Permit No.	Date	DIN
44-03	March 26,2015	24050

RECEIVED
March 24, 2015
Solid Waste Section
Asheville Regional Office

FRANCIS FARM LANDFILL
CAP MAINTENANCE PLAN
HAYWOOD COUNTY
NORTH CAROLINA

PROPERTY OWNER :

HAYWOOD COUNTY
215 N. MAIN ST.
WAYNESVILLE, N.C. 28786

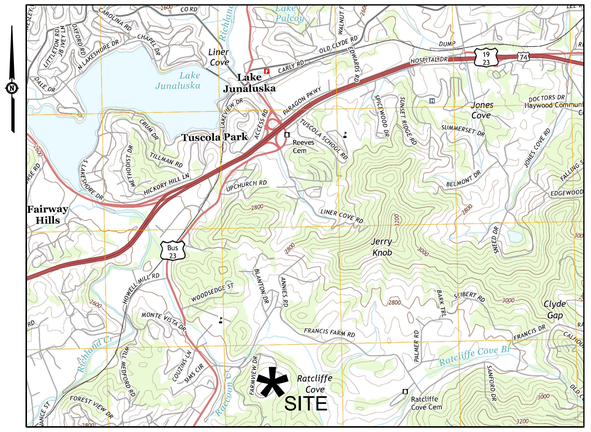
PROPERTY ADDRESS :

176 FARMVIEW DR.
WAYNESVILLE, N.C. 28786

PIN NO. : 8626-22-2037
DEED BOOK/PAGE : 405/794

ENGINEER :

SCOTT BURWELL, PE
McGILL ASSOCIATES
55 BROAD STREET
ASHEVILLE, N.C. 28801



SITE COORDINATES : LATITUDE = 35.504228° N LONGITUDE = -82.957017° W

VICINITY MAP

USGS MAP (NTS)
1:24,000 (CLYDE, NC QUAD)

SCHEDULE OF DRAWINGS

G-001 . . . . . COVER SHEET
G-002 . . . . . GENERAL NOTES
C-101 . . . . . GRADING AND EROSION CONTROL PLAN
C-102 . . . . . GAS AND LEACHATE COLLECTION SYSTEM MODIFICATION PLAN
C-501 . . . . . MISCELLANEOUS DETAILS
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C-503 . . . . MISCELLANEOUS DETAILS

McGill ASSOCIATES
ENGINEERING · PLANNING · FINANCE
55 BROAD STREET ASHEVILLE, NC 28801 PH. (828) 252-0575 FIRM LICENSE # C-0459

NORTH CAROLINA PROFESSIONAL SEAL 039177 3-13-15 ENGINEER SCOTT E. BURWELL

MARCH 2015

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MAINTENANCE PLAN

REVISION DATE – MARCH, 18, 2015

1. ALL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE CHECKED FOR STABILITY AND OPERATION FOLLOWING EVERY RUNOFF–PRODUCING RAINFALL BUT IN NO CASE NOT LESS THAN ONCE EVERY WEEK. ANY NEEDED REPAIRS SHALL BE MADE IMMEDIATELY TO MAINTAIN ALL PRACTICES AS DESIGNED.
2. SEDIMENT SHALL BE REMOVED FROM THE TEMPORARY SKIMMER BASINS WHEN SEDIMENT ACCUMULATES TO ONE–HALF THE HEIGHT OF THE FIRST BAFFLE. CLEAN OUT AND RESHAPE BASIN BACK TO ITS' ORIGINAL DIMENSIONS. REPAIR ANY DAMAGED BAFFLES. SKIMMERS SHALL BE CHECKED FOR CLOGGING AND CLEANED OUT.
3. SEDIMENT SHALL BE REMOVED FROM BEHIND THE SILT FENCE WHEN IT BECOMES ABOUT 0.5 FEET DEEP AT THE SILT FENCE. THE SILT FENCE SHALL BE REPAIRED AS NECESSARY TO MAINTAIN A BARRIER.
4. ALL SEEDED AREAS SHALL BE FERTILIZED, RESEEDED AS NECESSARY AND MULCHED ACCORDING TO SPECIFICATIONS IN THE SEEDING SPECIFICATION TO MAINTAIN A VIGOROUS AND DENSE VEGETATIVE COVER.
5. MAINTAIN ALL MATTING THAT HAS BEEN PLACED ON SLOPES AND IN DITCHES. CHECK FOR GOOD GROUND CONTACT AND FOR THE OCCURRENCE OF ANY EROSION UNDER THE MATTING. MONITOR AND REPAIR OR REPLACE AS NECESSARY.
6. THE CONTRACTOR SHALL MAINTAIN SELF INSPECTION REPORTS AS REQUIRED BY NCDENR AND THE NPDES CONSTRUCTION STORMWATER PERMIT. SELF–INSPECTIONS ARE TO BE CONDUCTED AFTER EACH PHASE OF THE PROJECT FOR THE RECORD OF THE INSTALLATION AND MAINTENANCE OF THE EROSION CONTROL MEASURES. FOR DOCUMENTATION OF SELF–INSPECTION REPORTS AND NPDES SELF–MONITORING REPORTS, DWQ AND DEMLR DEVELOPED A COMBINED FORM. THE SELF–INSPECTION PROGRAM IS SEPARATE FROM THE WEEKLY SELF–MONITORING PROGRAM OF THE NPDES STORMWATER PERMIT FOR CONSTRUCTION ACTIVITIES. THE FOCUS OF THE SELF–INSPECTION REPORT IS THE INSTALLATION AND MAINTENANCE OF EROSION AND SEDIMENTATION CONTROL MEASURES ACCORDING TO THE APPROVED PLAN. THE INSPECTIONS SHOULD BE CONDUCTED AFTER EACH PHASE OF THE PROJECT, AND CONTINUED UNTIL PERMANENT GROUND COVER IS ESTABLISHED. THE FORM CAN BE ACCESSED AT: HTTP://PORTAL.NCDENR.ORG/WEB/LR/EROSION

CONSTRUCTION SEQUENCE

REVISION DATE – MARCH, 18, 2015

1. OBTAIN THE NECESSARY STORMWATER AND EROSION CONTROL PERMIT FROM THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES (NCDENR).
2. FLAG WORK LIMITS BEFORE CONSTRUCTION ACTIVITY BEGINS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR KEEPING ALL RECORDS REQUIRED BY NCDENR FOR THE INSTALLATION AND MAINTENANCE OF THE SITE EROSION CONTROL.
4. CONSTRUCT TEMPORARY STABILIZED CONSTRUCTION ENTRANCE.
5. INSTALL SILT FENCE AS SHOWN ON PLANS, CLEARING ONLY WHAT IS NECESSARY TO INSTALL THE SILT FENCE.
6. CONSTRUCT TEMPORARY SKIMMER BASIN.
7. NOTIFY NCDENR FOR INSPECTION OF SKIMMER BASIN AND SILT FENCE. UPON APPROVAL, BEGIN CLEARING AND GRUBBING.
8. INSTALL TEMPORARY DIVERSION DITCHES WITH WATTLES TO DIVERT STORMWATER TO THE TEMPORARY SKIMMER BASIN.
9. INSTALL PROTECTIVE DRAINAGE STRUCTURES AT ALL STORM DRAINAGE AND PIPE INLETS.
10. BEGIN ROUGH GRADING OPERATIONS. SLOPE GRADE TOWARD TEMPORARY DIVERSION DITCHES AND SEDIMENT BASINS.
11. SEED/GRASS AND INSTALL EROSION CONTROL MATTING (AS SHOWN ON PLANS) FOR STABILIZATION ON ALL NEW CUT AND FILL SLOPES WITHIN 14 DAYS AFTER COMPLETION OF ANY PHASE OF GRADING.
12. SEED/GRASS AND INSTALL EROSION CONTROL MATTING (AS SHOWN ON PLANS) FOR STABILIZATION ON ALL PERIMETER AND 2:1 CUT AND FILL SLOPES ONCE FINISHED GRADE IS REACHED OR WITHIN 7 CALENDAR DAYS AFTER FINAL GRADE IS ACHIEVED.
13. GROUNDCOVER THAT IS SUFFICIENT TO RESTRAIN EROSION MUST BE PLACED ON ALL EXPOSED SLOPES GREATER THAN 3:1 AND ALL PERIMETER AREAS (INCLUDING DIKES, SWALES, DITCHES AND SLOPES) WITHIN SEVEN (7) DAYS OF COMPLETION OF ANY PHASE OF GRADING; PLACE PERMANENT GROUNDCOVER FOR ALL OTHER DISTURBED AREAS WITHIN FOURTEEN (14) WORKING DAYS OF FINISHED GRADE.
14. EROSION CONTROL MEASURES SHALL BE MAINTAINED DURING THE ENTIRE LENGTH OF THE PROJECT AND UNTIL SITE IS STABILIZED.
15. UPON SITE STABILIZATION, THE CONTRACTOR SHALL NOTIFY NCDENR FOR THE INSPECTION AND COORDINATION OF THE REMOVAL OF THE TEMPORARY SKIMMER BASIN. NO MEASURE SHALL BE REMOVED WITHOUT PRIOR APPROVAL.
16. ESTIMATED TIME TO STABILIZE THE SITE IS SIX (6) MONTHS.

NORTH CAROLINA LAND QUALITY SECTION EROSION CONTROL NOTES

REVISION DATE - OCTOBER, 2012

GENERAL: ALL EROSION CONTROL MEASURES ARE TO BE PERFORMED IN STRICT ACCORDANCE WITH REQUIREMENTS OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF LAND RESOURCES, LAND QUALITY SECTION. THE FOLLOWING CONSTRUCTION SEQUENCE SHALL BE COMPLIED WITH FOR ALL WORK.

1. – PRIOR TO BEGINNING WORK ON THE PROJECT THE CONTRACTOR SHALL OBTAIN FROM THE OWNER A COPY OF THE "EROSION AND SEDIMENT CONTROL APPROVAL" FROM THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF LAND QUALITY, OR THE LOCAL AUTHORIZED PROGRAM. THE APPROVAL NOTICE MUST BE POSTED AT THE PRIMARY ENTRANCE TO THE JOB SITE BEFORE CONSTRUCTION BEGINS AND DURING ALL GRADING AND CONSTRUCTION ACTIVITIES.

2. – INSTALL ALL EROSION CONTROL MEASURES AS REQUIRED BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF LAND RESOURCES, LAND QUALITY SECTION.

NOTE: ALL UTILITY INSTALLATION WITHIN 25' OF A RIVER OR STREAM BANK SHALL BE INSTALLED PER STREAM PROTECTION DURING EXCAVATION DETAIL. SEEDING AND MULCHING SHALL BE COMPLETED DAILY IN AREAS NOTED AS STREAM PROTECTION AREAS. SILT FENCE IN THESE AREAS SHALL NOT BE INSTALLED CLOSER THAN 5' FROM CREEK BANK UNLESS FIELD CONDITIONS PREVENT SUFFICIENT CLEARANCE. ALL SILT FENCES SHALL BE INSPECTED AND CLEANED AS NEEDED AFTER EACH RAIN.

3. – NO WORK SHALL BE PERFORMED IN STREAM FROM OCTOBER 15 TO APRIL 15 (TO ACCOMMODATE COE AND DWQ RECOMMENDATIONS CONCERNING WORK IN TROUT WATERS.)

4. – CONTRACTOR IS TO PLACE PERMANENT STAKES MARKING CLEARLY THE 25' BUFFER FOR STREAMS WHERE SHOWN ON THE PLANS AND THE MARKERS ARE TO BE VISIBLE AT ALL TIMES DURING CONSTRUCTION.

5. – OBTAIN CERTIFICATE OF COMPLIANCE THROUGH ON–SITE INSPECTION BY A REPRESENTATIVE OF THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF LAND RESOURCES, LAND QUALITY SECTION.

6. – CONSTRUCTION SHALL BE LIMITED TO 2000' OF CONTIGUOUS ROAD CORRIDOR UNTIL ALL CUTS, FILLS, AND DITCHES ARE STABILIZED FOR THAT 2000' SECTION. UPON STABILIZATION OF THAT SECTION ANOTHER 2000' SECTION CAN BE CONSTRUCTED AND STABILIZED.

7. – ALL STREAM CROSSINGS AND PERENNIAL STREAMS WILL BE ALIGNED WITH THE NATURAL STREAM PATTERNS ABOVE AND BELOW THE PROPOSED ROAD. ARCH CULVERTS WILL BE USED AND FOOTERS WILL BE CONSTRUCTED IN UNDISTURBED BANKS AWAY FROM THE STREAM FLOW.

8. – PROCEED WITH GRADING. NOTE: NO OFF SITE DISPOSAL OF MATERIAL IS ALLOWED UNLESS THE DISPOSAL SITE HAS AN APPROVED EROSION CONTROL PLAN.

9. – SEED AND PLACE EROSION CONTROL MATTING ON ALL FILL SLOPES THAT ARE NOT ROCK IMMEDIATELY UPON COMPLETION OF SLOPE STABILIZATION.

10. – ALL TEMPORARY STREAM AND CREEK CROSSINGS FOR EQUIPMENT DURING CONSTRUCTION SHALL BE MADE USING TEMPORARY BRIDGES. NO STREAM BANK OR STREAM BED DISTURBANCE SHALL BE ALLOWED FOR EQUIPMENT CROSSINGS.

11. – SEED AND MULCH DENUDED AREA WITHIN 15 DAYS AFTER FINISHED GRADE ARE ESTABLISHED. SEED AND SOIL AMENDMENTS SHALL BE PLACED ON A PREPARED SEEDBED AT THE FOLLOWING RATES PER ACRE. STRAW MULCH SHALL BE TACKED WITH TACKING AGENT APPLIED BY HYDROSEEDER.

LIME	4,000 LBS
FERTILIZER (10–10–10)	1,000 LBS
KY–31 FESCUE (POA PRATENSIS)	100 LBS
STRAW MULCH	60–80 BALES

FOR SUMMER SEEDING ADD TO THE ABOVE:

GERMAN MILLET (SETARIA ITALICA)	40 LBS
SMALL–STEMMED SUDAN GRASS (SORGHUM BICOLOR)	50 LBS

FOR WINTER SEEDING ADD TO THE ABOVE:

RYE GRAIN (SECASE CEREALE)	120 LBS

IF HYDROSEEDING, WOOD CELLULOSE MAY BE USED IN ADDITION TO STRAW MULCH AT THE RATE OF 1,000 LBS PER ACRE.

ALL SEEDING SHALL BE MAINTAINED, WATERED ETC.., UNTIL A PERMANENT VEGETATIVE GROUND COVER IS ESTABLISHED OVER ALL DISTURBED AREAS.

FOR ALL SLOPES 2:1 OR STEEPER ADD TO THE ABOVE:

PURE LIVE SEED SWITCHGRASS	4 LBS
SERICEA LESPEDEZA	2 LBS
BROWNTOP MILLET OR PEARL MILLET (PENNISETUM GLAUCUM)	8 LBS
GRAIN SORGHUM (SORGHUM BICOLOR (L.) MOENCH SSP. BICOLOR)	2 LBS

ALL SLOPES 2:1 OR STEEPER SHALL BE COVERED BY EROSION CONTROL MATTING.

NATIVE SEEDING:

THE CORRECT SEEDBED pH IS 5.5 TO 6.5.

APPLY ZERO NITROGEN AT PLANTING.

INCORPORATE SOIL AMENDMENTS INTO TOPSOIL/ROOT ZONE BEFORE SEEDING.

FIRM SEEDBED BEFORE SEEDING (TRAVEL WITH DOZER CLEATS).

SEEDING DEPTH FOR ALL NATIVE SSP. EXCEPT E.GAMAGRASS (TRIPSACUM DACTYBIDES) NEED TO BE 1/4" – 1/2". GREATER DEPTHS CAUSE HIGH SEED MORTALITY.

SPECIALIZED SEEDING IMPLEMENTS ARE REQUIRED. SEED MIXES AND RATES TO MATCH SEEDER USED. A NO–TILL, DROP SEEDER OR BROADCASTER WITH PRECISION METERING TO CONTROL SMALL SEED FLOW AND PICKER WHEEL AGITATORS TO HANDLE FLUFFY SEED ARE BEST SUITED FOR NATIVE SEED.

NATIVE PLANT SEEDING MIX FOR STREAM OR RIVERBANK STABILIZATION

SEEDING FOR STREAM OR RIVERBANK STABILIZATION SHALL BE A MIXTURE OF NATIVE GRASSES, PLANTS AND TREES. NATIVE PLANT MIX SHALL INCLUDE THE FOLLOWING:

GRASSES – BIG BLUESTEM (ANDROPOGAN GERARDII), INDIAN GRASS (SORGASTRUM NUTANS), LITTLE BLUESTEM (SCHIZACHYRIUM SCOPARIUM), SWITCHGRASS (PANICUM VIRGATUM). 15 LBS/ACRE EACH
AUGUST THRU MAY – GREENRYE (SECALE CEREALE) 25 LBS/ACRE EACH
MAY 1 THRU AUGUST – MILLET (PENNISETUM GLLAUCUM) 25 LBS/ACRE EACH

TREES – SILKY DOGWOOD (CORNUS AMONUM), SILKY WILLOW (SALIX SERICEA), HAZEL ALDER (ALMUS SERRULATA) AND ELDERBERRY (SAMBUEUS CANADENSIS)

NATIVE PLANT MIX VARIATIONS SHALL BE APPROVED BY ENGINEER.

NOTE: NO FERTILIZER SHALL BE USED WITHIN 10' OF TOP OF STREAM OR RIVER BANK.

NPDES PERMITS - NOTE -FOR PROJECTS REQUIRING NPDES PERMITS, THE FOLLOWING STABILIZATION SCHEDULE SHALL APPLY:

SITE AREA DESCRIPTION	STABILIZATION TIMEFRAME	STABILIZATION TIMEFRAME EXCEPTIONS
PERIMETER DIKES, SWALES DITCHES AND SLOPES	7 DAYS	NONE
HIGH QUALITY WATER (HQW) ZONES	7 DAYS	NONE
SLOPES STEEPER THAN 3:1	7 DAYS	IF SLOPES ARE 10' OR LESS IN LENGTH AND ARE NOT STEEPER THAN 2:1, 14 DAYS ARE ALLOWED
SLOPES 3:1 OR FLATTER	14 DAYS	7–DAYS FOR SLOPES GREATER THAN 50 FEET IN LENGTH
ALL OTHER AREAS WITH SLOPES FLATTER THAN 4:1	14 DAYS	NONE (EXCEPT FOR PERIMETERS AND HQW ZONES)

12. – MAINTAIN SOIL EROSION CONTROL MEASURES UNTIL PERMANENT GROUND COVER IS ESTABLISHED.

13. – REMOVE SOIL EROSION CONTROL MEASURES AND STABILIZE THESE AREAS.

14. – REQUEST FINAL APPROVAL BY THE NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES, DIVISION OF LAND RESOURCES, LAND QUALITY SECTION.

GENERAL CONSTRUCTION NOTES

REVISION DATE - MARCH 18, 2015

1. FINISH GRADE TOLERANCES SHALL BE AS NOTED IN THE SPECIFICATIONS. THE ENGINEER MAY MAKE GRADE CHANGES AS REQUIRED IN THE FIELD WITHOUT EFFECTING THE UNIT BID PRICE FOR UNCLASSIFIED EXCAVATION.
2. UNLESS OTHERWISE STATED, ALL FILL AREAS SHALL BE CONSTRUCTED IN LAYERS OF 8" MAXIMUM THICKNESS, WITH WATER ADDED OR SOIL CONDITIONED TO THE OPTIMUM MOISTURE CONTENT AS DETERMINED BY THE ENGINEER AND COMPACTED WITH A SHEEP'S FOOT ROLLER TO A COMPACTION EQUAL TO OR GREATER THAN 95% (100% IN THE TOP 2' OF THE SUB GRADE BELOW ROADWAYS AND PARKING LOTS) OF THE DENSITY OBTAINED BY COMPACTING A SAMPLE OF THE MATERIAL IN ACCORDANCE WITH THE STANDARD PROCTOR METHOD OF MOISTURE–DENSITY RELATIONSHIP TEST, ASTM D698 OR AASHTO–99 UNLESS SPECIFIED IN OTHER SPECIFICATIONS.
3. ALL SOIL EROSION CONTROL MEASURES REQUIRED BY THE GRADING PLAN SHALL BE PERFORMED PRIOR TO GRADING, CLEARING OR GRUBBING. ALL EROSION CONTROL DEVICES SUCH AS SILT FENCES, ETC., SHALL BE MAINTAINED IN WORKABLE CONDITION FOR THE LIFE OF THE PROJECT AND SHALL BE REMOVED AT THE COMPLETION OF THE PROJECT ONLY ON THE ENGINEER'S APPROVAL. PAYMENT SHALL BE CONSIDERED INCIDENTAL TO CLEARING AND GRUBBING. IF DURING THE LIFE OF THE PROJECT, A STORM CAUSES SOIL EROSION WHICH CHANGES FINISH GRADES OR CREATES "GULLIES" AND "WASHED AREAS", THESE SHALL BE REPAIRED AT NO EXTRA COST, AND ALL SILT WASHED OFF OF THE PROJECT SITE ONTO ADJACENT PROPERTY SHALL BE REMOVED AS DIRECTED BY THE ENGINEER AT NO EXTRA COST. THE CONTRACTOR SHALL ADHERE TO ANY APPROVED EROSION CONTROL PLANS WHETHER INDICATED IN THE CONSTRUCTION PLANS OR UNDER SEPARATE COVER.
4. DISPOSABLE MATERIAL
   A. SOLID WASTES TO BE REMOVED, SUCH AS SIDEWALKS, CURBS, PAVEMENT, ETC., MAY BE PLACED IN SPECIFIC DISPOSAL AREAS DELINEATED ON THE PLANS OR REMOVED FROM THE SITE AS REQUIRED BY THE SPECIFICATIONS. THIS MATERIAL SHALL HAVE A MINIMUM COVER OF 2'. THE CONTRACTOR SHALL MAINTAIN SPECIFIED COMPACTION REQUIREMENTS IN THESE AREAS. WHEN DISPOSAL SITES ARE NOT PROVIDED, THE CONTRACTOR SHALL REMOVE THIS WASTE FROM THE SITE AND PROPERLY DISPOSE OF IT AT HIS EXPENSE.
   B. ABANDONED UTILITIES SUCH AS CULVERTS, WATER PIPE, HYDRANTS, CASTINGS, PIPE APPURTENANCES, UTILITY POLES, ETC., SHALL BE THE PROPERTY OF THE SPECIFIC UTILITY AGENCY, OR COMPANY HAVING JURISDICTION. BEFORE THE CONTRACTOR CAN REMOVE, DESTROY, SALVAGE, REUSE, SELL OR STORE FOR HIS OWN USE ANY ABANDONED UTILITY, HE MUST PRESENT TO THE OWNER WRITTEN PERMISSION FROM THE UTILITY INVOLVED.
5. THE CONTRACTOR IS RESPONSIBLE FOR THE COORDINATION OF ADJUSTMENT OF ALL UTILITY SURFACE ACCESSES WHETHER HE PERFORMS THE WORK OR A UTILITY COMPANY PERFORMS THE WORK.
6. THE CONTRACTOR SHALL CONTROL ALL "DUST" BY PERIODIC WATERING AND SHALL PROVIDE ACCESS AT ALL TIMES FOR PROPERTY OWNERS WITHIN THE PROJECT AREA AND FOR EMERGENCY VEHICLES. ALL OPEN DITCHES AND HAZARDOUS AREAS SHALL BE CLEARLY MARKED IN ACCORDANCE WITH THE SPECIFICATIONS.
7. ALL AREAS WHERE THERE IS EXPOSED DIRT SHALL BE SEEDED, FERTILIZED AND MULCHED ACCORDING TO THE SPECIFICATIONS. THE FINISHED SURFACE SHALL BE TO GRADE AND SMOOTH, FREE OF ALL ROCKS LARGER THAN 3", EQUIPMENT TRACKS, DIRT CLODS, BUMPS, RIDGES AND GOUGES PRIOR TO SEEDING; THE SURFACE SHALL BE LOOSENED TO A DEPTH OF ±4"–6" TO ACCEPT SEED. THE CONTRACTOR SHALL NOT PROCEED WITH SEEDING OPERATIONS WITHOUT FIRST OBTAINING THE ENGINEER'S APPROVAL OF THE GRADED SURFACE. ALL SEEDING SHALL BE PERFORMED BY A MECHANICAL "HYDRO–SEEDER". HAND SEEDING SHALL BE AUTHORIZED ON AN AREA BY AREA APPROVAL BY THE ENGINEER. DISTURBED AREAS SHOULD THEN BE MATTED WITH SHORT–TERM PHOTODEGRADABLE EROSION CONTROL MATTING.
8. CONTRACTOR SHALL VERIFY ALL ELEVATIONS BEFORE INSTALLATION OF FACILITIES.

NO.	DATE	BY	REVISION DESCRIPTION
1	3/18/15	SB	NCDENR LAND QUALITY SUBMITTAL

McGill ASSOCIATES
ENGINEERING·PLANNING·FINANCE
55 BROAD STREET ASHEVILLE, NC 28801 PH. (828) 252-0575 FIRM LICENSE # C-0459

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 039177 3-18-15 SCOTT E. BURWELL

FRANCIS FARM LANDFILL
CAP MAINTENANCE PLAN
HAYWOOD COUNTY
HAYWOOD COUNTY, NORTH CAROLINA

JOB NO.: 14.00707
DATE: MARCH 2015
DESIGNED BY: SEB
CADD BY: BAS
DESIGN REVIEW: ____
CONST. REVIEW: ____
FILE NAME: FFLF Cap Maintenance Plan.dwg

GENERAL NOTES

SHEET G-002

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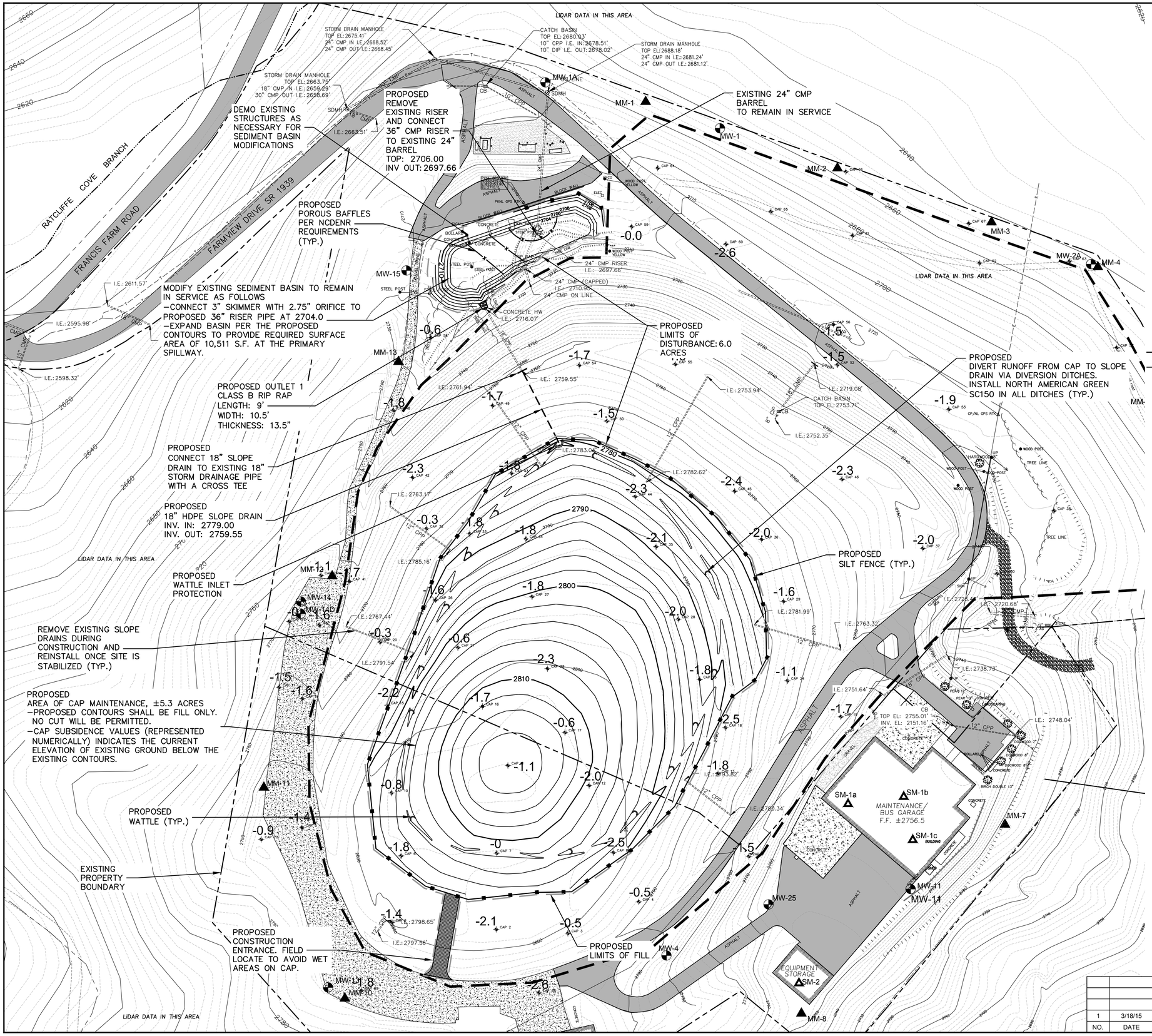

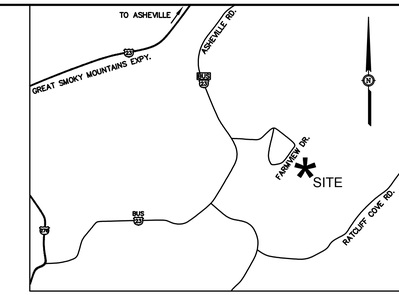

VICINITY MAP

LEGEND

- GROUND WATER MONITORING WELL
- LANDFILL GAS MONITORING WELL
- LANDFILL GAS MONITORING LOCATION IN STRUCTURE
- LANDFILL GAS EXTRACTION WELL
- LANDFILL GAS EXTRACTION WELL WITH LEACHATE PUMP
- LANDFILL GAS EXTRACTION WELL WITH LEACHATE PUMP CONNECTION
- 4" HDPE LANDFILL GAS COLLECTION PIPE, WITH PIPE SIZE
- 4" HDPE LEACHATE COLLECTION PIPE, WITH PIPE SIZE

PROPOSED EROSION CONTROL AND STORM DRAINAGE LEGEND

- LIMITS OF DISTURBED AREA
- TEMPORARY SILT FENCE
- SLOPE DRAIN
- WATTLE TYPE CHECK DAM
- STABILIZED CONSTRUCTION ENTRANCE
- -2.0 LEVEL OF SUBSIDENCE IN FEET
- PROPOSED INTERVAL CONTOUR
- 2790 PROPOSED INDEX CONTOUR

PLAN

GRAPHIC SCALE 1 INCH = 60 FEET

NO.	DATE	BY	REVISION DESCRIPTION
1	3/18/15	SB	NCDENR LAND QUALITY SUBMITTAL

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55 BROAD STREET ASHEVILLE, NC 28801 PH. (828) 252-0575 FIRM LICENSE # C-0459

NORTH CAROLINA PROFESSIONAL SEAL 039177 3-18-15 ENGINEER SCOTT E. BURNETT

FRANCIS FARM LANDFILL
CAP MAINTENANCE PLAN
HAYWOOD COUNTY
HAYWOOD COUNTY, NORTH CAROLINA

JOB NO.: 14.00707
DATE: MARCH 2015
DESIGNED BY: SEB
CADD BY: BAS
DESIGN REVIEW: ____
CONST. REVIEW: ____
FILE NAME: FFLF Cap Maintenance Plan.dwg

GRADING AND EROSION CONTROL PLAN

SHEET
C-101

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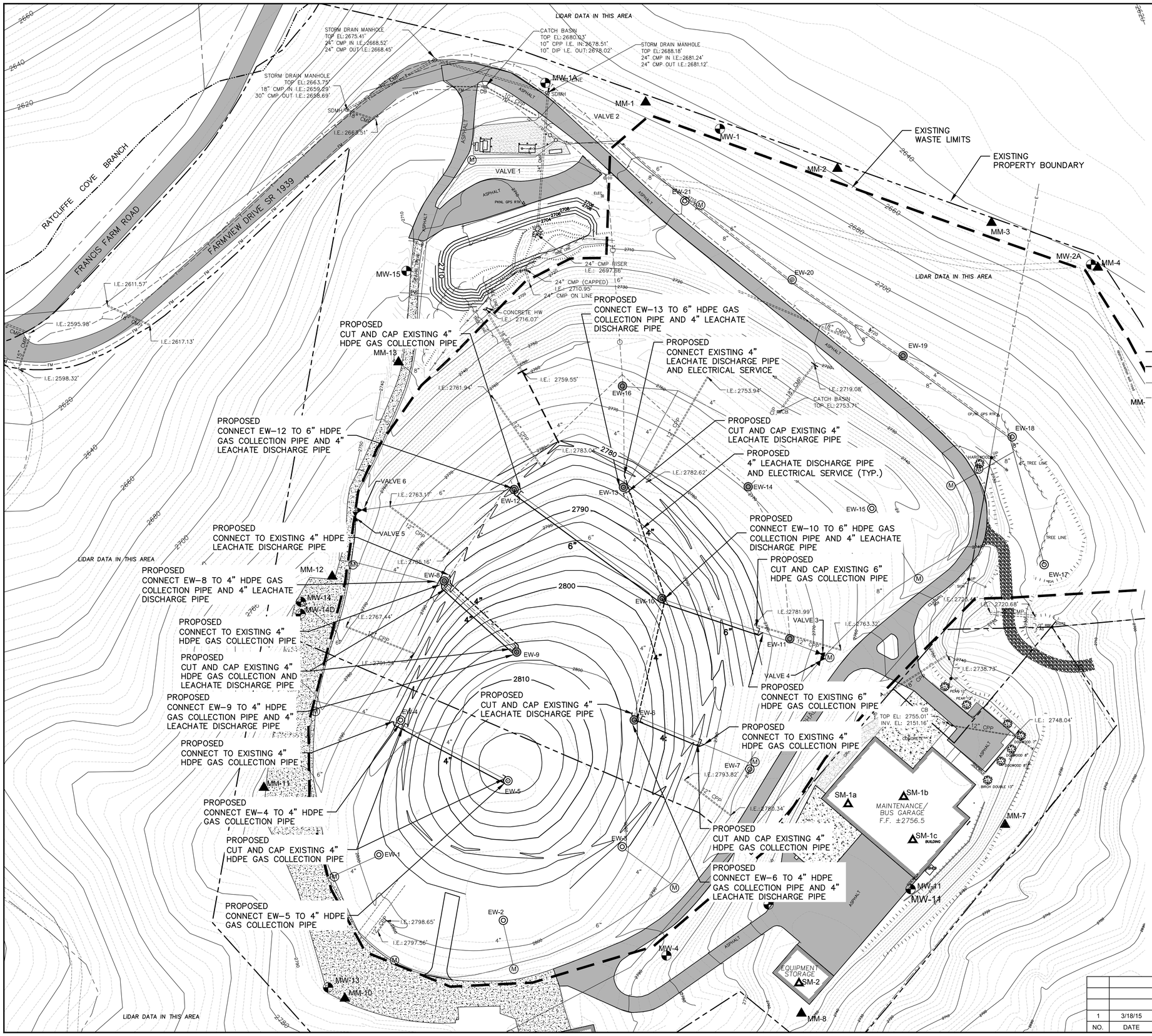

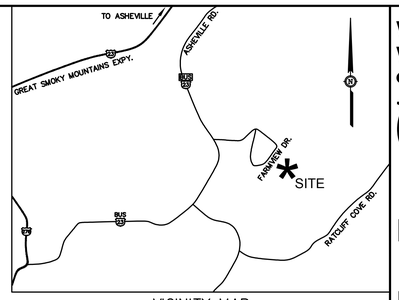

VICINITY MAP

LEGEND

- GROUND WATER MONITORING WELL
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- 4" EXISTING HDPE LANDFILL GAS COLLECTION PIPE, WITH PIPE SIZE
- 4" EXISTING HDPE LEACHATE COLLECTION PIPE, WITH PIPE SIZE

PLAN

GRAPHIC SCALE 1 INCH = 60 FEET

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ENGINEERING·PLANNING·FINANCE
55 BROAD STREET ASHEVILLE, NC 28801 PH: (828) 252-0575 FIRM LICENSE # C-0459

NORTH CAROLINA PROFESSIONAL SEAL 038114 ENGINEER SCOTT E. BLANKENSHIP

FRANCIS FARM LANDFILL
CAP MAINTENANCE PLAN
HAYWOOD COUNTY
HAYWOOD COUNTY, NORTH CAROLINA

JOB NO.: 14.00707
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DESIGN REVIEW: ____
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GAS AND LEACHATE COLLECTION SYSTEM MODIFICATIONS

SHEET
C-102

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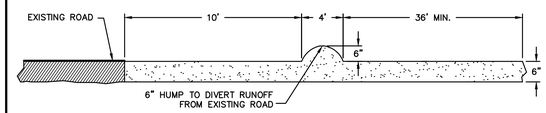
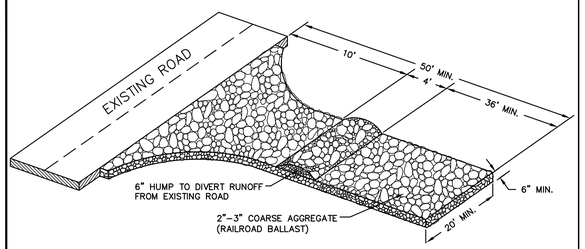


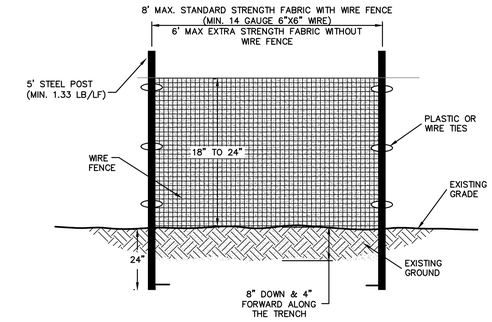


NOTES:

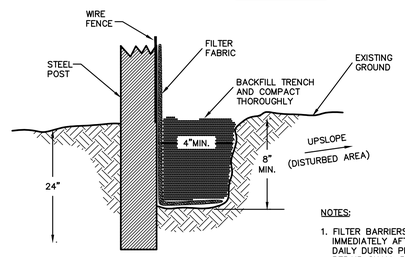
1. A STABILIZED PAD OF CRUSHED STONE SHALL BE LOCATED WHERE TRAFFIC WILL BE ENTERING OR LEAVING A CONSTRUCTION SITE TO OR FROM AN EXISTING ROAD.
2. STONE TO BE 2 – 3 INCH WASHED STONE RAILROAD BALLAST.
3. THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC STREETS OR EXISTING PAVEMENT. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT.
4. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC STREETS MUST BE REMOVED IMMEDIATELY.
5. WHEN NECESSARY WHEELS MUST BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTERING A PUBLIC STREET, WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT BASIN.
6. REFERENCE NCDENR LAND QUALITY SECTION DESIGN MANUAL: 6.06.

STABILIZED CONSTRUCTION ENTRANCE

REVISION DATE - NOVEMBER 3, 2008



SECTION VIEW



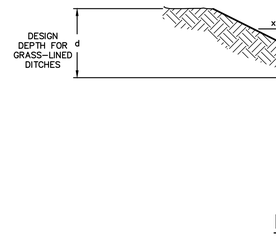
SLOPE	SLOPE LENGTH(FT)	MAXIMUM AREA(SQFT)
<2%	100	10,000
2 TO 5%	75	7,500
5 TO 10%	50	5,000
10 TO 20%	25	2,500
>20%	15	1,500

NOTES:

1. FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND DAILY DURING PROLONGED RAINFALL. REPAIR SHALL BE MADE AS NECESSARY.
2. FABRIC SHALL BE REPLACED PROMPTLY IF FOUND TO BE IN DISREPAIR.
3. SEDIMENT DEPOSITS SHALL BE REMOVED AFTER EACH STORM EVENT AND WHEN DEPOSITS REACH APPROXIMATELY 1/3 HEIGHT OF BARRIER.
4. REFERENCE NCDENR LAND QUALITY SECTION DESIGN MANUAL: 6.62.

SEDIMENTATION/SILT FENCE

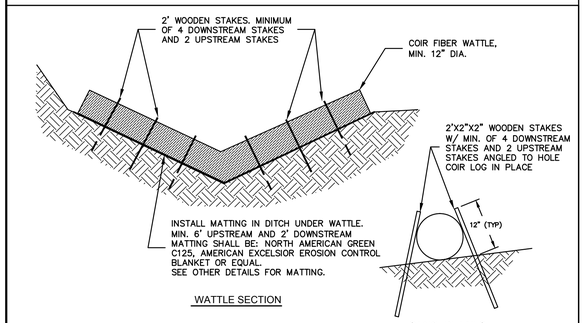
REVISION DATE - NOVEMBER 3, 2008



DITCH	b	d	x
1	1	1.5	2

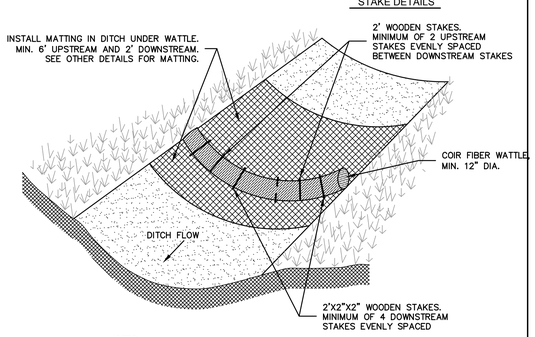
DIVERSION DITCH DETAIL

REVISION DATE - MARCH 18, 2015



WATTLE SECTION

STAKE DETAILS

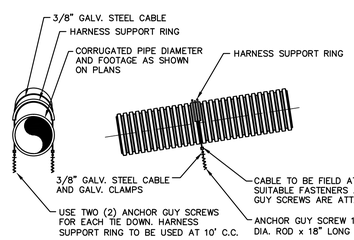


NOTES:

1. USE COIR FIBER (COCONUT) WATTLE WITH MIN. DIAMETER OF 12 INCHES
2. INSTALL WATTLE IN DITCH ONLY TO A HEIGHT TO PREVENT WASHING OUT AROUND THE WATTLE AND SCOURING OF DITCH AND SLOPES

WATTLE DETAILS

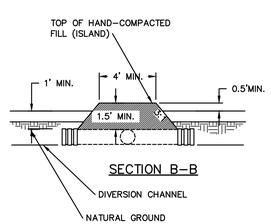
REVISION DATE NOVEMBER 1, 2012



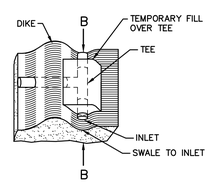
SECTION AA

NOTES:

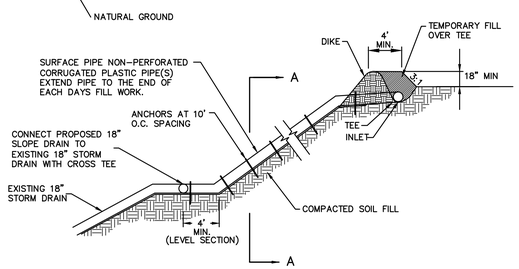
1. PLACE SLOPE DRAINS ON UNDISTURBED SOIL OR WELL COMPACTED FILL AT 200' INTERVALS ALONG NEW FILL SLOPE DURING CONSTRUCTION.
2. SLIGHTLY SLOPE SECTION OF PIPE UNDER THE DIVERSION DIKE TOWARD OUTLET.
3. ENSURE THAT ALL SLOPE DRAIN CONNECTIONS ARE WATERTIGHT.
4. INSPECT AFTER EVERY RAINFALL AND MAKE NECESSARY REPAIRS.
5. REFERENCE NCDENR LAND QUALITY SECTION DESIGN MANUAL: 6.32.



SECTION B-B



PLAN VIEW
T-SECTION



TEMPORARY SLOPE DRAIN

REVISION DATE - NOVEMBER 3, 2008

NO.	DATE	BY	REVISION DESCRIPTION
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ENGINEERING·PLANNING·FINANCE
55 BROAD STREET ASHEVILLE, NC 28801 PH.(828) 252-0575 FIRM LICENSE # C-0459

FRANCIS FARM LANDFILL
CAP MAINTENANCE PLAN
HAYWOOD COUNTY
HAYWOOD COUNTY, NORTH CAROLINA

JOB NO.: 14.00707
DATE: MARCH 2015
DESIGNED BY: SEB
CADD BY: BAS
DESIGN REVIEW: ____
CONST. REVIEW: ____
FILE NAME: FFLF Cap Maintenance Plan.dwg

MISCELLANEOUS DETAILS

SHEET
C-501

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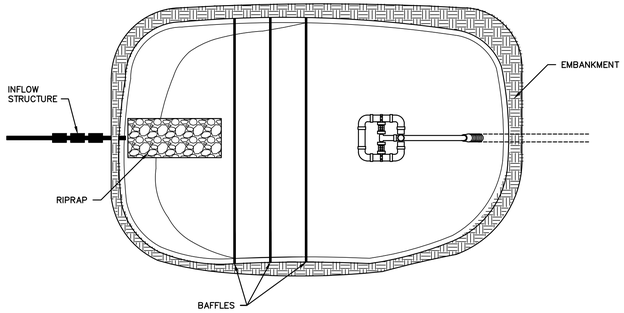
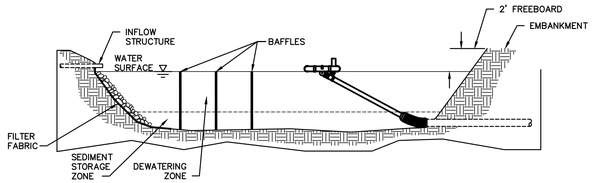
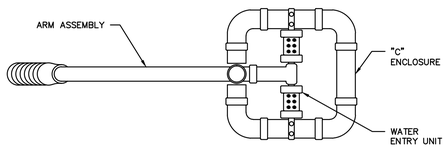


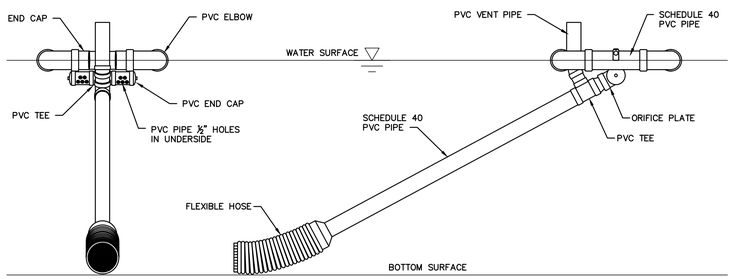
PLAN



SECTION



TOP VIEW

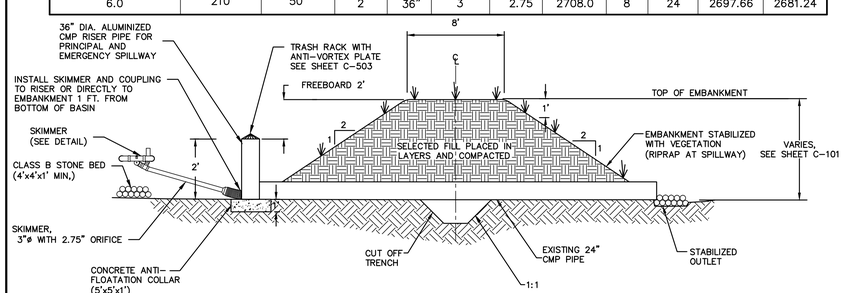


END VIEW FRONT VIEW

SKIMMER DETAIL

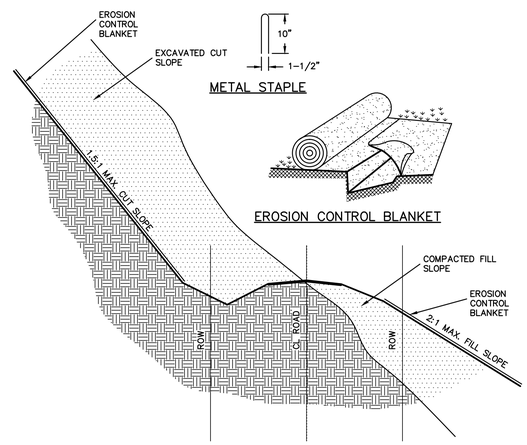
REVISION DATE - MARCH, 2015

POTENTIAL DISTURBED AREA (ACRES)	LENGTH (FT.)	WIDTH (FT.)	DEPTH (FT.)	RISER SIZE (IN.)	SKIMMER SIZE (IN.)	ORIFICE SIZE (IN.)	TOP BERM ELEV (FT)	BERM WIDTH (FT)	EXISTING BARREL SIZE (IN)	EXISTING BARREL INV. IN ELEV. (FT)	EXISTING BARREL INV. OUT ELEV. (FT)
6.0	210	50	2	36"	3	2.75	2708.0	8	24	2697.66	2681.24



SEDIMENT BASIN WITH RISER

REVISION DATE - MARCH, 2015

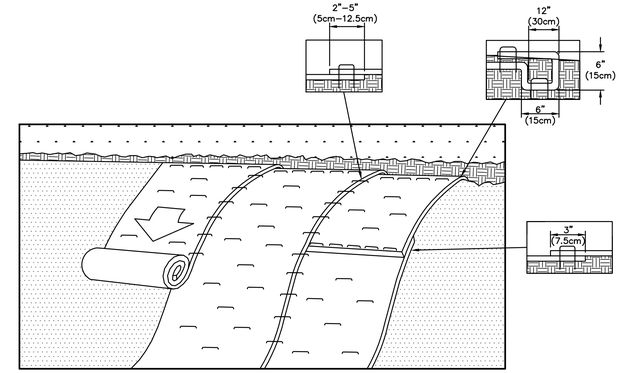


NOTES:

1. INSTALLATION OF MATTING SHALL CONFORM TO MANUFACTURER'S REQUIREMENTS.
2. SEE GRADING PLAN FOR LOCATIONS OF CUT AND FILL SLOPES.
3. MATTING SHALL BE: NORTH AMERICAN GREEN SC150, AMERICAN EXCELSIOR EROSION CONTROL BLANKET, OR EQUAL. INSTALL ON ALL DISTURBED SLOPES (CHOSEN PRODUCT MUST BE RATED FOR SLOPES 2:1 TO 1:1).
4. ALLOW 3" MIN. OVERLAP BETWEEN PARALLEL STRIPS.
5. BURY THE TOP END OF THE MAT IN A TRENCH 4" OR MORE IN DEPTH. TAMP THE TRENCH FULL OF SOIL. SECURE WITH ROW OF STAPLES, 10" SPACING, 4" DOWN FROM THE TRENCH. OVERLAP END OF TOP STRIP 4" AND STAPLE.

SLOPE STABILIZATION WITH MATTING

REVISION DATE - NOVEMBER 3, 2008



NOTES:

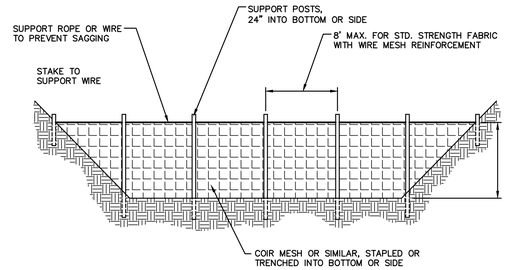
1. PREPARE SOIL BEFORE INSTALLING ROLLED EROSION CONTROL PRODUCTS (RECP'S), INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE RECP'S IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF RECP'S EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE RECP'S WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF RECP'S BACK OVER SEED AND COMPACTED SOIL. SECURE RECP'S OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE RECP'S.
3. ROLL THE RECP'S DOWN OR HORIZONTALLY ACROSS THE SLOPE. RECP'S WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL RECP'S MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING AND SPACING STAPLES/STAKES IN APPROPRIATE LOCATIONS PER MANUFACTURER RECOMMENDATIONS.
4. THE EDGES OF PARALLEL RECP'S MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON RECP'S TYPE.
5. CONSECUTIVE RECP'S SPLICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE RECP'S WIDTH.
6. IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE RECP'S.

STAPLE/ROLL INSTALLATION

REVISION DATE - NOVEMBER 3, 2008

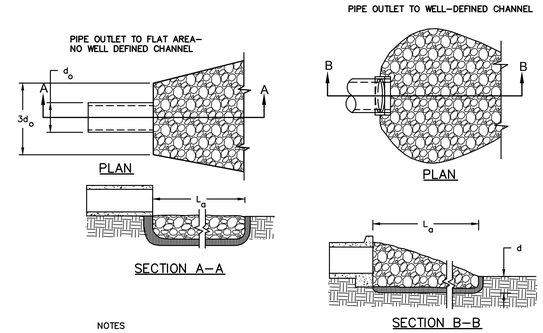
NOTES:

1. INLET ZONE (A) SHOULD HAVE 35% OF SURFACE AREA. FIRST CELL (B) SHOULD HAVE 25% OF SURFACE AREA, SECOND CELL (C) SHOULD HAVE 25% OF SURFACE AREA AND THE OUTLET ZONE (D) SHOULD HAVE 15% OF SURFACE AREA.
2. GRADE THE BASIN SO THAT THE BOTTOM IS LEVEL FRONT TO BACK AND SIDE TO SIDE.
3. STEEL POSTS SHOULD BE DRIVEN TO A DEPTH OF 24 INCHES, SPACED A MAXIMUM OF 4 FEET APART.
4. DO NOT SPLICE FABRIC. USE ONE CONTINUOUS PIECE ACROSS BASIN.
5. INSPECT BAFFLES AT LEAST ONCE A WEEK AND AFTER EACH RAINFALL. MAKE ANY REPAIRS IMMEDIATELY. REMOVE SEDIMENT DEPOSITS WHEN IT REACHES HALF FULL.
6. REFERENCE NCDENR LAND QUALITY SECTION DESIGN MANUAL: 6.65.



SKIMMER BASIN POROUS BAFFLE

REVISION DATE - MARCH, 2015



NOTES

1. La IS THE LENGTH OF THE RIPRAP APRON
2. d= 1.5 TIMES THE MAXIMUM STONE DIAMETER BUT NOT LESS THAN 6".
3. IN A WELL-DEFINED CHANNEL EXTEND THE APRON UP THE CHANNEL BANKS TO AN ELEVATION OF 6" ABOVE THE MAXIMUM TAILWATER DEPTH OR TO THE TOP OF THE BANK, WHICHEVER IS LESS.
4. FILTER FABRIC SHOULD BE INSTALLED BETWEEN THE RIPRAP AND SOIL FOUNDATION.
5. REFERENCE NCDENR LAND QUALITY SECTION DESIGN MANUAL: 6.41.

RIPRAP APRON SIZING (PER FIG. 8.06a)

OUTLET No.	PIPE DIAMETER (Do)	3 x Do	APRON LENGTH (La)	APRON WIDTH (W=Do+La)	RIPRAP SIZE (d_{50}xTHICKNESS)	dMAX	d
1	18"	4.5'	9'	10.5	9"	9"	13.5"

OUTLET PROTECTION

NOT TO SCALE

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NORTH CAROLINA PROFESSIONAL SEAL 039114 ENGINEER SCOTT E. BRANNON

FRANCIS FARM LANDFILL
CAP MAINTENANCE PLAN
HAYWOOD COUNTY
HAYWOOD COUNTY, NORTH CAROLINA

JOB NO.: 14.00707
DATE: MARCH 2015
DESIGNED BY: SEB
CADD BY: BAS
DESIGN REVIEW: ____
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FILE NAME: FFLF Cap Maintenance Plan.dwg

MISCELLANEOUS DETAILS

SHEET
C-502

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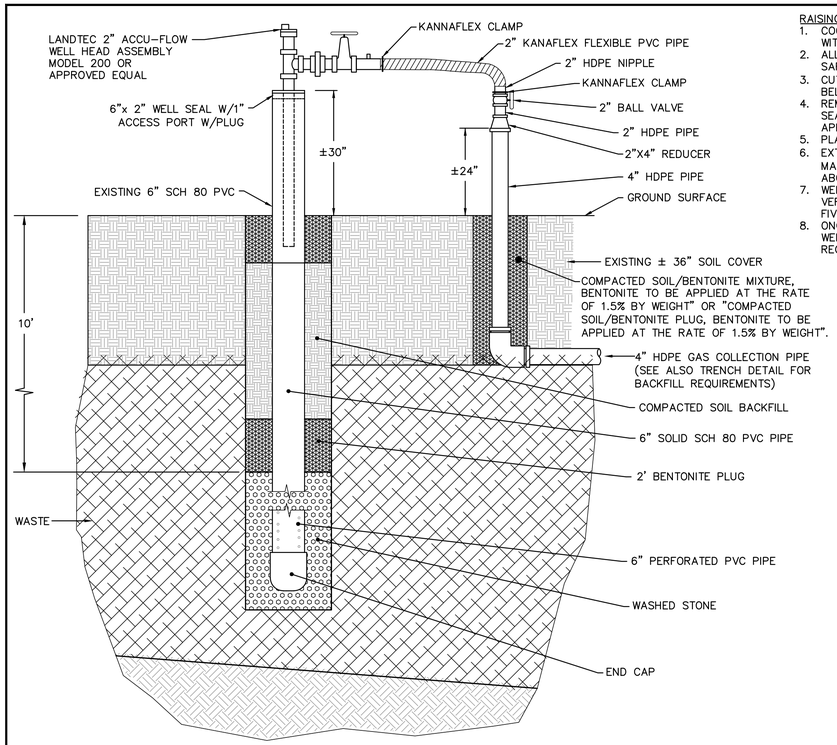
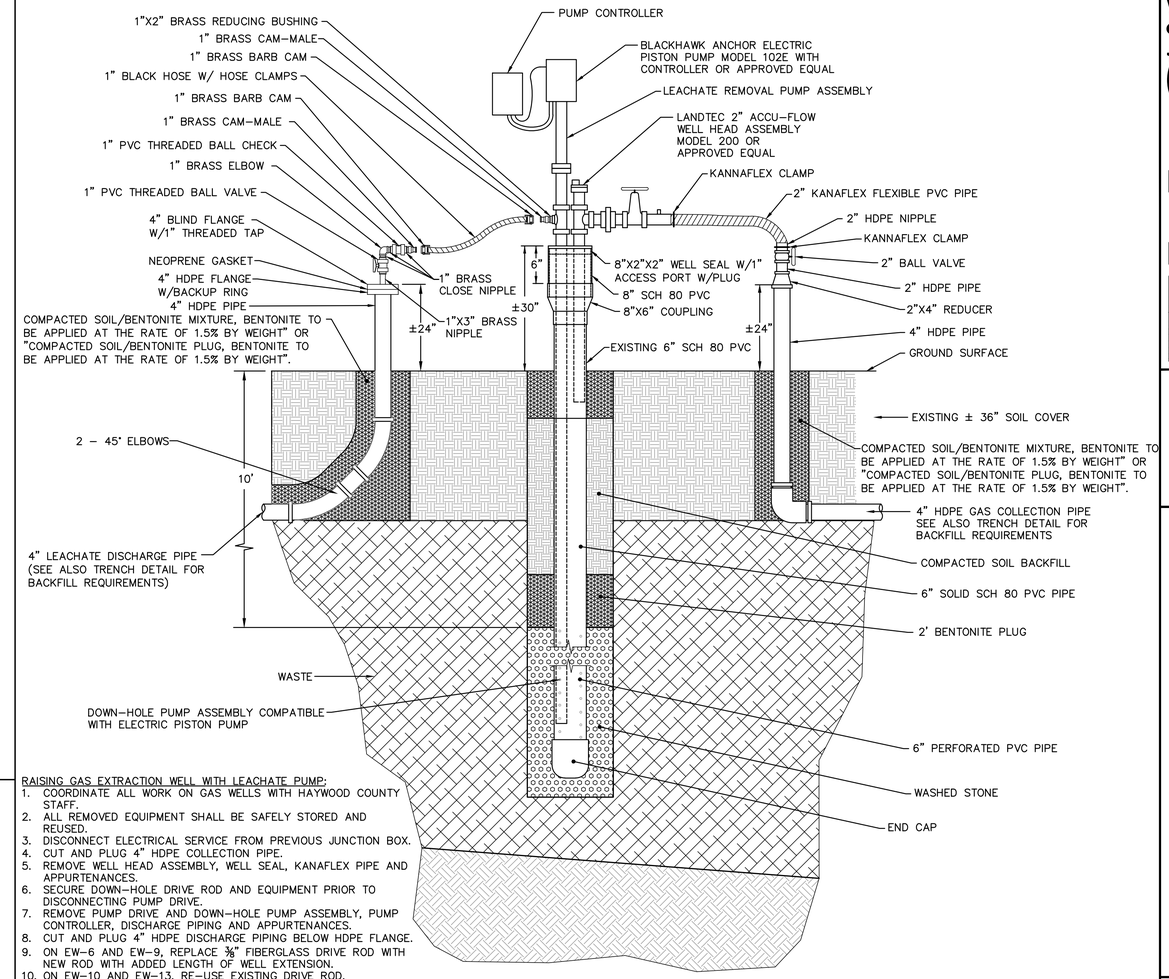


EXISTING LANDFILL GAS EXTRACTION WELL

(EW-5)
NOT TO SCALE

RAISING GAS EXTRACTION WELL:

1. COORDINATE ALL WORK ON GAS WELLS WITH HAYWOOD COUNTY STAFF.
2. ALL REMOVED EQUIPMENT SHALL BE SAFELY STORED AND REUSED.
3. CUT AND PLUG 4" HDPE COLLECTION PIPE BELOW REDUCER.
4. REMOVE WELL HEAD ASSEMBLY, WELL SEAL, KANAFLEX PIPE AND APPURTENANCES.
5. PLACE SOIL FILL AS SHOWN ON PLANS.
6. EXTEND 6" PVC WELL AS REQUIRED TO MAINTAIN TOP OF WELL A MINIMUM 30" ABOVE GROUND SURFACE.
7. WELL MUST REMAIN UNDAMAGED AND VERTICAL. NO DRIVEN EQUIPMENT WITHIN FIVE FEET OF WELL.
8. ONCE GRADE IS ACHIEVED, REINSTALL WELL HEAD EQUIPMENT AS SHOWN, AND RECONNECT TO GAS COLLECTION PIPE.



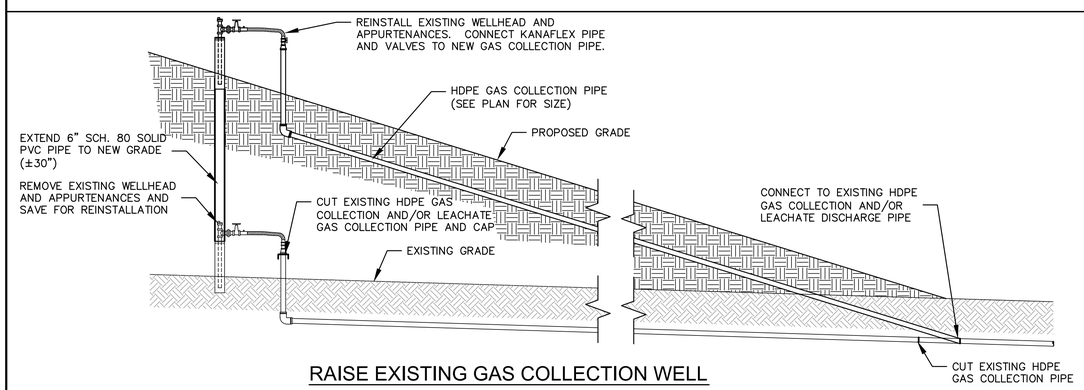
RAISING GAS EXTRACTION WELL WITH LEACHATE PUMP:

1. COORDINATE ALL WORK ON GAS WELLS WITH HAYWOOD COUNTY STAFF.
2. ALL REMOVED EQUIPMENT SHALL BE SAFELY STORED AND REUSED.
3. DISCONNECT ELECTRICAL SERVICE FROM PREVIOUS JUNCTION BOX.
4. CUT AND PLUG 4" HDPE COLLECTION PIPE.
5. REMOVE WELL HEAD ASSEMBLY, WELL SEAL, KANAFLEX PIPE AND APPURTENANCES.
6. SECURE DOWN-HOLE DRIVE ROD AND EQUIPMENT PRIOR TO DISCONNECTING PUMP DRIVE.
7. REMOVE PUMP DRIVE AND DOWN-HOLE PUMP ASSEMBLY, PUMP CONTROLLER, DISCHARGE PIPING AND APPURTENANCES.
8. CUT AND PLUG 4" HDPE DISCHARGE PIPING BELOW HDPE FLANGE.
9. ON EW-6 AND EW-9, REPLACE ⅜" FIBERGLASS DRIVE ROD WITH NEW ROD WITH ADDED LENGTH OF WELL EXTENSION.
10. ON EW-10 AND EW-13, RE-USE EXISTING DRIVE ROD.
11. ONCE GRADE IS ACHIEVED, REINSTALL WELL HEAD, PISTON PUMP, DOWN-HOLE ASSEMBLY, PUMP CONTROLLER AND CONNECTION EQUIPMENT AS SHOWN.
12. RECONNECT GAS COLLECTION PIPING AND LEACHATE DISCHARGE PIPING.
13. RECONNECT ELECTRICAL SERVICE.

NOTE: SEE EXISTING EXTRACTION WELL INFORMATION TO DETERMINE DEPTHS OF DE-WATERING EQUIPMENT

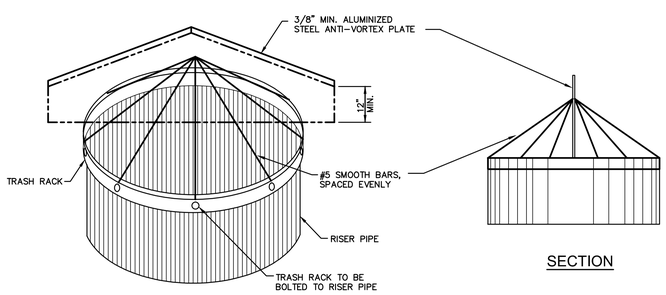
EXISTING LANDFILL GAS EXTRACTION WELL W/ LEACHATE PUMP

(EW-6, EW-9, EW-10, EW-13)
NOT TO SCALE



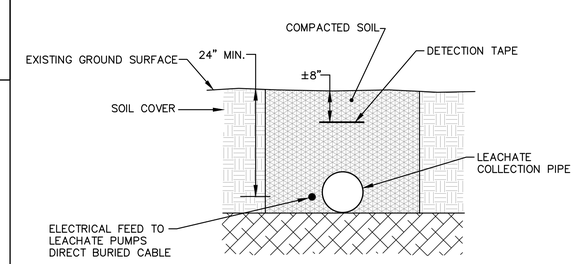
RAISE EXISTING GAS COLLECTION WELL

NOT TO SCALE



TRASH RACK WITH ANTI-VORTEX PLATE DETAIL

REVISION DATE - MARCH 5, 2010

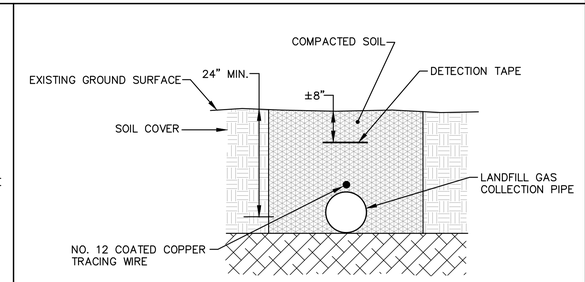


NOTES:

1. CONSTRUCTION OF TRENCHES SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL SAFETY AND HEALTH REGULATIONS WHICH HAVE JURISDICTION AT THE PROJECT SITE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE FAMILIAR WITH THE APPLICABLE REGULATIONS AND FOLLOW THEM ACCORDINGLY.
2. FOR EW-8 TO EW-9, USE 3-#6 WITH 1-#6 GROUND DIRECT BURY CU-TYPE UF-B CABLE.
3. FOR EW-13 TO EW-10 TO EW-6, USE 3-#10 WITH 1-#10 GROUND DIRECT BURY CU-TYPE UF-B CABLE.

LEACHATE COLLECTION PIPE TRENCH DETAIL

NOT TO SCALE



NOTES:

1. CONSTRUCTION OF TRENCHES SHALL COMPLY WITH ALL FEDERAL, STATE AND LOCAL SAFETY AND HEALTH REGULATIONS WHICH HAVE JURISDICTION AT THE PROJECT SITE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO BE FAMILIAR WITH THE APPLICABLE REGULATIONS AND FOLLOW THEM ACCORDINGLY.

LANDFILL GAS COLLECTION PIPE TRENCH DETAIL

NOT TO SCALE

NO.	DATE	BY	REVISION DESCRIPTION
1	3/18/15	SB	NCDENR LAND QUALITY SUBMITTAL

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ENGINEERING·PLANNING·FINANCE
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