



PAT MCCRORY  
*Governor*

DONALD R. VAN DER VAART  
*Secretary*

MICHAEL SCOTT  
*Acting Director*

August 19, 2016

Nelson Breeden, P.E.  
Waste Connections of the Carolinas  
375 Dozer Drive  
Polkton, NC 28135

Re: **Permit No. 0403-MSWLF**  
Chambers Development MSWLF - Anson County  
Design Hydro Report and Monitoring Plans Reviews – Phases 3 and 4  
**DIN 26670**

Dear Mr. Neelson,  
Solid Waste Section (Section) has completed the technical review of the Design Hydrogeologic Report (dated September 30, 2016) for the proposed Phases 3 and 4 landfill expansion. The Report also includes (as appendices) updates to the Water Quality Monitoring Plan and Landfill Gas Monitoring Plan for the facility, respectively. The Design Hydro Report was prepared on behalf of Waste Connections by David Garret PG (formerly of SCS Engineers). A permit-to-construct application for Phases 3 and 4 is planned to be submitted separately to the Section at a later date. Phases 3 and 4 cover approximately 60 acres and would be a contiguous expansion of the currently active MSW landfill area.

Design Hydrogeologic Report – ref. 15A NCAC 13B .1623(b)

Based on our review, the Design Hydro Report for the Phase 3 and 4 expansion meets the criteria required in .1623(b)(3) for construction, including the top-of-bedrock datum and seasonal high groundwater table determinations for vertical separation requirements for construction [15A NCAC 13B .1624(4)]. Other than change the plan sheets from 'Draft' to 'Final', the design hydrogeologic portion of the Permit to Construct is approved.

Water Quality Monitoring Plan – ref. 15A NCAC 13B .1623(b)(3)

The facility is currently operating under a Water Quality Monitoring plan approved for Phases 1 and 2 in 2008 and modified in 2012 to require sampling only in the shallow wells (six total) monitoring the uppermost aquifer. In addition to the groundwater monitoring, the site has a surface water monitoring network consisting of four stream sampling locations and underdrain outlet sampling points. A seventh shallow monitor well MW-10s for Phase 2 will be installed prior to completion of Phase 2 in 2016. A leachate sample is also collected semi-annually for analysis in accordance with the facility's permit.

The updated Water Quality Monitoring Plan (Appendix 7 of the Design Hydro Report) submitted for review adds ten (10) compliance monitoring wells to the existing facility's overall monitoring network. These include five shallow wells for Phase 3; and five shallow wells for Phase 4. All new wells will be installed to monitor for release of contaminants to the upper shallow aquifer beneath the landfill. With the addition of the new wells, the facility monitoring network will contain a total of seventeen (17) compliance monitoring wells. In addition to the compliance wells, there will be four (4) surface water sampling locations on adjacent streams, as well as underdrain outlet sampling locations (see comments below).

The proposed Phases 3 and 4 expansion detection monitoring wells will be installed prior to construction and sampled, along with the current facility monitoring network, according to the Water Quality Monitoring Plan. The initial baseline sampling requirements will be included in the Permit-To-Construct to be issued at a later date. Guidelines for water quality sampling and electronic data submittal can be located at the Section's web site. <http://portal.ncdenr.org/web/wm/sw/envmonitoring>

Prior to final approval of the updated WQ Plan, the following revisions are requested based on our review:

- Section 2.0: Note whether MW-10S has been installed and sampled for Phase 2 activation since submittal of this report.
- Section 2.0: Note when the compliance wells for Phase 3 and Phase 4 are planned to be installed and sampled.
- Section 3.0: Underdrain outlet sampling. It makes more sense to identify the underdrain outlet sampling locations as "underdrain outlet" sampling (maybe UOS-1?), to distinguish from stream surface water sampling. The underdrain sampling locations are also expected to be temporary and likely to reduce flow or stop flow altogether once the recharge environment changes due to the lined landfill. There are three underdrain outlet locations. (see attached plan sheet). Please add a third underdrain sampling point to account for all three underdrain outlets.
- Section 3.0: Underdrain outlet sampling. Note that proposed SG-5 is the underdrain for Cell 2B East installed in 2012(??) and outlets into existing sediment basin #2. A second underdrain was installed for Cell 2B West in 2014 and was later connected to an underdrain for Cell 2C south (installed in 2015). In 2016, another underdrain was installed for Cell 2C North. The latter 2 underdrains discharge closer to the upper end of a sediment trap to the northeast of Cell 2C. Please note and revise as appropriate.
- Section 3.0: As part of the approval for the Cell 2C North underdrain (June 15, 2016 DIN 26268), the Section added a requirement for annual internal inspection of the Cell 2C North underdrain to be performed when the leachate collection system is inspected. The other underdrains are too small for internal inspections. The approval also required the facility to monitor flow from all underdrains on a monthly basis and to maintain records of the flow monitoring data onsite. Please add these requirements in the WQ plan.
- Plan Sheets M1 and M2: Revise underdrain outlet locations and show underdrain location within Cells 2B and 2C, respectively. Label 'Brown Creek' and Pinch Gut Creek' on plan sheets. Add note on plan sheets which wells are existing and which are planned/proposed.

Landfill Gas Monitoring Plan– ref. 15A NCAC 13B .1626(4)

Based on our review, the updated Landfill Gas Monitoring Plan (submitted as Appendix 8 of the Design Hydro Investigation report) meets all the requirements [per .1626(4) and Section guidance] for monitoring of explosive gases at the facility, including proposed Phases 3 and 4. The Section approves the LFG Monitoring Plan.

Well Abandonment

Any existing piezometers and/or monitoring wells within the footprint of the proposed Phases 3 and 4 expansions must be properly abandonment prior to construction activities commencing for the landfill expansion. (*Piezometers, groundwater monitoring wells, and borings, located in proposed expansion may be abandoned now or after a Permit-to-Construct is issued by the Solid Waste Section*). Please adhere to the following conditions:

Prior to construction of cell(s), all piezometers, ground-water monitoring wells, and borings, located in the proposed cell(s), shall be properly abandoned by over drilling first (exception for non-cased borings) and sealed with grout in accordance with 15A NCAC 2C .0113, entitled “Abandonment of Wells”.

- a. In areas where soil is to be undercut, abandoned piezometers, monitoring wells, and borings must not be grouted to pre-grade land surface, but to the proposed base grade surface to prevent having to cut excess grout and potentially damaging the wells.
- b. Well abandonment records (GW-30 form) for each decommissioned piezometer, boring, and groundwater monitoring well must be certified by a Licensed Geologist in accordance with rule .1623(b)(2)(1) and submitted to the Solid Waste Section in accordance with 15A NCAC 02C.0114(b).

NOTE: The Permit-to-Construct to be issued at a later date will include Geologic, Ground Water, and other Monitoring Requirements.

Please submit the updated and revised Design Hydro report (including revised WQ Plan and LFG Plan) to me once the changes have been completed. One hardcopy and an electronic pdf copy will be fine. If you have any questions concerning these comments, please do not hesitate to contact me via email [perry.sugg@ncdenr.gov](mailto:perry.sugg@ncdenr.gov) or phone (919) 707-8258.

Sincerely,



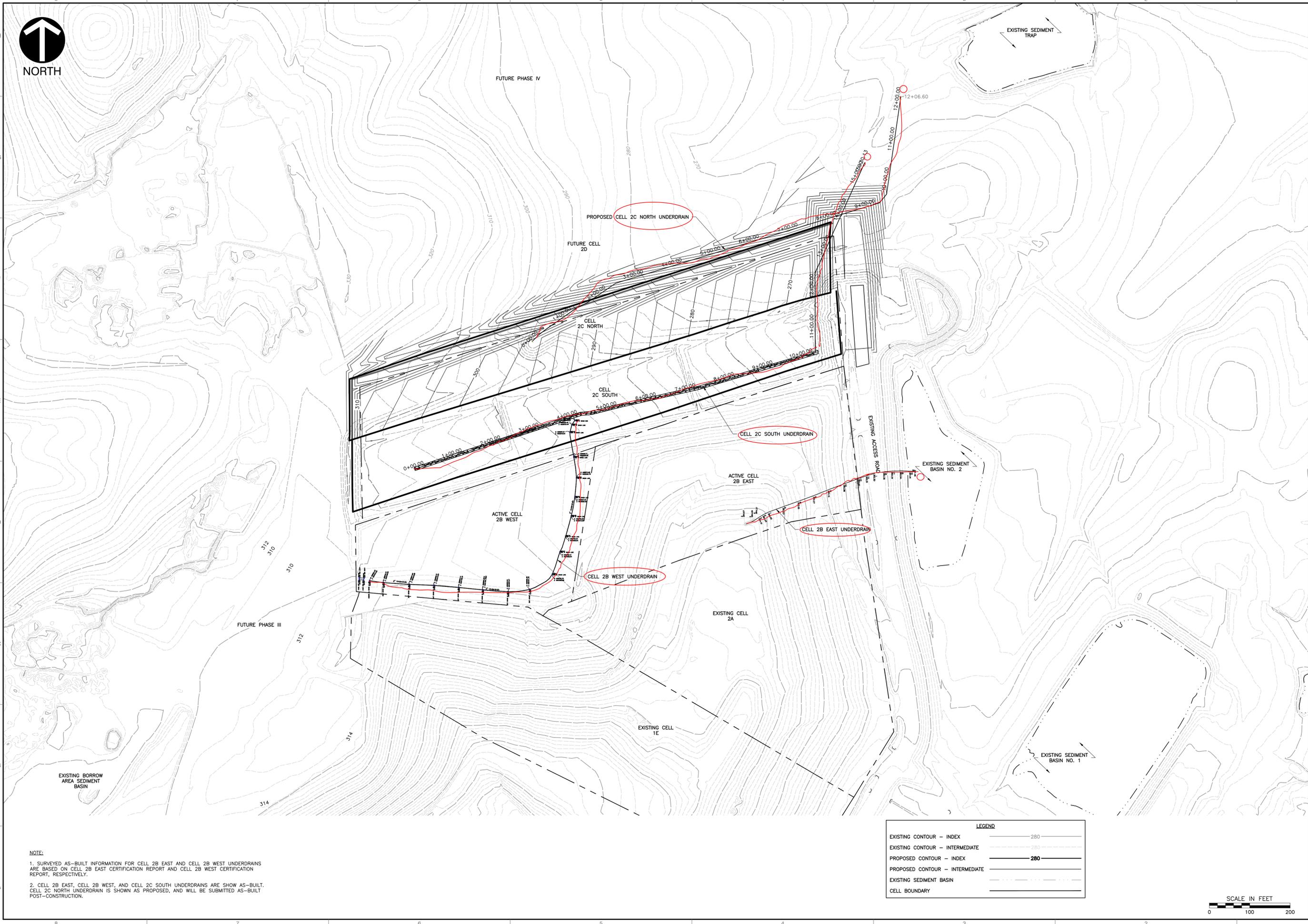
Perry Sugg, PG  
Permitting Hydrogeologist  
Solid Waste Section

Cc: Ed Mussler, SWS Permitting Branch Head  
John Murray, SWS Permitting Engineer  
David Garrett PG/PE, AMEC Foster Wheeler  
Nathan Bivins PE, CEC Inc.



NORTH

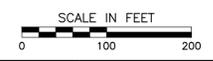
P:\2014\142-962-CAD\DWG\CELL 2C NORTH CONSTRUCTION SHEETS\CONSTRUCTION\142962-SW7-Composite Underdrain Plan.dwg (1/27/2016 11:23 AM)



**NOTE:**

1. SURVEYED AS-BUILT INFORMATION FOR CELL 2B EAST AND CELL 2B WEST UNDERDRAINS ARE BASED ON CELL 2B EAST CERTIFICATION REPORT AND CELL 2B WEST CERTIFICATION REPORT, RESPECTIVELY.
2. CELL 2B EAST, CELL 2B WEST, AND CELL 2C SOUTH UNDERDRAINS ARE SHOWN AS-BUILT. CELL 2C NORTH UNDERDRAIN IS SHOWN AS PROPOSED, AND WILL BE SUBMITTED AS-BUILT POST-CONSTRUCTION.

LEGEND	
EXISTING CONTOUR - INDEX	— 280 —
EXISTING CONTOUR - INTERMEDIATE	— 280 —
PROPOSED CONTOUR - INDEX	— 280 —
PROPOSED CONTOUR - INTERMEDIATE	— —
EXISTING SEDIMENT BASIN	— —
CELL BOUNDARY	— —



REVISION RECORD		
NO	DATE	DESCRIPTION

**CEE**

**Civil & Environmental Consultants, Inc.**  
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 Ph: 980.237.0373 - Fax: 980.237.0372  
 www.ceinc.com

**ANSON WASTE MANAGEMENT FACILITY  
 CELL 2C EXPANSION  
 CONSTRUCTION DRAWINGS**

COMPOSITE UNDERDRAIN PLAN	
DATE:	MARCH 2016
DRAWN BY:	CTH
DWG SCALE:	1" = 100'
PROJECT NO.:	142-962
APPROVED BY:	SLB

DRAWING NO.: **FIGURE 1**

SHEET 1 OF 1