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NORTH CAROLINA

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

DIVISION OF WASTE MANAGEMENT

CONSTRUCTION PLAN APPLICATION FOR THE HIGHWAY 55 C&D LANDFILL PHASE 2

NORTH CAROLINA PROFESSIONAL SEAL 026435 ENGINEER SCOTT L BROWN

Scott L. B

NORTH CAROLINA B.P. BARBER & ASSOCIATES, INC. No. F0630 CERTIFICATE OF AUTHORIZATION

11-6-08

PREPARED FOR:

HIGHWAY 55 C&D LANDFILL, LLC

19109 WEST CATAWBA AVENUE SUITE 200

CORNELIUS, NORTH CAROLINA 28031

Received DEC 2008 Waste Management

PREPARED BY:

BP BARBER

10430 HARRIS OAKS BLVD, SUITE A

CHARLOTTE, NORTH CAROLINA 28269-7511

PROJECT NO. 05185-H55

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1.0 Project Description

This Application for Permit to Construct/Permit Renewal for Highway 55 C&D Landfill Phase II is being submitted by BP Barber on behalf of Highway 55 C&D Landfill, LLC. The Site Plan Application for this facility was approved on August 9, 2002. The Permit to Construct Phase I was approved on August 9, 2002. This application meets the landfill design parameters, construction requirements, and design drawing requirements found in Section .0547(3) of 15A NCAC 13B of the North Carolina Solid Waste Management Rules. This application package includes information regarding the site design, construction, operation, closure and post-closure, and monitoring plans.

2.0 Facility Plan

This Facility Plan defines the comprehensive development of the property in accordance with Subparagraphs (d)(1), (e)(1), (e)(2), and (e)(3) of Rule .0537 of 5A NCAC 13B.

2.1 Facility Drawings

2.1.1 Site Development

Appendix A consists of drawings which plot the site development prepared on topographical maps representative of existing site conditions. These drawings are consistent with the requirements of Subparagraph (d)(1)(A-F) of 15A NCAC 13B.

2.1.2 Landfill Operations

Appendix A consists of drawings as they relate to long-term operations of the facility consistent with Subparagraph (d)(2)(A-B) of 15A NCAC 13B.

2.2 Facility Report

The following is a discussion of the characteristics of the waste received at the facility, an analysis of landfill capacity and soil resources, and special engineering features consistent with Subparagraph (e)(1-2) of 15A NCAC 13B.

2.2.1 Waste Stream

Waste that is generated from the construction, remolding, repair, or demolition operation on pavement and buildings or structures will be accepted.

The waste generation rate projected for this facility will be on the order of 340 tons/day (5.5 days/week) for an estimated annual total of 97,240 tons. The estimated disposal rate may vary due to population, industrial, and commercial growth within the region, recycling efforts, or availability of other landfills.

The facility will service Wake County.

Waste segregation procedures are presented in the Operational Plan, Section 5.0. The facility will be operated with equipment owned by the landfill owner. At minimum equipment will consist of a dozer, compactor, track hoe, motor grader, and a water truck.

2.3 Landfill Capacity

Landfill capacity calculations were performed for Phases 2 and 3 from proposed grading and closure plans using an anticipated disposal rate of 97,240 tons. The calculations (Appendix B) assume two percent gross volume for weekly cover and account for a 3 foot thick final cover system. The estimated remaining gross capacity of Phase 2 and 3 is on the order of 2,000,000 cubic yards. This is based on an estimated gross capacity of 1,100,000 cubic yards for Phase 2 and 900,000 cubic yards for Phase 3. Based on approximate generation rates it is expect the facility has 10 to 11 years of operating life remaining.

It is estimated that 409,000 yd^3 of soil will be excavated for construction of Phase 2 and Phase 3. Operation of Phase 2 will require an estimated 90,300 yd^3 of

soil and Phase 3 will require an estimated 73,700 yd^3 of soil for an estimated total of 164,000 yd^3 for operations.

3.0 Engineering Plan

3.1 Erosion and Sedimentation Control

The Erosion and Sedimentation Control Plan was developed to meet all requirements set forth by the Sedimentation Pollution Control Law (15A NCAC 4), and other requirements set forth by the North Carolina Department of Environment and Natural Resources (NCDENR). All erosion and sedimentation control measures were designed based on a 25 year, 24 hour storm event occurring in Wake County, North Carolina per the NCDENR Division of Waste Management-Solid Waste Program. Temporary measures to be used on the site are two (2) sediment basins and silt (sediment) fencing. These, along with permanent ditches and seeding make up all erosion control measures to be utilized on the site. Calculations and corresponding references can be found in Appendix D and drawings can be found in Appendix A.

3.2 Stormwater Conveyance and Mitigation

The stormwater conveyance and mitigation plan was designed to meet all NPDES Phase II requirements. The permanent ditches designed for erosion control purposes will be used directly for stormwater conveyance. The ditches will need to be vegetated with at least 90% landscaped cover at all times. In order to avoid failure due to high exit velocities from slope drains a series of eleven (11) plunge pools have been designed. Slope drains, plunge pools and ditches are to be inspected every six (6) months or after every major storm event (1/2" or greater).

3.3 Stability and Settlement

The majority of the proposed Phase II landfill requires a substantial amount of excavation to establish the proposed base grades. However, there is a

portion of the landfill (north-central portion of Phase 2) that will require up to 12 feet of fill in order to fill an existing low area and establish the proposed base grades.

Based on observed and proposed site conditions, three critical-sections were selected for the static slope stability analyses. Soil material properties used in the analyses were selected based on established engineering correlations with boring log information (SPT-values, visual classifications) including the work of Terzaghi and Peck (1967). Properties for the C&D waste materials were obtained from results of seismic cone penetrometer test soundings advanced in C&D waste materials at another C&DLF sites located in the Carolinas, with results appearing conservatively consistent with published data. The Modified Bishop's method was used in calculating the factor of safety for circular failure surfaces. The critical sections were evaluated for the global stability and stability of the landfill support embankments. Please see Appendix C for complete stability report and corresponding calculations.

The stability of the final cover system soils depends on the shear strength properties and frictional resistance between the various soil layers (i.e., low permeability clay layer, protective soil cover layer). The stability of the cover soil was approximated using the infinite slope methodology.

Foundation settlement was evaluated in the area anticipated to experience the maximum estimated subsidence under the proposed waste embankment due to maximum waste fill height, as well as areas to receive lesser waste fill heights including mid-slope and edge of the landfill. The magnitude of foundation settlement was estimated using Hough's method for evaluating elastic compression.

4.0 Construction Quality Assurance Plan

Please see Appendix H for the entire Construction Quality Assurance Plan.

5.0 Operational Plan

The facility will be operated in accordance with this Operational Plan prepared in accordance with Rule 0542 of 5A NCAC 13B.

5.1 Operation Drawings

Appendix A consist of drawings which plot each phase of landfill development and are consistent with the engineering plan and Subparagraph (b)(1)(A-G) of 15A NCAC 13B. The owner and operator will maintain and operate the unit in accordance with the operation plan.

5.2 Waste Acceptance

The facility will accept C&D waste generated from the construction, remolding, repair, or demolition operation on pavement and buildings or structures for disposal in the C&D landfill. Yard trash as defined by GS 130A-294(m) and land-clearing debris will be accepted for processing in the Yard Waste Composting Area or disposed of in a LCID landfill.

The following waste will not be accepted:

- Containers such as tubes, drums, barrels, tanks, cans, and bottles unless empty and perforated to ensure that no liquid, hazardous waste or municipal waste is contained therein.
- Garbage as defined in GS 130A-290(a)(7)
- Hazardous waste as defined in GS 130A-290(a)(8), to include hazardous waste from conditionally exempt small quantity generators.
- Industrial solid waste unless a demonstration has been made to the Division.
- Liquid waste
- Medical waste
- Municipal solid waste
- Polychlorinated biphenyls (PCB)

- Radioactive waste
- Special waste as defined in GS 130A-290(a)(40)
- White goods
- Segregated loads of lamps, bulbs, ballast. Thermostats, batteries, smoke detectors, transformers or creosote treated loads.
- Shredded or pulverized C&D waste from an un-permitted facility
- C&D waste from generators within the boundaries of a local unit government that have recycling ordinance prohibiting disposal.

The Division will be notified within 24 hours of an attempted disposal of waste that is not permitted including waste outside its service area.

5.3 Recycling

Incoming C&D waste volume will be recycled as much as practical. A C&D recycling area will be located near, but clearly segregated from the working face. Incoming waste with recyclables will be unloaded at the recycling area. Metals pulled from the load will be placed in the on-site metal recycling container. Inert debris such as brick, concrete, concrete block, rock, etc. will be removed and transported to the reprocessing/material storage area for crushing. Clean cardboard will be removed and transported to an on-site bailer. Drywall be stored and transported off-site for recycling. The landfill will also accept mobile homes for dismantling. The desired parts will be removed and used as the owner desires, while the rest will be buried. Residual waste will be routed to the active face for landfill disposal.

5.4 Cover, Spreading, and Compacting

The working face will be restricted to the smallest area feasible and compacted as densely as feasible. Any area that exceeds one-half acre or more on a weekly basis will be covered with six inches of earthen material. Cover may be

placed at more frequent intervals to control disease vectors, fires, odors, blowing litter, and scavenging.

Areas where additional waste will not receive waste for three months, but will receive additional waste will be covered and stabilized with vegetative cover or other stabilizing material.

Appropriate methods including fencing and diking will be used to confine wind blown solid waste. At the end of each day, wind blown waste will be collected and disposed of in the landfill.

5.5 Air Criteria and Fire Control

No open burning of waste will be permitted on site. The Division will be notified verbally within 24 hours and in writing with 15 days of any fire and explosion at the facility.

If a fire occurs at the landfill, the Apex Fire Department will be notified. Hot loads that are brought to the facility will be immediately dumped away from the landfill and the fire department notified. The hot load will be sprayed down with water until extinguished. The load is then to be reloaded for disposal in the landfill.

5.6 Access and Safety

The site has controlled access with the use of entrance gates. The remainder of the site has wooded buffer zones along the northern boundary, streams along the western and southern boundary and a chain link fence along the eastern property boundary. Access roads are all weather construction and maintained in good condition.

A scalehouse is located at the entrance with an attendant present during operational hours. The attendant is responsible for evaluating loads to assure compliance with operation requirements and to direct the loads to the appropriate location on site, landfill, recycling/processing area, or composting facility. In addition, signs are posted to direct loads to the appropriate area.

Dust is controlled on access roads through the use of a water truck. Signs are posted indicating that liquid, hazardous, and municipal waste is prohibited.

5.7 Erosion and Sedimentation Control

The Erosion and Sedimentation Control Plan was developed to meet all requirements set forth by the Sedimentation Pollution Control Law (15A NCAC 4), and other requirements set forth by the North Carolina Department of Environment and Natural Resources (NCDENR). All erosion and sedimentation control measures were designed based on a 25 year, 24 hour storm event occurring in Wake County, North Carolina per the NCDENR Division of Waste Management-Solid Waste Program. Temporary measures to be used on the site are two (2) sediment basins and silt (sediment) fencing. These, along with permanent ditches and seeding make up all erosion control measures to be utilized on the site.

Both sediment basins shall be inspected at minimum weekly and after each significant rain event (1/2 inch or greater). Sediment shall be removed and basin restored to original dimensions after sediment has accumulated to one-half (1/2) of design depth. Removed sediment shall be placed in an area that has sediment controls in place. Sediment basin spillways, baffles, embankments and outlet control structure shall be inspected at the same time for erosion damage and piping (embankment only). All necessary repairs shall be made immediately to prevent basin failure.

Silt fencing shall be inspected at least once per week and after every rainfall event. Any tears, cracks or overall failure should be repaired and/or replaced immediately. Sediment deposits shall be removed as necessary to ensure proper functioning of fencing. Silt fencing shall remain until final site stabilization has occurred.

Permanent ditches should be seeded and matted immediately after their construction; they should be inspected after all rain events for any failure of the ditch or erosion control matting. All outlet protection measures used to protect damage to channel vegetation shall be inspected for wash out. All necessary

repairs/replacements should be made immediately, and rip rap should be added where necessary.

Embankment and landfill cover slopes shall be periodically inspected for erosion. The slopes shall be mowed no more than twice per year. The embankment slopes shall be re-fertilized in the second year unless vegetation growth is fully adequate. The damaged areas shall be re-seeded (permanent seeding for embankment slopes and temporary seeding for landfill cover slopes), fertilized and mulched immediately. Seeding, fertilizing and mulching shall be in accordance with the Erosion and Sedimentation control plan. Appendix A present all erosion and sedimentation control measures on existing and proposed topography. Appendix D houses all relevant calculations and references for erosion and sedimentation control measures design.

5.8 Stormwater Conveyance and Mitigation

The Town of Apex approved the request for the classification of the facility as a Low Density Development in accordance with Section 6.1 of the Town of Apex Unified Development Ordinance (UDO). See letter in Appendix E. Therefore the facility will not be required to implement structural Stormwater BMPs or prepare a stormwater impact statement. Stormwater will be transported by vegetative conveyances to the maximum extent possible in accordance with Section 6.1 of the Towns' UDO.

5.9 Operating Record and Recordkeeping Requirements

The owner and operator will record and retain at the facility or an alternative location the following information:

- Records for random waste inspections, monitoring results, certifications of training, and training procedures.
- Amount of waste received at the facility and county of generation.

- Amount of recycled material recovered from in-coming waste. (Weighed as exported from the site)
- Cost estimates for closure and post-closure.
- Notation of date and time of placement of cover material.
- All audit records, compliance records, and inspection reports.

All information contained in the operating record will be furnished to the Division upon request or made available for inspection by the division. The operating record will also include a copy of all approved permits and Monitoring Plans.

6.0 Closure and Post-Closure Plan

The following is a specific plan for closure and post-closure that complies with the requirements Rule 0543 of 5A NCAC 13B. It will establish scheduling and documentation of closure and monitoring and maintenance of the facility following closure.

6.1 Closure

6.1.1 Closure Cap System

The closure cap system is designed to minimize infiltration and erosion. To minimize infiltration the cap system will consist of 18 inches of soil having a permeability less than or equal to the soils underlying the landfill, or no greater than 1.0×10^{-5} cm/sec, whichever is less. The low permeability layer will be installed in two (2) 9 inch lifts. To minimize erosion and to protect the low-permeability barrier from root penetration 18 inches of earthen material that is capable of sustaining native plant growth will overlay the low-permeability layer. The vegetative layer will be installed in two (2) 9 inch lifts and seeded according to the details on the closure drawings (Appendix A).

6.1.2 Construction of Cap System

The post-settlement surface slopes will be a minimum of five percent and a maximum of 33 percent. The stability analysis of the proposed 33% slope can be found in Appendix C.

6.1.3 Closure Schedule

Prior to beginning closure activities the Division will be notified of the intent close the unit and place such notification in the operating record. No later than 30 days after the date the unit receives the known final receipt of waste, closure activities will commence unless an extension has been granted from the Division. The closure activities will be complete 180 days following the beginning of closure activities unless the Division grants an extension.

Following closure of a unit, the Division will be notified that a certification signed by the project engineer verifying closure has been completed in accordance with the closure plan has been placed in the operating record. Following closure of the Construction and Demolition Landfill a notation on the deed to the facility property will be recorded with the local Register of Deeds office, or some other instrument that is normally examined during a title search and a copy of the notation will be placed in the operating record. The notation will in perpetuity notify any potential purchaser that the land has been used as a Construction and Demolition Landfill and is restricted under the closure plan approved by the Division. Appendix B consists of calculations estimating the maximum inventory of waste on-site the landfill facility.

6.1.4 Closure Cost Estimate

Appendix F is a summary of estimated cost for closure activities as required under Rule .0546 of 5A NCAC 13B.

6.2 Post-Closure

Following closure of each unit post-closure care will be conducted for 30 years unless:

- It is decreased by the Division because it has been demonstrated that a reduced period is sufficient to protect human health and the environment.
- It is increased by the Division to protect human health and the environment.

The owner, Highway 55 C&D Landfill, LLC's representative, Mike Griffin will be responsible for the facility during the post-closure period

6.2.1 Post-Closure Maintenance

The final cover will be seeded, fertilized and mulched to provide a dense stand of grass consistent with the specification noted on the Erosion and Sediment Control Plan in Appendix A. The grass should not be mowed more than twice a year until dense vegetation is established. The final cover will be inspected for signs of settlement, erosion, vector damage, and bare spots on a quarterly basis. Additional inspections will be performed after large storm events. Depressions in the cover that pond will be re-graded as needed to promote positive drainage. Areas subject to re-grading or any bare spots will be reseeded in accordance with permanent seeding specification. Any deep-rooted vegetation will be removed so that deep rooted vegetation will not compromise the integrity of the final cover.

6.2.2 Post-Closure Monitoring

The post-closure monitoring plan is detailed in Appendix G.

6.2.3 Planned Use

Once the facility is closed in accordance with Rule 0543 of 5A NCAC 13B, the entire facility will be offered to Wake County for possible use as a park and recreation facility.

6.2.4 Post-Closure Cost Estimate

Appendix F is a summary of estimated cost for post-closure activities as required under Rule .0546 of 5A NCAC 13B.