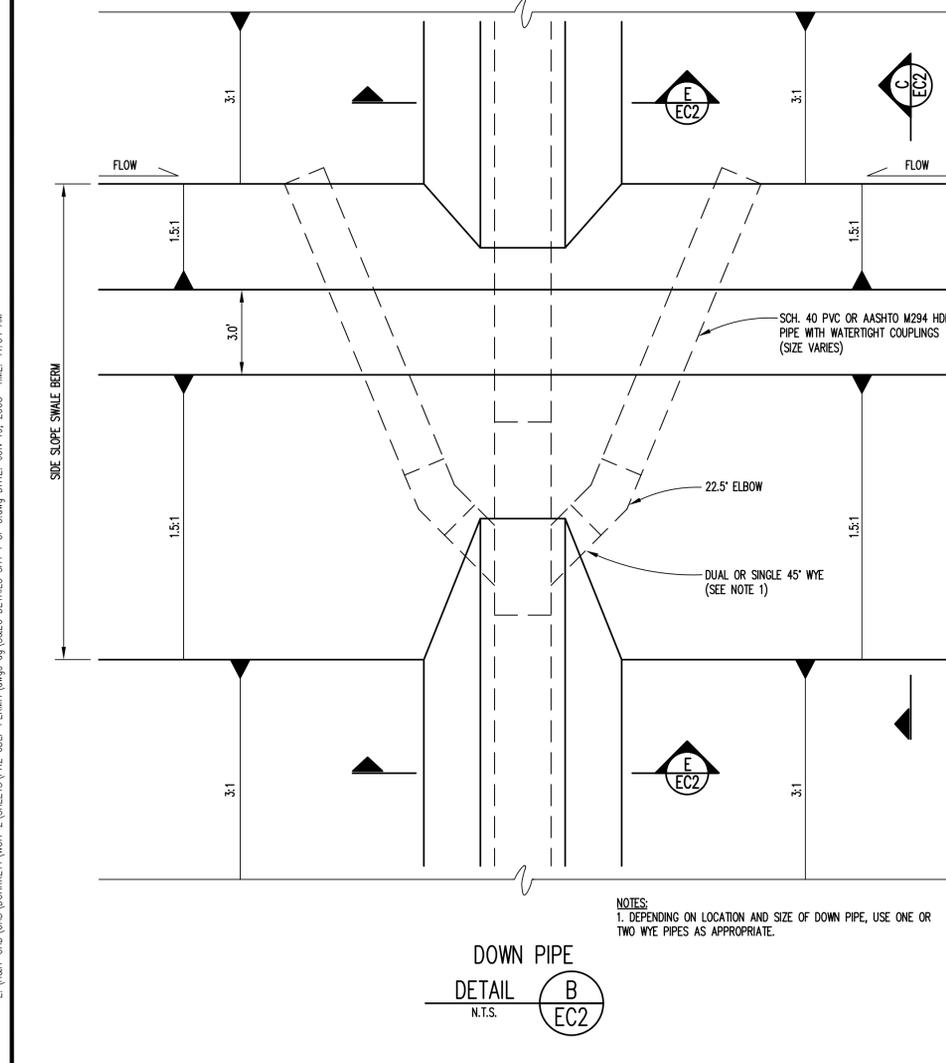
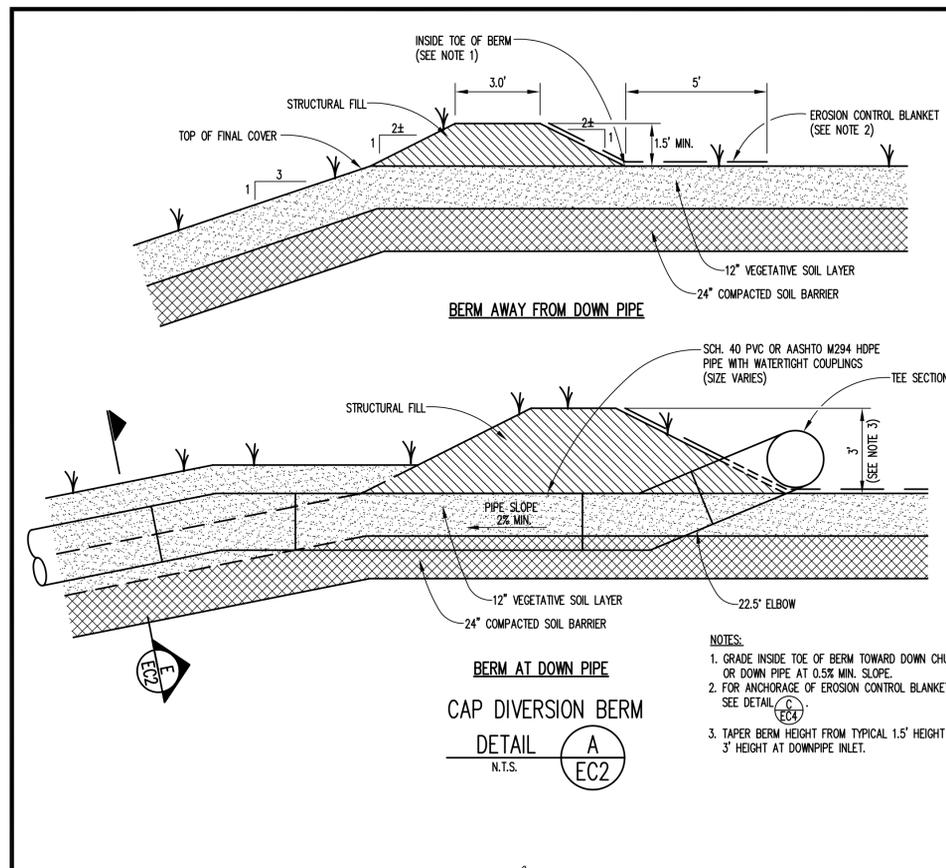
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PROJECT TITLE:
WCA WASTE CORPORATION, INC.
BROWNFIELD RD. C&D LANDFILL
PH2 PERMIT MODIFICATIONS (#92-31)
WAKE COUNTY, NORTH CAROLINA

DESIGNED BY: G.D.G.
 DRAWN BY: A.W.H.
 CHECKED BY: G.D.G.
 PROJECT NO.: WCA-2
 DATE: JUNE 2008
 FILE NAME: S&EC DETAILS SH1 1 OF 3
 SHEET NO.: 17
 DRAWING NO.: EC2

SEDIMENTATION & EROSION CONTROL DETAILS
 SHEET 1 OF 3



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- NOTES:**
- SEE CHANNEL DESIGN SCHEDULE DWG EC5 FOR ALL CHANNEL SLOPES AND SIZES
 - FORM CHANNEL WITH 3H:1V SIDE SLOPES; USE CHANNEL LINER PER SCHEDULES
 - FOR ANCHORAGE OF TRM, SEE DETAILS (A) (CHANNEL) AND (B) (SLOPE).
 - CONSTRUCT FINAL COVER IN ACCORDANCE WITH 15A NCAC 13B .0543

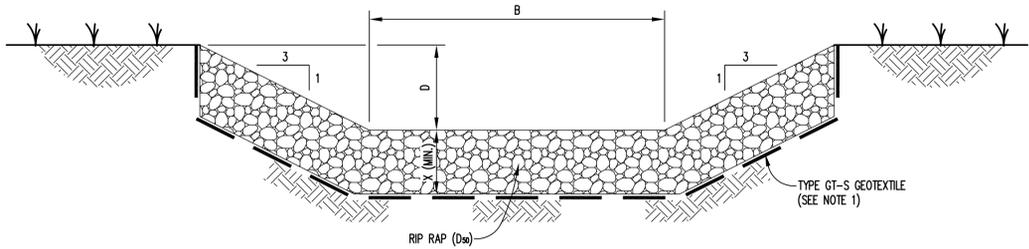
- NOTE:**
- SEE PIPE DESIGN SUMMARY SCHEDULES ON DRAWING EC5 FOR PIPE SIZES.
 - COMPACT ALL PIPE BACKFILL W/HAND TAMPS PRIOR TO OPERATING EQUIPMENT ON SLOPES

- NOTES:**
- GRADE INSIDE TOE OF BERM TOWARD DOWN CHUTE OR DOWN PIPE AT 0.5% MIN. SLOPE.
 - FOR ANCHORAGE OF EROSION CONTROL BLANKET, SEE DETAIL (C).
 - TAPER BERM HEIGHT FROM TYPICAL 1.5' HEIGHT TO 3' HEIGHT AT DOWNPIPE INLET.

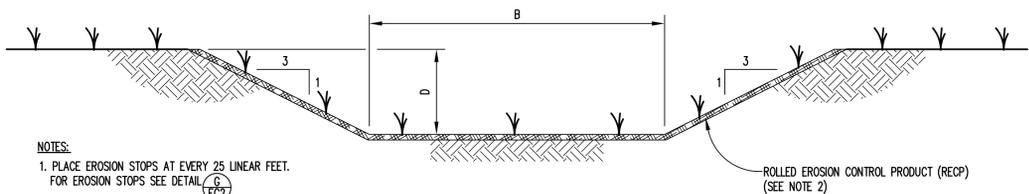
- NOTES:**
- PLACE ON MIN. 5% SLOPE SECTION FOR POSITIVE DRAINAGE
 - INSTALL WITHIN TOP OF WASTE PRIOR TO COVER PLACEMENT
 - SLOPE PERFORATED PIPE SECTION UPWARD TOWARD CENTER AT 5%
 - BACKFILL TRENCH WITH NO. 57 WASHED STONE
 - COMPACT OVERLYING SOILS TO PROJECT SPECIFICATIONS
 - TYPICALLY INSPALL AT THREE VENTS PER ACRE

- NOTES:**
- DEPENDING ON LOCATION AND SIZE OF DOWN PIPE, USE ONE OR TWO WYE PIPES AS APPROPRIATE.

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RIP RAP LINED CHANNELS

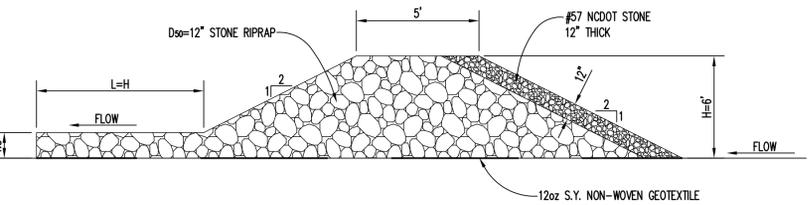


RECP LINED CHANNELS

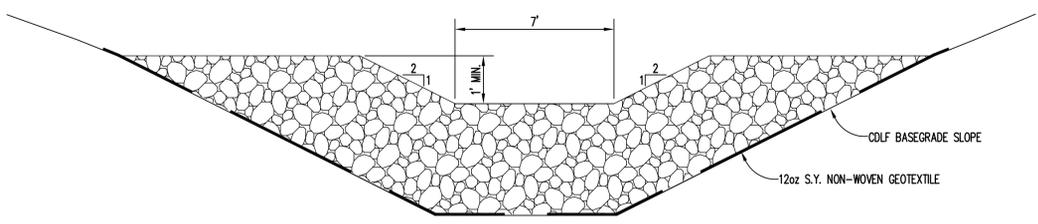
- NOTES:**
1. PLACE EROSION STOPS AT EVERY 25 LINEAR FEET. FOR EROSION STOPS SEE DETAIL **EC2**
 2. FOR ANCHORAGE OF RECP, SEE DETAIL **EC4**

DRAINAGE CHANNEL DETAILS

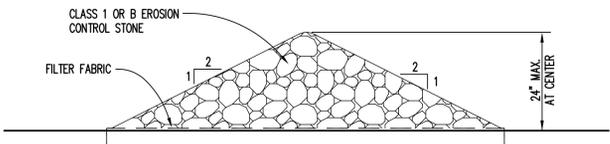
DETAIL A
N.T.S. **EC3**



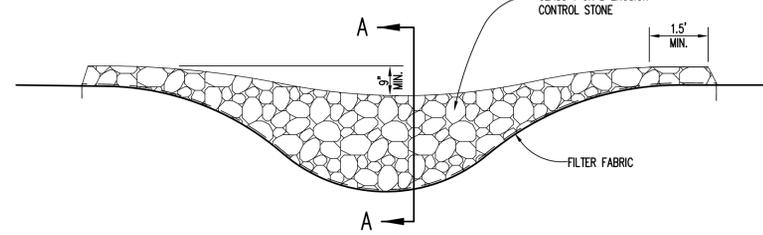
CROSS SECTION



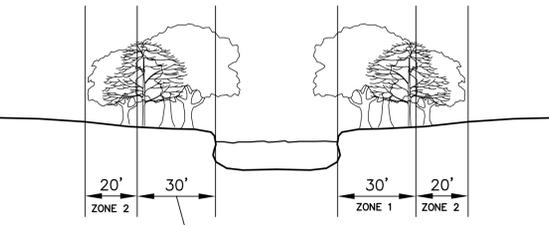
ROCK DAM
DETAIL B
N.T.S. **EC3**



SECTION A-A



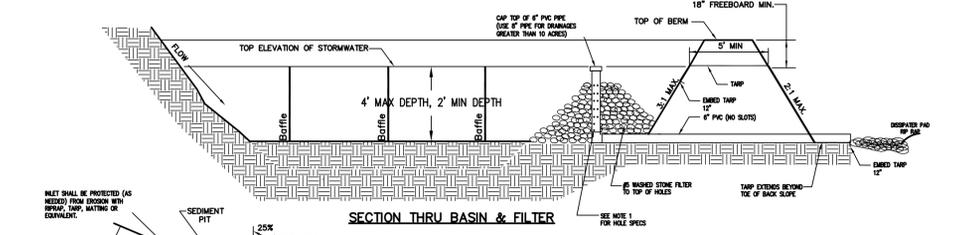
CHECK DAM
DETAIL C
N.T.S. **EC3**



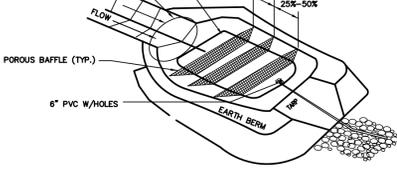
- A LIMITED AMOUNT OF HARVESTING IS ALLOWED IN THE OUTER 20 FEET OF ZONE 1. THE FIRST 10' OF ZONE 1 MUST REMAIN ESSENTIALLY UNDISTURBED.
- ZONE 2 IS AN ADDITIONAL 20' ON EITHER SIDE OF THE STREAM. ZONE 2 MUST HAVE A DENSE PLANT COVER. FOR BOTH ZONES, THE LANDOWNER OR CARETAKER IS REQUIRED TO KEEP THE LAND UNDISTURBED AND REFRAIN FROM USING FERTILIZER. NEW DEVELOPMENT IS NOT ALLOWED IN EITHER ZONE.

TYPICAL RIPARIAN BUFFERED STREAM

DETAIL E
N.T.S. **EC3**



SECTION THRU BASIN & FILTER



PERSPECTIVE VIEW

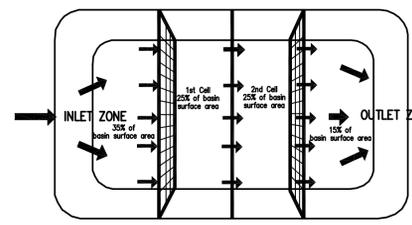
- GENERAL NOTES**
1. DRAW DOWN RISER & BARREL SHALL BE 6" SCH. 40 PVC WITH CLEAN-OUT CAP AND 3/4" HOLES. SEE NOTE 1 FOR NUMBER AND SPACING OF HOLES.
 2. THE TARP USED TO PROTECT THE WEIR SHALL BE THE WIDTH SPECIFIED. THE LENGTH OF THE TARP SHALL BE ACCORDING TO AVAILABLE SUPPLY. IF MULTIPLE TARPS ARE TO BE USED, THEN TARPS SHALL BE OVERLAPPED AT LEAST 12". THE UPSTREAM 12" TARP SHALL OVERLAP THE DOWNSTREAM TARP. THE TARP SHALL BE 50 MIL. HEAVY DUTY SILVER TARP/AULINS OR EQUIVALENT FOR U.V. RESISTANCE.
 3. MAINTENANCE: SEDIMENT TO BE REMOVED AND PROPERLY DISPOSED OF WHEN BASIN IS HALF FULL. GRAVEL FILTER AROUND RISER SHOULD BE REPLACED AS NEEDED TO ENSURE DEWATERING.

CUSTOM BASIN DETAIL (WAKE CO.)

DETAIL F
N.T.S. **EC3**

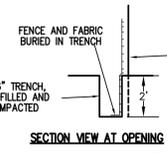
SECTION THRU WEIR

- NOTE 1**
HOLE SPECS:
DEWATERING HOLES WILL BE INSTALLED IN SETS OF HORIZONTAL RINGS. THE FIRST SET OF HOLES WILL BE SET 6 INCHES FROM THE BOTTOM OF THE RISER. RINGS WILL CONTINUE UP THE RISER IN INTERVALS OF 3 INCHES. HOLES WILL BE 3/4 INCH IN DIAMETER AND WILL BE SPACED EQUALLY AROUND THE RISER. THE NUMBER OF HOLES PER RING WILL EQUAL TO THE DRAINAGE AREA.
- EXAMPLE**
A BASIN DRAINING 2.0 ACRES SHOULD HAVE 2 HOLES PER RING EVERY 3 INCHES ON THE RISER PIPE. THE FIRST RING (2 HOLES) WILL BE SET 6 INCHES FROM THE BOTTOM OF THE RISER.
- NOTE:** ROUND DRAINAGE AREA TO THE NEAREST WHOLE NUMBER TO DETERMINE NUMBER OF HOLES.

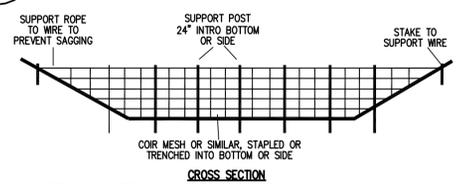


PLAN VIEW

- NOTES:**
1. BAFFLE MATERIAL SHOULD BE SECURED AT THE BOTTOM AND SIDES USING STAPLES OR BY TRENCHING AS FOR SILT FENCE.
 2. MOST OF THE SEDIMENT WILL ACCUMULATE IN THE 1ST BAY, WHICH SHOULD BE READILY ACCESSIBLE FOR MAINTENANCE.
 3. PROVIDE 3 BAFFLES (USE TWO IF LESS THAN 20 FEET IN LENGTH). PROVIDE 5 BAFFLES FOR DRAINAGE AREAS GREATER THAN 10 ACRES.
 4. BAFFLE SHALL BE 700 G/M2 COR EROSION BLANKET.
 5. TOPS OF BAFFLES SHOULD BE 2 INCHES LOWER THAN THE TOP OF THE BERMS.
 6. INSPECT BAFFLES FOR REPAIR ONCE A WEEK AND AFTER EACH RAINFALL.



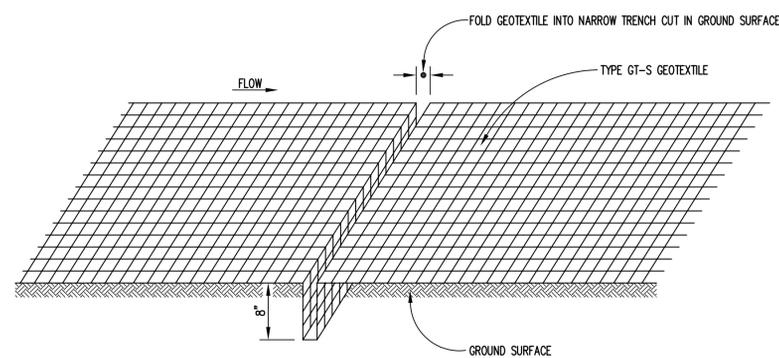
SECTION VIEW AT OPENING



CROSS SECTION

STANDARD BAFFLES DETAIL

DETAIL G
N.T.S. **EC3**

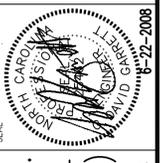


EROSION STOP DETAIL

DETAIL G
N.T.S. **EC2**

DATE	NO.	REVISION

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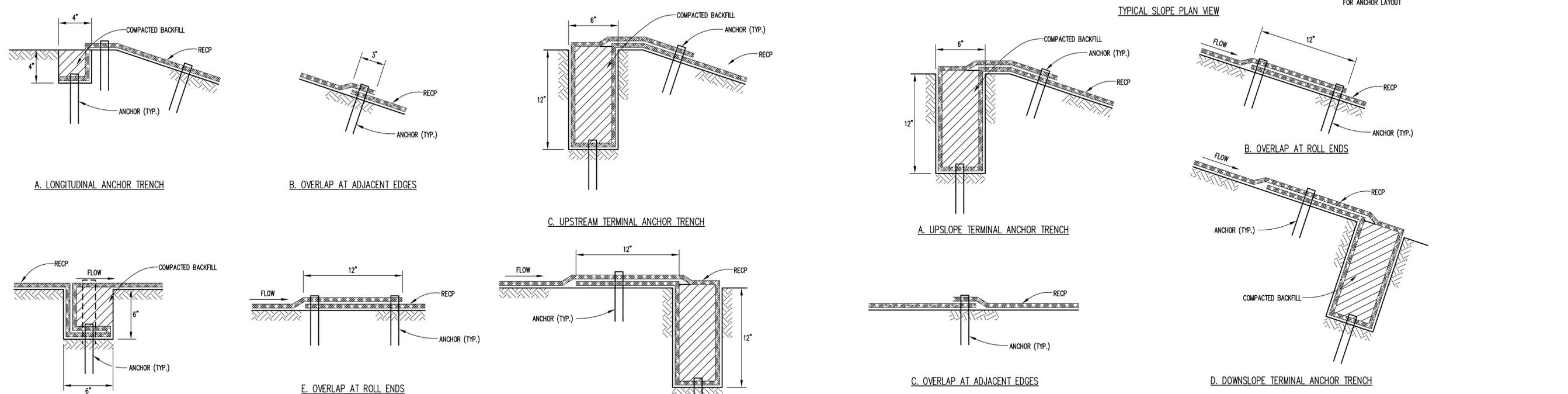
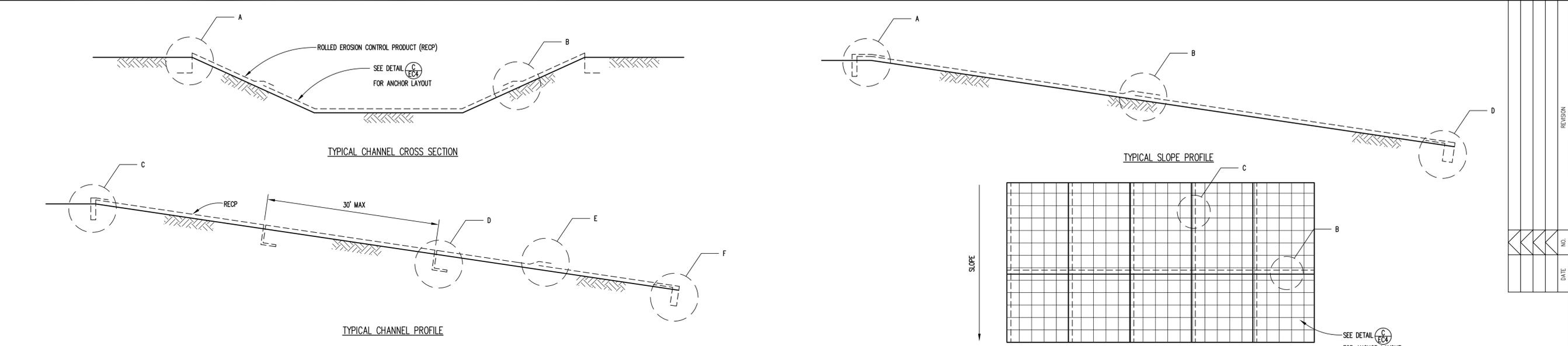


PROJECT TITLE: WCA WASTE CORPORATION, INC. BROWNFIELD RD. C&D LANDFILL PH2 PERMIT MODIFICATIONS (#92-31) WAKE COUNTY, NORTH CAROLINA

DRAWING TITLE: SEDIMENTATION & EROSION CONTROL DETAILS
SHEET 2 OF 3

DESIGNED BY: G.D.G.	DRAWN BY: A.W.H.
CHECKED BY: G.D.G.	PROJECT NO.: WCA-2
SCALE: AS SHOWN	DATE: JUNE 2008
FILE NAME: S&EC DETAILS SHT 2 OF 3	DRAWING NO.:
18	EC3

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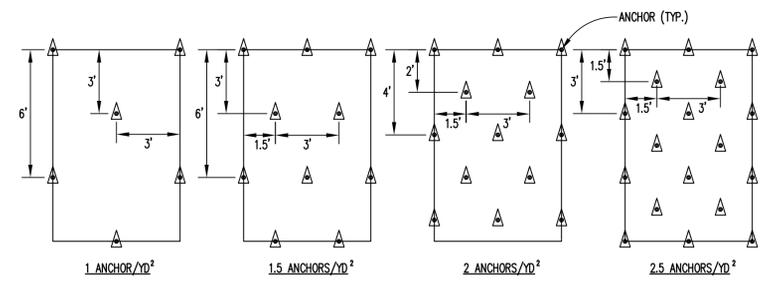
INSTALLATION OF ROLLED EROSION CONTROL PRODUCTS (CHANNELS)

NOTES:
 1. PLACE ANCHORS AT ANCHOR TRENCHES, OVERLAPS, AND CHECK SLOTS ON 1 FOOT CENTERS.
 IF APPLICABLE, STAGGER ANCHOR SPACING BETWEEN MULTIPLE ROWS OF ANCHORS.

DETAIL **A**
N.T.S. **EC4**

INSTALLATION OF ROLLED EROSION CONTROL PRODUCTS (SLOPES)

DETAIL **B**
N.T.S. **EC4**



ANCHOR SPACING SCHEDULE	
LOCATION	REQUIRED ANCHOR SPACING (ANCHORS/YD ²)
ALL CHANNELS	2.5
1.5H:1V SLOPES	2.0
2H:1V SLOPES	2.0
2.5H:1V SLOPES	1.5
3H:1V SLOPES	1.5
3.5H:1V SLOPES	1.0
4H:1V SLOPES	1.0

REVISION	NO.	DATE

PROJECT TITLE:
**WCA WASTE CORPORATION, INC.
 BROWNFIELD RD. C&D LANDFILL
 PH2 PERMIT MODIFICATIONS (#92-31)
 WAKE COUNTY, NORTH CAROLINA**

DRAWING TITLE:
**SEDIMENTATION & EROSION
 CONTROL DETAILS
 SHEET 3 OF 3**

DESIGNED BY: G.D.G.
 DRAWN BY: A.W.H.
 CHECKED BY: G.D.G.
 PROJECT NO.: WCA-2
 SCALE: AS SHOWN
 DATE: JUNE 2008
 FILE NAME: SR&C DETAILS SHT 3 OF 3
 SHEET NO.: 19
 DRAWING NO.: EC4

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SEAL
 NORTH CAROLINA PROFESSIONAL ENGINEER
 DAVID GARRETT
 6-22-2008

CHANNEL DESIGN SCHEDULE

Channel design based on Normal-Depth Procedure calculations. All channels are trapezoidal in profile with dimensions shown below (see diagram). Refer to the Erosion Control Plan sheet in the plan set for channel locations.

All vegetation to be installed per Seed Bed Preparation detail and Seeding Schedule shown on the Erosion Control Details sheet.

Channel No.	Channel Area, ac	Channel Length, ft	Channel Slope, %	Assumed Manning's n	25-Year Design Storm Flow Characteristics				Required Channel Flow Dimensions				Required Lining Type	
					Peak Flow, cfs	Normal Flow, cfs	Velocity, ft/s	Max. Shear Stress at Q25, psf	Bottom Width, ft	Top Width, ft	Side Slope, W:1	Depth, ft		
1	0.14	8	4.68	1.7%	0.033	1	0.22	1.7	0.2	2	1	8	3H:1V	Grass w/ straw net, check dams**
2	0.55	14	4.10	3.4%	0.033	2	0.26	2.6	0.6	2	1	8	3H:1V	Grass w/ straw net, check dams**
3	0.66	6.5	3.66	1.9%	0.033	2	0.31	2.2	0.3	2	1	8	3H:1V	Grass w/ straw net, check dams**
4	0.90	20.5	6.55	3.1%	0.033	3	0.33	3.0	0.6	2	1	8	3H:1V	Grass w/ straw net, check dams**
5	0.14	8	3.80	2.1%	0.033	1	0.21	1.9	0.3	2	1	8	3H:1V	Grass w/ straw net, check dams**
6	1.73	8	6.80	2.0%	0.033	6	0.50	3.4	0.8	2	1	8	3H:1V	Grass w/ straw net, check dams**
7	1.51	10	5.13	1.9%	0.033	5	0.48	2.9	0.6	2	1	8	3H:1V	Grass w/ straw net, check dams**
8	1.44	8	5.88	1.4%	0.033	5	0.53	2.8	0.5	2	1	8	3H:1V	Grass w/ straw net, check dams**
9	2.10	12	7.35	1.0%	0.033	7	0.61	3.0	0.6	2	1	8	3H:1V	Grass w/ straw net, check dams**
10	1.76	22	6.92	3.2%	0.033	6	0.47	3.7	0.9	2	1	8	3H:1V	Grass w/ straw net, check dams**
11	2.01	22	8.23	2.7%	0.033	7	0.59	3.7	0.9	2	1	8	3H:1V	Grass w/ straw net, check dams**
12	1.54	10	6.07	1.8%	0.033	5	0.45	3.3	0.8	2	1	8	3H:1V	Grass w/ straw net, check dams**
13	2.35	14	8.00	1.8%	0.033	8	0.57	3.8	1.0	2	1	8	3H:1V	Grass w/ straw net, check dams**
14	3.00	13	9.86	1.3%	0.033	10	0.55	3.9	0.9	3	1	9	3H:1V	Grass w/ straw net, check dams**
15	2.86	31	9.31	3.3%	0.033	10	0.55	3.9	0.9	3	1	9	3H:1V	Grass w/ straw net, check dams**
16	2.51	20	9.39	2.1%	0.033	9	0.60	3.9	1.0	2	1	8	3H:1V	Grass w/ straw net, check dams**
17	1.90	12	7.10	1.7%	0.033	7	0.53	3.7	0.9	2	1	8	3H:1V	Grass w/ straw net, check dams**
18	1.85	10	6.53	1.8%	0.033	7	0.61	3.0	0.6	2	1	8	3H:1V	Grass w/ straw net, check dams**
19	0.61	2	1.75	1.1%	0.033	2	0.35	1.9	0.2	2	1	8	3H:1V	Grass w/ straw net, check dams**
20	0.34	2	1.75	1.1%	0.033	2	0.35	1.9	0.2	2	1	8	3H:1V	Grass w/ straw net, check dams**
21	0.97	1.8	1.97	1.8%	0.033	3	0.38	2.5	0.4	2	1	8	3H:1V	Grass w/ straw net, check dams**
22	0.95	5	3.40	1.5%	0.033	4	0.47	2.5	0.4	2	1	8	3H:1V	Grass w/ straw net, check dams**
23	2.00	11	5.68	1.9%	0.033	7	0.58	3.2	0.7	2	1	8	3H:1V	Grass w/ straw net, check dams**
24	1.61	36	11.98	3.0%	0.033	12	0.59	5.4	1.1	2	1	8	3H:1V	Grass w/ straw net, check dams**
25	2.17	18	9.45	1.9%	0.033	11	0.63	3.6	0.7	3	1	9	3H:1V	Grass w/ straw net, check dams**
26	11.48	20	7.70	2.6%	0.025	44	1.02	7.1	1.7	3	2	15	3H:1V	Vegetated TRM w/ check dams**
27	23.71	12	6.53	1.8%	0.025	18	1.44	7.2	1.8	3	2	15	3H:1V	Vegetated TRM w/ check dams**
28	23.72	2	1.70	1.2%	0.025	87	1.88	6.4	1.3	3	2	15	3H:1V	Vegetated TRM w/ check dams**
29	34.74	4	2.64	1.5%	0.025	125	1.98	7.7	1.8	3	2	15	3H:1V	Vegetated TRM w/ check dams**
30	19.15	5	0.76	0.7%	0.025	73	1.75	5.1	0.9	3	2	15	3H:1V	Vegetated TRM w/ check dams**
31	14.09	11	5.75	1.9%	0.025	54	1.21	6.7	1.4	3	2	15	3H:1V	Vegetated TRM w/ check dams**
32	3.20	34	13.61	2.5%	0.025	19	0.82	5.3	1.0	3	1	9	3H:1V	Vegetated TRM w/ check dams**
33	3.08	61	11.98	3.0%	0.033	7	0.62	3.6	0.7	3	1	9	3H:1V	Grass w/ straw net, check dams**
34	0.87	38	9.62	3.7%	0.033	3	0.4	3.4	0.9	1	1	7	3H:1V	Grass w/ straw net, check dams**
DB1	0.05	1	3.05	1.0%	0.033	2	0.4	1.9	0.3	1	1	7	3H:1V	Grass w/ straw net, check dams**
DB2	0.07	1	1.08	1.0%	0.033	1	0.33	1.5	0.2	1	1	7	3H:1V	Grass w/ straw net, check dams**
DB3	0.11	1	0.21	1.0%	0.033	1	0.33	1.5	0.2	1	1	7	3H:1V	Grass w/ straw net, check dams**
DB4	0.58	2	2.35	1.0%	0.033	2	0.45	1.9	0.3	1	1	7	3H:1V	Grass w/ straw net, check dams**
DB5	0.40	1	1.34	1.0%	0.033	2	0.45	1.9	0.3	1	1	7	3H:1V	Grass w/ straw net, check dams**
DB6	0.81	5	4.68	1.0%	0.033	3	0.55	2.1	0.3	1	1	7	3H:1V	Grass w/ straw net, check dams**
DB7	0.87	5	4.68	1.0%	0.033	3	0.55	2.1	0.3	1	1	7	3H:1V	Grass w/ straw net, check dams**
DB8	0.35	1	1.21	1.0%	0.033	1	0.33	1.5	0.2	1	1	7	3H:1V	Grass w/ straw net, check dams**

Notes: **values represent 100-year design flow for sediment basin discharge
**all check dams to be constructed of 60" x 12" rip-rap with 12 inches of No. 57 filter stone on upstream face, place on 50-foot centers

PIPE DESIGN SCHEDULE

Pipe No.	Diam. Inches	Type	Length feet	Slope ft/ft	Q25	Inlet Structure		Outlet Structure		Rip-Rap Apron:		Pipe End Width, ft.	Ditch End Width, ft.
						Invert Elev.*	Type	Invert Elev.*	Type	Length, ft.	Width, ft.		
DPIPE #1	18	PVC/PE	514	0.290	25	401.00	Projecting tee	252.00	Projecting end	20	4.5	21.5	
DPIPE #2	18	PVC/PE	646	0.260	21	401.00	Projecting tee	232.00	Projecting end	18	4.5	19.5	
DPIPE #3	18	PVC/PE	876	0.200	40	401.00	Projecting tee	179.00	Projecting end	24	4.5	25.5	
DPIPE #4	18	PVC/PE	566	0.292	30	401.00	Projecting tee	235.00	Projecting end	22	4.5	23.5	
DPIPE #5	12	PVC/PE	62	0.310	10	245.00	Projecting tee	225.00	Projecting end	14	3	15	
DPIPE #6	12	PVC/PE	107	0.240	9	245.00	Projecting tee	219.00	Projecting end	14	3	15	

Notes: Lengths and elevations are estimated values, must field verify and adjust as needed - depth of all inlets/outlets shall be a minimum of two feet plus the pipe diameter below finished grade, invert of exit pipe shall be one-tenth of a foot below the invert of the inlet at all pass-through catch basins

USE SMOOTH-WALL SCH. 40 PVC PIPE OR HIGHWAY GRADE POLYETHYLENE PIPE (E.G., HANCOR SUR-LOK, OR EQUIV.) EXCEPT DPIPE 3

DOUBLE CHECK ALL REQUIRED PIPE LENGTHS AND GRADES BASED ON FIELD INSPECTION PRIOR TO ORDERING MATERIALS!

INSTALL ALL PIPES AND OUTLET PROTECTION IN ACCORDANCE WITH THE STANDARDS AND GUIDELINES OF THE NORTH CAROLINA SEDIMENTATION AND EROSION CONTROL DESIGN MANUAL (SEE BELOW)

All inlets shall be protected from sediment intrusion during construction with wire-backed gravel filters (straw bales are not acceptable)

For outlet structure, use Class B rip-rap with a 50" x 12" inches; place rip-rap a minimum thickness of 2 feet in two interlocking layers provide geotextile erosion blanket (minimum 8 o.s.y., non-woven) underneath stone, with water stops placed at 25 feet centers (minimum of one); water stop shall be at least 12 inches wide and 12 inches deep; place rip-rap apron to specified length and full-width of ditch on downstream end

**Merge the pipe outlet apron for the stormwater basin with the emergency overflow weir apron

THE RISER STRUCTURE FOR THE STORM WATER POND IS SUBJECT TO SAME MATERIAL AND PROTECTION REQUIREMENTS AS THE CATCH BASINS (SEE ABOVE); IN ADDITION, A CONCRETE ANTI-FLOATATION BLOCK IS REQUIRED (SEE DETAILS)

ALL PIPES SHALL BE CRADLED IN COMPACTED SOIL (FORMING A V-PROFILE), BACKFILL SHALL BE SELECT SOIL (FREE OF ROCKS, DEBRIS, OR VEGETATIVE MATTER) AND COMPACTED TO SAME STANDARDS AS FINAL COVER

CUSTOM BASIN SCHEDULE

These take the place of temporary sediment traps per Wake County requirements

Design Storm Event	Q25	25-Year, 5-Minute Storm
Peak Runoff Intensity, I, in/hr	8.12	NOAA Atlas 14
Design Runoff Coefficient, C	0.35	Cleared, unimproved area (for traps only)
Basin No.		CB-1
Disturbed Area, acres		3.60
* Required Volume (1800 P3 / ac), cf		6,480
Peak Runoff Flow, Qp, cfs		10.2
* Required Area (0.01 * Qp), sq. ft.		4456
with 2:1 length to width ratio		
Min. Basin Dimensions:	Length, ft	60
(measured at bottom)	Width, ft	30
** Effective Depth, ft		4
Required Filter Weir Length, ft		10
Required Filter Weir Crest Width, ft		5
Resulting Dimensions:	Length, ft	84
(measured at top)	Width, ft	34
Resulting Storage Volume, cf		9360
Resulting Surface Area, sf		4536

Use 4-inch diameter PVC pipe drain (see details) with 4 drilled half-inch diameter holes placed in rings spaced 3 inches vertically

The design is OK if the resulting volume and area are larger than the required quantities

* Design criteria per NC Sedimentation and Erosion Control Design Manual guidelines - the basins are purposefully shallow and have large surface areas

** Vertical distance from top or weir to bottom of excavation, considered here to be the minimum desired depth of the sediment trap

The perimeter berm should be level and the height should be at least 1.5 feet higher than the top of the weir

Use 3H:1V side slopes inside and outside basin for berm and weir, vegetate slopes as soon as practical - within 20 days per NC S&EC Rules and Guidelines

Compact all soil per Technical Specifications, if provided, or as directed by the Engineer

Cover weir with UV-resistant silver tarp, per Wake County specifications

Direct discharge away from water bodies and/or riparian buffer zones

Construct diversion ditches toward basin, as shown on plans, and stabilize with rip-rap or vegetation as directed by the Engineer

SEEDING SCHEDULE

Shoulders, Side Ditches, Slopes (Max 3:1)

DATE	TYPE	PLANTING RATE
Aug 15 - Nov 1	Tall Fescue	300 lbs/acre
Nov 1 - Mar 1	Tall Fescue & Abruzzi Rye	300 lbs/acre
Mar 1 - Apr 15	Tall Fescue	300 lbs/acre
Apr 15 - Jun 30	Hulled Common Bermudagrass	25 lbs/acre
Jul 1 - Aug 15	Tall Fescue and ***Browntop Millet ***or Sorghum-Sudan Hybrids	125 lbs/acre 35 lbs/acre 30 lbs/acre
Shoulders, Side Ditches, Slopes (3:1 to 2:1)		
Mar 1 - Jun 1	Sericea Lespedeza (scarified) & use the following combinations:	50 lbs/acre
(Mar 1 - Apr 15)	Add Tall Fescue	120 lbs/acre
(Mar 1 - Jun 30)	Or Add Weeping Lovegrass	10 lbs/acre
(Mar 1 - Jun 30)	Or Add Hulled Common Bermudagrass	25 lbs/acre
Jun 1 - Sep 1	***Tall Fescue and ***Browntop Millet ***or Sorghum-Sudan Hybrids	120 lbs/acre 35 lbs/acre 30 lbs/acre
Sep 1 - Mar 1	Sericea Lespedeza (unhulled-unscarified) and Tall Fescue	70 lbs/acre 120 lbs/acre
(Nov 1 - Mar 1)	Add Abruzzi Rye	25 lbs/acre

Consult Conservation Engineer or Soil Conservation Service for additional information concerning other alternatives for vegetation of denuded areas. The above vegetation rates are those which will under local conditions; other seeding rate combinations are possible.

***Temporary - Reseed according to optimum season for desired permanent vegetation. Do not allow temporary cover to grow over 12" in height before mowing, otherwise fescue may be shaded out.

SEEDBED PREPARATION

- CHISEL COMPACTED AREAS AND SPREAD TOPSOIL 3 INCHES DEEP OVER ADVERSE SOIL CONDITIONS, IF AVAILABLE.
- RIP THE ENTIRE AREA TO 6 INCHES DEEP.
- REMOVE ALL LOOSE ROCK, ROOTS, AND OTHER OBSTRUCTIONS LEAVING SURFACE REASONABLY SMOOTH AND UNIFORM.
- APPLY AGRICULTURAL LIME, FERTILIZER, AND SUPERPHOSPHATE UNIFORMLY AND MIX WITH SOIL (SEE BELOW)*.
- CONTINUE TILLAGE UNTIL A WELL-PULVERIZED, FIRM REASONABLY UNIFORM SEEDBED IS PREPARED 4 TO 6 INCHES DEEP.
- SEED ON A FRESHLY PREPARED SEEDBED AND COVER SEED LIGHTLY WITH SEEDING EQUIPMENT OR CULTIPACK AFTER SEEDING.
- MULCH IMMEDIATELY AFTER SEEDING AND ANCHOR MULCH.
- INSPECT ALL SEEDED AREAS AND MAKE NECESSARY REPAIRS OR RESEEDINGS WITHIN THE PLANTING SEASON, IF POSSIBLE. IF STAND SHOULD BE OVER 60% DAMAGED, REESTABLISH FOLLOWING ORIGINAL LIME, FERTILIZER AND SEEDING RATES.
- CONSULT CONVERSATION INSPECTOR ON MAINTENANCE TREATMENT AND FERTILIZATION AFTER PERMANENT COVER IS ESTABLISHED.

* APPLY: AGRICULTURAL LIMESTONE - 2 TONS/ACRE (3 TONS/ACRE IN CLAY SOILS)
FERTILIZER - 1,000 LBS./ACRE -10-10-10
SUPERPHOSPHATE - 500 LBS./ACRE -20% ANALYSIS
MULCH - 2 TONS/ACRE - SMALL GRAIN STRAW
ANCHOR - ASPHALT EMULSION @ 300 GALS./ACRE

EROSION AND SEDIMENTATION CONTROL CONSTRUCTION NARRATIVE

NOTIFICATIONS

PRIOR TO COMMENCING EARTH WORK IN ANY CRITICAL AREAS, E.G., NEAR STREAM BUFFERS OR WETLANDS FEATURES, THE CONTRACTOR SHALL NOTIFY THE WAKE COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES, STORM WATER UNIT, TEL: 919-XXX-XXXX AND THE PROJECT ENGINEER FOR AN INSPECTION OF SEDIMENTATION AND EROSION CONTROL MEASURES. NO GROUND DISTURBING WORK SHALL TAKE PLACE WITHOUT PROPER MEASURES IN PLACE. THE PROJECT ENGINEER SHALL BE KEPT INFORMED OF ALL NEW WORK.

GENERAL

ALL WORK SHALL CONFORM TO THE RULES AND GUIDELINES OF THE NORTH CAROLINA SEDIMENTATION CONTROL LAW, AS ADMINISTERED BY NC DENR AND/OR THE NCDENR DIVISION OF LAND QUALITY.

CRITICAL SEDIMENTATION CONTROL FEATURES, E.G., CLEARING LIMITS, SEDIMENT TRAPS, GRADED CHANNELS, BASINS, OUTLET STRUCTURES, LEVEL SPREADERS, ETC., SHALL BE FIELD STAKED BY A LICENSED SURVEYOR OR OTHER PARTY APPROVED BY THE PROJECT ENGINEER AND CONSTRUCTED ACCORDING TO PLAN DIMENSIONS. ALL WORK SHALL PROCEED IN A METHODOICAL AND WORKMANLIKE MANNER. THE OWNER/OPERATOR IS RESPONSIBLE FOR SECURING ANY REQUIRED LAND DISTURBING PERMITS AND PAYING FEES.

THIS S&EC PLAN DESCRIBES TEMPORARY AS WELL AS PERMANENT SEDIMENTATION AND EROSION CONTROL MEASURES. THIS PLAN ASSUMES THAT ALL DESIGNED MEASURES WILL BE INSTALLED. FIELD ADJUSTMENTS ARE ALLOWABLE WITH THE ADVANCE PERMISSION OF THE PROJECT ENGINEER.

SEDIMENTATION AND EROSION CONTROL MEASURES ARE SUBJECT TO FIELD INSPECTION AND PERFORMANCE EVALUATION BY WAKE COUNTY. IF ANY MEASURES ARE FOUND INADEQUATE, A REVIEW OF THE MEASURES AS CONSTRUCTED SHALL BE PERFORMED TO ENSURE ADHERENCE TO THE PLANS. THEN, IF NEEDED, ADDITIONAL DESIGNS SHALL BE SUBMITTED TO NCDENR DIVISION OF LAND RESOURCES FOR REVIEW. SUBSTANTIAL DEVIATIONS FROM THIS PLAN SHALL BE REVIEWED IN ADVANCE BY THE ENGINEER AND MAY BE SUBJECT TO PRIOR APPROVAL BY WAKE COUNTY ENVIRONMENTAL SERVICES.

SILT FENCING

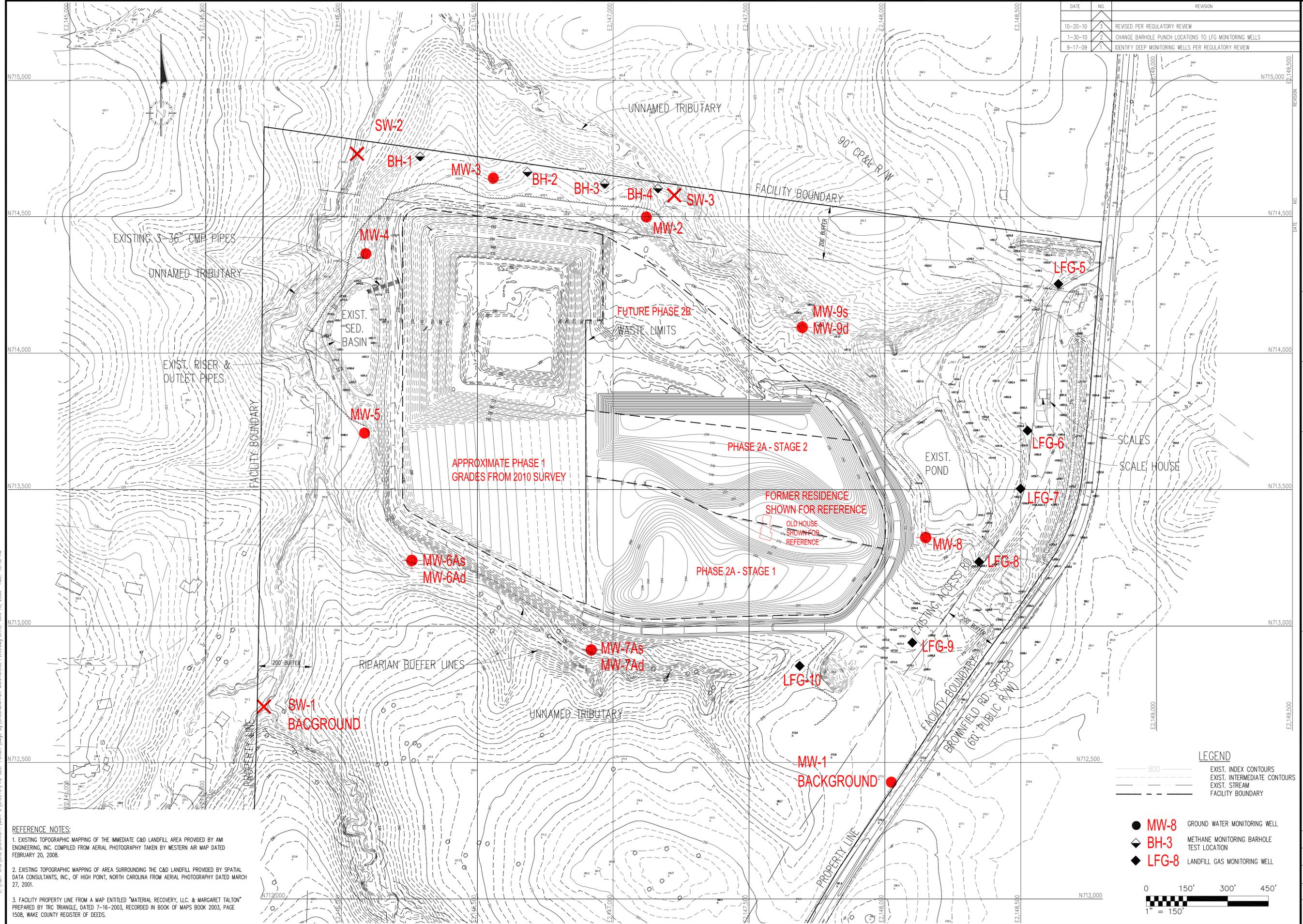
ADEQUATE SILT FENCING SHALL BE INSTALLED AND PROPERLY MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. THE PLANS SHOW THE MINIMUM REQUIRED AREAS INTENDED FOR SILT FENCE CONSTRUCTION. THE SILT FENCE SHALL BE OF THE TYPE DESIGNATED IN THE PLANS, UNLESS THE ENGINEER APPROVES A SUBSTITUTE. PREFABRICATED SILT FENCING ATTACHED TO WOODEN STAKES WILL NOT BE APPROVED - ONLY METAL POSTS AND WIRE-BACKED SILT FENCING WILL BE ACCEPTABLE. THE BASE OF THE FABRIC SHALL BE EMBEDDED IN A TRENCH PER THE PLANS AND AN APPROVED BACKFILL USED TO SECURE THE FABRIC. OUTLETS SHALL BE INSTALLED AT LOCATIONS SHOWN ON THE PLANS, OR AS DESIGNATED IN THE FIELD BY THE ENGINEER.

DIVERSIONS, DITCHES AND SOIL BERMS

TEMPORARY AND PERMANENT DIVERSION DITCHES (SWALES) AND SOIL BERMS ARE REQUIRED THROUGHOUT THE PROJECT TO CONVEY SURFACE RUNOFF. ALL DITCHES SHALL BE BUILT TO THE DIMENSIONS AND GIVEN THE CHANNEL-LINING MATERIAL SPECIFIED IN THIS PLAN, UNLESS THE ENGINEER HAS APPROVED AN ALTERNATIVE. ALL SOIL BERMS SHALL BE BUILT TO THE MINIMUM DIMENSIONS SHOWN ON THE PLANS. SOIL SHALL BE COMPACTED AND STABILIZED WITH VEGETATION IMMEDIATELY UPON COMPLETION OF THE CONSTRUCTION. ADDITIONAL DITCHES AND SOIL BERMS MAY BE REQUIRED. ALL WATER-DIVERSION STRUCTURES, WHETHER SHOWN ON THE PLANS OR ADDED AS A FIELD ADJUSTMENT, SHALL BE MADE TO DRAIN TO AN APPROVED MEASURE.

TEMPORARY SEDIMENT TRAPS

SEDIMENT TRAPS SHALL CONFORM TO WAKE COUNTY "CUSTOM BASIN" STANDARDS AND SHALL BE CONSTRUCTED AT THE LOCATIONS AND DIMENSIONS SHOWN IN THE PLANS DURING THE EARLY STAGES OF CLEARING. ASSOCIATED DITCHES AND SILT FENCES SHALL BE INSTALLED. FIELD ADJUSTMENTS OF LOCATIONS MAY BE ALLOWABLE SUBJECT TO APPROVAL BY THE PROJECT ENGINEER. ALL TEMPORARY SEDIMENT TRAPS SHALL BE CLEANED OUT AND MAINTAINED AS NEEDED FOR AS LONG AS NECESSARY TO PROTECT WATER QUALITY. ALL EARTHWORK ASSOCIATED WITH THE SEDIMENT TRAPS SHALL BE VEGETATED UPON COMPLETION. THE TRAPS MAY BE LEFT IN PLACE INDEFINITELY, OR, ONCE THE ENGINEER DEEMS A TRAP TO BE OBSOLETE, IT MAY BE REMOVED AND THE GROUND RESTORED TO PROMOTE POSITIVE DRAINAGE. VEGETATION OR OTHER PROTECTIVE MEASURES SPECIFIED BY THE ENGINEER SHALL BE ESTABLISHED IMMEDIATELY AT THE SITE OF ANY ABANDONED TRAPS.



DATE	NO.	REVISION
10-20-10	3	REVISED PER REGULATORY REVIEW
1-30-10	2	CHANGE BARHOLE PUNCH LOCATIONS TO LFG MONITORING WELLS
9-17-09	1	IDENTIFY DEEP MONITORING WELLS PER REGULATORY REVIEW

REFERENCE NOTES:

- EXISTING TOPOGRAPHIC MAPPING OF THE IMMEDIATE C&D LANDFILL AREA PROVIDED BY AMI ENGINEERING, INC. COMPILED FROM AERIAL PHOTOGRAPHY TAKEN BY WESTERN AIR MAP DATED FEBRUARY 20, 2008.
- EXISTING TOPOGRAPHIC MAPPING OF AREA SURROUNDING THE C&D LANDFILL PROVIDED BY SPATIAL DATA CONSULTANTS, INC., OF HIGH POINT, NORTH CAROLINA FROM AERIAL PHOTOGRAPHY DATED MARCH 27, 2001.
- FACILITY PROPERTY LINE FROM A MAP ENTITLED "MATERIAL RECOVERY, LLC. & MARGARET TALTON" PREPARED BY TRC TRIANGLE, DATED 7-16-2003, RECORDED IN BOOK OF MAPS BOOK 2003, PAGE 1508, WAKE COUNTY REGISTER OF DEEDS.

LEGEND

- 800 (contour line symbol)
- EXIST. INDEX CONTOURS
- EXIST. INTERMEDIATE CONTOURS
- EXIST. STREAM
- FACILITY BOUNDARY

● MW-8 GROUND WATER MONITORING WELL
 ◆ BH-3 METHANE MONITORING BARHOLE TEST LOCATION
 ◆ LFG-8 LANDFILL GAS MONITORING WELL

0 150' 300' 450'
 1" = 150'

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PROJECT TITLE:
 WCA WASTE CORPORATION, INC.
 BROWNFIELD RD. C&D LANDFILL
 PH2 PERMIT MODIFICATIONS (#92-31)
 WAKE COUNTY, NORTH CAROLINA

DRAWING TITLE:
 GROUNDWATER AND METHANE MONITORING PLAN
 PHASE 2 AMENDMENTS

DESIGNED BY: G.D.G. DRAWN BY: A.W.H.
 CHECKED BY: G.D.G. PROJECT NO.: WCA-2
 SCALE: AS SHOWN DATE: JUNE 2008
 FILE NAME: GROUNDWATER MONITORING PLAN
 SHEET NO.: 21 DRAWING NO.: MP1

