CRAVEN LCID
(A Land Clearing and Inert Debris Landfill)
PERMIT NUMBER _____

Permit Application Data and Operation Plan

356 Sanders Lane
Number 8 Township
Craven County
New Bern, N.C.

For

Craven LCID, LLC
Mr. Terry D. Morris, Agent
109 Swift Creek Road
Vanceboro, NC 28586
(252) 670-6749

Prepared By

NORTH CAROLINA PROFESSIONAL SEAL 28925 ENGINEER MICHAEL L. RICE

8/6/13

Michael L. Rice, P.E.
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May 31, 2013
Revised August 6, 2013

Permit No.	Date	Document ID No.
P1263	**August 14, 2013**	**19525**

Received by a mail
Date: **August 12, 2013**
Solid Waste Section
Raleigh Central Office

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August 7, 2013

Certified Mail Receipt No. 7009 2820 0001 4222 9246

RECEIVED AUG 12 2013 SOLID WASTE SECTION

Mr. Ming-Tai Chao, P.E.
NCDENR, DWM, Solid Waste Section
1646 Mail Service Center
Raleigh, NC 27699-1646

Re: Craven LCID, 356 Sanders Lane, Document ID No. 19172

Enclosures:
(1) Copy, Exhibit A, description of LCID property, with errors marked.
(2) 2 Paper Copies and 1 electronic Copy, Craven LCID (A Land Clearing and Inert Debris Landfill), Permit Application Data and Operation Plan, 356 Sanders Lane, Number 8 Township, Craven County, New Bern, NC, for Craven LCID, LLC, prepared by Robert M. Chiles, PE, Revised, August 6, 2013.

Dear Mr. Chao:

On behalf of our client, Craven LCID, LLC and its agent, Mr. Terry Morris, we submit the enclosures in response to your letter of July 12, for your review and approval. To simplify your review, the responses in this letter are presented in the same order as the comments are presented in your letter.

The property description contained in exhibit A of deed book 3193, page 221 contains a number of errors, all of which have been brought to Mr. Morris's attention. The property depicted in the site-wide drawing is copied from drawings created for the previous LCID operator, and is based upon deed descriptions and actual survey data that were current at that time. It is the deed description, and not the depiction of the property that contains the error. For your information, a copy of that exhibit with the errors marked and presented to Mr. Morris, is provided as enclosure 1.

In the interim since receiving your letter, we received a response from the NC Wildlife Resources Commission. We also submitted a request to the office of the NC Heritage Program and have received their response. To summarize their comments, neither agency anticipates any negative effects from the proposed LCID. Both of their responses are included in the appendix of the revised LCID permit application data and operation plan.

We have received two responses from the Division of Water Quality regarding stormwater management for the LCID. In response to that agency's review of a copy of our erosion and sedimentation control submittal, they determined that the project will not pose surface water quality threats from stormwater runoff, and issued an exemption from stormwater management permit regulations. Concurrently, they reviewed our ownership change request for the general permit issued to the previous LCID owner, and re-issued the general permit with the new owner information. The exemption letter and general permit are included in the appendix of the revised LCID permit application data and operation plan.

Your item 5 addresses 15A NCAC 13B.0564 (4) and (5). These codes relate to the LCID's possible effect on archeological or historic sites, state parks, state nature and historic preserves, etc. In addition to the response from the NC Natural Heritage Program, we added a paragraph to Section 2 of the permit application to address the issue.

In order to satisfy the required buffer distances from the property line, we have revised the site-wide drawing to indicate that the existing fill material is present within, but will not be removed from the buffer, and have also relocated the proposed disposal area boundary to honor the buffer requirement.

We have revised Section 3, Type of Waste Accepted/Prohibited to indicate that the owner's agent, or in his absence, the facility operator is responsible for screening all received waste. We also added the language of 15A NCAC 13B.0566(8) to this section. To clarify language contained in the operation plan, the proposed LCID is primarily for the private use of its owner. It is unlikely that the site will ever be operated on an "open to the general public" basis. However, the owner wants to preserve the ability to accept waste from other generators on a case-by-case basis, therefore, the "public use" aspects are included in the plan.

Owing to changes made to the proposed disposal area boundary, the possible fill configuration depicted in the drawings and the volumes associated with that configuration are changed. We have revised Section 2, paragraph 4, and Section 3, Volume of Waste, and the acreage table on the LCID site-wide drawing to reflect those changes.

The Surface Water Control/Wet Weather Operation portion of Section 3 is revised, and surface water control is presented separately from wet weather operation. The surface water control portion is revised to provide additional discussion related to potential discharge sources (stormwater runoff and leachate) and information about the way those sources are treated. References are made to 15A NCAC 13B.0101 (24), 15A NCAC 13B.0103 (i), and 15A NCAC 13B.0566 (14), and how they relate to operation of the proposed LCID. A paragraph addressing the issue of stormwater run-on is added. In short, stormwater will not run onto the disposal area because the entire operation is above the original ground surface. Arrows indicating surface water flow direction are added to the LCID site-wide drawing. The directions indicated apply for both the existing and proposed conditions, as the proposed construction does not change the existing flow patterns of the site. The onsite ditches are connected to, and discharge into other ditches that flow westward, eventually discharging approximately 1,400 feet west of the LCID property, toward Bachelor Creek. A proposed sampling location is indicated on the LCID drawing at the point where onsite ditches exit the property. If sampling is required as part of the issued permit(s), this location is where it will be performed. The location of existing Sanders Lane roadside ditches are added, and the existing ditches near the entrance road are corrected on the site-wide drawing. Notes are added to change the proposed ditch realignment to a possible ditch realignment. The realignment will only be necessary if the owner wants to make use of the easternmost portion of the existing disposal area. Since that area affords very little disposal area increase, it is unlikely that the ditch will be relocated. The wet weather operation paragraph is unchanged; if it is raining, the site will, most likely, be closed.

We have revised Section 3, Fire Prevention/Management to include your earthen material suggestion, and have corrected the typographical error contained in the NCAC reference to .0566(13).

Section 3, Site Closure is revised to address post-closure use and inspections of the proposed LCID disposal site. It also addresses care and maintenance of the portions of the existing LCID disposal area that cannot be used due to their location within the required property line buffers.

Section 4, Sedimentation and erosion control pan is revised to include more information. We are still working toward approval of the sedimentation and erosion control plan, and will provide a copy of the plan and approval upon issuance.

The site-wide and isometric drawings are revised to separately label the existing and proposed LCID disposal area boundaries where they are now different; to indicate surface water flow directions; and to include a proposed stormwater discharge sampling location, as requested in your item 15. The proposed construction will not alter flow directions on the property, so the arrows indicate both existing and proposed flow directions. The proposed sampling location is only applicable if sampling is a requirement of the NPDES or LCID operation permits, as the state stormwater permit does not require sampling. The drawings contain a number of other corrections and additions that result from the revisions made and additional information gathered during that process.

Owing to the number of changes affected by your comments, we felt it would be better to provide two printed copies of the entire permit application data and operation plan revised pursuant to your comments, as opposed to providing only revised pages and instructions regarding their placement. To reiterate, we have not yet received approval from LQS for the erosion control plan. We will provide a copy of that approval upon issuance, along with a copy of the approved plan.

Should you require additional information, or have any questions or additional comments about the revised documents and drawings, please contact us your earliest convenience.

Very truly yours,
ROBERT M. CHILES, P.E.

Michael L. Rice, P.E.

cc: Mr. Terry Morris, agent, Craven LCID, LLC

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RECEIVED
AUG 12 2013
SOLID WASTE SECTION

Section 1 - General Information

Craven LCID is the name of this proposed land clearing and inert debris (LCID) landfill.

R.J. Bushhogging, Inc. previously operated a notification LCID on site. On January 11, 2011, the NCDENR, DWM, Solid Waste Section issued a closure letter bearing notification number N0634 for the RJ Bushhogging LCID. The closure was recorded in Craven County Register of Deeds book 2989 at page 507.

Landowner / LCID Owner / LCID Operator:

Craven LCID, LLC.
109 Swift Creek Road
Vanceboro, NC 28586
Mr. Terry D. Morris, Agent

Mr. Terry D. Morris is the individual in responsible charge of the LCID daily operations. Mr. Morris will receive permit fee and annual fee invoices at the LLC address, and can be reached via telephone at (252) 670-6749

Applicant's Consulting Engineer:

Robert M. Chiles, PE
Engineers and Consultants
P.O. Box 3496
New Bern, NC 28564-3496
(252)637-4702

Section 2 - Property Information

The property containing the LCID is located on NCSR 1243 and the physical address is 356 Sanders Lane. The property is between 340 and 370 Sanders Lane and directly across the street from 355, 365, and 379 Sanders Lane. The Craven Co GIS website indicates that the current tax parcel number is 8-225-15000.

Sanders Lane extends from NCSR 1005 to NC HWY 55, west of New Bern and north of the Craven County Industrial Park. Sanders Road intersects with NC HWY 55 approximately 3.2 miles west of the intersection of NC HWY 55 and NC HWY 43 Connector, at Washington Post Road. The property driveway is approximately seven-tenths of a mile north along Sanders Lane from the intersection at NCSR 1005.

As mentioned in section one, a notification LCID was previously operated onsite by R.J. Bushhogging, Inc. On January 11, 2011, the NCDENR, DWM, Solid Waste Section issued a closure letter bearing notification number N0634 for the RJ Bushhogging LCID. The closure was recorded in Craven County Register of Deeds book 2989 at page 507.

The property contains a total of 10.01 acres, the existing boundary of the LCID fill material covers approximately 4.05 acres and the proposed boundary of the LCID fill material covers approximately 3.60 acres. There are approximately 0.70 acres of existing roads within the property. The road surface materials include asphalt and gravel. (paragraph revised, 8/6/13 revision)

As there are no archaeological or historic sites, state parks, recreation or scenic areas, or any other lands in the state nature and historic preserve located on the project site, or within one-quarter mile of the project site, it is presumed that the proposed facility shall not damage or destroy any such site, and that it complies with 15A NCAC 13B.0564 (4) and (5). (paragraph added, 8/6/13 revision)

The following enclosures are provided in the Appendix for additional information:

- Craven County Deed Book 3193, Pages 218-221.
- Road Map with Approximate Location Indicated.
- Portion of USGS Quadsheet "JASPER" with Approximate Location indicated.
- Copy, Zoning Consistency Letter from Craven County Office of Planning and Community Development.
- Portion of FEMA FIRM Community Panel Number 372 554000J with approximate location indicated.
- Copy, USFWS Internet generated National Wetlands Inventory Map for site.
- Copy, Cover letter to US Fish and Wildlife Service regarding endangered species.
- Copy, Response from US Fish and Wildlife Service .
- Copy, Cover letter to NC Wildlife Resources Commission regarding endangered species.
- Copy, Response from NC Wildlife Resources Commission
- Copy, 2005 Response from NCDENR Natural Heritage Program regarding endangered species, natural and historic sites.
- Copy, Cover letter to NCDENR Natural Heritage Program regarding endangered species, natural and historic sites.
- Copy, 2013 Response from NCDENR Natural Heritage Program regarding endangered species, natural and historic sites

(paragraph added, 8/6/13 revision)

Section 3 -Operation Plan

General

The proposed landfill will incorporate and reactivate an existing land clearing and inert debris landfill that is located on the site. The landfill will be operated entirely above the original ground surface. The facility will operate in accordance with 15A NCAC 13B.0564 and 15A NCAC 13B.0566. (paragraph revised, 8/6/13 revision)

If existing material is removed for screening, consolidation, and replacement in order to regain storage capacity, excavation will be limited to a depth approximately equal to that of the original ground surface. In the event that deeper excavation is necessary, then only uncontaminated soil will be used to restore the excavation to the original grade.

Groundwater Data

On August 8, 2005 the ground water table elevation was measured directly in a test pit excavated to a depth of 8 feet below the original grade. At 9AM the top of the ground water was located 7.4 feet below the original ground surface elevation of the proposed site. At 12PM the top of the ground water was located 7 feet below the original ground surface elevation of the proposed site. The top layer of wet soil was observed in the test pit at a depth of 5 feet below the existing grade.

The original ground at the project site is approximately at elevation 20 NAVD88. Bachelor Creek is located approximately 1400 feet away from the proposed LCID boundary, and a number of ditches are located between the site and the creek.

Observations were made during April and May, 2005 site visits to identify the possible elevation of the ground water table. During all site visits, the property line ditch adjacent to the site and those between the site and creek were dry. The invert of the property line ditch is approximately 6 feet below the existing ground elevation of the site. The water surface elevation in Bachelor Creek is estimated to be 15 feet below the existing ground elevation of the site.

Electronic data retrieved from the NCDENR Division of Water Resources identifies two surficial aquifer wells near the project site. Wells Q 21T1 - Vanceboro and S 22J4 - Clarks are located 8.8 and 1.5 miles from the site, respectively. These wells are located at similar ground elevations as the LCID site and both indicate mean depths to the surficial aquifer of 8 to 10 feet below existing ground.

The currently existing site (2013) contains approximately 10 feet of fill above the original ground elevation. Given that operations are proposed to remain entirely above the original ground elevation, the provided separation distance

between the bottom of landfilled material and the seasonal high groundwater table elevation will exceed the required four feet minimum.

Types of Waste Accepted/Prohibited

Craven LCID will only accept land clearing waste, yard trash, yard waste, untreated and unpainted wood, and inert debris.

The following definitions contained within North Carolina General Statutes and the North Carolina Administrative Code are provided for reference:

Land clearing waste	means solid waste which is generated solely from land clearing activities such as stumps, trees, limbs, brush, grass, and other naturally occurring vegetative material.
Yard trash, yard waste	means solid waste resulting from landscaping and yard maintenance such as brush, grass, tree limbs, and similar vegetative material.
Inert debris	means solid waste which consists solely of material that is virtually inert and that is likely to retain its physical and chemical structure under expected conditions of disposal, such as concrete, brick, concrete block, uncontaminated soil, rock and gravel.

Prohibited waste includes, but Is not limited to tires, appliances, petroleum products, automobiles, household garbage, treated lumber, insulation, and medical waste. Prohibited items that are discovered among otherwise acceptable incoming waste material shall be removed from the site by the transporter attempting delivery. Prohibited items discovered onsite shall be separated from surrounding acceptable material, removed from the disposal area of the LCID upon discovery, and transported to an appropriate waste facility during the next convenient operating hours of the receiving facility.

The owner's agent, or in his absence, the facility's assigned operator, is responsible for screening all received waste. In accordance with 15A NCAC 13B.0566 (8):

> The facility shall be adequately secured by means of gates, chains, berms, fences, etc., to prevent unauthorized access except when an operator is on duty. An attendant shall be on duty at all times while the landfill is open for public use to assure compliance with operational requirements and to prevent acceptance of unauthorized wastes. (paragraph added, 8/6/13 revision)

Sources of Waste

The primary source for waste received at the site is a general contracting company with which Mr. Morris is affiliated. There are no plans to operate the LCID as an "open to the public" facility, however, waste material from sources other than Mr. Morris's company will be considered on a case-by-case basis.

Waste material received by the site is likely to originate in Craven, Carteret, Pamlico, Beaufort, Pitt, Lenoir, and/or Jones Counties.

Volume of Waste

The proposed LCID has an approximate total capacity of 107,500 cubic yards. The volume of material contained in the existing LCID is approximately 52,500 cubic yards, or one-half of the available capacity. Without further consolidation, the remaining capacity of the proposed LCID is approximately 54,500 cubic yards.

With a maximum capacity of 15 cubic yards, the average over-the-road dump truck is estimated to contain 10 cubic yards of material. Based upon 10 cubic yards per truck, the remaining 54,500 cubic-yard capacity will serve an additional 5,450 truckloads. (paragraph revised, 8/6/13 revision)

If no activity is performed to extend the useful capacity of the site, the remaining capacity will be depleted in 5 years assuming an average of twenty-one 10 cubic yard truckloads per work week are transported to the proposed LCID. (paragraph revised, 8/6/13 revision)

The usable capacity of the LCID can effectively be increased by employing the use of a screening device to remove soil from the solid wastes already deposited in the LCID, and consolidating the existing solid wastes. Screening incoming debris to provide clean soil for reuse as topsoil or cover material, and chipping woody debris for reuse as mulch or fuel for the local wood-energy plant can also help reduce the volume of material eventually stored in the disposal area. (paragraph revised, 8/6/13 revision)

Equipment

At a minimum, it is anticipated that an excavator and/or bull-dozer will be used onsite to place, shape, and cover solid waste deposited onsite.

The use of mechanical screening, crushing, chipping, and drying equipment, based upon the receipt of any necessary additional permits, can be employed onsite to prepare materials such as topsoil, concrete, for re-purposed use by

landscaping or paving companies, thereby reducing the volume of material ultimately landfilled onsite.

Site Security and Access Control

The LCID property has one road-front entrance accessible by the general public, and a private rear entrance. Both entrances are gated and locked.

(paragraph revised, 8/6/13 revision)

Hours of Operation

As this LCID is not proposed to be operated as an "open to the public" facility, generally speaking, there are no "normal" hours of operation.

Mr. Morris will typically require access to the LCID during standard daytime business hours, primarily on weekdays, and the site will operate on an as-needed basis.

For other waste generators, the LCID will probably operate on a "by appointment" method to accommodate waste disposal on a case-by-case basis.

Signs

Signs will be posted at the facility entrances to indicate the facility name, address, permit number, emergency contact phone number and to prohibit trespassing. If public operation is considered, signs indicating the types of waste accepted, types of waste prohibited, hours of operation, and necessary instructions will also be posted.

Road Maintenance

The entrance road is paved with asphalt. Other roads within the LCID site are paved with gravel, while others still are compacted dirt. Maintenance will be performed on all roads as needed to provide safe passage into, through, and away from the site.

Surface Water Control

(section revised, 8/6/13 revision)

The original ground surface of the property containing the LCID was relatively flat, at approximately elevation 20. The property and surrounding area sloped downward from east to west, with Sanders Lane immediately to the east and Bachelors Creek approximately 1,400 feet to the west.

The existing and proposed LCID disposal areas are located entirely above ground and constructed in that manner, stormwater run-on will not be an issue.

The LCID disposal area has the potential to discharge two forms of water; stormwater runoff and leachate.

Stormwater runoff will occur whenever rainfall volumes exceed the infiltration capacity of the LCID property. Deposition of waste material is proposed to occur above ground and in a method that prevents standing water. Given the requirements for cover placement, stormwater runoff generated by the waste material stockpile will typically occur after the vegetatively stabilized cover material is saturated. Stormwater runoff generated in this circumstance will flow overland, across the vegetated side slopes and buffers before reaching existing/proposed ditches. Fifty feet-wide vegetated buffers are provided between the proposed disposal area and onsite ditches to provide additional opportunity for infiltration and for sediment removal before runoff reaches the ditches. The existing system of ditches discharges in the southwest corner of the project site and continues westward approximately 1,400 feet before reaching Bachelor Creek.

Leachate, is defined in 15A NCAC 13B.0101 (24) as any liquid, including any suspended components in liquid, that has percolated through or drained from solid waste. By regulatory definition, and as expanded upon in the "types of waste accepted" section of this operation plan, the material allowed to be received by this LCID is divided into two categories; land clearing debris, and inert debris, neither of which pose a threat of contamination to stormwater beyond that of sedimentation. This is supported by 15A NCAC 13B.0103 (i) which reads "after January 1, 1998, all active sanitary landfills (<u>except land clearing and inert debris landfills</u>) shall be equipped with liners, leachate collection systems and final cover systems as required in Sections .0500 and .1600 of this Subchapter," emphasis added. Accordingly, no leachate collection system is proposed at this LCID.

15A NCAC 13B.0566 (14) states that leachate shall be properly managed on site through the use of current best management practices. Because the disposal area is above the original ground surface, stormwater that infiltrates the disposal area can potentially collect above the original ground surface and travel horizontally until it discharges through the surface of the fill slopes. This "leachate" can erode the vegetated earthen material used to cover the disposal area, creating an increased possibility of sediment being transported away from the disposal area within the leachate and stormwater runoff. In order to manage and reduce the effects of this possibility, the operator will inspect the perimeter slopes of the disposal area weekly during active LCID operations (monthly during inactive periods), and after any significant runoff producing rainfall for slope face erosion. Slope failures shall be repaired using uncontaminated earthen material (soil) placed in six to eight inch-thick lifts, compacted, and seeded in accordance with the erosion and sediment control plan. Any sedimentation that has occurred beyond the perimeter of the disposal area shall be removed and returned to the disposal area. Repaired areas shall be inspected weekly until vegetation stabilization is fully developed.

General stormwater permit number SW7050818 was issued to RJ Bushhogging in October 2005 for operation of the LCID. By letter dated July 22, 2013, the Washington Regional Office of NCDENR DWQ transferred that permit to Craven LCID, LLC. A copy of the name/ownership change form and issued permit is provided in the Appendix for additional information.

Wet Weather Operation (section isolated, 8/6/13 revision)

Under normal conditions, LCID operation is dependant upon the operation of the other companies with which the owner/operator is affiliated. As those companies typically cease operations during inclement weather, it is likely that the LCID will not operate during inclement weather.

Fire Prevention

In accordance with 15A NCAC 13B.0566 (12), open burning of solid waste is prohibited at the LCID.

In accordance with 15A NCAC 13B.0566 (13), the concentration of explosive gases generated by the facility shall not exceed:

a. Twenty-five percent of the lower explosive limit for the gases in facility structures.
b. The lower explosive limit for the gases at the property boundary.

The primary explosive gas produced by an LCID landfill is methane. Methane production occurs as a result of anaerobic decomposition of organic waste. The lower explosive limit of methane is a concentration of five (5) percent by volume in the atmosphere.

Monitoring frequency does not appear to be specifically addressed in the NCAC. The introduction of the NCDENR, DWM, Solid Waste Section, Landfill Gas Monitoring Guidance document, dated November 2010, indicates that 15A NCAC 13B requires "quarterly monitoring of methane and other explosive landfill gases at C&D and other landfills." In accordance with the guidance document, quarterly testing will be performed at the property boundary and within any facility structures (if proposed and constructed in the future) for the presence and level of landfill gases. A record of the date, time and result of the tests shall be maintained with the LCID documents for the life of the facility or the time mandated by permit conditions, if different. A copy of the landfill gas monitoring guidance document is provided in the appendix for reference.

Wet and/or green vegetation should be placed in a manner that promotes drying before landfilling to reduce the possibility of auto-ignition from the heat of decomposition as is common with large mulch stockpiles. A copy of the NCDENR,

DWM, Solid Waste Section issued spontaneous combustion guidance document for disaster debris management is provided in the appendix for reference.

The facility is located in a community that is served by volunteer fire, rescue, EMS, and the County Sheriff's Department all of which can be contacted as needed.

In the event of a fire that exceeds the extinguishing capabilities of the equipment or staff onsite, evacuate the site and call 911 to report the fire.

Earthen material received by the facility that is suitable for future use as cover material should be stockpiled within the footprint of the landfill waste area (see following section "cover material"). Earthen material stockpiled onsite also provides a readily accessible smothering agent for use during firefighting.

(paragraph added, 8/6/13 revision)

File Management

Originals of LCID related permits, inspection reports, correspondence, and operation plans will be maintained at a location chosen by the agent of Craven LCID, LLC.

A copy of all current permits and plans applicable to the LCID operation will be kept onsite for reference.

Cover Material

In accordance with 15A NCAC 13B.0566 (4), adequate soil cover shall be applied monthly, or when the active area reaches one acre in size, whichever occurs first.

Periodic cover placed in compliance with the 0566(4) at an average lift thickness of six (6) inches will require approximately 800 cubic yards of material for every acre being covered.

In accordance with 15A NCAC 13B.0566 (5), 120 calendar days after completion of any phase of disposal operations, or upon revocation of a permit, the disposal area shall be covered with a minimum of one foot of suitable soil cover sloped to allow surface runoff in a controlled manner. The Division may require further action in order to correct any condition which is or may become injurious to the public health, or nuisance to the community.

Final cover placed in compliance with the 0566(5) at an average lift thickness of one (1) foot will require approximately 1,600 cubic yards of material for every acre being covered.

In accordance with 15A NCAC 13B.0566 (7), provisions for a ground cover sufficient to restrain erosion must be accomplished within 30 working days or 120 calendar days upon completion of any phase of landfill development. If requirements contained in the erosion and sediment control or National Pollution Discharge Elimination System (NPDES) permits differ, the permit indicating the shortest time governs. (paragraph revised, 8/6/13 revision)

To avoid the undesired loss of storage capacity within the LCID disposal area, it is recommended to maintain an active area that is less than one acre, with exterior side slopes adjacent to the active area covered and stabilized as completed.

Craven LCID, LLC is affiliated with another company that performs land clearing, grading, excavation, and other site preparation work, and operates surface mines that produce topsoil, sand, and gravel. If insufficient quantities of suitable cover material are generated by the land clearing, grading, and site preparation work, then sufficient cover soils for the LCID can be provided by the mining operations.

Site Closure (section revised, 8/6/13 revision)

Portions of the previously closed notification LCID are located within the 100 feet of the property line. These areas are hatched and labeled on the proposed LCID plan drawing. These areas cannot be part of the new waste disposal area. Vegetatively stabilized soil cover, at the approved slopes, must be maintained on these areas throughout the life of the permitted LCID. Damage and/or erosion of cover material or vegetative stabilization within these areas shall be repaired upon discovery in accordance with the provisions of the issued erosion control plan.

When it is desired to terminate all operations of the LCID, cover material will be installed on all remaining exposed surfaces of the disposal site, with surfaces and slopes graded to promote overland runoff of stormwater. Vegetative ground cover sufficient to restrain erosion will be installed, and allowed to establish. Contact will be made with representatives of the Division of Waste Management, Solid Waste Section to schedule a final inspection and arrange for issuance of a notice of closure.

After a notice of closure is received and the appropriate form (if any) is filed with the Register of Deeds, operation of the LCID is terminated. No additional waste shall be received after closure without applying for and receipt of a permit renewal and/or a new permit. Following closure, the property containing the LCID will be allowed to establish woody and other naturally occurring vegetation.

Unless less stringent requirements are allowed by the issued LCID operation permit or closure notice, post-closure inspections shall be performed of the LCID disposal area for damage and/or erosion of cover material and vegetative stabilization, formation of sinkholes, and slope failures upon the following schedule:

- For the first calendar year following closure, the facility shall be inspected monthly. Beginning the second calendar year following closure, or after two consecutive monthly inspections yield no damages/erosion, whichever occurs last.
- After two consecutive quarterly inspections yield no damages/erosion, the facility shall be inspected semi-annually.
- After two consecutive semi-annual inspections yield no damages/erosion, the facility shall be inspected annually for the remainder of the first five years following closure.

Note: replace missing cover material and/or vegetation, fill sinkholes using uncontaminated earthen fill material, repair slope failures, and remove any sediment deposited downslope resulting from slope failures, upon discovery. Following discovery of sinkholes or slope failures, resume monthly inspections of repaired areas until two consecutive monthly inspections indicate the repairs are stabilized.

Section 4 - Sedimentation and Erosion Control Plan

(section revised, 8/6/13 revision)

The primary sedimentation and erosion control measure proposed for use at the LCID site is fill slopes that change one foot or less vertically for every three feet of horizontal distance (1V:3H, or flatter), stabilized vegetatively with temporary and permanent seeding. As perimeter fill slopes are constructed within the LCID, cover soils will be placed and vegetation planted/seeded to stabilize those slopes.

Check dams are proposed for use in the access ramp ditch. These will be installed as the access ramp is constructed.

An existing paved entrance road will serve to reduce/eliminate any offsite transportation of sediment on vehicle wheels. Any dirt/debris carried onto and deposited on the public roads from the LCID site will be swept and removed from the road as discovered. If necessary, a gravel construction entrance will be constructed on the gravel portion of the entrance road to supplement the tire cleaning capacity of the paved entrance road.

A copy of the financial responsibility/ownership, sedimentation pollution control act form is provided in the Appendix. A copy of the erosion and sedimentation control plan and letter of approval will be provided upon issuance.

Section 5 -Application for 5-Year Permit

Each five-year period of operation requires an application for permit amendment. The following information must be submitted to the Solid Waste Section no less than six (6) months prior to the expiration date of the previous permit to operate to maintain continuous operation of the LCID landfill.

- The general information indicated at the beginning of this document.
- A minimum of two cross sections along each major axis per operational area that shows the current elevations, the proposed excavation, the proposed elevation at the end of the five-year phase of operation and the proposed final elevations. The excavation drawing must show the separation to groundwater and bedrock is at least 4 feet.
- Any updates to the operation plan.
- Letter from local government stating that the LCID complies with local land use and zoning ordinances.

Section 6 - Applicant Signature Page

Name of Facility: CRAVEN LCID

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision and that the information provided in this application is true, accurate, and complete to the best of my knowledge.

I understand that North Carolina General Statute 130A-22 provides for administrative penalties of up to fifteen thousand dollars ($15,000.00) per day per each violation of the Solid Waste Management Rules. I further understand that the Solid Waste Management Rules may be revised or amended in the future and that the facility siting and operations of this solid waste management facility will be required to comply with all such revisions or amendments.

Signature

Terry D. Morris 6·6·13

Print Name Date

Agent

Title

Craven LCID, LLC

Business or organization name

Appendix

(revised, 8/6/13)

- Copy, 15A NCAC 13B.0564 and 13B.0566.
- Copy, NC Department of the Secretary of State website corporation information cover page for Craven LCID, LLC.
- Craven County Deed Book 3193, Pages 218-221.
- Road Map with Approximate Location Indicated.
- Portion of USGS Quadsheet "JASPER" with Approximate Location indicated.
- Copy, Zoning Consistency Letter from Craven County Office of Planning and Community Development.
- Portion of FEMA FIRM Community Panel Number 372 554000J with approximate location indicated.
- Copy, USFWS Internet generated National Wetlands Inventory Map for site.
- Copy, Cover letter to US Fish and Wildlife Service regarding endangered species.
- Copy, Response from US Fish and Wildlife Service .
- Copy, Cover letter to NC Wildlife Resources Commission regarding endangered species.
- Copy, Response from NC Wildlife Resources Commission
- Copy, 2005 Response from NCDENR Natural Heritage Program regarding endangered species, natural and historic sites.
- Copy, Cover letter to NCDENR Natural Heritage Program regarding endangered species, natural and historic sites.
- Copy, 2013 Response from NCDENR Natural Heritage Program regarding endangered species, natural and historic sites.
- Copy, State Stormwater Permit Name/Ownership Change Form for stormwater management permit number SW7050818
- Copy, DWQ Exemption letter, dated July 8, 2013
- Copy, State Stormwater Permit number SW7050818
- Copy, NCDENR, DWM, Solid Waste Section, Landfill Gas Monitoring Guidance, November 2010
- Copy, NCDENR, DWM, Solid Waste Section, Emergency Site/Disaster Management Spontaneous Combustion Guidance Document
- Copy, Financial Responsibility/Ownership Form from erosion and sedimentation control approval submission
- Copy, Erosion and sedimentation control plan and approval (provided after approval is received)

15A NCAC 13B .0564 SITING CRITERIA FOR LAND CLEARING AND INERT DEBRIS (LCID) LANDFILLS

The following siting criteria shall apply for Land Clearing and Inert Debris (LCID) landfills:

(1) Facilities or practices, shall not be located in the 100-year floodplain.

(2) Facilities or practices shall not cause or contribute to the taking of any endangered or threatened species of plants, fish, or wildlife.

(3) Facilities or practices shall not result in the destruction or adverse modification of the critical habitat of endangered or threatened species as identified in 50 CFR Part 17 which is hereby incorporated by reference including any subsequent amendments and editions. This material is available for inspection at the Department of Environment, Health, and Natural Resources, Division of Solid Waste Management, 401 Oberlin Road, Raleigh, North Carolina 27605 where copies can be obtained at no cost.

(4) Facilities or practices shall not damage or destroy an archaeological or historical site.

(5) Facilities or practices shall not cause an adverse impact on a state park, recreation or scenic area, or any other lands included in the state nature and historic preserve.

(6) Facilities shall not be located in any wetland as defined in the Clean Water Act, Section 404(b).

(7) It must be shown that adequate suitable soils are available for cover, either from on or off site.

(8) Land Clearing and Inert Debris landfills shall meet the following surface and ground water requirements:

(a) Facilities or practices shall not cause a discharge of pollutants into waters of the state that is in violation of the requirements of the National Pollutant Discharge Elimination System (NPDES), under Section 402 of the Clean Water Act, as amended.

(b) Facilities or practices shall not cause a discharge of dredged materials or fill material into waters of the state that is in violation of the requirements under Section 404 of the Clean Water Act, as amended.

(c) Facilities or practices shall not cause non-point source pollution of waters of the state that violates assigned water quality standards.

(d) Waste in landfills with a disposal area greater than two acres shall be placed a minimum of four feet above the seasonal high water table, except where an alternative separation is approved by the Division.

(e) Waste in landfills with a disposal area less than two acres shall be placed above the seasonal high water table.

(9) The facility shall meet the following minimum buffer requirements:

(a) 50 feet from the waste boundary to all surface waters of the state as defined in G.S. 143-212.

(b) 100 feet from the disposal area to property lines, residential dwellings, commercial or public buildings, and wells.

(c) Buffer requirements may be adjusted as necessary to insure adequate protection of public health and the environment.

(10) The facility shall meet all requirements of any applicable zoning ordinance.

History Note: *Authority G.S. 130A-294;*
Eff. January 4, 1993.

15A NCAC 13B .0566 OPERATIONAL REQ. FOR LAND CLEARING/INERT DEBRIS (LCID) LANDFILLS

Land Clearing and Inert Debris (LCID) landfills shall meet the following operational requirements:

(1) Operational plans shall be approved and followed as specified for the facility.

(2) The facility shall only accept those solid wastes which it is permitted to receive.

(3) Solid waste shall be restricted to the smallest area feasible and compacted as densely as practical into cells.

(4) Adequate soil cover shall be applied monthly, or when the active area reaches one acre in size, whichever occurs first.

(5) 120 calendar days after completion of any phase of disposal operations, or upon revocation of a permit, the disposal area shall be covered with a minimum of one foot of suitable soil cover sloped to allow surface water runoff in a controlled manner. The Division may require further action in order to correct any condition which is or may become injurious to the public health, or a nuisance to the community.

(6) Adequate erosion control measures, structures, or devices shall be utilized to prevent silt from leaving the site and to prevent excessive on site erosion.

(7) Provisions for a ground cover sufficient to restrain erosion must be accomplished within 30 working days or 120 calendar days upon completion of any phase of landfill development.

(8) The facility shall be adequately secured by means of gates, chains, berms, fences, etc. to prevent unauthorized access except when an operator is on duty. An attendant shall be on duty at all times while the landfill is open for public use to assure compliance with operational requirements and to prevent acceptance of unauthorized wastes.

(9) Access roads shall be of all-weather construction and properly maintained.

(10) Surface water shall be diverted from the working face and shall not be impounded over waste.

(11) Solid waste shall not be disposed of in water.

(12) Open burning of solid waste is prohibited.

(13) The concentration of explosive gases generated by the facility shall not exceed:

(a) Twenty-five percent of the lower explosive limit for the gases in facility structures.

(b) The lower explosive limit for the gases at the property boundary.

(14) Leachate shall be properly managed on site through the use of current best management practices.

(15) Should the Division deem it necessary, ground water or surface water monitoring, or both, may be required as provided for under Rules .0601 and .0602 of this Subchapter.

(16) A sign shall be posted at the facility entrance showing the contact name and number in case of an emergency and the permit number. The permit number requirement is not applicable for facilities not requiring an individual permit.

History Note: *Authority G.S. 130A-294;*
Eff. January 4, 1993.

Elaine F. Marshall
Secretary

North Carolina
DEPARTMENT OF THE SECRETARY OF STATE
PO Box 29622 Raleigh, NC 27626-0622 (919)807-2000

Account Login Register

Date: 6/4/2013

Click here to:
View Document Filings | Upload a PDF Filing |
File an Annual Report |

Print a Pre-populated Annual Report Fillable PDF Form | Amended A Previous Annual Report |

Corporation Names

Name	Name Type
NC CRAVEN LCID, LLC	LEGAL

Limited Liability Company Information

SOSID:	1311013
Status:	Current-Active
Effective Date:	4/5/2013
Citizenship:	DOMESTIC
Duration:	PERPETUAL
Annual Report Status:	CURRENT

Registered Agent

Agent Name:	MORRIS, TERRY D.
Office Address:	109 SWIFT CREEK ROAD VANCEBORO NC 28586
Mailing Address:	109 SWIFT CREEK ROAD VANCEBORO NC 28586

Principal Office

Office Address:	109 SWIFT CREEK ROAD VANCEBORO NC 28586
Mailing Address:	109 SWIFT CREEK ROAD VANCEBORO NC 28586

Officers

This website is provided to the public as a part of the Secretary of State Knowledge Base (SOSKB) system. Version: 687

SOSID: 1311013
Date Filed: 4/5/2013 2:27:00 PM
Elaine F. Marshall
North Carolina Secretary of State

C201309501019

ARTICLES OF ORGANIZATION
OF
CRAVEN LCID, LLC

Pursuant to § 57C-2-20 of the General Statutes of North Carolina, the undersigned hereby does submit these Articles of Organization for the purpose of forming a limited liability company.

1. The name of the limited liability company is "Craven LCID, LLC."
2. The period of duration of the limited liability company shall be perpetual.
3. The name and address of the organizer executing these Articles are:

Name	Address
Lee C. Hodge	1001 College Court New Bern, NC 28562

4. The street and mailing address of the initial registered office of the limited liability company is 109 Swift Creek Road, Vanceboro, Craven County, NC 28586; and the name of the initial registered agent of the limited liability company at such address is Terry D. Morris.

5. The street and mailing address of the principal office of the limited liability company is 109 Swift Creek Road, Vanceboro, Craven County, NC 28586.

6. Except as provided in N.C.G.S. § 57C-3-20(a), members of the limited liability company shall not be managers of the limited liability company by virtue of their status as members.

7. These Articles of Organization shall be effective upon the filing of same by the North Carolina Secretary of State.

IN TESTIMONY WHEREOF, the undersigned has executed this instrument, this the 3rd day of April, 2013.

Lee C. Hodge, Organizer

Prepared by and return to:

Lee C. Hodge
For the firm of
Ward and Smith, P.A.
1001 College Court
PO Box 867
New Bern, NC 28563-0867
Telephone: (252) 672-5400
Facsimile: (252) 672-5477

ND: 4842-6723-3811, v. 1

Image ID: 000002229463 Type: CRP
Recorded: 05/08/2013 at 03:37:07 PM
Fee Amt: $156.00 Page 1 of 4
Revenue Tax: $130.00
Workflow# 0000092748-0002
Craven, NC
Sherri B. Richard Register of Deeds
BK 3193 PG 218

DEED

Parcel: 8-225-15000

Revenue Stamps: $130.00

☐ If checked, the property includes the primary residence of the party depicted as party of the first part. (N.C. Gen. Stat. § 105-317.2)

STATE OF NORTH CAROLINA

COUNTY OF CRAVEN

THIS DEED, made and entered into this the 8th day of May, 2013 by and between R. J.'S BUSHHOGGING, INC., party of the first part (the address of the party of the first part is: 1185 Winn Circle, Vanceboro, NC 28586); and CRAVEN LCID, LLC, party of the second part (the address of the party of the second part is: 109 Swift Creek Road, Vanceboro, NC 28586).

W I T N E S S E T H :

That the party of the first part in consideration of the sum of Ten and No/100 Dollars ($10.00) and other good and valuable considerations to said party paid by the party of the second part, the receipt of which hereby is acknowledged, has bargained and sold and by these presents does bargain, sell and convey unto the party of the second part, said party's successors and assigns, the following described property, to wit:

Prepared by Ward and Smith, P.A., 1001 College Court (28562), Post Office Box 867, New Bern, NC 28563-0867
Please return to Ward and Smith, P.A., 1001 College Court (28562), Post Office Box 867, New Bern, NC 28563-0867
Attention: C. H. Pope, Jr.

No opinion on title is rendered by Ward and Smith, P.A., without a separate written opinion on title from Ward and Smith, P.A.

Image ID: 000002229464 Type: CRP
Page 2 of 4
BK3193 PG219

All that certain tract or parcel of land lying and being situate in Number Eight (8) Township, Craven County, North Carolina, and being more particularly described on Exhibit A attached hereto and incorporated herein by reference.

This conveyance is made subject to utility easements and unviolated restrictive covenants that do not materially affect the value of the property and ad valorem taxes for the current year, which taxes the party of the second part, by acceptance of this deed, assumes and agrees to pay.

TO HAVE AND TO HOLD said property and all privileges and appurtenances thereunto belonging to the party of the second part, said party's successors and assigns forever.

And the party of the first part covenants that said party is seized of said property in fee and has the right to convey same in fee simple; that the same is free from encumbrances except any encumbrances or restrictions mentioned above and that said party will warrant and defend the title to the same against the lawful claims of all persons whomsoever.

IN TESTIMONY WHEREOF, the party of the first part has caused this instrument to be executed under seal and in such form as to be binding, this the day and year first above written.

R. J.'S BUSHHOGGING, INC.

By: Robert E. Jones
Robert E. Jones, President

Book: 3193 Page: 218 Seq: 2

Image ID: 000002229465 Type: CRP
Page 3 of 4
BK 3193 PG 220

STATE OF NORTH CAROLINA
COUNTY OF CRAVEN

I certify that the following person personally appeared before me this day, acknowledging to me that he signed the foregoing document for the purpose(s) stated therein, in the capacity indicated therein: Robert E. Jones.

Date: 5/8/13

Helen T. Norris
Signature of Notary Public

Helen T. Norris
Notary's printed or typed name

My commission expires: 5-11-14

(Official Seal)

HELEN T. NORRIS
NOTARY
PUBLIC
CRAVEN COUNTY, N.C.

Notary seal or stamp must appear within this box.

ND: 4820-9323-0867, v. 1

Book: 3193 Page: 218 Seq: 3

Image ID: 000002229466 Type: CRP
Page 4 of 4
BK 3193 PG 221

EXHIBIT A

All that certain tract or parcel of land lying and situate in Number Eight Township, Craven County, North Carolina and being more particularly described as follows:

Beginning at a point in the western right of way line of NCSR 1243 (Sanders Lane), which point marks the southeasternmost corner of the Alice Koonce property described in Book 1115 at Page 445 the office of the Register of Deeds of Craven County, and the northeasternmost corner of the lands conveyed to Robert Jones by Deed recorded in Book 2134 at Page 80 in the office of the Register of Deeds of Craven County. Running thence from this point of beginning North 66 degrees 58 minutes West 175.00 feet; thence North 34 degrees 35 minutes West 607.00 feet; thence North 56 degrees 05 minutes West 345.50 feet to a fence line; thence down and with the fence 475.00 feet to a point; thence South 43 degrees 21 minutes 55 seconds East 170.00 feet to a point; thence South 42 degrees 28 minutes 37 seconds East 187.31 feet to a point; thence South 61 degrees 24 minutes 59 seconds East 177.89 feet to a point; thence South 57 degrees 18 minutes 00 seconds East 364.34 feet to a point; thence South 32 degrees 55 minutes 00 seconds West 120.55 feet more or less to the northern line of the 30' Access Easement depicted on a map recorded in Plat Cabinet G, Slide 31-B; thence South 57 degrees 05 minutes 00 seconds West 126.00 feet along the western line of said 30' Access Easement to a point; thence North 23 degrees 02 minutes East 80.00 feet to a point; thence South 57 degrees 05 minutes East 120.00 feet to a western right of way line of NCSR 1243; thence along the western right of way of NCSR 1243 North 23 degrees 02 minutes East to the point of beginning.

This conveyance is made together with a non-exclusive, perpetual easement for the purposes of ingress, egress, regress, access, the installation and maintenance of utilities and further subdivision, to and from N.C.S.R. 1243, said 30' access easement being more particularly described by map recorded in Plat Cabinet G, Slide 31-B in the office of the Register of Deeds of Craven County.

There is saved and excepted from this conveyance the property described as a 80 foot by 120 foot lot on a map entitled "Survey for David M. & Mitchell Koonce", said map being attached to a deed recorded in Book 1159, Page 448 in the office of the Register of Deeds of Craven County.

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omitted direction, & wrong distance

missed a call here

S 32°53'41" W 13.70 ft

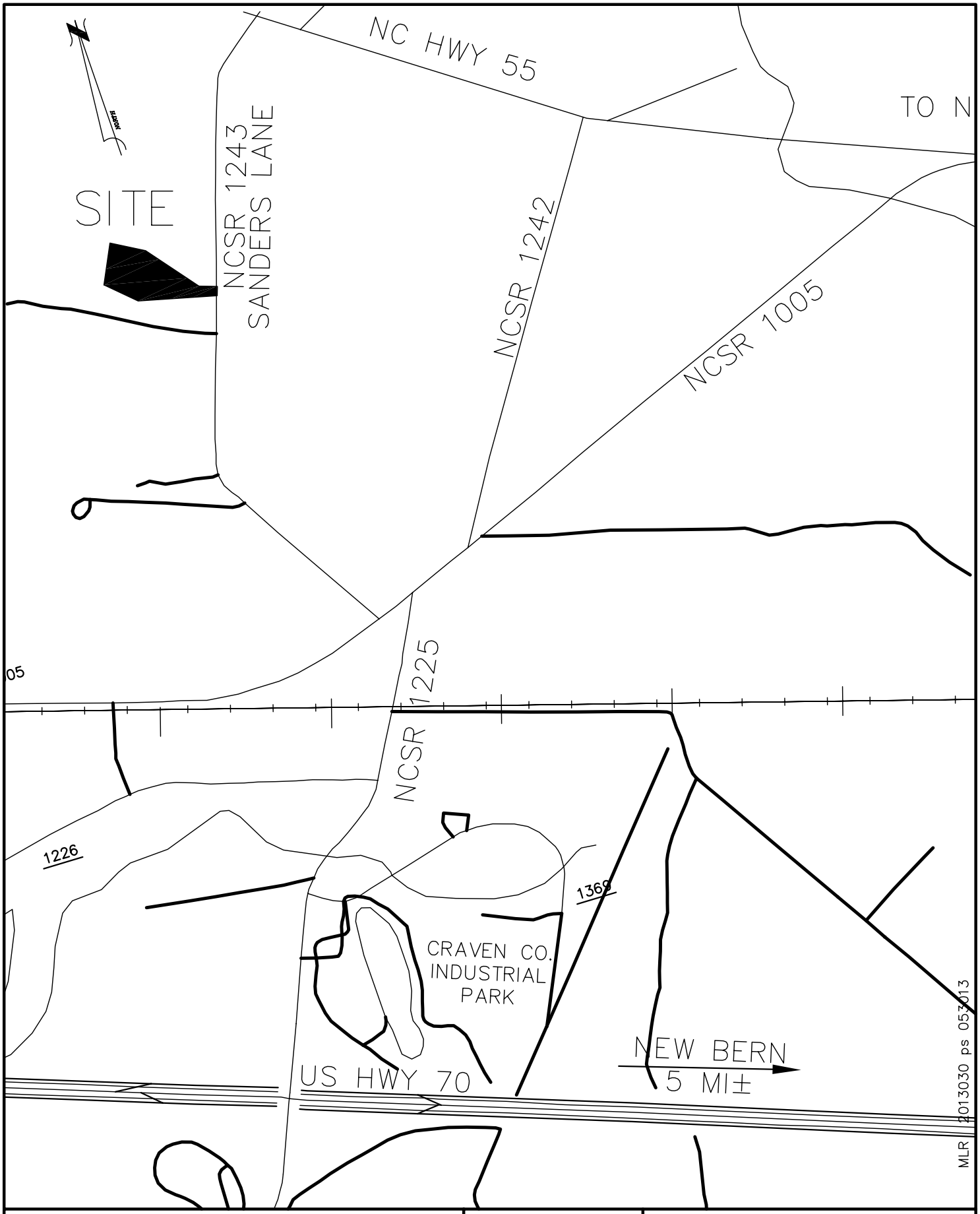
wrong bearing & distance due to missed call to follow.

SHOULD BE EAST

This conveyance is made together with a non-exclusive, perpetual easement for the purposes of ingress, egress, regress, access, the installation and maintenance of utilities and further subdivision, to and from N.C.S.R. 1243, said 30' access easement being more particularly described by map recorded in Plat Cabinet G, Slide 31-B in the office of the Register of Deeds of Craven County.

There is saved and excepted from this conveyance the property described as a 80 foot by 120 foot lot on a map entitled "Survey for David M. & Mitchell Koonce", said map being attached to a deed recorded in Book 1159, Page 448 in the office of the Register of Deeds of Craven County.

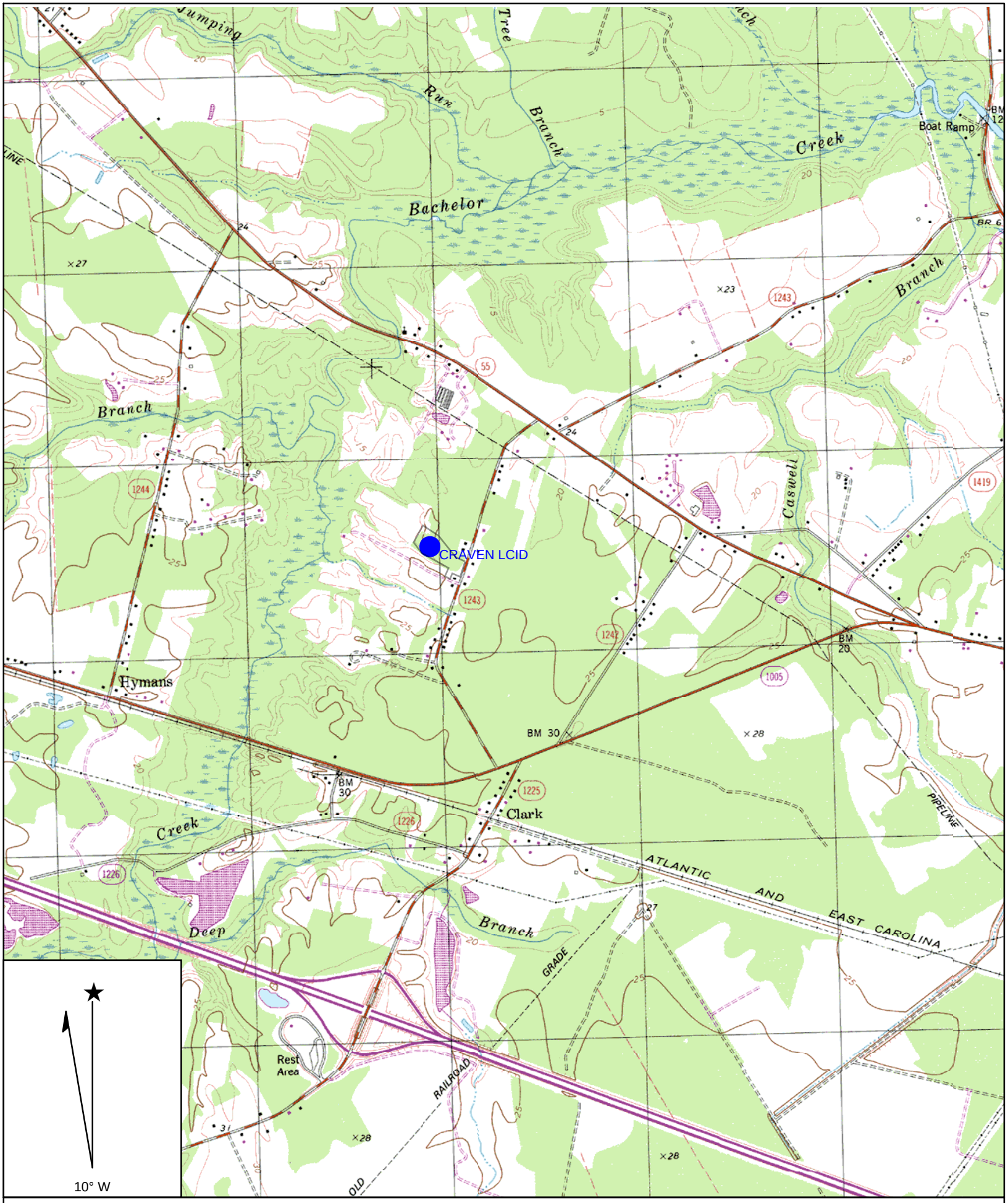
Not Applicable: the description above (after correction) goes around & does not include the 80x120 lot.



CRAVEN LCID
VICINITY MAP
FOR
CRAVEN LCID, LLC

DATE: MAY 30, 2013
JOB NO. 2013030
SCALE: 1" = 1200'

ROBERT M. CHILES, P.E.
ENGINEERS AND CONSULTANTS
NEW BERN, NORTH CAROLINA



Name: JASPER
Date: 5/31/2013
Scale: 1 inch equals 2000 feet

Location: 035° 09' 30.0" N 077° 09' 48.0" W
Caption: Craven LCID
356 Sanders Lane

Copyright (C) 1997, Maptech, Inc.

Office of Planning,
Inspections and
Community Development

Donald R. Baumgardner, Director
R. Chad Strawn, Assistant Director
Shelton P. Toler, Chief Building Inspector

Craven County

1712

Human Services Annex
2828 Neuse Boulevard
New Bern, North Carolina 28562

Planning (252) 636-6618
Fax (252) 636-5190
Inspections (252) 636-4987
Fax (252) 636-4984

April, 18 2013

RE: Sanders Lane
Parcel ID 8-225-15000

To Whom It May Concern:

The above property located in Craven County, North Carolina does not fall within any municipality and, therefore, is regulated by the county. Craven County does not have a typical zoning ordinance within its jurisdiction. Thus this property can be used for residential or commercial development.

If you have any further questions or comments regarding this property or county policies, please do not hesitate to contact me.

Thank you,

Don LaVelle Jr
Planner I
Craven County Planning Department

Craven LCID

- Major Cities
- Benchmarks
- DFIRM Grid
- Rivers and Streams
- Transects (Coastal)
- County Boundaries
- Coastal Barrier Resource Systems
- Roads
- NC Highway
- US Highway
- Interstate Highway
- Political Areas
- Extraterritorial Jurisdictions
- Coastal Sounds
- 100yr Flooding - Floodway (AE)
- 100yr Flooding - Has BFE's (AE)
- 100yr Flooding - No BFE's (A)
- 100yr Flooding - Velocity Zone
- 500yr Flooding (Shaded X)
- Base Flood Elevation (Symbol)
- Cross Sections

0 800 Feet

North Carolina
Floodplain Mapping Program

Portion of FIRM Panel 5540, Map Number 3720554000J, July 2, 2004

U.S. Fish and Wildlife Service

National Wetlands Inventory

Craven LCID

May 8, 2013

Wetlands

- Freshwater Emergent
- Freshwater Forested/Shrub
- Estuarine and Marine Deepwater
- Estuarine and Marine
- Freshwater Pond
- Lake
- Riverine
- Other

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

User Remarks:

National Wetlands Inventory Map

ROBERT M. CHILES, P.E.
ENGINEERS, CONSULTANTS
&
MARINE SURVEYORS

417-A BROAD ST.
P.O. BOX 3496
NEW BERN, NORTH CAROLINA 28564-3496

BUSINESS : 252-637-4702
FAX: 252-637-3100
office@robertmchilespe.com
mikerice@robertmchilespe.com

April 22, 2013

Mr. Pete Benjamin, Field Supervisor
US Fish and Wildlife Service
PO Box 33726
Raleigh, NC 27636

Re: Sanders Lane Land Clearing and Inert Debris Landfill

Enclosures:
(1) 15A NCAC 13B.0101 (portion), 15A NCAC 13B.0562.
(2) Portion of USGS Topographic Quadrangle Jasper, with project site indicated.
(3) Portion NFIP FIRM Panel 370072 0225 B, effective May 4, 1987, with project site indicated.
(4) Portion NFIP FIRM Panel 370072 5540000J, effective July 2, 2004, with project site indicated.
(5) USFWS Endangered Species Act species list for the project site.

Dear Mr. Benjamin:

Our office is preparing a land clearing and inert debris landfill (LCID) permit application package for submission to the North Carolina Department of Environment and Natural Resources, Division of Waste Management, Solid Waste Section. One of the enclosures we must include is a letter from the USFWS indicating that based upon a survey results there is no potential damage or threat to endangered species due to the site development and operation.

If you are unfamiliar with LCID landfills, they provide a location for depositing brick, concrete, concrete block, uncontaminated soil, rock, gravel, brush, grass, tree limbs, stumps, trees, etc. Enclosure one provides copies of the applicable definitions contained within North Carolina Administrative Code (NCAC) Chapter 15A, sub-chapter 13B, section .0101, and section .0562 for your reference.

The project site is located between 340 and 370 Sanders Lane and the current Craven Co GIS website indicates that the parcel number is 8-225-15000. Enclosures 2, 3 and 4 provide copies of the Jasper quadrangle and FIRM maps with the site location indicated.

The site contains an existing LCID that was closed by the previous owner. We are preparing the permit application for a new owner who seeks to reactivate the site. We performed a search on the USFWS website and enclosure 5 provides a copy of the resulting report for your information. The polygon shown in the project location map was drawn to enclose the entire property using the available aerial photograph background as a guide. The species indicated by the report are essentially all of those indicated for Craven County.

With respect to the species on the list generated by the USFWS website we offer the following discussion: There are no water bodies in or near the LCID property, so there is no habitat for manatee, sea turtle, and sturgeon on site. One-half acre of trees at the road frontage of the property and those along the south property line are the only trees onsite. The LCID site proper has no trees remaining, greatly reducing the potential habitat for woodpeckers to be present on site. According to USFWS, the primary habitat for sensitive joint vetch is the intertidal zone of coastal marsh, where subject to twice-daily flooding. There are no marshes or surface waters on site, so that habitat does not exist on the site. According to USFWS, the primary habitat for rough-leaf loosestrife is the edges between longleaf pine uplands and pond pine pocosins, on moist to seasonally saturated sands and shallow organic soils overlaying sand. Investigations onsite made during 2005 indicated a ground water surface elevation seven to eight feet below the existing natural ground surface. In the years since, the ground surface was raised with the placement of fill material and covering soil. The surrounding properties are developed for residential and agricultural uses. Accordingly, neither the seasonal saturation nor the pine boundary habitat for rough-leaf loosestrife exist on the site.

Please provide a report of your survey results regarding the potential damage or threat to endangered species due to the site development and operation as an LCID.

Should you require additional information or have any questions, please contact us your convenience.

Very truly yours,
ROBERT M. CHILES, P.E.

See original for signature - electronic copy provided for information only

Michael L. Rice, P.E.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

May 23, 2013

Robert Chiles, P.E.
Engineers, Consultants & Marine Surveyors
417-A Broad St.
New Bern, NC 28564

Re: Sanders Lane Land Clearing & Inert Debris Landfill- Craven County, NC

Dear Mr. Chiles:

This letter is to inform you that a list of all federally-protected endangered and threatened species with known occurrences in North Carolina is now available on the U.S. Fish and Wildlife Service's (Service) web page at http://www.fws.gov/raleigh. Therefore, if you have projects that occur within the Raleigh Field Office's area of responsibility (see attached county list), you no longer need to contact the Raleigh Field Office for a list of federally-protected species.

Our web page contains a complete and frequently updated list of all endangered and threatened species protected by the provisions of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.)(Act), and a list of federal species of concern[1] that are known to occur in each county in North Carolina.

Section 7 of the Act requires that all federal agencies (or their designated non-federal representative), in consultation with the Service, insure that any action federally authorized, funded, or carried out by such agencies is not likely to jeopardize the continued existence of any federally-listed endangered or threatened species. A biological assessment or evaluation may be prepared to fulfill that requirement and in determining whether additional consultation with the Service is necessary. In addition to the federally-protected species list, information on the species' life histories and habitats and information on completing a biological assessment or evaluation and can be found on our web page at http://www.fws.gov/raleigh. Please check the web site often for updated information or changes.

---

[1] The term "federal species of concern" refers to those species which the Service believes might be in need of concentrated conservation actions. Federal species of concern receive no legal protection and their designation does not necessarily imply that the species will eventually be proposed for listing as a federally endangered or threatened species. However, we recommend that all practicable measures be taken to avoid or minimize adverse impacts to federal species of concern.

If your project contains suitable habitat for any of the federally-listed species known to be present within the county where your project occurs, the proposed action has the potential to adversely affect those species. As such, we recommend that surveys be conducted to determine the species' presence or absence within the project area. The use of North Carolina Natural Heritage program data should not be substituted for actual field surveys.

If you determine that the proposed action may affect (i.e., likely to adversely affect or not likely to adversely affect) a federally-protected species, you should notify this office with your determination, the results of your surveys, survey methodologies, and an analysis of the effects of the action on listed species, including consideration of direct, indirect, and cumulative effects, before conducting any activities that might affect the species. If you determine that the proposed action will have no effect (i.e., no beneficial or adverse, direct or indirect effect) on federally listed species, then you are not required to contact our office for concurrence (unless an Environmental Impact Statement is prepared). However, you should maintain a complete record of the assessment, including steps leading to your determination of effect, the qualified personnel conducting the assessment, habitat conditions, site photographs, and any other related articles.

With regard to the above-referenced project, we offer the following remarks. Our comments are submitted pursuant to, and in accordance with, provisions of the Endangered Species Act.

Based on the information provided and other information available, it appears that the proposed action is not likely to adversely affect any federally-listed endangered or threatened species, their formally designated critical habitat, or species currently proposed for listing under the Act at these sites. We believe that the requirements of section 7(a)(2) of the Act have been satisfied for your project. Please remember that obligations under section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or, (3) a new species is listed or critical habitat determined that may be affected by the identified action.

However, the Service is concerned about the potential impacts the proposed action might have on aquatic species. Aquatic resources are highly susceptible to sedimentation. Therefore, we recommend that all practicable measures be taken to avoid adverse impacts to aquatic species, including implementing directional boring methods and stringent sediment and erosion control measures. An erosion and sedimentation control plan should be submitted to and approved by the North Carolina Division of Land Resources, Land Quality Section prior to construction. Erosion and sedimentation controls should be installed and maintained between the construction site and any nearby down-gradient surface waters. In addition, we recommend maintaining natural, vegetated buffers on all streams and creeks adjacent to the project site.

The North Carolina Wildlife Resources Commission has developed a Guidance Memorandum (a copy can be found on our website at (http://www.fws.gov/raleigh) to address and mitigate secondary and cumulative impacts to aquatic and terrestrial wildlife resources and water quality. We recommend that you consider this document in the development of your projects and in completing an initiation package for consultation (if necessary).

We hope you find our web page useful and informative and that following the process described above will reduce the time required, and eliminate the need, for general correspondence for species' lists. If you have any questions or comments, please contact John Ellis of this office at (919) 856-4520 ext. 26.

Sincerely,

John Ellis for

Pete Benjamin
Field Supervisor

List of Counties in the Service's Raleigh Field Office Area of Responsibility

Alamance
Beaufort
Bertie
Bladen
Brunswick
Camden
Carteret
Caswell
Chatham
Chowan
Columbus
Craven
Cumberland
Currituck
Dare
Duplin
Durham
Edgecombe
Franklin
Gates
Granville
Greene
Guilford
Halifax
Harnett
Hertford
Hoke
Hyde
Johnston
Jones
Lee
Lenoir
Martin
Montgomery
Moore
Nash
New Hanover
Northampton
Onslow
Orange
Pamlico
Pasquotank
Pender
Perquimans
Person
Pitt
Randolph
Richmond
Robeson
Rockingham
Sampson
Scotland
Tyrrell
Vance
Wake
Warren
Washington
Wayne
Wilson

ROBERT M. CHILES, P.E.
ENGINEERS, CONSULTANTS
&
MARINE SURVEYORS

417-A BROAD ST.
P.O. BOX 3496
NEW BERN, NORTH CAROLINA 28564-3496

BUSINESS : 252-637-4702
FAX: 252-637-3100
office@robertmchilespe.com
mikerice@robertmchilespe.com

April 22, 2013

Mrs. Maria Dunn
NC Wildlife Resources Commission
943 Washington Square Mall
Washington, NC 27889

Re: Sanders Lane Land Clearing and Inert Debris Landfill

Enclosures:
(1) 15A NCAC 13B.0101 (portion), 15A NCAC 13B.0562.
(2) Portion of USGS Topographic Quadrangle Jasper, with project site indicated.
(3) Portion NFIP FIRM Panel 370072 0225 B, effective May 4, 1987, with project site indicated.
(4) Portion NFIP FIRM Panel 370072 5540000J, effective July 2, 2004, with project site indicated.
(5) USFWS Endangered Species Act species list for the project site.

Dear Mrs. Dunn:

Our office is preparing a land clearing and inert debris landfill (LCID) permit application package for submission to the North Carolina Department of Environment and Natural Resources, Division of Waste Management, Solid Waste Section. One of the enclosures we must include is a letter from the NC Wildlife Resources Commission indicating that based upon a survey results there is no potential damage or threat to endangered species due to the site development and operation.

If you are unfamiliar with LCID landfills, they provide a location for depositing brick, concrete, concrete block, uncontaminated soil, rock, gravel, brush, grass, tree limbs, stumps, trees, etc. Enclosure one provides copies of the applicable definitions contained within North Carolina Administrative Code (NCAC) Chapter 15A, sub-chapter 13B, section .0101, and section .0562 for your reference.

The project site is located between 340 and 370 Sanders Lane and the current Craven Co GIS website indicates that the parcel number is 8-225-15000. Enclosures 2, 3 and 4 provide copies of the Jasper quadrangle and FIRM maps with the site location indicated.

The site contains an existing LCID that was closed by the previous owner. We are preparing the permit application for a new owner who seeks to reactivate the site. We performed a search on the USFWS website and enclosure 5 provides a copy of the resulting report for your information. The polygon shown in the project location map was drawn to enclose the entire property using the available aerial photograph background as a guide. The species indicated by the report are essentially all of those indicated for Craven County.

With respect to the species on the list generated by the USFWS website we offer the following discussion: There are no water bodies in or near the LCID property, so there is no habitat for manatee, sea turtle, and sturgeon on site. One-half acre of trees at the road frontage of the property and those along the south property line are the only trees onsite. The LCID site proper has no trees remaining, greatly reducing the potential habitat for woodpeckers to be present on site. According to USFWS, the primary habitat for sensitive joint vetch is the intertidal zone of coastal marsh, where subject to twice-daily flooding. There are no marshes or surface waters on site, so that habitat does not exist on the site. According to USFWS, the primary habitat for rough-leaf loosestrife is the edges between longleaf pine uplands and pond pine pocosins, on moist to seasonally saturated sands and shallow organic soils overlaying sand. Investigations onsite made during 2005 indicated a ground water surface elevation seven to eight feet below the existing natural ground surface. In the years since, the ground surface was raised with the placement of fill material and covering soil. The surrounding properties are developed for residential and agricultural uses. Accordingly, neither the seasonal saturation nor the pine boundary habitat for rough-leaf loosestrife exist on the site.

Please provide a report of your survey results regarding the potential damage or threat to endangered species due to the site development and operation as an LCID.

Should you require additional information or have any questions, please contact us your convenience.

Very truly yours,
ROBERT M. CHILES, P.E.

See original for signature - electronic copy provided for information only

Michael L. Rice, P.E.

North Carolina Wildlife Resources Commission

Gordon S. Myers, Executive Director

MEMORANDUM

TO: Michael L. Rice, P.E., P.L.S.
Robert M. Chiles, P.E.
Engineers, Consultants & Marine Surveyors

FROM: Maria T. Dunn, Northeast Coastal Region Coordinator
Habitat Conservation Program

DATE: August 2, 2013

SUBJECT: Sanders Lane Land Clearing and Inert Debris Landfill, Craven County, North Carolina.

Biologists with the North Carolina Wildlife Resources Commission (NCWRC) have reviewed the request for threatened and endangered species information for the above project area located between 340 and 370 Sanders Lane in Craven County. Our comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667e).

The proposed project is to reinstate an inert debris landfill (LCID) that was closed by a previous owner. LCID facilities provide a disposal location for construction materials such as brick, concrete, rock, gravel, brush, stumps and other materials as defined in NCAC 15A 13B.0101 and NCAC 15A 13B.0562.

The NCWRC has looked at the available information and does not foresee the project as proposed will cause significant adverse impacts to threatened or endangered wildlife resources due to the location of the property and disturbed nature from the previously active LCID facility. This area does not appear to have records of any threatened or endangered wildlife species on file nor is located near any primary nursery areas or anadromous fish spawning areas.

Thank you for your concern pertaining to wildlife resources. If I can be of further assistance, please contact me at (252) 948-3916.

Mailing Address: Division of Inland Fisheries • 1721 Mail Service Center • Raleigh, NC 27699-1721
Telephone: (919) 707-0220 • **Fax:** (919) 707-0028

NCDENR

North Carolina Department of Environment and Natural Resources

Michael F. Easley, Governor

William G. Ross Jr., Secretary

May 4, 2005

Mr. Michael L. Rice
Robert M. Chiles, P.E.
417-A Broad St.
P.O. Box 3496
New Bern, NC 28564-3496

Subject: Expansion of Land Clearing and Inert Debris (LCID) Landfill; NCSR 1243 (Sanders Lane), Craven County

Dear Mr. Rice:

The Natural Heritage Program has no record of rare species, significant natural communities, or priority natural areas at the site nor within 0.7 mile of the project area. Although our maps do not show records of such natural heritage elements in the project area, it does not necessarily mean that they are not present. It may simply mean that the area has not been surveyed. The use of Natural Heritage Program data should not be substituted for actual field surveys, particularly if the project area contains suitable habitat for rare species, significant natural communities, or priority natural areas.

You may wish to check the Natural Heritage Program database website at <www.ncnhp.org> for a listing of rare plants and animals and significant natural communities in the county and on the topographic quad map. Please do not hesitate to contact me at 919-715-8697 if you have questions or need further information.

Sincerely,

Harry E. LeGrand, Jr.

Harry E. LeGrand, Jr., Zoologist
Natural Heritage Program

HEL/hel

1601 Mail Service Center, Raleigh, North Carolina 27699-1601
Phone: 919-733-4984 • FAX: 919-715-3060 • Internet: www.enr.state.nc.us
An Equal Opportunity • Affirmative Action Employer - 50 % Recycled • 10 % Post Consumer Paper

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ROBERT M. CHILES, P.E.
ENGINEERS, CONSULTANTS
&
MARINE SURVEYORS

417-A BROAD ST.
P.O. BOX 3496
NEW BERN, NORTH CAROLINA 28564-3496

BUSINESS : 252-637-4702
FAX: 252-637-3100
office@robertmchilespe.com
mikerice@robertmchilespe.com

July 29, 2013

Henry LeGrand, Zoologist
NC Natural Heritage Program
1601 Mail Service Center
Raleigh, NC 27699-1601

Re: Sanders Lane Land Clearing and Inert Debris Landfill

Enclosures:
(1) 15A NCAC 13B.0101 (portion), 15A NCAC 13B.0562.
(2) Portion of USGS Topographic Quadrangle Jasper, with project site indicated.
(3) Portion NFIP FIRM Panel 370072 0225 B, effective May 4, 1987, with project site indicated.
(4) Portion NFIP FIRM Panel 370072 5540000J, effective July 2, 2004, with project site indicated.
(5) USFWS Endangered Species Act species list for the project site.

Dear Mr. LeGrand:

Based upon our brief telephone conversation last Friday, I present this letter and enclosures for your review and response. With the exception of the recipient, this is the same letter I sent to the US Fish and Wildlife Service and NC Wildlife Resources Commission.

Our office is preparing a land clearing and inert debris landfill (LCID) permit application package for submission to the North Carolina Department of Environment and Natural Resources, Division of Waste Management, Solid Waste Section. One of the enclosures we must include is a letter from the NC Wildlife Resources Commission indicating that based upon a survey results there is no potential damage or threat to endangered species due to the site development and operation.

If you are unfamiliar with LCID landfills, they provide a location for depositing brick, concrete, concrete block, uncontaminated soil, rock, gravel, brush, grass, tree limbs, stumps, trees, etc. Enclosure one provides copies of the applicable definitions contained within North Carolina Administrative Code (NCAC) Chapter 15A, sub-chapter 13B, section .0101, and section .0562 for your reference.

The project site is located between 340 and 370 Sanders Lane and the current Craven Co GIS website indicates that the parcel number is 8-225-15000. Enclosures 2, 3 and 4 provide copies of the Jasper quadrangle and FIRM maps with the site location indicated.

The site contains an existing LCID that was closed by the previous owner. We are preparing the permit application for a new owner who seeks to reactivate the site. We performed a search on the USFWS website and enclosure 5 provides a copy of the resulting report for your information. The polygon shown in the project location map was drawn to enclose the entire property using the available aerial photograph background as a guide. The species indicated by the report are essentially all of those indicated for Craven County.

With respect to the species on the list generated by the USFWS website we offer the following discussion: There are no water bodies in or near the LCID property, so there is no habitat for manatee, sea turtle, and sturgeon on site. One-half acre of trees at the road frontage of the property and those along the south property line are the only trees onsite. The LCID site proper has no trees remaining, greatly reducing the potential habitat for woodpeckers to be present on site. According to USFWS, the primary habitat for sensitive joint vetch is the intertidal zone of coastal marsh, where subject to twice-daily flooding. There are no marshes or surface waters on site, so that habitat does not exist on the site. According to USFWS, the primary habitat for rough-leaf loosestrife is the edges between longleaf pine uplands and pond pine pocosins, on moist to seasonally saturated sands and shallow organic soils overlaying sand. Investigations onsite made during 2005 indicated a ground water surface elevation seven to eight feet below the existing natural ground surface. In the years since, the ground surface was raised with the placement of fill material and covering soil. The surrounding properties are developed for residential and agricultural uses. Accordingly, neither the seasonal saturation nor the pine boundary habitat for rough-leaf loosestrife exist on the site.

Please provide a report of your survey results regarding the potential damage or threat to endangered species due to the site development and operation as an LCID.

Should you require additional information or have any questions, please contact us your convenience.

Very truly yours,
ROBERT M. CHILES, P.E.

ELECTRONIC COPY
SEE ORIGINAL FOR SIGNATURE

Michael L. Rice, P.E.

NCDENR
North Carolina Department of Environment and Natural Resources
Office of Conservation, Planning, and Community Affairs

Pat McCrory
Governor

Linda Pearsall
Director

John E. Skvarla, III
Secretary

August 6, 2013

Mr. Michael L. Rice
Robert M. Chiles, P.E.
417-A Broad St.
P.O. Box 3496
New Bern, NC 28564-3496

Subject: Sanders Lane Land Clearing and Inert Debris Landfill; Craven County

Dear Mr. Rice:

The Natural Heritage Program has no record of rare species, significant natural communities, significant natural heritage areas, or conservation/managed areas at the site nor within 0.45-mile of the project area. Roughly 0.45-mile to the northwest is Bachelor Creek, and within the creek are locations of two rare animals within a mile of the site – the Neuse River Waterdog (*Necturus lewisi*), which is State Special Concern, and the State Significantly Rare Banded Sunfish (*Enneacanthus obesus*). Locations of the creek and these rare species appear to be far enough from the proposed project site that no impacts to them are anticipated.

You may wish to check the Natural Heritage Program database website at http://www.ncnhp.org. Use the NHP "Map Viewer" tab to search for records of rare species, natural communities, significant natural areas, and managed areas within various distances (1 mile to 5 mile radius choices) of your project area; or use the "Database Search" tool for listings of rare species and natural communities by county and USGS 7.5-minute topo map. You can also download GIS shapefiles of our data; click on "Download Natural Heritage Program shapefiles" for more information. To view the site ratings of significant natural areas, plus the scoring methodology, click on "Publications", then "NHP Publications", then enter "2013" in the Search box, then click on the Download for the "NC NHP Biennial Protection Plan."

Please do not hesitate to contact me at 919-707-8603 if you have questions or need further information.

Sincerely,

Harry E. LeGrand Jr.

Harry E. LeGrand, Jr., Zoologist
Natural Heritage Program

ROBERT M. CHILES, P.E.
ENGINEERS, CONSULTANTS
&
MARINE SURVEYORS

417-A BROAD ST.
P.O. BOX 3496
NEW BERN, NORTH CAROLINA 28564-3496

BUSINESS : 252-637-4702
FAX: 252-637-3100
office@robertmchilespe.com
mikerice@robertmchilespe.com

June 11, 2013

Certified Mail Receipt No. 7009 2820 0001 4222 9192

Mrs. Amy Adams, Regional Supervisor
NCDENR, Division of Water Quality
943 Washington Square Mall
Washington, N. C. 27889

Re: Craven LCID, 356 Sanders Lane

Enclosures: (1) State Stormwater Permit Name/Ownership Change Form
(2) Copy, Craven County Register of Deeds Book 3193, Pages 218-221

Dear Mrs. Adams:

On behalf of our client, Craven LCID, LLC and its agent, Mr. Terry Morris, we submit the enclosed form for your review and approval.

Craven LCID, LLC recently purchased property from Robert Jones Bushhogging located on Sanders Lane, west of New Bern, in township number 8. Mr. Jones operated a land clearing and inert debris landfill (LCID) on part of the property, and Craven LCID, LLC is applying for the several permits required to re-activate the LCID.

In August 2005, DWQ issued stormwater permit number SW7050818 to Mr. Jones for operation of the land clearing and inert debris landfill on Sanders Lane. The permit is contained in the May 6 revision of the active state stormwater permits spreadsheet that is linked to the stormwater permitting unit website. During a telephone conversation with Mr. Thorpe 2 weeks ago, we discussed how the new owner wishes to resume operations at the LCID, that the proposed operation is essentially the same as the previously permitted operation, and inquired if a name/ownership change applied in this case. Based upon that conversation, we have presented Craven LCID with a copy of the RJ Bushhogging stormwater permit and approved plans, and have prepared the enclosed name/ownership change form for your approval.

Should you require additional information or have any questions, please contact us your convenience.

Very truly yours,
ROBERT M. CHILES, P.E.

See original for signature - electronic copy provided for information only

Michael L. Rice, P.E.

cc: Mr. Terry Morris, agent, Craven LCID, LLC

State of North Carolina
Department of Environment and Natural Resources
Division of Water Quality

STATE STORMWATER PERMIT NAME/OWNERSHIP CHANGE FORM

I. CURRENT PERMIT INFORMATION

1. Stormwater Management Permit Number: SW7050818
2. Project Name: Debris Landfill Site
3. Current Permit Holder's Company Name/Organization: RJ Bushhogging, Inc.
4. Signing Official's Name: Robert Jones Title: Owner
5. Mailing Address: 175 High School Road
   City: Vanceboro State: NC Zip: 28586
6. Phone: (252) 244-2805 Fax: (____) ____

II. PROPOSED PERMITTEE / OWNER / PROJECT / ADDRESS INFORMATION

This request is for: *(please check all that apply)*

XX Name change of the owner (Please complete Items 1, 2 and 3 below)
XX Name change of project (Please complete Item 5 below)
XX Change in ownership of the property/company (Please complete Items 1, 2, 3, and 4 below)
☐ Mailing address / phone number change. (Please complete Item 4 below)
☐ Other (please explain): ____

1. Proposed permittee's company name/organization: Craven LCID, LLC
2. Proposed permittee's signing official's name: Terry D. Morris
3. Proposed permittee's title: Agent
4. Mailing Address: 109 Swift Creek Road
   City: Vanceboro State: NC Zip: 28586
   Phone: (252) 670-6749 Fax: (____) ____
5. New Project Name to be placed on permit: CRAVEN LCID

Please check the appropriate box. The proposed permittee listed above is:

☐ **HOA or POA** *(Attach documentation showing that the HOA or POA owns, controls, or has a recorded easement for all areas that contain stormwater system features. Print name of HOA or POA in #1 above and provide name of HOA/POA's authorized representative in #2 above)*
XX **The property owner**
☐ **Lessee** *(Attach a copy of the lease agreement and complete Property Owner Information on page 4)*
XX **Purchaser** *(Attach a copy of the pending sales agreement. Final approval of this transfer will be granted upon receipt of a copy of the recorded deed)*
☐ **Developer** *(Complete Property Owner Information on page 4)*

III. REQUIRED ITEMS

A request to transfer a permit will not be approved by the Division of Water Quality (DWQ) unless all of the applicable required items listed below are included with the submittal. Failure to provide the listed items may result in processing delays or denial of the transfer.

1. This completed and signed form. This certification must be completed and signed by both the current permit holder and the new applicant if this is a change of ownership.
2. Legal documentation of the property transfer to a new owner.
3. A copy of any recorded deed restrictions, covenants, or easements, if required by the permit.
4. The designer's certification (DWQ Engineer and Designer Certification Forms are available from each DWQ Regional office), if required by the permit and if not already submitted to DWQ.
5. If the proposed permittee is a firm, partnership, association, institution, corporation, limited liability company, or other corporate entity, provide documentation showing the authority of the named representative to act on behalf of the proposed permittee.
6. The $40.00 processing fee. If this is an initial transfer from the original permittee the processing fee is not required. Subsequent ownership transfers will require the $40.00 processing fee.

IV. CURRENT PERMITTEE'S CERTIFICATION

Please check one of the following statements and fill out the certification below that statement:

☐ *Check here if the current permittee is only changing his/her/its name, the project name, or mailing address, but will retain the permit.* I, _____, the current permittee, hereby notify the DWQ that I am changing my name and/or I am changing my mailing address and/or I am changing the name of the permitted project. I further attest that this application for a name/ownership change is accurate and complete to the best of my knowledge. I understand that if all required parts of this application are not completed or if all required supporting information and attachments listed above are not included, this application package will be returned as incomplete.

XX *Check here if current permittee is transferring the property to a new owner and will not retain ownership of the permit.*

I, Robert Jones, the current permittee, am submitting this application for a transfer of ownership for permit # SW7050818. I hereby notify DWQ of the sale or other legal transfer of the stormwater system associated with this permit. I have provided a copy of the most recent permit, the designer's certification for each BMP, any recorded deed restrictions, covenants, or easements, the DWQ approved plans and/or approved as-built plans, the approved operation and maintenance agreement, past maintenance records, and the most recent DWQ stormwater inspection report to the proposed permittee named in Sections II and V of this form. I further attest that this application for a name/ownership change is accurate and complete to the best of my knowledge. I understand that if all required parts of this application are not completed or if all required supporting information and attachments listed above are not included, this application package will be returned as incomplete. I assign all rights and obligations as permittee to the proposed permittee named in Sections II and V of this form. I understand that this transfer of ownership cannot be approved by the DWQ unless and until the facility is in compliance with the permit.

Signature: Robert Jones Date: 6-6-13

I, Warren H. Richardson, a Notary Public for the State of North Carolina, County of Craven, do hereby certify that Robert Jones personally appeared before me this the 6 day of June, 2013, and acknowledge the due execution of the forgoing instrument. Witness my hand and official seal,

(Notary Seal)

Warren H. Richardson
Notary Signature

July 13, 2013

WARREN H. RICHARDSON NOTARY PUBLIC CRAVEN COUNTY, N.C.

V. PROPOSED PERMITTEE CERTIFICATION: *(This section must be completed by the Proposed Permittee for all transfers of ownership)*

I, Terry D. Morris, hereby notify the DWQ that I have acquired through sale, lease or legal transfer, the responsibility for operating and maintaining the permitted stormwater management system, and, if applicable, constructing the permitted system. I acknowledge and attest that I have received a copy of: (check all that apply to this permit)

- [XX] the most recent permit
- [ ] the designer's certification for each BMP
- [ ] any recorded deed restrictions, covenants, or easements
- [XX] the DWQ approved plans and/or approved as-built plans
- [ ] the approved operation and maintenance agreement
- [ ] past maintenance records from the previous permittee (where required)
- [ ] DWQ stormwater inspection report showing compliance within 90 days prior to this transfer

I have reviewed the permit, approved plans and other documents listed above, and I will comply with the terms and conditions of the permit and approved plans. I acknowledge and agree that I will operate and maintain the system pursuant to the requirements listed in the permit and in the operation and maintenance agreement. I further attest that this application for a name/ownership change is accurate and complete to the best of my knowledge. I understand that if all required parts of this application are not completed or if all required supporting information and attachments listed above are not included, this application package will be returned as incomplete.

Signature: Terry D. Morris Date: 6-6-13

I, Barbara D. Francis, a Notary Public for the State of North Carolina, County of Craven, do hereby certify that Terry D. Morris personally appeared before me this the 6th day of JUNE, 2013, and acknowledge the due execution of the forgoing instrument. Witness my hand and official seal,

Barbara D. Francis
Notary Signature

(Notary Seal) BARBARA D. FRANCIS NOTARY PUBLIC CRAVEN COUNTY, NC

MY COMMISSION EXPIRES: JUNE 24, 2017

Additional copies of the original permit and the approved Operation and Maintenance agreement can be obtained from the appropriate Regional Office of the Division of Water Quality.

This completed form, including all supporting documents and processing fee (if required), should be sent to the appropriate Regional Office of the North Carolina Department of Environment and Natural Resources, Division of Water Quality, as shown on the attached map.

Please note that if the Proposed Permittee listed above is not the property owner, the property owner must complete and sign page 4 of this document. Both the lessee / developer and the property owner will appear on the permit as permittees.

State of North Carolina
Department of Environment and Natural Resources
Division of Water Quality

STATE STORMWATER PERMIT NAME/OWNERSHIP CHANGE FORM

I. CURRENT PERMIT INFORMATION

1. Stormwater Management Permit Number: SW7050818
2. Project Name: Debris Landfill Site
3. Current Permit Holder's Company Name/Organization: RJ Bushhogging, Inc.
4. Signing Official's Name: Robert Jones Title: Owner
5. Mailing Address: 175 High School Road
   City: Vanceboro State: NC Zip: 28586
6. Phone: (252) 244-2805 Fax: (_____) _____

II. PROPOSED PERMITTEE / OWNER / PROJECT / ADDRESS INFORMATION

This request is for: *(please check all that apply)*

XX Name change of the owner (Please complete Items 1, 2 and 3 below)
XX Name change of project (Please complete Item 5 below)
XX Change in ownership of the property/company (Please complete Items 1, 2, 3, and 4 below)
☐ Mailing address / phone number change. (Please complete Item 4 below)
☐ Other (please explain):_____

1. Proposed permittee's company name/organization: Craven LCID, LLC
2. Proposed permittee's signing official's name: Terry D. Morris
3. Proposed permittee's title: Agent
4. Mailing Address: 109 Swift Creek Road
   City: Vanceboro State: NC Zip: 28586
   Phone: (252) 670-6749 Fax: (____) _____
5. New Project Name to be placed on permit: CRAVEN LCID

Please check the appropriate box. The proposed permittee listed above is:

☐ **HOA or POA** (*Attach documentation showing that the HOA or POA owns, controls, or has a recorded easement for all areas that contain stormwater system features. Print name of HOA or POA in #1 above and provide name of HOA/POA's authorized representative in #2 above)*
XX **The property owner**
☐ **Lessee** *(Attach a copy of the lease agreement and complete Property Owner Information on page 4)*
XX **Purchaser** *(Attach a copy of the pending sales agreement. Final approval of this transfer will be granted upon receipt of a copy of the recorded deed)*
☐ **Developer** *(Complete Property Owner Information on page 4)*

III. REQUIRED ITEMS

A request to transfer a permit will not be approved by the Division of Water Quality (DWQ) unless all of the applicable required items listed below are included with the submittal. Failure to provide the listed items may result in processing delays or denial of the transfer.

1. This completed and signed form. This certification must be completed and signed by both the current permit holder and the new applicant if this is a change of ownership.
2. Legal documentation of the property transfer to a new owner.
3. A copy of any recorded deed restrictions, covenants, or easements, if required by the permit.
4. The designer's certification (DWQ Engineer and Designer Certification Forms are available from each DWQ Regional office), if required by the permit and if not already submitted to DWQ.
5. If the proposed permittee is a firm, partnership, association, institution, corporation, limited liability company, or other corporate entity, provide documentation showing the authority of the named representative to act on behalf of the proposed permittee.
6. The $40.00 processing fee. If this is an initial transfer from the original permittee the processing fee is not required. Subsequent ownership transfers will require the $40.00 processing fee.

IV. CURRENT PERMITTEE'S CERTIFICATION

Please check one of the following statements and fill out the certification below that statement:

☐ *Check here if the current permittee is only changing his/her/its name, the project name, or mailing address, but will retain the permit.* I, _____, the current permittee, hereby notify the DWQ that I am changing my name and/or I am changing my mailing address and/or I am changing the name of the permitted project. I further attest that this application for a name/ownership change is accurate and complete to the best of my knowledge. I understand that if all required parts of this application are not completed or if all required supporting information and attachments listed above are not included, this application package will be returned as incomplete.

XX *Check here if current permittee is transferring the property to a new owner and will not retain ownership of the permit.*
I, Robert Jones, the current permittee, am submitting this application for a transfer of ownership for permit # SW7050818. I hereby notify DWQ of the sale or other legal transfer of the stormwater system associated with this permit. I have provided a copy of the most recent permit, the designer's certification for each BMP, any recorded deed restrictions, covenants, or easements, the DWQ approved plans and/or approved as-built plans, the approved operation and maintenance agreement, past maintenance records, and the most recent DWQ stormwater inspection report to the proposed permittee named in Sections II and V of this form. I further attest that this application for a name/ownership change is accurate and complete to the best of my knowledge. I understand that if all required parts of this application are not completed or if all required supporting information and attachments listed above are not included, this application package will be returned as incomplete. I assign all rights and obligations as permittee to the proposed permittee named in Sections II and V of this form. I understand that this transfer of ownership cannot be approved by the DWQ unless and until the facility is in compliance with the permit.

Signature: _____Date:_____

I, _____, a Notary Public for the State of

_____, County of _____, do hereby certify that

_____ personally appeared before me this the

_____ day of _____, 20____, and acknowledge the due execution of the

forgoing instrument. Witness my hand and official seal, (Notary Seal)

_____
Notary Signature

V. PROPOSED PERMITTEE CERTIFICATION: *(This section must be completed by the Proposed Permittee for all transfers of ownership)*

I, Terry D. Morris , hereby notify the DWQ that I have acquired through sale, lease or legal transfer, the responsibility for operating and maintaining the permitted stormwater management system, and, if applicable, constructing the permitted system. I acknowledge and attest that I have received a copy of: (check all that apply to this permit)

- [XX] the most recent permit
- [ ] the designer's certification for each BMP
- [ ] any recorded deed restrictions, covenants, or easements
- [XX] the DWQ approved plans and/or approved as-built plans
- [ ] the approved operation and maintenance agreement
- [ ] past maintenance records from the previous permittee (where required)
- [ ] DWQ stormwater inspection report showing compliance within 90 days prior to this transfer

I have reviewed the permit, approved plans and other documents listed above, and I will comply with the terms and conditions of the permit and approved plans. I acknowledge and agree that I will operate and maintain the system pursuant to the requirements listed in the permit and in the operation and maintenance agreement. I further attest that this application for a name/ownership change is accurate and complete to the best of my knowledge. I understand that if all required parts of this application are not completed or if all required supporting information and attachments listed above are not included, this application package will be returned as incomplete.

Signature: _____ Date: _____

I, Barbara D. Francis, a Notary Public for the State of North Carolina, County of Craven, do hereby certify that Terry D. Morris personally appeared before me this the _____ day of _____, 20____, and acknowledge the due execution of the forgoing instrument. Witness my hand and official seal,

_____ (Notary Seal)
Notary Signature

Additional copies of the original permit and the approved Operation and Maintenance agreement can be obtained from the appropriate Regional Office of the Division of Water Quality.

This completed form, including all supporting documents and processing fee (if required), should be sent to the appropriate Regional Office of the North Carolina Department of Environment and Natural Resources, Division of Water Quality, as shown on the attached map.

Please note that if the Proposed Permittee listed above is not the property owner, the property owner must complete and sign page 4 of this document. Both the lessee / developer and the property owner will appear on the permit as permittees.

VI. PROPERTY OWNER CONTACT INFORMATION AND CERTIFICATION

If the Proposed Permittee listed in Sections II and V of this form is not the Property Owner, the Property Owner must provide his/her Contact Information below and sign this form:

Printed Name: _____

Organization: _____

Title within the Organization: _____

Street Address: _____

City: _____ State: _____ Zip: _____

Mailing Address: _____
(if different from street address)

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Email: _____

I certify that I own the property identified in this permit transfer document and have given permission to the Proposed Permittee listed in Sections II and V to develop and/or, lease the property. A copy of the lease agreement or other contract, which indicates the party responsible for the construction and/or operation and maintenance of the stormwater system, has been provided with the submittal.

As the legal property owner I acknowledge, understand, and agree by my signature below, that I will appear as a permittee along with the lessee/developer and I will therefore share responsibility for compliance with the DWQ Stormwater permit. As the property owner, it is my responsibility to notify DWQ by submitting a completed Name/Ownership Change Form within 30 days of procuring a developer, lessee or purchaser for the property. I understand that failure to operate and maintain the stormwater treatment facility in accordance with the permit is a violation of NC General Statute (NCGS) 143-215.1, and may result in appropriate enforcement action including the assessment of civil penalties of up to $25,000 per day, pursuant to NCGS 143-215.6.

Signature of the property owner _____ Date: _____

I, _____, a Notary Public for the State of

_____, County of _____, do hereby certify that

_____ personally appeared before me this the

_____ day of _____, 20____, and acknowledge the due execution of the

forgoing instrument. Witness my hand and official seal,

_____ (Notary Seal)
Notary Signature

NCDENR
North Carolina Department of Environment and Natural Resources
Division of Water Quality

Pat McCrory
Governor

Thomas A. Reeder
Acting Director

John E. Skvarla, III
Secretary

July 8, 2013

Mr. Terry Morris
Craven LCID, LLC
109 Swift Creek Road
Vanceboro, NC 28586

Subject: **EXEMPTION** from Stormwater Management Permit Regulations
SEC Plan Approval
Craven LCID
Stormwater Project No.: SW7130612
Craven County

Dear Mr. Morris:

The Washington Regional Office received a copy of your SEC Plan application for the proposed Craven LCID project in Craven County, North Carolina on June 17, 2013. Staff review of the plans and specifications has determined that the project, as proposed, consists of activities that will not pose surface water quality threats from stormwater runoff since no significant new impervious area is proposed.

The Director has determined that projects that are reviewed and approved by the Division as not posing water quality threats from stormwater runoff should not be subject to the State stormwater management permitting requirements of 15A NCAC 2H.1000 and SL 2008-211. For this reason, we are informing you by way of this letter that your project will not require a State Stormwater management permit at this time. Please understand that you will automatically receive coverage under the separate Federal NPDES NCG010000 Construction Stormwater Permit that goes along with the Erosion & Sediment Control Plan approval.

The State stormwater rules require the Division to permit the common plan of development, therefore, any future development on the property, regardless of whether a SEC plan or CAMA Major permit is also required, will require a Stormwater Management Permit review from the Division of Water Quality prior to any construction. Any non-agricultural development or construction on the subject site, prior to receipt of the required permit, will constitute a violation of 15A NCAC 2H.1000 and SL 2008-211 and may result in appropriate enforcement actions by this Office.

Please keep in mind that this determination does not affect your legal requirements to obtain other permits which may be required by the Division of Water Quality, the Division of Land Resources, Coastal Area Management Act or any other Federal, State or Local Government.

Please reference the Stormwater Project Number above on all correspondence. If you have any questions or need additional information concerning this matter, please contact Samir Dumpor at (252) 946-6481.

Sincerely,

Amy Adams

Amy Adams
Regional Supervisor
Washington Regional Office

AA/ sd: K:\SD\STORMWATER\EXEMPT\SW7130612
cc: Washington Regional Office

North Carolina Department of Environment and Natural Resources
Division of Water Quality

Pat McCrory
Governor

Thomas A. Reeder
Acting Director

John E. Skvarla, III
Secretary

July 22, 2013

Mr. Terry Morris
Craven LCID, LLC
109 Swift Creek Road
Vanceboro, NC 28586

Subject: Stormwater Permit No. SW7050818 Ownership Change
Debris Landfill Site
General Stormwater Permit
Craven County

Dear Mr. Morris:

The Washington Regional Office received your Stormwater Application and supporting information on June 13, 2013. Staff review of the plans and specifications has determined that the project, as proposed, will comply with the Stormwater Regulations set forth in Title 15A NCAC 2H.1000. We are forwarding Permit No. SW7050818 dated July 22, 2013 to Craven LCID, LLC.

This permit shall be effective from the date of issuance until rescinded and shall be subject to the conditions and limitations as specified therein. Any future development at this site will require an additional Stormwater review and a permit for any Stormwater control measures deemed appropriate.

If any parts, requirements, or limitations contained in this permit are unacceptable, you have the right to request an adjudicatory hearing upon written request within thirty (30) days following receipt of this permit. This request must be in the form of a written petition, conforming to Chapter 150B of the North Carolina General Statutes, and filed with the office of Administrative Hearings, 6714 Mail Service Center, Raleigh, NC 2799-6714. Unless such demands are made this permit shall be final and binding.

If you have any questions, or need additional information concerning this matter, please contact Mr. Roger Thorpe at (252) 948-3923.

Sincerely,

Amy Adams
for Thomas A. Reeder

Cc R. J. Bushhogging, Inc.
Robert M. Chiles, P.E.

North Carolina Division of Water Quality
943 Washington Square Mall
Washington, NC 27889
Phone: 252-946-6481 \ FAX: 252-946-9215
Internet: www.ncwaterquality.org

State Stormwater Management Systems
Permit No. SW7050818

STATE OF NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
DIVISION OF WATER QUALITY

STATE STORMWATER MANAGEMENT PERMIT

GENERAL PERMIT

In accordance with the provisions of Article 21 of Chapter 143, General Statutes of North Carolina as amended, and other applicable Laws, Rules and Regulations

PERMISSION IS HEREBY GRANTED TO

Craven LCID, LLC
Craven County
FOR THE

construction, operation and maintenance of stormwater management systems in compliance with the provisions of 15A NCAC 2H.1000 (hereafter referred to as the *"stormwater rules"*) and the approved stormwater management plans and specifications, and other supporting data as attached and on file with and approved by the Division of Water Quality and considered a part of this permit for grass swales and vegetated buffers to serve an Inert Debris Landfill located off SR1243 near New Bern, NC.
The Permit shall be effective from the date of issuance until rescinded and shall be subject to the following specific conditions and limitations.

I. DESIGN STANDARDS

1. This project involves the construction of grass swales and vegetated buffers to serve an inert debris landfill and gravel access road located off SR1243.

2. Approved plans and specifications for projects covered by this permit are incorporated by reference and are enforceable parts of the permit.

3. No stormwater piping in addition to the existing piping shall be allowed except:

   a. That minimum amount necessary to direct runoff beneath an impervious surface such as a road.
   b. That minimum amount needed under driveways to provide access to lots.

II. SCHEDULE OF COMPLIANCE

1. Grasslined swales, vegetated buffers and other Best Management Practices used for stormwater runoff control shall be adequately maintained throughout the life of the project.

2. The permittee shall at all times provide adequate erosion control measures in conformance with the approved Erosion Control Plan.

3. The permittee shall submit all information requested by the Director or his representative within the time frame specified in the written information request.

III. GENERAL CONDITIONS

1. Failure to abide by the conditions and limitations contained in this permit may subject the Permittee to an enforcement action by the Division of Water Quality, in accordance with North Carolina General Statutes 143-215.6A to 143.215.6C.

2. The permit may be modified, revoked or terminated for cause. The filing of a request for a permit modification, or termination does not void any permit condition.

3. The issuance of this permit does not prohibit the Director from reopening and modifying laws, rules, and regulations contained in Title 15A of the North Carolina Administrative Code, Subchapter 2H.1000; and North Carolina General Statute 143-215.1 et.al.

4. The following items will require a modification to the permit:

   a. Any revision to the approved plans, regardless of size
   b. Project name change
   c. Change of ownership
   d. Redesign or addition to the approved amount of built-upon area.
   e. Further subdivision of the project area

   f. In addition, the Director may determine that other revisions to the project should require a modification to the permit.

5. For any additions or modifications of the previously permitted built-upon area, the permittee shall submit to the Director revised plans and specifications and shall receive approval prior to construction.

6. The Director may notify the permittee when the permitted site does not meet one or more of the minimum requirements of the permit. Within the time frame specified in the notice, the permittee shall submit a written time schedule to the Director for modifying the site to meet minimum requirements. The permittee shall provide copies of revised plans and certification in writing to the Director that the changes have been made.

7. The permit is not transferable to any person except after notice to and approval by the Director. The Director may require modification or revocation and reissuance of the permit to change the name and incorporate such other requirements as may be necessary. A formal permit request must be submitted to the Division of Water Quality accompanied by the appropriate fee, documentation from both parties involved, and other supporting materials as may be appropriate. The approval of this request will be considered on its merits, and may or may not be approved.

8. The issuance of this permit does not preclude the Permittee from complying with any and all statutes, rules, regulations, or ordinances which may be imposed by other government agencies (local, state and federal) which have jurisdiction.

Permit issued this the 22 nd day of July, 2013.

NORTH CAROLINA ENVIRONMENTAL MANAGEMENT COMMISSION

Amy Adams

Thomas A. Reeder, Acting Director
Division of Water Quality
By Authority of the Environmental Management Commission

Permit Number SW7050818

NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

DIVISION OF WASTE MANAGEMENT

SOLID WASTE SECTION

LANDFILL GAS MONITORING GUIDANCE

NOVEMBER 2010

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SECTION 1 - Introduction

North Carolina Solid Waste Management Rules 15A NCAC 13B require quarterly monitoring of methane gas (at MSW landfills) and quarterly monitoring of methane and other explosive landfill gases (LFG) (at C&D and other landfills) to ensure that landfill gas does not exceed the lower explosive limit (LEL) at the facility property boundary or 25 percent of the lower explosive limit in facility structures. If the concentration exceeds the specified limits, steps must be taken to ensure the protection of public health and a remediation plan must be implemented immediately. A landfill gas monitoring plan is necessary to ensure that these performance standards are met and this guidance document was developed to assist in establishing a standardized procedure for the monitoring of landfill gas.

Background

Organic matter in landfills begins to decompose almost immediately after being placed in a disposal site. Putrescible wastes such as food products and sewage sludges begin to break down by biological processes very rapidly whereas paper, cardboard or cellulose based materials are slower to decompose. However, when conditions become favorable, most organic matter will decompose. The decomposition process typically goes through several stages that depend on conditions such as pH, temperature, and moisture content. The final stage results in the production of methane and although the rate of production may vary, most landfills produce methane.

Landfill Gas Generation

Landfill gas is a natural by-product of the anaerobic decomposition of organic waste in a landfill. The composition, quantity and rate of landfill gas generation are dependent on the types of waste that are decomposing and the level of microbial activity within the wastes. The decomposition of biodegradable waste begins with aerobic decomposition which lasts until the oxygen in the landfill is depleted. The anaerobic phase then begins, resulting in landfill gas production.

There are four stages of landfill gas composition: the first stage is characterized by elevated nitrogen levels and occurs when the landfill is new. The second stage is characterized by elevated carbon dioxide levels and occurs for a relatively short period of time after the initial stage is complete. The third and fourth stages are characterized by elevated methane concentrations and represent the active life of a landfill and the post-closure time frame.

Landfill gas is generally composed of 50-55% methane (CH_4); 45-50% carbon dioxide (CO_2); less than 5% nitrogen (N_2); and less than 1% non-methane organic compounds. These individual gases generally remain co-mingled and do not naturally separate. The Solid Waste Section (SWS) Rules typically focus on methane (CH_4) and its explosive properties due to public safety issues. Hydrogen sulfide (H_2S) is also of particular concern in landfills and is typically recognized by its rotten egg odor. H_2S is immediately dangerous to life and health at concentrations of 100 parts per million (ppm).

Landfill Gas Migration

The production of landfill gas creates a positive pressure within the landfill that forces the gas to migrate. Landfill gas migrates from place to place by diffusion and pressure gradient and will follow the path of least resistance. Subsurface gas typically migrates above the groundwater table and is restricted laterally by streams. Porous soils lying above the bedrock can serve as pathways to transmit large volumes of gas. Underground off-site migration is common and can be facilitated by the presence of pipelines, buried utility corridors or trenches located within or adjacent to the landfill boundaries. Movement depends on soil type and moisture, and migration distances of 1,500 feet have been observed. Barometric pressure also influences movement. Falling barometric pressure allows methane to migrate out of the landfill and into surrounding areas.

SECTION 2 - Factors Influencing Landfill Gas Generation and Migration

Factors that affect landfill gas generation and migration through the subsurface include the following:

Waste Composition
The production of landfill gas is directly related to the amount of organic matter present in waste. The bacteria that break down the waste require small amounts of specific minerals such as calcium, potassium, magnesium and other micronutrients. Bacteria are able to thrive and produce landfill gas if the minerals/micronutrients are present. If the minerals/micronutrients are not present or if substances that inhibit bacterial growth exist, landfill gas production will occur at a reduced rate. Some forms of organic matter such as cellulose break down quickly whereas matter such as lignin breaks down more slowly. The rate at which landfill gas is produced depends on the proportions of each type of organic matter present in the waste.

Moisture Content
Landfills with higher moisture content generate higher concentrations of landfill gas in earlier stages of development (such as during leachate recirculation). Moisture accelerates the methanogenic process.

Temperature
Landfill bacteria are temperature dependant. They are able to survive and function below the freezing point, but they also function well at temperatures up to 65°C. Anaerobic bacteria produce small amounts of heat and may not be able to maintain the temperature of a shallow landfill when external temperatures decrease, so LFG generation may exhibit seasonal variations. Saturated landfills may not achieve ideal temperatures because the bacteria do not generate sufficient heat to raise the temperature of the excess water. Higher temperatures promote volatilization and chemical reactions with the waste so the trace gas component of landfill gas tends to increase with higher landfill temperatures.

Age of Landfill
Typically, landfills have an increasing generation of landfill gas for a number of years until closure at which time landfill gas generation reaches a peak and begins to subside. An evaluation of the age of the landfill and use of a landfill gas generation curve can be helpful in determining the likelihood of significant landfill gas concentrations from the landfill.

Landfill Cap
The type or presence of landfill cover can influence landfill gas generation and migration. Although a low permeability cap will reduce moisture and landfill gas generation over the longer term, initially, the installation of a landfill cap could drive landfill gas migration further from the landfill in the subsurface without proper ventilation (either passive or active). This is especially true in the case of unlined (unvented) landfills.

Water Table
Landfill gas movement in unlined landfills may be influenced by groundwater table variations. A rising water table could cause displacement and force upward movement of landfill gas.

Man-made and Natural Conduits
Structures such as drains, trenches, and buried utility corridors can act as conduits for landfill gas migration. Geologic features including fractured bedrock, porous soil, and permeable strata also provide conduits for landfill gas migration

Landfill Liner Conditions
The presence of a Subtitle-D (or equivalent) landfill liner has the capability to limit the lateral migration of landfill gas in the subsurface. Unlined landfills have no barrier to prevent lateral landfill gas migration in the subsurface.

Weather Conditions
Barometric pressure and precipitation have significant effects on landfill gas migration. Increased barometric pressure yields decreased landfill gas venting from the subsurface, until the pressure within the subsurface is greater than the atmospheric (barometric) pressure. Conversely, as the barometric pressure decreases, the landfill will vent the stored gas until pressure equilibrium is reached. Capping of a landfill can influence the effect of barometric pressure on landfill gas migration. Generally, a more permeable landfill cap will allow greater influence by barometric pressure than a less permeable landfill cap.

SECTION 3 – Current Solid Waste Section Rules Pertaining to Landfill Gas Monitoring

Web link to the 15A NCAC 13B rules - http://portal.ncdenr.org/web/wm/sw/rules

15A NCAC 13B

.0101- DEFINITIONS
.0101 (14) "Explosive gas" means Methane (CH_4)
.0101(25) "Lower explosive limit" (LEL) means the lowest percent by volume of a mixture of explosive gases which will propagate a flame in air at 25 degrees Celsius and atmospheric pressure.

.0503 - SITING AND DESIGN REQUIREMENTS FOR DISPOSAL FACILITIES
.0503(2) A site shall meet the following design requirements:

(a) The concentration of explosive gases generated by the site shall not exceed:

(i) twenty-five percent of the limit for the gases in site structures (excluding gas control or recovery system components); and

(ii) the lower explosive limit for the gases at the property boundary;

.0543 - CLOSURE AND POST-CLOSURE REQUIREMENTS FOR C&DLF FACILITIES
.0543(e) Post-closure criteria.

(1) Following closure of each C&DLF unit, the owner and operator must conduct post-closure care. Postclosure care must be conducted for 30 years, except as provided under Subparagraph (2) of this Paragraph, and consist of at least the following:

(C) maintaining and operating the gas monitoring system in accordance with the requirements of Rule .0544 of this Section; and

(2) The length of the post-closure care period may be:

(A) decreased by the Division if the owner or operator demonstrates that the reduced period is sufficient to protect human health and the environment and this demonstration is approved by the Division; or

(B) increased by the Division if the Division determines that the lengthened period is necessary to protect human health and the environment.

.0544 - MONITORING PLANS AND REQUIREMENTS FOR C&DLF FACILITIES
.0544(d) Gas Control Plan

(1) Owners and operators of all C&DLF units must ensure that:

(A) the concentration of methane gas or other explosive gases generated by the facility does not exceed 25 percent of the lower explosive limit in on-site facility structures (excluding gas control or recovery system components);

(B) the concentration of methane gas or other explosive gases does not exceed the lower explosive limit for methane or other explosive gases at the facility property boundary; and

(C) the facility does not release methane gas or other explosive gases in any concentration that can be detected in offsite structures.

(2) Owners and operators of all C&DLF units must implement a routine methane monitoring program to ensure that the standards of this Paragraph are met.

(A) The type of monitoring must be determined based on soil conditions, the Hydrogeologic conditions under and surrounding the facility, hydraulic conditions on and surrounding the facility, the location of facility structures and property boundaries, and the location of all offsite structures adjacent to property boundaries.

(B) The frequency of monitoring shall be quarterly or as approved by the Division.

(3) If methane or explosive gas levels exceeding the limits specified in Subparagraph (d)(1) of this Rule are detected, the owner and operator must:

(A) immediately take all steps necessary to ensure protection of human health and notify the Division;

(B) within seven days of detection, place in the operating record the methane or explosive gas levels detected and a description of the steps taken to protect human health; and

(C) within 60 days of detection, implement a remediation plan for the methane or explosive gas releases, place a copy of the plan in the operating record, and notify the Division that the plan has been implemented. The plan must describe the nature and extent of the problem and the proposed remedy.

(4) Based on the need for an extension demonstrated by the operator, the Division may establish alternative schedules for demonstrating compliance with Parts (3)(B) and (3)(C) of this Paragraph.

(5) For purposes of this Item, "lower explosive limit" means the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25 C and atmospheric pressure.

.0566 - OPERATIONAL REQUIREMENTS FOR LAND CLEARING/INERT DEBRIS (LCID) LANDFILLS

.0566(13) The concentration of explosive gases generated by the facility shall not exceed:

(a) Twenty-five percent of the lower explosive limit for the gases in facility structures.

(b) The lower explosive limit for the gases at the property boundary.

.1626 – OPERATIONAL REQUIREMENTS FOR MSWLF FACILITIES

.1626(4) Explosive gases control.

(a) Owners or operators of all MSWLF units must ensure that:

(i) The concentration of methane gas generated by the facility does not exceed 25 percent of the lower explosive limit for methane in facility structures (excluding gas control or recovery system components); and

(ii) The concentration of methane gas does not exceed the lower explosive limit for methane at the facility property boundary.

(b) Owners or operators of all MSWLF units must implement a routine methane monitoring program to ensure that the standards of (4)(a) are met. A permanent monitoring system shall be constructed on or before October 9, 1994. A temporary monitoring system shall be used prior to construction of the permanent system.

(i) The type and frequency of monitoring must be determined based on the following factors:

(A) Soil conditions;

(B) The hydrogeologic conditions surrounding the facility;

(C) The hydraulic conditions surrounding the facility; and

(D) The location of facility structures and property boundaries.

(ii) The minimum frequency of monitoring shall be quarterly.

(c) If methane gas levels exceeding the limits specified in (4)(a) are detected, the owner or operator must:

(i) Immediately take all necessary steps to ensure protection of human health and notify the Division;

(ii) Within seven days of detection, place in the operating record the methane gas levels detected and a description of the steps taken to protect human health; and

(iii) Within 60 days of detection, implement a remediation plan for the methane gas releases, place a copy of the plan in the operating record, and notify the Division that the

plan has been implemented. The plan shall describe the nature and extent of the problem and the proposed remedy.

(iv) Based on the need for an extension demonstrated by the operator, the Division may establish alternative schedules for demonstrating compliance with (4)(c)(ii) and (iii) of this Rule.

(d) For purposes of this Item, "lower explosive limit" means the lowest percent by volume of a mixture of explosive gases in air that will propagate a flame at 25°C and atmospheric pressure.

.1626(10) Recordkeeping requirements.

(a) The owner or operator of a MSWLF unit must record and retain at the facility, or an alternative location near the facility approved by the Division, in an operating record the following information as it becomes available:

(iii) Gas monitoring results and any remediation plans required by Item (4) of this Rule;

.1627 – CLOSURE AND POST CLOSURE REQUIREMENTS FOR MSWLF ACTIVITES

.1627(d) Post-Closure Criteria

(1) Following closure of each MSWLF unit, the owner or operator shall conduct post-closure care. Post-closure care shall be conducted for 30 years, except as provided under Subparagraph (2) of this Paragraph, and consist of at least the following:

(D)-Maintaining and operating the gas monitoring system in accordance with the requirements of Rule .1626 of this Section.

(2) The length of the post-closure care period may be:

(A) Decreased by the Division if the owner or operator demonstrates that the reduced period is sufficient to protect human health and the environment and this demonstration is approved by the Division; or

(B) Increased by the Division if the Division determines that the lengthened period is necessary to protect human health and the environment.

(3) Following completion of the post-closure care period for each MSWLF unit, the owner or operator shall notify the Division that a certification, signed by a registered professional engineer, verifying that post-closure care has been completed in accordance with the post-closure plan, has been placed in the operating record.

NOTES:

Based on the referenced rules above, the following words / phrases are presently in the Solid Waste Section rules pertaining to methane and explosive landfill gas.

Rule .0101(14) states: *"Explosive gas means Methane (CH)"*.
Rule .0503 (2)(a) refers to *"explosive gases"*.
Rule .0544(d) refers to *"Gas Control Plan"*
Rule .0544(d)(1) refers to *"methane or other explosive gases"*.
Rule .0544(d)(2) refers to "*methane monitoring program*"
Rule .0544(d)(3) refers to *"methane or explosive gas levels*"
Rule .0566 (13) refers to *"explosive gases"*.
Rule .1626 (4) refers to *"explosive gases control"*
Rule .1626(4)(a-b) refers to "*methane monitoring"* and "*methane monitoring program"*.

Monitoring Goals

Landfill design and landfill gas monitoring regulations in North Carolina require that there not be an exceedance of 100% of the Lower Explosion Limit (LEL) (equivalent to 5% methane) at the property boundary, or 25% LEL in on-site structures. These regulations were developed over time to protect the health and safety of the citizens of North Carolina and the U.S. from the asphyxiation and explosive hazards of landfill gas.

NC Rule History

A review of NC landfill guidance documents and regulations from 1972 to the present indicates that from 1972 through 1982, there was no mention of design requirements regarding the control of landfill gas, nor were there any landfill monitoring requirements for landfill gas. In 1982, the regulations were changed to require that sanitary landfill design prevent landfill gas concentrations of 100% LEL at the property boundary line and 25% inside on-site structures. Although a design requirement was added, no design requirement was established to determine if the design requirement was being met. In 1993 with the establishment of .1600 rules, requirements for designs to limit landfill gas levels to below 100% at the property boundary line and 25% in on-site structures and monitoring of landfill gas concentrations around the perimeter of the landfill and inside on-site structures were adopted.

SECTION 4 – Landfill Gas Incidents and Explosions

Hazards Involving Landfill Gas

Landfill fires may or may not be directly caused by landfill gas. The primary concern with these fires is air contamination from the resulting smoke; however they also present a variety of additional problems. In addition to concerns with containing and extinguishing landfill fires, potential reactions involving unknown chemicals in the landfill can cause uncertain hazards. Discarded consumer products in a landfill, such as pesticides, paints, solvents, cleaners, and other material can be the source of chemical releases. Heat from the fire can cause chemicals to volatilize, breakdown, and enter the environment. Also to be considered is the presence of other combustible gases in addition to methane. Whenever an environmental investigation of a landfill is prompted by odorous compounds or explosive gases, the presence of toxic substances should also be investigated. One example is hydrogen sulfide (H2S) that can cause asphyxiation and is flammable. An analysis should include alkyl benzenes, sulfur compounds, vinyl chloride, and methane, and other products associated with industrial wastes, construction and debris waste, and normal organic and inorganic waste.

Fires and explosion hazards become a concern when gases collect in confined spaces. Buildings, basements, and pits are typically regarded as confined spaces. However, landfill gases also collect in and migrate to cracks in the landfill cover, leachate “springs”, cracks in adjacent structures, paved parking areas, etc. Fires can occur on the surface and underground. Surface fires involve recently buried waste near the surface in an aerobic decomposing layer, typically 1 to 4 feet below ground. These fires can be intensified by subsurface landfill gas and spread throughout the landfill. Subsurface fires occur deeper within the landfill, involve material buried for months or years, and can burn for days and months.

The following is a brief summary of some incidents involving landfill gas migration from landfills:

2007 Four employees died as a result of exposure to high concentrations of hydrogen sulfide while attempting to repair a leachate pump at a C&D landfill in Superior, Wisconsin (Journal of Environmental Heath 2008).

1999 An 8-year old girl was burned on her arms and legs when playing in an Atlanta, Georgia playground. The area was reportedly used as an illegal dumping ground many years ago (Atlanta Journal-Constitution 1999).

1994 While playing soccer in a park built over an old landfill in Charlotte, North Carolina, a woman was seriously burned by a methane explosion (Charlotte Observer 1994).

1987 Offsite landfill gas migration is suspected to have caused a house to explode in Pittsburgh, Pennsylvania (EPA 1991).

1984 Landfill gas migrated to and destroyed one house near a landfill in Akron, Ohio. Ten houses were temporarily evacuated (EPA 1991).

1983 An explosion destroyed a residence across the street from a landfill in Cincinnati, Ohio. Minor injuries were reported (EPA 1991).

1975 In Sheridan, Colorado, landfill gas accumulated in a storm drain pipe that ran through a landfill. An explosion occurred when several children playing in the pipe lit a candle, resulting in serious injury.

1969 Methane gas migrated from an adjacent landfill into the basement of an armory in Winston-Salem, North Carolina. A lit cigarette caused the gas to explode, killing three men and seriously injuring five others (USACE 1984).

SECTION 5 - Landfill Gas Monitoring Wells

Locations

Landfill gas monitoring well locations will be site specific depending upon site geology, depth to groundwater, surface water features, on-site and off-site structures and sensitive receptors. The landfill gas monitoring wells must be spaced no more than 500 feet apart depending upon site specifics. A readily accessible, unobstructed path must be maintained so that landfill gas monitoring wells are always accessible using four-wheel drive vehicles. Regardless of site specifics, the permittee must obtain approval from the Solid Waste Section for the design and installation of any landfill gas monitoring well system.

Well Construction and Installation

Landfill gas monitoring wells are the same as groundwater monitoring wells with two exceptions. Landfill gas monitoring wells are installed just above the water table within the unsaturated zone and are equipped with a stopcock valve or a quick connect coupling on the cap, which allows for accurate landfill gas measurements. The stopcock valve must be equipped with flexible tubing and a barb connection that will fit the gas meter's inlet tube. The stopcock valve or a quick connect coupling must be closed between monitoring events. The landfill gas monitoring well must also be capped, locked, and labeled with a permanently affixed identification plate stating the well contractor name and certification number, date of well competition, total depth of well, screen length and well ID number. See detailed schematics of a landfill gas monitoring well (Figure 1).

The depth of each landfill gas monitoring well will be site specific depending upon depth to groundwater. Landfill gas monitoring wells must be constructed the same as groundwater monitoring wells as described in 15A NCAC Subchapter 2C. Typically landfill gas monitoring wells must be installed using 2" PVC piping and screen. The screen length, also site specific, must span the majority of the unsaturated zone while still allowing for proper well construction. A North Carolina Professional Geologist or Professional Engineer must be present to supervise the installation of all landfill gas monitoring wells. The exact locations, screened intervals, and nesting of the wells must be approved by the Solid Waste Section Hydrogeologist prior to landfill gas monitoring well installation. Each landfill gas monitoring well must be surveyed for location and elevation by a North Carolina Registered Land Surveyor. Within thirty (30) days of the completed construction of each new landfill gas monitoring well, the boring log and a diagram of each well including, but not limited to total depth, screened interval and distance above seasonal high water table must be submitted to the Solid Waste Section. The submittal must also include a scaled topographic map showing the location and identification of new, existing and abandoned landfill gas monitoring wells.

Nested and Clustered Landfill Gas Monitoring Wells

Nested and/or clustered landfill gas monitoring wells may be required in unsaturated zones of 45 feet or more to measure specific depths of the unsaturated zone. Initially, the installation of one long screen shall be sufficient. If a monitoring event shows an exceedance of the lower explosive limit, then the Solid Waste Section may require the installation of nested and/or clustered landfill gas monitoring wells.

Abandonment of Wells

An abandonment record must be submitted to the Solid Waste Section within 30 (thirty) days of the abandonment of a landfill gas monitoring well. The landfill gas monitoring well(s) must be overdrilled and sealed with grout in accordance with 15A NCAC 2C .0113(d) and certified by a North Carolina Professional Geologist or Professional Engineer.

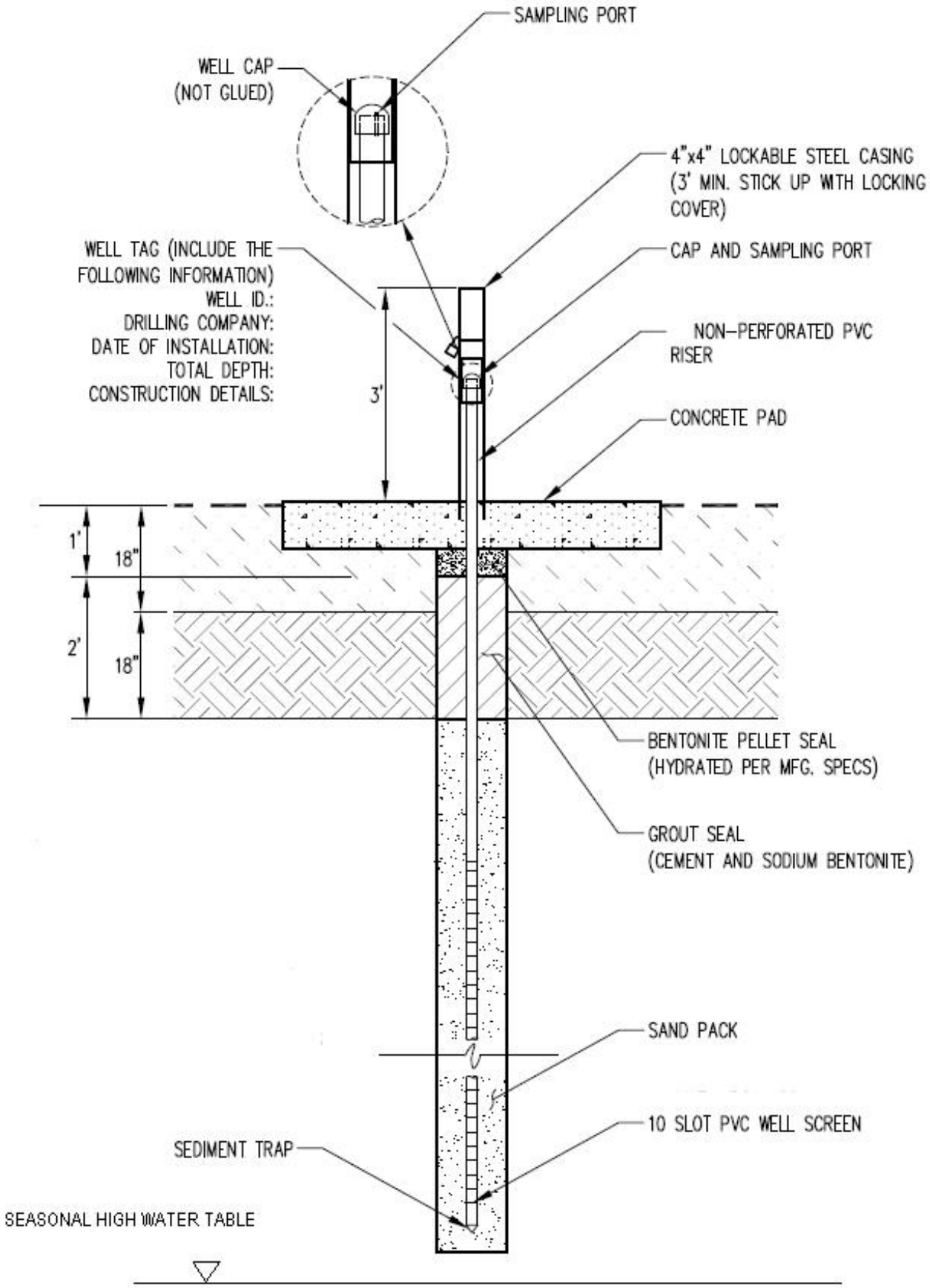
Professional Certification

The certification statement below must be signed and sealed by a North Carolina Professional Geologist or Professional Engineer and submitted with the Landfill Gas Monitoring Plan.

> The landfill gas monitoring plan for this facility has been prepared by a qualified geologist or engineer who is licensed to practice in the State of North Carolina. The plan has been prepared based on first-hand knowledge of site conditions and familiarity with North Carolina solid waste rules and industry standard protocol. This certification is made in accordance with North Carolina Solid Waste Regulations, indicating this Landfill Gas Monitoring Plan should provide early detection of any release of hazardous constituents to the uppermost aquifer, so as to be protective of public health and the environment. No other warranties, expressed or implied, are made.
>
> Signed _____
>
> Printed _____
>
> Date _____
>
> Not valid unless this document bears the seal of the above mentioned licensed professional.

In addition, the boring logs and/or well diagram must be signed and sealed with the stamp of a North Carolina Registered Land Surveyor.

Figure 1 – Landfill Gas Monitoring Well Detail



SECTION 6 – Landfill Gas Monitoring Instrumentation

The person using the landfill gas monitoring instrument must understand the principles of operation and follow the manufacturer's instructions. This includes calibrating the instrument according to the manufacturer's specifications. Include the following on the top portion of the landfill gas monitoring form (See example below) : facility name, permit number, type and serial number of gas monitoring instrument, calibration date of the instrument, date and time of field calibration, type of gas used for field calibration (15/15 or 35/50), expiration date of field calibration gas canister, date of landfill gas monitoring event, name and position of sample collector, pump rate of instrument being used, ambient air temperature, and general weather conditions. Verification that the equipment was calibrated in accordance with the manufacturer's specifications is also required. When determining which field calibration gas to use, take into consideration the expected levels of methane in the landfill gas monitoring wells. If the methane levels are expected to be low, use the 15/15 gas canister (15% CO2/15% CH4). If the methane levels are expected to be high, use the 35/50 gas canister (35% CO2/50% CH4).

For every landfill gas monitoring well, please include the following: verification of sample tube purge prior to each sample taken (should be one minute), the time pumped in seconds (should be at least one minute), barometric pressure, time stabilized reading collected, percent lower explosive limit, percent methane by volume, percent oxygen, percent carbon dioxide, and any observations or comments.

The landfill gas monitoring data form (See example below) and results should be retained in the facility's operating record unless an exceedance has occurred and/or is requested by the Solid Waste Section.

Landfill gas monitoring readings from non-calibrated or inaccurately calibrated instruments are not reliable, and will therefore be rejected by the Solid Waste Section. Landfill gas monitoring readings collected with monitoring equipment that was not designed for landfill gas monitoring will also be rejected by the Solid Waste Section. There are several different landfill gas monitoring instruments on the market which may be used in order to obtain all of the information required by the Solid Waste Section.

Monitoring Times

Monitoring times are also important when conducting landfill gas monitoring. Proper landfill gas monitoring should include sampling during times when landfill gas is most likely to migrate. Landfill gas can migrate and accumulate not only in landfill gas monitoring wells; it can also migrate and accumulate in buildings and other structures. Because subsurface gas pressures are considered to be at a maximum during the afternoon hours, monitoring should be conducted in the afternoon or whenever the barometric pressure is low.

Scientific evidence also indicates that weather and soil conditions influence the migration of landfill gas. Barometric pressure and precipitation have significant effects on landfill gas migration. Increased barometric pressure generates decreased landfill gas venting from the subsurface, until the pressure within the subsurface is greater than the atmospheric (barometric) pressure. On the other hand, when the barometric pressure decreases, the landfill will vent the stored gas until a pressure equilibrium is reached. Capping of a landfill can influence the effect of barometric pressure on landfill gas migration. Generally, a more permeable landfill cap will allow greater influence by barometric pressure than a less permeable landfill cap. As a result, landfill gas monitoring should be conducted when the barometric pressure is low and soils are saturated. During the winter season when snow cover is just beginning to melt or when the ground is frozen or ice covered, landfill gas monitoring should be conducted when the barometric pressure is low.

Landfill Gas Sampling Procedures
Any accumulation of landfill gas in the landfill gas monitoring wells is the result of landfill gas migration. The following procedure is a recommended example for conducting landfill gas monitoring well sampling, but always read and follow the manufacturer's instructions because each instrument will be different.

Step 1 – Calibrate the instrument according to the manufacturer's specifications. In addition, prepare the instrument for monitoring by allowing it to properly warm up as directed by the manufacturer. Make sure the static pressure shows a reading of zero on the instrument prior to taking the first sample.
Step 2 – Purge sample tube for at least one minute prior to taking reading. Connect the instrument tubing to the landfill gas monitoring well cap fitted with a stopcock valve or quick connect coupling.
Step 3 – Open the valve and record the initial reading and then the stabilized reading. A stable reading is one that does not vary more than 0.5 percent by volume on the instrument's scale.
Step 4 - Record the stabilized reading including the oxygen concentration and barometric pressure. A proper reading should have two percent oxygen by volume or less. If levels of oxygen are higher, it may indicate that air is being drawn into the system giving a false reading.
Step 5 – Turn the stopcock valve to the off position and disconnect the tubing.
Step 6 – Proceed to the next landfill gas monitoring well and repeat Steps 2 – 5.

Landfill Gas Constituent Sampling and Analysis
Sampling of landfill gas to determine volume percentages/concentrations of each constituent can be accomplished through the use of canisters which are specifically designed for landfill gas analysis. Several analytical methods are available to determine the concentrations of a variety of constituents. Typically, landfill gas analysis of this type is performed to determine the non-methane organic compounds emission rate for Tier 2 testing under the Clean Air Act (Title V Subpart WWW 60.754). Isotropic identification of landfill methane can be accomplished to identify one source of methane from another. In this case, isotopes of carbon and hydrogen in the methane are analyzed to determine the methane source.

NC Division of Waste Management - Solid Waste Section

Landfill Gas Monitoring Data Form

Notice: This form and any information attached to it are "Public Records" as defined in NC General Statute 132-1. As such, these documents are available for inspection and examination by any person upon request (NC General Statute 132-6).

Facility Name: _____ Permit Number: _____

Date of Sampling: _____ NC Landfill Rule (.0500 or .1600): _____

Name and Position of Sample Collector: _____

Type and Serial Number of Gas Meter: _____ Calibration Date of Gas Meter: _____

Date and Time of Field Calibration: _____

Type of Field Calibration Gas (15/15 or 35/50): _____ Expiration Date of Field Calibration Gas Canister: _____

Pump Rate of Gas Meter: _____

Ambient Air Temperature: _____ Barometric Pressure: _____ General Weather Conditions: _____

Instructions: Under "Location or LFG Well" identify the monitoring wells or describe the location for other tests (e.g., inside buildings). A drawing showing the location of test must be attached. Report methane readings in both % LEL and % methane by volume. A reading in percent methane by volume can be converted to % LEL as follows: % methane by volume = % LEL/20

Location or LFG Well ID	Sample Tube Purge	Time	Time Pumped (s)	Initial %LEL	Stabilized %LEL	%CH4 by Volume	%O2	%CO2	Notes

If your facility has more gas monitoring locations than there is room on this form, please attach additional sheets listing the same information as contained on this form.

Certification
To the best of my knowledge, the information reported and statements made on this data submittal and attachments are true and correct. I am aware that there are significant penalties for making any false statement, representation, or certification including the possibility of a fine and imprisonment.

_____ _____
SIGNATURE TITLE

SECTION 7 - References

Agency for Toxic Substances & Disease Registry. "Landfill Gas Primer- An Overview for Environmental Health Professionals. 2001." http://www.atsdr.cdc.gov/HAC/landfill/html/toc.html (accessed February 24. 2010).

California Environmental Protection Agency. "Landfill Gas Monitoring Well Functionality at 20 California Landfills, 2008". http://www.calrecycle.ca.gov/Publications/Organics/2008022.pdf (accessed February 24 2010).

Florida Department of Environmental Protection. Gas Management Systems, under Rule 62-701.530. http://www.dep.state.fl.us/waste/quick_topics/rules/default.htm (accessed February 24, 2010).

Missouri Department of Natural Resources, Flood Grant Team. "An Analysis of Landfill Gas Monitoring Well Design and Construction, 2007". http://www.clu-in.org/conf/itrc/directpush/prez/Missouri_Study.pdf (accessed February 24, 2010).

Missouri Department of Natural Resources. "Design and Construction of Landfill Gas Monitoring Wells". http://www.dnr.missouri.gov/pubs/pub2054.pdf (accessed February 24. 2010).

Wisconsin Department of Natural Resources. Environmental Monitoring for Landfills, under Chapter NR 507.22. http://www.dnr.state.wi.us/org/aw/wm/information/wiacsss.htm (accessed February 24, 2010).

"Landfill Gas-an Overview" Landfill-gas.com. Web, 22, Feb. 2010 http://www.landfill-gas.com/webpage -LFG-overview.doc

SECTION 8 – Suggested Outline for a Landfill Gas Monitoring Plan

1. Introduction
   1.1. Background (project overview, site observations, NCDENR rules referenced)
   1.2. Site Geology with discussion of groundwater depth and flow (potentiometric surface map)
   1.3. Regulatory Limits
2. Landfill Gas Monitoring
   2.1. Landfill Gas Monitoring Well Locations (discussion of reasoning behind proposed locations, discussion of well construction, reference map showing proposed locations, reference table displaying well ID, well depth, screen interval and depth to groundwater)
   2.2. Structure and Ambient Sampling
   2.3. Landfill Gas Monitoring Frequency
3. Landfill Gas Sampling Procedures
   3.1. Detection Equipment Used (discussion of calibration procedures)
   3.2. Landfill Gas Sampling Procedure
4. Record Keeping and Reporting
   4.1. Landfill Gas Monitoring Data Form
   4.2. Sampling Reports
   4.3. Permanent Record Keeping
5. Contingency Plan
6. Certification of Professional Geologist or Professional Engineer
7. Certification of Registered Land Surveyor

Figures

Map displaying proposed landfill gas monitoring well locations

Potentiometric Surface Map

Diagram showing construction of stopcock valve or quick connect coupling on well cap

Diagram showing well construction of each landfill gas monitoring well

Table

Table displaying well ID, well depth, screen interval, depth to groundwater

Example of landfill gas monitoring data form

SECTION 9 – Checklist of Items to be Included in a Landfill Gas Monitoring Plan

1. Depth to groundwater discussion
2. Well locations
    a. Number of wells
    b. Well spacing
3. Instrumentation being used
    a. Calibration procedures
4. Sampling procedures as per the manufacture's instructions
5. Map of well locations
6. Table describing each well location
    a. Well ID
    b. Well depth
    c. Screen interval
    d. Depth to groundwater
    e. Subsurface lithology
7. Diagram of cap construction w/ stopcock valve or quick connect coupling
8. Diagram of well construction
9. Potentiometric surface map
10. Professional Geologist or Professional Engineer certification
11. Registered Land Surveyor certification

Emergency/Disaster Site - Spontaneous Combustion Guidance

When ground organic debris is put into piles, microorganisms can very quickly begin to decompose the organic materials. The microorganisms generate heat and volatile gases as a result of the decomposition process. Temperatures in these piles can easily rise to more than 160 degrees Fahrenheit. Spontaneous combustion can occur in these situations.

Spontaneous combustion is more likely to occur in larger piles of debris because of a greater possibility of volatile gases building up in the piles and being ignited by the high temperatures. If wind rows can be maintained 5 feet to 6 feet high and 8 feet to 10 feet wide, volatile gases have a better chance of escaping the piles; and the possibility of spontaneous combustion will be reduced.

Turning piles when temperatures reach 160 degrees can also reduce the potential for spontaneous combustion. Pile turning provides an opportunity for gases to escape and for the contents of the pile to cool. Adding moisture during turning will increase cooling. Controlling the amount of nitrogen-bearing (green) wastes in piles will also help to reduce the risk of fire. The less nitrogen in the piles the slower the decomposition process and consequently the less heat generated and gases released.

Large piles should be kept away from wooded areas and structures and shall be accessible to fire fighting equipment, if a fire were to occur. Efforts should be made to avoid driving or operating heavy equipment on large piles because the compaction will increase the amount of heat build-up, which could increase the possibility of spontaneous combustion.

ROBERT M. CHILES, P.E.
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BUSINESS : 252-637-4702
FAX: 252-637-3100
office@robertmchilespe.com
mikerice@robertmchilespe.com

August 8, 2013

Certified Mail Receipt No. 7009 2820 0001 4222 9253

Mr. Patrick McClain, P.E.
NCDENR, DLR, Land Quality Section
943 Washington Square Mall
Washington, N. C. 27889

Re: Crave-2013-019, Craven LCID, LLC

Enclosures:
(1) 2 Copies, Revised Erosion and Sediment Control Plan Application Checklist Attachment for Craven LCID, 356 Sanders Lane
(2) 2 Copies, Drawing, Erosion and Sediment Control Plan for Craven LCID, 356 Sanders Lane, for Craven LCID, LLC, prepared by Robert M. Chiles, PE, Revised 8-6-2013.

Dear Mr. McClain:

On behalf of our client, Craven LCID, LLC and its agent, Mr. Terry Morris, we submit the enclosed revised information in response to the July 1 letter of disapproval for your review and approval.

We have made a number of revisions to the proposed LCID plans following receipt of comments from Mr. Ming -Tai Choa of the Division of Waste Management, Solid Waste Section. These revisions include changes to the configuration of the proposed LCID disposal area, corrections to the onsite ditches, and changes to the proposed ditches. We have incorporated a number of other changes as a result of our recent telephone conversation.

With regards to the proposed ditches, we have removed the proposed ditch alongside the entrance road. Apparently, the site has functioned satisfactorily to date without one, and the existing gradual slope of the original ground will direct any runoff from the disposal area to the west and south, toward existing ditches. We corrected the depiction of the existing ditches near the Sanders Lane entrance. This is based upon recently acquired information which indicates there is only one ditch south of the entrance, not two as previously depicted. The proposed ditch realignment is now labeled as a possible ditch realignment. During the revision process, we realized that realigning the ditch provided only an insignificant increase in the disposal area. In the event that the owner decides to realign the ditch anyway, a note is added to the construction sequence on the drawing which indicates that the alignment should be cleared, the realignment ditch excavated without making connections to the exiting ditches, vegetation established within the realignment, and then the connections made to the existing ditches. The portion of the existing ditch that is replace by the realignment is then plugged and filled.

We have added check dams (with a note that they can be rock, coir logs, or compost socks) to the ditch alongside the access ramp at every 5 feet of vertical rise. We have also changed the plateau at the top of the disposal area from the previously submitted 0.25 acres to 0.08 acres, to reduce the watershed for the ditch considerably.

The revisions expand the erosion and sedimentation control measures for the site to now include temporary and permanent seeding, mulch, check dam, temporary gravel construction entrance, and compost sock, using the specifications directly from the Division's manual.

During our telephone conversation I clarified that the woody vegetation to be removed is located within the overgrown existing LCID disposal area, and that the general cleanup of stray fill material left behind by the previous operator is solid material stockpiled on the original ground that will be relocated to the disposal area.

Lastly, we have revised the application checklist attachment to include the discussed revisions, and to provide estimated stormwater runoff calculations.

Should you require additional information or have any questions, please contact us your convenience.

Very truly yours,
ROBERT M. CHILES, P.E.

ELECTRONIC COPY
SEE ORIGINAL FOR SIGNATURE

Michael L. Rice, P.E.

cc: Mr. Terry Morris, agent, Craven LCID, LLC

ROBERT M. CHILES, P.E.
ENGINEERS & CONSULTANTS
MARINE SURVEYORS
NEW BERN, NORTH CAROLINA

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June 21, 2013

Mrs. Allison Ward
NCDENR, DLR, Land Quality Section
943 Washington Square Mall
Washington, N. C. 27889

Re: Craven LCID, 356 Sanders Lane

Enclosures:
(1) 2 copies, Revised Drawing, Erosion and Sediment Control plan for Craven LCID, 356 Sanders Lane, for Craven LCID, LLC, prepared by Robert M. Chiles, PE.
(2) Copy, Temporary Gravel Construction Entrance standard specification.
(3) Copy of Deed

Dear Mrs. Ward:

On behalf of our client, Craven LCID, LLC and its agent, Mr. Terry Morris, we submit the enclosures in response to your request for additional information for your review and approval.

Enclosure one provides two signed and sealed copies of the revised Craven LCID erosion control plan drawing that we provided via email today. As discussed in our email to you, it is revised to include a typical ditch cross section, a gravel construction entrance location and detail, and an emphasized disturbed boundary per your requests.

Enclosure two is the standard two page specification for the temporary gravel construction entrance contained in the NCDENR, LQS erosion control manual.

Enclosure three provides a hard copy of the deed for the property that we provided via email today.

We typically withhold issuing plans to clients until they are approved by the regulatory agency with permitting authority. We will insert the revised and additional information into the copies we have prepared for Mr. Morris prior to issuing those documents to him.

Should you require additional information or have any questions, please contact us your convenience.

Very truly yours,
ROBERT M. CHILES, P.E.

ELECTRONIC COPY
SEE ORIGINAL FOR SIGNATURE

Michael L. Rice, P.E.

cc: Mr. Terry Morris, agent, Craven LCID, LLC

ROBERT M. CHILES, P.E.
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June 11, 2013

Certified Mail Receipt No. 7009 2820 0001 4222 9208

Mr. Patrick McClain, P.E.
NCDENR, DLR, Land Quality Section
943 Washington Square Mall
Washington, N. C. 27889

Re: Craven LCID, 356 Sanders Lane

Enclosures:
(1) Erosion and sedimentation control plan for Craven LCID, 356 Sanders Lane, Township No. 8, Craven County, NC, for Craven LCID, LLC, prepared by Robert M. Chiles, PE.
(2) Check for $325

Dear Mr. McClain:

On behalf of our client, Craven LCID, LLC and its agent, Mr. Terry Morris, we submit the enclosed information for your review and approval.

Craven LCID, LLC recently purchased property from Robert Jones Bushhogging located on Sanders Lane, west of New Bern, in township number 8. Mr. Jones operated a land clearing and inert debris landfill (LCID) on part of the property, and Craven LCID, LLC is applying for the several permits required to re-activate the LCID.

In August 2005, the LCID was issued a letter of approval of revised plan bearing erosion and sedimentation control plan no. Craven-2005-007 and the title Jones Land Disturbance. The disposal area of the LCID and the use of the surrounding property within which it is located remains unchanged from the previously permitted site. The existing disposal area contains approximately 4.05 acres, and is contained within a property that contains 10.01 acres.

Erosion and sedimentation control measures for the site include temporary and permanent seeding, and mulch, using the specifications directly from the Division's manual. The site is already constructed, and no work is required to reactivate the site following receipt of permits. You will note that the 4.5 acres disturbed area indicated on the financial responsibility form is slightly larger than the disposal area. The reason for this is to allow for removal of woody vegetation and consolidation of existing fill material within the entire disposal area, to include the area required realign one section of existing ditch onsite in order to establish the required separation distance between it and the disposal area, and to allow for some general cleanup of stray fill material left behind by the previous operator.

Should you require additional information or have any questions, please contact us your convenience.

Very truly yours,
ROBERT M. CHILES, P.E.

See original for signature - electronic copy provided for information only

Michael L. Rice, P.E.

cc: Mr. Terry Morris, agent, Craven LCID, LLC

FINANCIAL RESPONSIBILITY/OWNERSHIP FORM
SEDIMENTATION POLLUTION CONTROL ACT

No person may initiate any land-disturbing activity on one or more acres as covered by the Act before this form and an acceptable erosion and sedimentation control plan have been completed and approved by the Land Quality Section, N.C. Department of Environment and Natural Resources. (Please type or print and, if the question is not applicable or the e-mail and/or fax information unavailable, place N/A in the blank.)

Part A.

1. Project Name Craven LCID
2. Location of land-disturbing activity: County Craven City of Township 8
   Highway/Street Sanders Lane (NCSR 1243) River Basin: Neuse
   Latitude 35.1583 Longitude 77.1633 Datum: NCGS QUAD
   (Lats and Longs given to **4 decimal places** i.e. xx.xxxx N, -xx.xxxx W, not xx° xx' xx" N, -xx° xx' xx" W)
3. Approximate date land-disturbing activity will commence: Upon receipt of permits
4. Purpose of development (residential, commercial, industrial, institutional, etc.): Land clearing and inert debris landfill
5. Total acreage disturbed or uncovered (including off-site borrow and waste areas): 4.5
6. Amount of fee enclosed: $ 325 The application fee of $65.00 per acre (rounded up to the next acre) is assessed without a ceiling amount (Example: a 9-acre application fee is $585).
7. Has an erosion and sediment control plan been filed? Yes _____ No _____ Enclosed xx
8. Person to contact should erosion and sediment control issues arise during land-disturbing activity:
   Name Terry D. Morris E-mail Address _____
   Telephone 252 670-6749 Cell # _____ Fax # _____
9. Landowner(s) of Record (attach accompanied page to list additional owners):
   Craven LCID, LLC
   Name Telephone Fax Number
   109 Swift Creek Road
   Current Mailing Address Current Street Address
   Vanceboro, NC 28586
   City State Zip City State Zip
10. Deed Book No. 3193 Page No. 218 Provide a copy of the most current deed.

Part B.

1. Person(s) or Legal Entity(s) who are financially responsible for the land-disturbing activity (Provide a comprehensive list of all responsible parties on an attached sheet):

   Craven LCID, LLC
   Name E-mail Address
   109 Swift Creek Road
   Current Mailing Address Current Street Address
   Vanceboro, NC 28586
   City State Zip City State Zip

   Telephone 252 670-6749 Fax Number _____

2. (a) If the Financially Responsible Party is not a resident of North Carolina, give name and street address of the designated North Carolina Agent:

Name	E-mail Address
Current Mailing Address	Current Street Address
City State Zip	City State Zip
Telephone	Fax Number

(b) If the Financially Responsible Party is a Partnership or other person engaging in business under an assumed name, **attach a copy of the Certificate of Assumed Name**. If the Financially Responsible Party is a Corporation, give name and street address of the Registered Agent:

Name of Registered Agent	E-mail Address
Current Mailing Address	Current Street Address
City State Zip	City State Zip
Telephone	Fax Number

The above information is true and correct to the best of my knowledge and belief and was provided by me under oath (This form must be signed by the financially Responsible Person if an individual or his attorney-in-fact, or if not an individual, by an officer, director, partner, or registered agent with the authority to execute instruments for the Financially Responsible Person). I agree to provide corrected information should there by any change in the information provided herein.

Terry D. Morris	Agent
Type of print name	Title or Authority
Signature	Date

I , Barbara D. Francis a Notary Public of the County of Craven

State of North Carolina, hereby certify that Terry D. Morris appeared personally before me this day and being duly sworn acknowledged that the above form was executed by him.

Witness my hand and official seal, this _____ day of _____, 20_____

Seal

Notary Public

My commission expires _____, 20 _____

2. (a) If the Financially Responsible Party is not a resident of North Carolina, give name and street address of the designated North Carolina Agent:

Name _____ E-mail Address _____

Current Mailing Address _____ Current Street Address _____

City State Zip City State Zip

Telephone _____ Fax Number _____

(b) If the Financially Responsible Party is a Partnership or other person engaging in business under an assumed name, **attach a copy of the Certificate of Assumed Name**. If the Financially Responsible Party is a Corporation, give name and street address of the Registered Agent:

Name of Registered Agent _____ E-mail Address _____

Current Mailing Address _____ Current Street Address _____

City State Zip City State Zip

Telephone _____ Fax Number _____

The above information is true and correct to the best of my knowledge and belief and was provided by me under oath (This form must be signed by the financially Responsible Person if an individual or his attorney-in-fact, or if not an individual, by an officer, director, partner, or registered agent with the authority to execute instruments for the Financially Responsible Person). I agree to provide corrected information should there by any change in the information provided herein.

Terry D. Morris
Type of print name

Agent
Title or Authority

Terry D. Morris
Signature

6-6-13
Date

I, Barbara D. Francis a Notary Public of the County of Craven State of North Carolina, hereby certify that Terry D. Morris appeared personally before me this day and being duly sworn acknowledged that the above form was executed by him.

Witness my hand and official seal, this 6th day of JUNE, 2013

BARBARA D. FRANCIS
Seal
NOTARY
PUBLIC
CRAVEN COUNTY, NC

Barbara D. Francis
Notary Public

My commission expires JUNE 24, 2017

NORTH CAROLINA DEPARTMENT OF ENVIRONMENT & NATURAL RESOURCES
LAND QUALITY SECTION

REVISED EROSION & SEDIMENT CONTROL PLAN APPLICATION CHECKLIST ATTACHMENT

CRAVEN LCID
356 SANDERS LANE
TOWNSHIP NO. 8, CRAVEN COUNTY, NC

EROSION CONTROL MEASURES

MAINTENANCE REQUIREMENTS OF MEASURES

The Owner is responsible for installation and maintenance of all erosion and sediment control devices. It is his responsibility to ensure removal of any debris from the erosion control devices (ditches), and that accumulated sediment is removed when the control device becomes one-half full, in order to maintain the erosion control devices. Also, the project site perimeter shall be inspected weekly and after every major rain event while the project area remains active. Reseed bare areas where vegetation did not germinate, is damaged, and/or erodes.

SITE DRAINAGE FEATURES

SOILS IN THE PROJECT AREA

Soil Survey Craven County, NC

1. CrB: Craven Silt Loam, 1 to 4 percent slopes.
2. Le: Lenoir Silt Loam

SOIL INFORMATION BELOW THE STORMWATER OUTLETS

N/A this application.

NAME AND CLASSIFICATION OF RECEIVING WATER COURSE, AND BASIN

Bachelor Creek C Sw NSW – Neuse River Basin

STORMWATER CALCULATIONS–Revised 8-6-13

Grassed fill slopes at 3H:1V or flatter and possible ditch realignment is only proposed construction. Estimated runoff from the 4 acre disposal area using the rational method is approximately 3.6 CFS (assuming Tp = 5 min, C= 0.15, I = 6 in/hr). With a disposal area perimeter of approx 2,000 ft, 100 ft long 3H:1V slope, the resulting overland runoff depth and velocity are approx .02 inches and 0.5-1.0 ft/sec, respectively.

VEGETATIVE STABILIZATION

AREA AND ACREAGE TO BE VEGETATIVELY STABILIZED

The areas to be vegetatively stabilized are those disturbed during consolidation of the existing LCID and those slopes/fill surfaces created within the LCID disposal area. Temporary seeding and/or permanent seeding shall be used, as is seasonally appropriate.

The LCID disposal area is contained within an area of approximately 4.05 acres.

STABILIZATION TIMELINE

In accordance with NPDES General Permit - NCG010000, soil stabilization shall be achieved on any area of a site where land-disturbing activities have temporarily or permanently ceased according to the following schedule:

All swales, ditches, perimeter slopes and all slopes steeper than 3 horizontal to 1 vertical (3H:1V) shall be provided temporary or permanent stabilization with ground cover as soon as practicable but in any event within 7 calendar days from the last land-disturbing activity

All other disturbed areas shall be provided temporary or permanent stabilization with ground cover as soon as practicable but in any event within 14 calendar days from the last land-disturbing activity.

For all slopes 50’ in length or greater, apply the ground cover within 7 days except when the slope is flatter then 4:1. For slopes less than 50’, apply ground cover within 14 days except when slopes are steeper than 3:1, the 7 day-requirement applies.

Slopes 10’ or less in length are exempt from the 7-day ground cover requirement except when the slope is steeper than 2:1.

Note: Annual rye grass is not in the NC DENR LQS approved seeding specifications, nor is it an acceptable substitute for the providing of a “nurse” cover for permanent grass cover.

For specifications concerning method of soil preparation, seeding, fertilizer, and mulch see the specification sheets located with this document, or the NC DENR LQS Design Manual, latest edition.

NARRATIVE AND CONSTRUCTION SEQUENCE–Revised 8-6-13

NATURE AND PURPOSE OF CONSTRUCTION ACTIVITY

The proposed landfill will incorporate and reactivate an existing land clearing and inert debris landfill that is located on the site. The landfill will be operated entirely above the original ground surface and within the boundary of the existing disposal area.

CONSTRUCTION SEQUENCE

The site is already established, and a notice of closure was issued for the previous owner. Re-initiation of landfill operations requires no other constriction and can begin following receipt of operating permit from NCDENR, DWM, Solid Waste Section and other applicable permits.

There are portions of the existing LCID disposal area where new material cannot be added because of its proximity to the property line. A small area near the Sanders Lane entrance can only be used after re-aligning the existing ditch in order to provide 50 feet of clearance

between the new fill and ditch. If constructed, the re-aligned portion shall be excavated and stabilized with vegetation prior to connecting it to the existing ditches. After vegetation is established and the new alignment is connected to the existing ditches, then the replaced section will be filled and stabilized.

EROSION AND SEDIMENT CONTROL SPECIFICATIONS –Revised 8-6-13

Sedimentation and erosion control measures proposed for use at the LCID site include fill slopes that rise one foot or less for every three feet of horizontal distance (1V:3H or flatter), stabilized vegetatively with temporary and permanent seeding.

As perimeter fill slopes are constructed within the LCID, cover soils will be placed and vegetation planted/seeded to stabilize slopes.

An existing paved entrance road will serve to reduce/eliminate any offsite transportation of sediment on vehicle wheels. Any dirt/debris carried onto and deposited on the public roads from the LCID site will be swept and removed from the road as discovered.
The paved entrance will be supplemented with a gravel construction entrance at the existing gravel/paved surface interface if necessary.
Check dams will be added to the proposed access ramp ditch approximately every five feet of vertical elevation change.

6.10 Temporary Seeding

6.11 Permanent Seeding

6.14 Mulching

6.06 Temporary Gravel Construction Entrance

6.66 Compost Sock

6.83 Check Dam

EROSION AND SEDIMENT CONTROL DRAWINGS

Erosion & Sediment Control Plan for Craven LCID, 356 Sanders Lane, for Craven LCID, LLC, Rev 2.

NCDENR DEMLR LQS, E&SC PLAN PRELIMINARY REVIEW CHECKLIST:

The following items shall be incorporated with respect to specific site conditions, in an erosion & sediment control plan:

NPDES Construction Stormwater General Permit NCGO010000

X Designation on the plans where the 7 or 14 day ground stabilization requirements apply per Section II.B.2 of the permit.

N/A Design of basins with one acre or more of drainage area for surface withdrawal as per Section II.B.4 of the permit.

LOCATION INFORMATION

X Project location & labeled vicinity map (roads, streets, landmarks)

X North arrow and scale

X Identify River Basin.

X Provide a copy of site located on applicable USGS quadrangle and NRCS Soils maps if it is in a River Basin with Riparian Buffer requirements.

GENERAL SITE FEATURES (Plan elements)

X Property lines & ownership ID for adjoining properties

X Existing contours (topographic lines)

X Proposed contours

X Limits of disturbed area (provide acreage total, delineate limits, and label). Be sure to include all access to measures, lots that will be disturbed, and utilities that may extend offsite.

N/A Planned and existing building locations and elevations

X Planned & existing road locations & elevations, including temporary access roads

N/A Lot and/or building numbers

N/A Hydrogeologic features: rock outcrops, seeps, springs, wetland and their limits, streams, lakes, ponds, dams, etc. (include all required local or state buffer zones and any DWQ Riparian Buffer determinations)

N/A Easements and drainageways, particularly required for offsite affected areas. Include copies of any recorded easements and/or agreements with adjoining property owners.

N/A Profiles of streets, utilities, ditch lines, etc.

N/A Stockpiled topsoil or subsoil locations

OKAY If the same person conducts the land-disturbing activity & any related borrow or waste activity, the related borrow or waste activity shall constitute part of the land-disturbing activity unless the borrow or waste activity is regulated under the Mining Act of 1971, or is a landfill regulated by the Division of Waste Management. If the land-disturbing activity and any related borrow or waste activity are not conducted by the same person, they shall be considered separate land-disturbing activities and must be permitted either through the Sedimentation Pollution Control Act as a one-use borrow site or through the Mining Act.

N/A Location and details associated with any onsite stone crushing or other processing of material excavated. If the affected area associated with excavation, processing, stockpiles and transport of such materials will comprise 1 or more acres, and materials will be leaving the development tract, a mining permit will be required.

N/A Required Army Corps 404 permit and Water Quality 401 certification (e.g. stream disturbances over 150 linear feet)

EROSION & CONTROL MEASURES (on plan)

X Legend (provide appropriate symbols for all measures and reference them to the construction details)

X Location of temporary measures

X Location of permanent measures

N/A Construction drawings and details for temporary and permanent measures. Show measures to scale on plan and include proposed contours where necessary. Ensure design storage requirements are maintained through all phases of construction.

N/A Maintenance requirements for measures

X Contact person responsible for maintenance

SITE DRAINAGE FEATURES

N/A Existing and planned drainage patterns (include off-site areas that drain through project and address temporary and permanent conveyance of stormwater over graded slopes)

N/A Method used to determine acreage of land being disturbed and drainage areas to all proposed measures (e.g. delineation map)

N/A Size, pipe material and location of culverts and sewers

X Soil information: type, special characteristics

N/A Soil information below culvert storm outlets

X Name and classification of receiving water course or name of municipal operator (only where stormwater discharges are to occur)

STORMWATER CALCULATIONS

N/A Pre-construction runoff calculations for each outlet from the site (at peak discharge points). Be sure to provide all supporting data for the computation methods used (rainfall data for required storm events, time of concentration/storm duration, and runoff coefficients).

N/A Design calculations for peak discharges of runoff (including the construction phase & the final runoff coefficients for the site)

N/A Design calcs for culverts and storm sewers (include HW, TW and outlet velocities)

N/A Discharge and velocity calculations for open channel and ditch flows (easement & rights-of-way)

N/A Design calcs for cross sections and method of stabilization for existing and planned channels (include temporary linings). Include appropriate permissible velocity and/or shear stress data.

N/A Design calcs and construction details for energy dissipaters below culvert and storm sewer outlets (include stone/material specs & apron dimensions). Avoid discharges on fill slopes.

N/A Design calcs and dimension of sediment basins (note current surface area and dewatering standards as well as diversion of runoff to the basins). Be sure that all surface drains, including ditches and berms, will have positive drainage to the basins.

VEGETATIVE STABILIZATION

X Area & acreage to be vegetatively stabilized

X Method of soil preparation

X Seed type & rates (temporary & permanent)

X Fertilizer type and rates

X Mulch type and rates (include mulch anchoring methods to be used)

NOTE: Plan should include provisions for groundcover in accordance with NPDES Construction Stormwater General Permit NCG010000 and; permanent groundcover for all disturbed areas within 15 working days or 90 calendar days (whichever is shorter) following completion of construction or development.

FINANCIAL RESPONSIBILITY/OWNERSHIP FORM

X Completed, signed & notarized FR/O Form

X Accurate application fee payable to NCDENR ($65.00 per acre rounded up the next acre with no ceiling amount)

N/A Certificate of assumed name, if the owner is a partnership

X Name of Registered Agent (if applicable)

X Copy of the most current Deed for the site. Please make sure the deed(s) and ownership information are consistent between the plan sheets, local records and this form.

X Provide latitude & longitude (in decimal degrees) at the project entrance.

NOTE: For the Express Permitting Option, inquire at the local Regional Office for availability.

NARRATIVE AND CONSTRUCTION SEQUENCE

X Narrative describing the nature & purpose of the construction activity

N/A Construction sequence related to erosion and sediment control (including installation of critical measures prior to the initiation of the land-disturbing activity & removal of measures after areas they serve are permanently stabilized). Address all phases of construction and necessary practices associated with temporary stream bypasses and/or crossings

N/A Bid specifications related only to erosion control

EROSION AND SEDIMENTATION CONTROL PLAN

FOR

CRAVEN LCID

356 Sanders Lane

Township No. 8, Craven County, NC

FOR

CRAVEN LCID, LLC

109 Swift Creek Road
Vanceboro, NC 28586
(252) 670-6749

PREPARED BY

ELECTRONIC COPY
SEE ORIGINAL FOR SIGNATURE

Michael L. Rice, P.E.
ROBERT M. CHILES, P.E.
ENGINEERS & CONSULTANTS
417 - A BROAD STREET
P.O. BOX 3496
NEW BERN
NORTH CAROLINA 28564-3496
(252) 637-4702
(252) 637-3100 FAX
REVISED August 6, 2013

NPDES STABILIZATION ESTABLISHMENT TIMELINE:

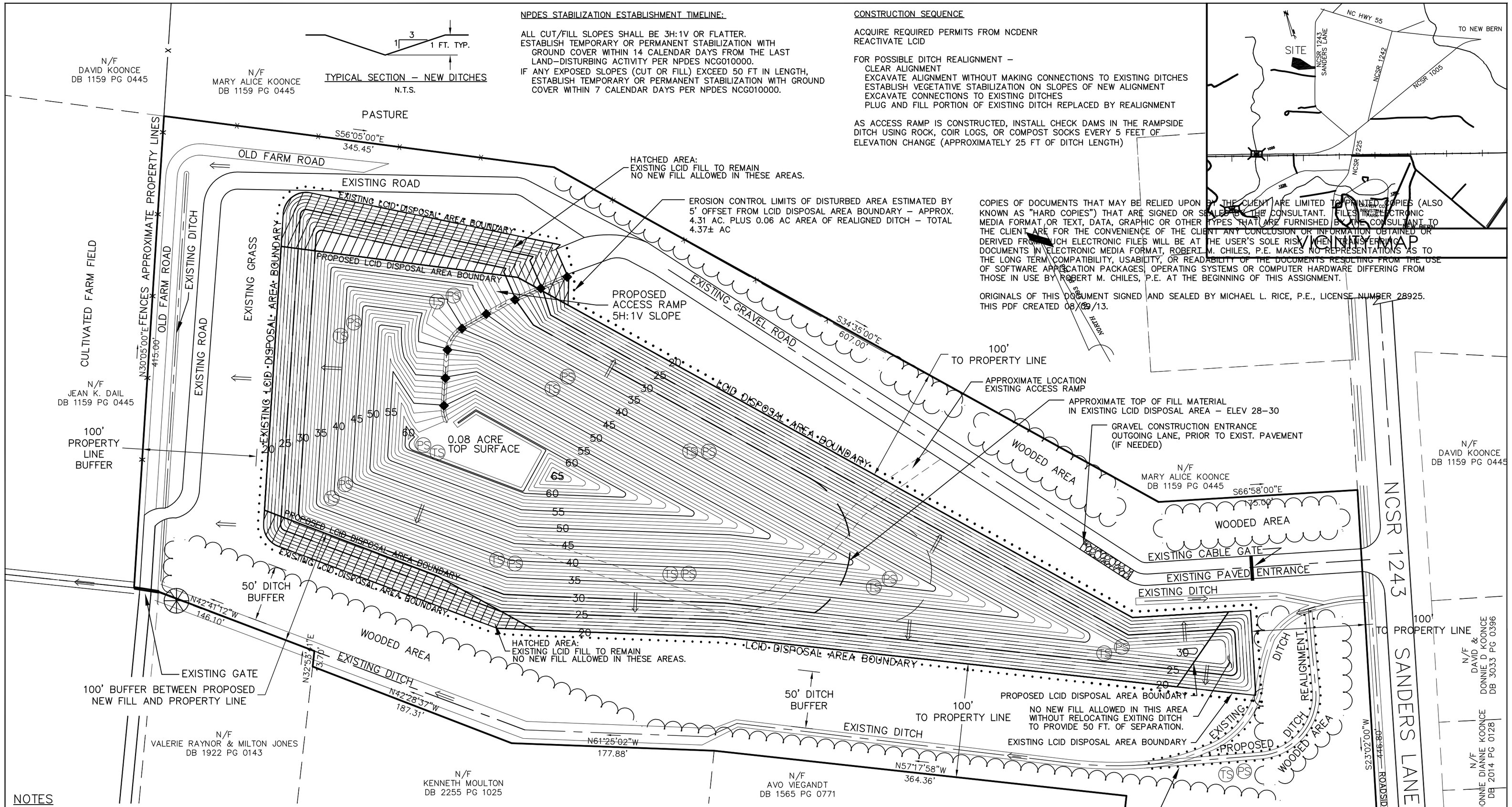
ALL CUT/FILL SLOPES SHALL BE 3H:1V OR FLATTER.
ESTABLISH TEMPORARY OR PERMANENT STABILIZATION WITH GROUND COVER WITHIN 14 CALENDAR DAYS FROM THE LAST LAND-DISTURBING ACTIVITY PER NPDES NCG010000.
IF ANY EXPOSED SLOPES (CUT OR FILL) EXCEED 50 FT IN LENGTH, ESTABLISH TEMPORARY OR PERMANENT STABILIZATION WITH GROUND COVER WITHIN 7 CALENDAR DAYS PER NPDES NCG010000.

CONSTRUCTION SEQUENCE

ACQUIRE REQUIRED PERMITS FROM NCDENR
REACTIVATE LCID

FOR POSSIBLE DITCH REALIGNMENT –
CLEAR ALIGNMENT
EXCAVATE ALIGNMENT WITHOUT MAKING CONNECTIONS TO EXISTING DITCHES
ESTABLISH VEGETATIVE STABILIZATION ON SLOPES OF NEW ALIGNMENT
EXCAVATE CONNECTIONS TO EXISTING DITCHES
PLUG AND FILL PORTION OF EXISTING DITCH REPLACED BY REALIGNMENT

AS ACCESS RAMP IS CONSTRUCTED, INSTALL CHECK DAMS IN THE RAMPSIDE DITCH USING ROCK, COIR LOGS, OR COMPOST SOCKS EVERY 5 FEET OF ELEVATION CHANGE (APPROXIMATELY 25 FT OF DITCH LENGTH)



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ORIGINALS OF THIS DOCUMENT SIGNED AND SEALED BY MICHAEL L. RICE, P.E., LICENSE NUMBER 28925.
THIS PDF CREATED 08/29/13.

PRELIMINARY NOT FOR CONSTRUCTION

NOTES

CONTOUR LINES REPRESENT ONE POSSIBLE CONFIGURATION OF THE LCID DISPOSAL AREA BASED UPON 3:1 SIDE SLOPES AND 5:1 RAMP SLOPE (20% GRADE) WITH A 50 FT. RADIUS TURN AROUND AREA ON THE TOP PLATEAU.

CONTOUR LABELS REPRESENT APPROXIMATE NAVD88 ELEVATIONS.

LCID SITE IS CONTAINED ON PROPERTY LOCATED AT 356 SANDERS LANE AND RECORDED IN CRAVEN COUNTY REGISTER OF DEEDS BOOK 3193 BEGINNING AT PAGE 118.

THE PROJECT SITE IS LOCATED IN ZONE X ACCORDING TO FEMA FIRM MAP NUMBER 3720554000J, EFFECTIVE JULY 2, 2004.

THERE ARE NO WETLANDS WITHIN THE PROPERTY.

LEGEND

- X — FENCE
- TS — TEMPORARY SEEDING (PER EROSION CONTROL PLAN APPROVAL)
- PS — PERMANENT SEEDING (PER EROSION CONTROL PLAN APPROVAL)
- TREES
- 35 — DISPOSAL AREA CONTOUR LINES
- DISTURBED AREA BOUNDARY
- SURFACE WATER FLOW DIRECTION
- CHECK DAM / COIR LOG / COMPOST SOCK
- PROPOSED LOCATION OF SAMPLING POINT FOR LEACHATE AND STORMWATER RUNOFF TESTING, IF REQUIRED.

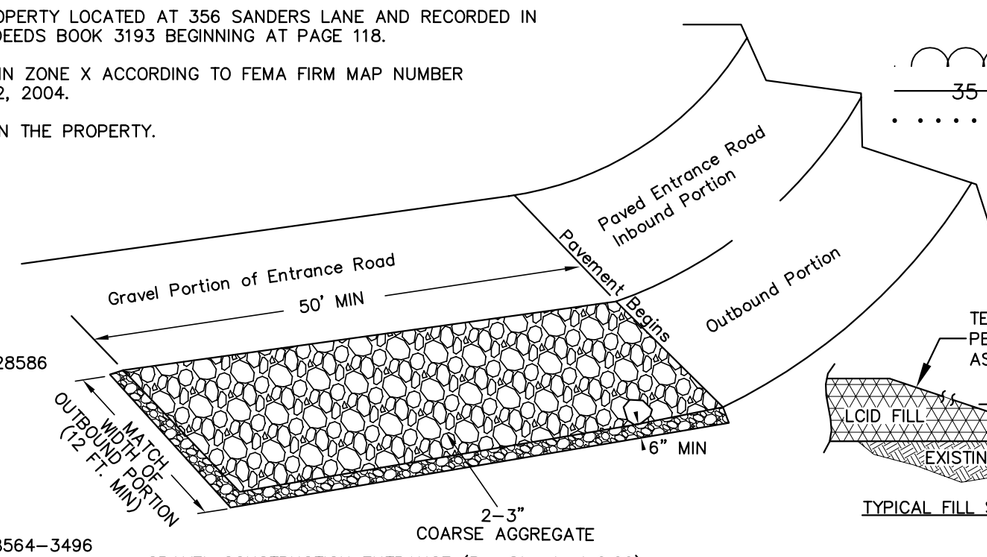
CATEGORY	AFFECTED ACREAGE
Total Tract	10.01±
Existing LCID Boundary	4.05±
Proposed LCID Boundary	3.60±
Existing Roads	0.70±
Boundary/Wooded Areas	5.26±

OWNER/OPERATOR

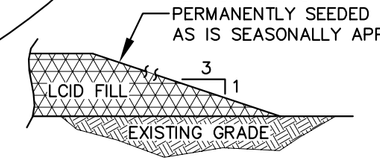
CRAVEN LCID, LLC
MR. TERRY MORRIS, AGENT
109 SWIFT CREEK ROAD
VANCEBORO, NORTH CAROLINA 28586
(252) 670-6749

ENGINEER/SURVEYOR

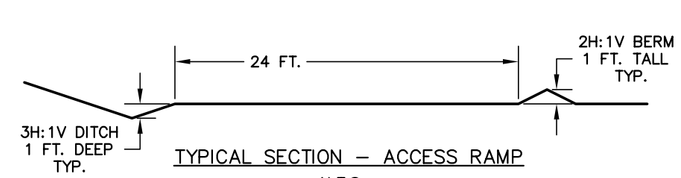
ROBERT M. CHILES, P.E.
ENGINEERS & CONSULTANTS
P.O. BOX 3496
NEW BERN, NORTH CAROLINA 28564-3496
(252) 637-4702



GRAVEL CONSTRUCTION ENTRANCE (Per Standard 6.06)
(IF NEEDED)



TYPICAL FILL SLOPE DETAIL



TYPICAL SECTION – ACCESS RAMP
N.T.S.

REV.			
2	ADD/REVISE EXISTING LCID DATA, REVISE CONSTRUCTION SEQUENCE, ADD CHECK DAMS IN RAMP DITCH, PER NCDENR	MLR	08-06-13
1	REVISE LABELS, ADD CONSTRUCTION ENTRANCE, DITCH CROSS SECTION & EMPHASIZE/ADD DISTURBED BOUNDARY, PER NCDENR	MLR	06-21-13

GRAPHIC SCALE 0 30 60 120

EROSION AND SEDIMENT CONTROL PLAN
FOR
CRAVEN LCID
356 SANDERS LANE
FOR
CRAVEN LCID, LLC

TOWNSHIP NO. 8 CRAVEN COUNTY NORTH CAROLINA

DATE: MAY 30, 2013
JOB NO: 2013030ec
SCALE: 1" = 60'

ROBERT M. CHILES, P.E.
ENGINEERS AND CONSULTANTS
NEW BERN, NORTH CAROLINA

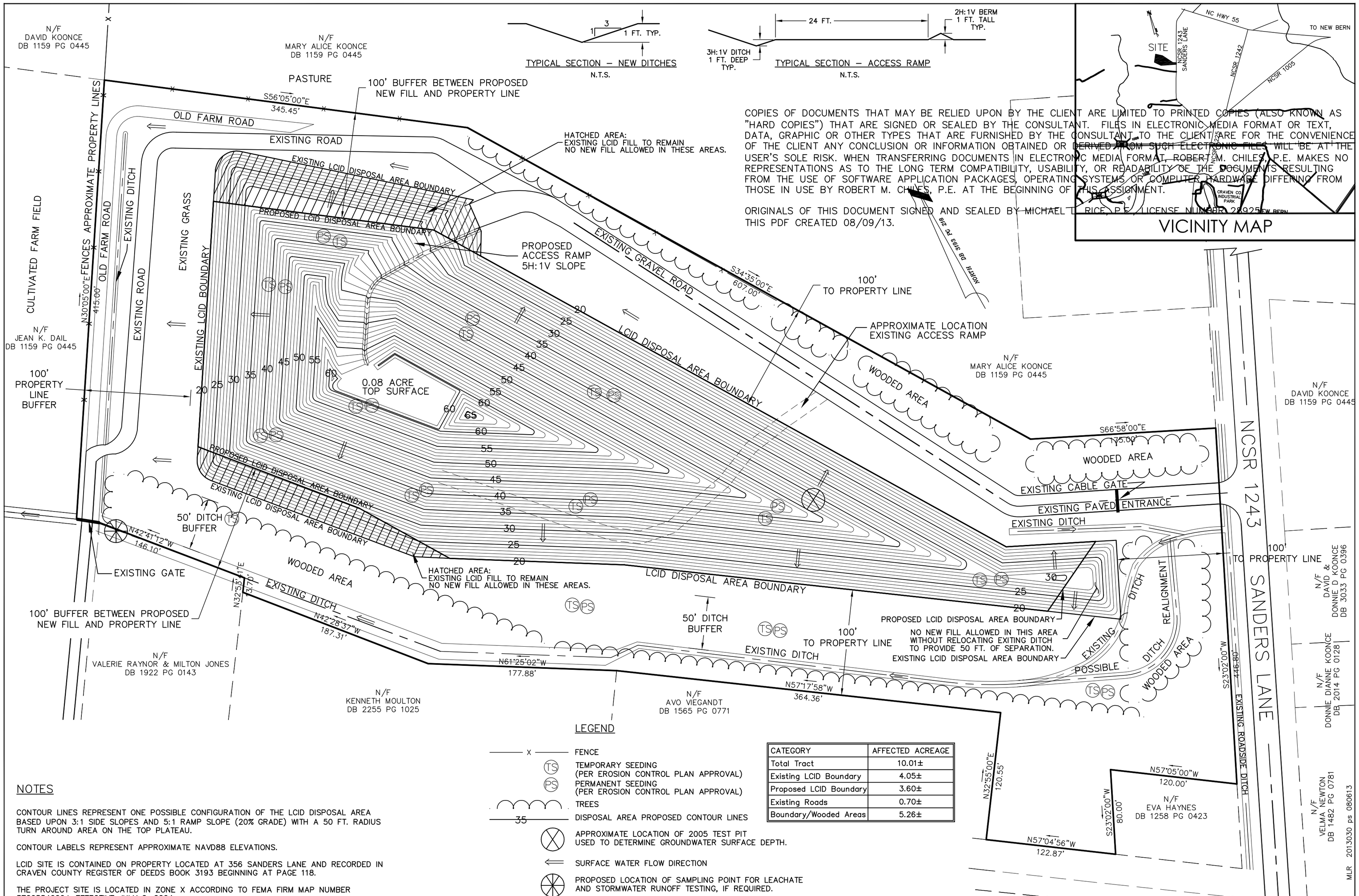
MLR 2013030 ps 080613

Section 7 - Drawings

- Craven LCID, A Proposed Land Clearing and Inert Debris Landfill located at 356 Sanders Lane for Craven LCID, LLC, prepared by Robert M. Chiles, PE., Rev. 1, 08-06-13

- Section and Isometric Views of the Proposed LCID Topographic Contours for Craven LCID, prepared by Robert M. Chiles, PE., Rev. 1, 08-06-13

- Area Within 1/4 Mile of the LCID Disposal Area Boundary for Craven LCID, prepared by Robert M. Chiles, PE.



VICINITY MAP

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LEGEND

- X — FENCE
- TS — TEMPORARY SEEDING (PER EROSION CONTROL PLAN APPROVAL)
- PS — PERMANENT SEEDING (PER EROSION CONTROL PLAN APPROVAL)
- TREES
- 35 — DISPOSAL AREA PROPOSED CONTOUR LINES
- APPROXIMATE LOCATION OF 2005 TEST PIT USED TO DETERMINE GROUNDWATER SURFACE DEPTH.
- SURFACE WATER FLOW DIRECTION
- PROPOSED LOCATION OF SAMPLING POINT FOR LEACHATE AND STORMWATER RUNOFF TESTING, IF REQUIRED.

CATEGORY	AFFECTED ACREAGE
Total Tract	10.01±
Existing LCID Boundary	4.05±
Proposed LCID Boundary	3.60±
Existing Roads	0.70±
Boundary/Wooded Areas	5.26±

NOTES

CONTOUR LINES REPRESENT ONE POSSIBLE CONFIGURATION OF THE LCID DISPOSAL AREA BASED UPON 3:1 SIDE SLOPES AND 5:1 RAMP SLOPE (20% GRADE) WITH A 50 FT. RADIUS TURN AROUND AREA ON THE TOP PLATEAU.

CONTOUR LABELS REPRESENT APPROXIMATE NAVD88 ELEVATIONS.

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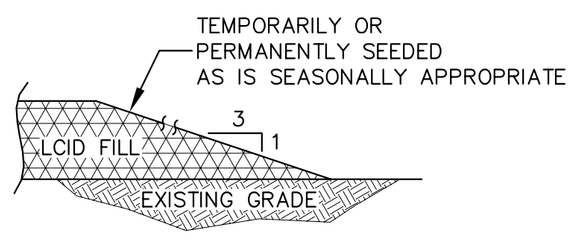
THERE ARE NO WETLANDS WITHIN THE PROPERTY.



TYPICAL FILL SLOPE DETAIL

ENGINEER/SURVEYOR

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(252) 670–6749

GRAPHIC SCALE 0 30 60 120

CRAVEN LCID

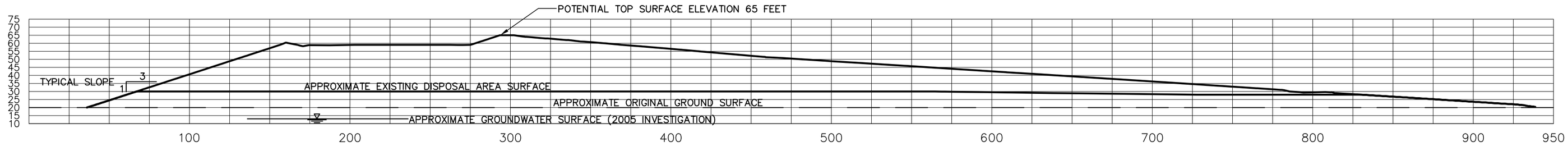
A PROPOSED LAND CLEARING AND INERT DEBRIS LANDFILL
LOCATED AT
356 SANDERS LANE
FOR
CRAVEN LCID, LLC

TOWNSHIP NO. 8 CRAVEN COUNTY NORTH CAROLINA

DATE: MAY 30, 2013
JOB NO: 2013030ec
SCALE: 1" = 60'

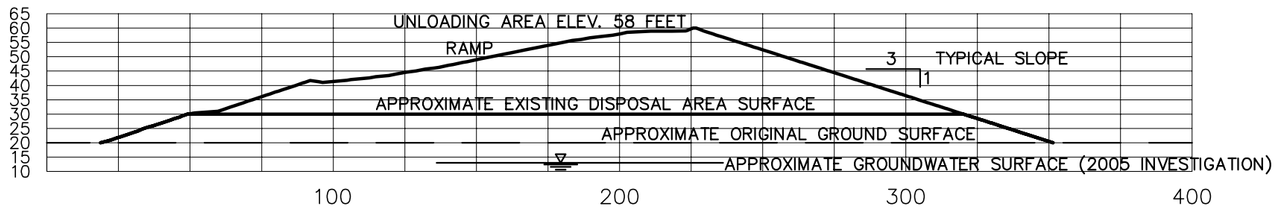
ROBERT M. CHILES, P.E.
ENGINEERS AND CONSULTANTS
NEW BERN, NORTH CAROLINA

REV. 1 ADD/REVISE EXISTING LCID DATA, FLOW DIRECTIONS, ROADSIDE DITCHES, RAMP SECTION, REVISE DISPOSAL AREA BOUNDARY AND CONTOURS, PER NCDENR MLR 08–06–13

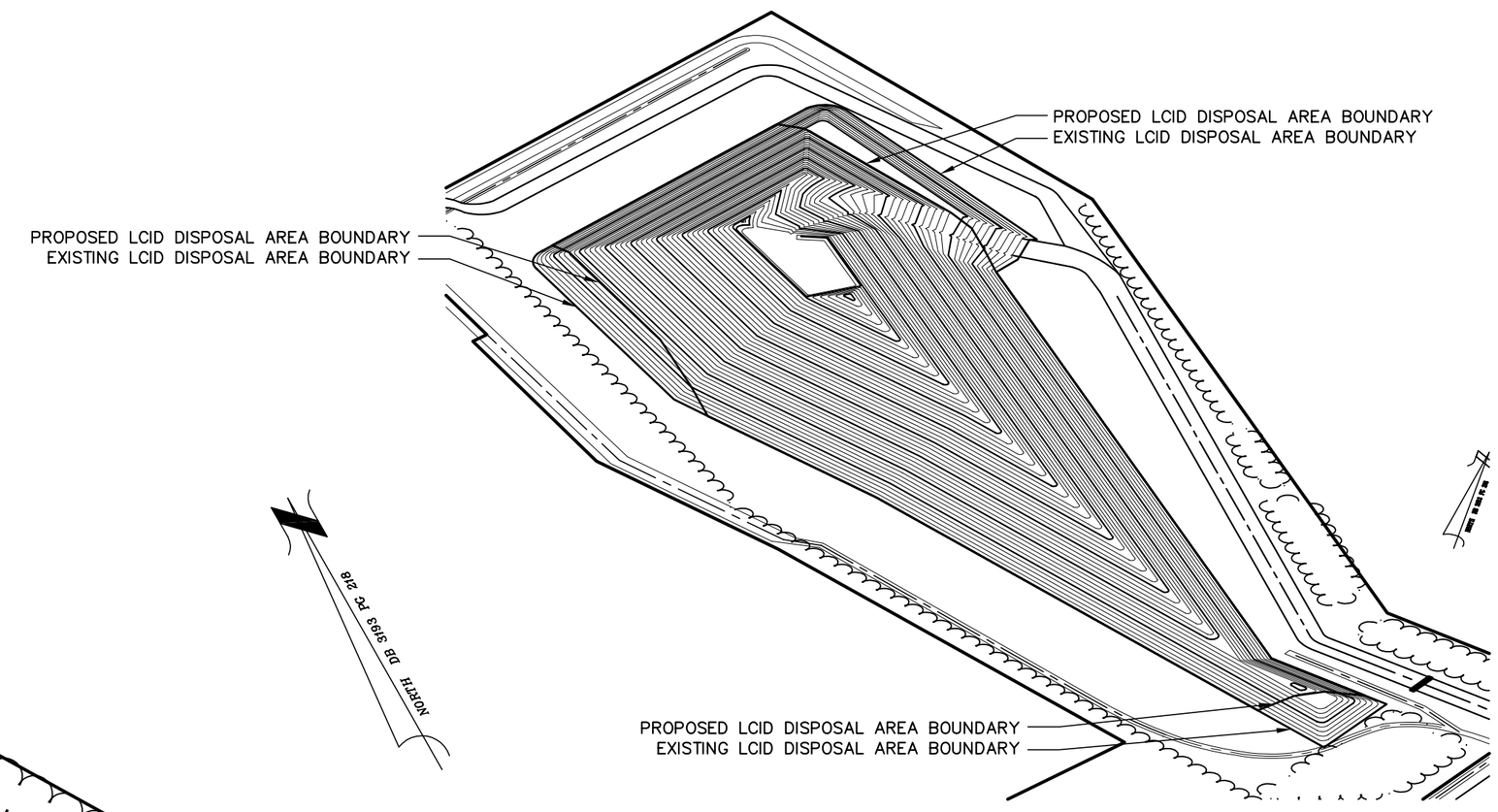


ORIGINAL GROUND VARIED FROM ELEVATION 20 TO ELEVATION 25

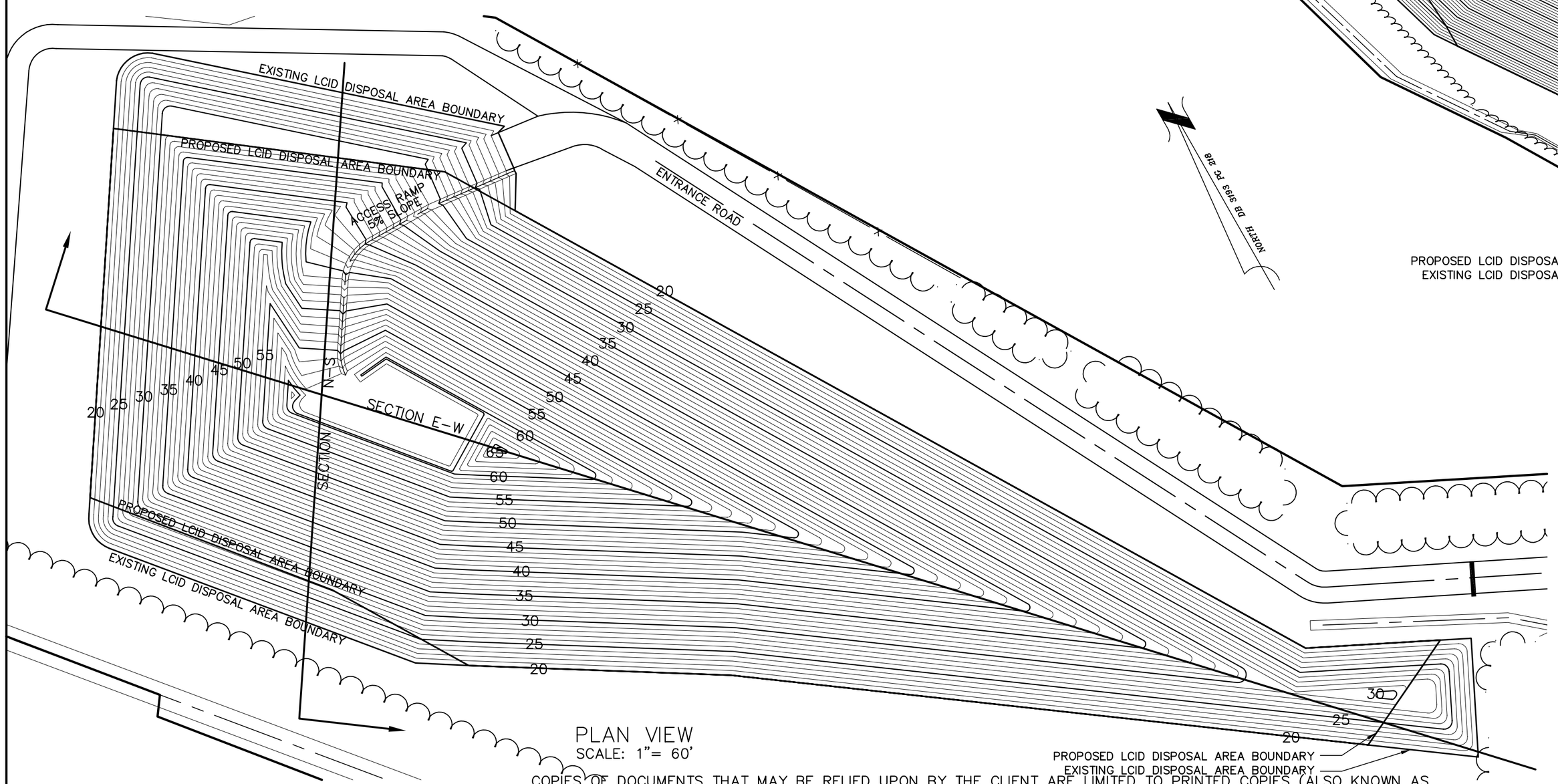
SECTION E–W
SCALE: 1"= 50'



SECTION N–S
SCALE: 1"= 50'



ISOMETRIC VIEW
FOR REFERENCE ONLY
SCALE: 1"= 100'



PLAN VIEW
SCALE: 1"= 60'

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THIS PDF CREATED 08/09/13.

ENGINEER/SURVEYOR

ROBERT M. CHILES, P.E.
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REV.			
1	ADD LABELS, REVISE SECTIONS TO MATCH REVISED DISPOSAL AREA BOUNDARY, PER NCDENR	MLR	08–06–13

GRAPHIC SCALE 0 .5 1 2

SECTION AND ISOMETRIC VIEWS
OF THE
PROPOSED LCID TOPOGRAPHICAL CONTOURS
FOR
CRAVEN LCID

TOWNSHIP NO. 8 CRAVEN COUNTY NORTH CAROLINA

DATE: MAY 30, 2013
JOB NO: 2013030ec
SCALE: AS INDICATED

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MLR 2013030 ps 080613

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MLR 201303O ps 053013

AREA WITHIN 1/4 MILE
OF THE
LCID DISPOSAL AREA BOUNDARY
FOR
CRAVEN LCID

TOWNSHIP NO. 8 — CRAVEN COUNTY — NORTH CAROLINA

DATE: MAY 30, 2013
JOB NO: 201303O
SCALE: 1" = 200'

ROBERT M. CHILES, P.E.
ENGINEERS AND CONSULTANTS
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