ATTACHMENT 6

Geosyntec consultants

11490 Westheimer Road
Suite 150
Houston, TX 77077
PH 281.920.4601
www.geosyntec.com

Memorandum

Date:	18 May 2017
To:	Colin Olness, Atlantic Coast Pipeline (ACP)
From:	Logan Brant, Ph.D., P.E. and Tony Rice, P.E.
Copies to:	Rodolfo Sancio, Ph.D., P.E.
Subject:	Response to Forest Service Item No. 6 – 14 May 2017 Letter Captioned "Reiteration of Previous Information Requests ……"

On 14 May 2017, the Forest Service (FS) submitted a letter to the Federal Energy Regulatory Commission (FERC) outlining a list of eight items requested from the Atlantic Coast Pipeline (ACP). This was followed by a conference call on 17 May 2017, where representatives of the FS and the ACP project team, including Geosyntec Consultants, Inc. (Geosyntec), discussed Item No. 6 from that letter. In this memorandum, Geosyntec responds specifically to Item No. 6 and provides supporting documentation intended to clarify areas of confusion identified in Item No. 6 of the letter and subsequently discussed during the conference call.

ITEM NO. 6

6. *For the GWNF02 site, the Computation Analysis Package Geohazard Mitigation Design at ACP AP-1 MP 84.95 to 85.05 (TXG0007-013-CA-002) shows a plan to place the temporary spoils in the Extra Workspace (EWS) straddling the ridgetop (Figure 4. Anticipated Average Slope Inclination Values for the Temporary Ground). The Cut-Fill Volume Calculations (Figure 6) show 1) a cut on the ridgetop for the winch pad, and 2) a fill 6-10 feet deep in a relatively small area in the EWS south of the cut on the ridgetop. However, Figure 6 also shows a fill 6-10 feet deep covering a larger area that is not in the EWS, but rather is on the steep side slope between contour elevations 2770' and 2830'. Similarly, Figure 6 shows fills 0-3 and 3-6 feet deep covering a larger area that is not in the EWS but rather is on the steep side slope between contour elevations 2650' and 2830'. These fills*

(0-10 feet deep) are temporary spoils that are not in the EWS but rather on steep side slopes which include slope inclinations of 37 degrees (Figure 4). Provide the excavation source for the temporary spoils placed on the steep side slopes between contour elevations 2650' and 2830'. Identify whether these temporary spoils on steep side slopes include material excavated from the ridgetop for the winch pad.

The Summary of Factor of Safety against shallow seated sliding (Table 4) includes a Factor of Safety for "Temporary Spoils in EWS" and for "Side Slopes". Is the Factor of Safety for "Side Slopes" for temporary spoils on side slopes? If so, then relabel "Side Slopes" to "Temporary Spoils on Side Slopes." Also, in the Temporary Ground section (p. 7-9), when discussing temporary spoils (not topsoil segregation material) it would help to avoid confusion by stating "a temporary spoils depth of 10 ft" rather than "a soil depth of 10 ft."

RESPONSE

For the GWNF02 site (ACP AP-1 MP 84.95 to 85.05), Geosyntec prepared a Computation Package TXG0007-013-CA-002 (Rev. D) to support the Design Drawings (Rev. D). The computation package included slope stability analyses, geohazard mitigation recommendations, and cut-fill volume calculations. Item No. 6 of the letter relates specifically to the grading of the slope and the locations where temporary spoils are anticipated to be placed during construction.

Temporary spoils will be generated during excavation within the temporary and permanent right of way areas (collectively referred to as the ROW area) to create the temporary ground surface in preparation for pipeline construction (cut occurring on North side of ROW area), excavation of the pipe trench, and excavation for the winch pad at the top of the slope. We anticipate that the Contractor will look to store as much of that temporary spoils within the ROW areas and extra work spaces (EWS) on the slope, although our calculations suggest that some excavated spoils may need to be removed for off-site disposal. The temporary spoils remaining on-site, will either be moved to the South side of the ROW area, where backfilling is needed to create the temporary ground surface for pipeline construction, or will be stored in stockpiles located within either of the two EWS that straddle the ridgetop.

The two parts of the computation package which appear to have caused the most confusion are Table 4 and Figure 4, which it seems did not clearly explained that temporary spoils may be stored

within both the ROW area and the EWS, not just in the EWS, as some interpreted. In order to improve clarity and address concerns raised by the FS in Item No. 6 of the letter, we propose making the following modifications to the computation package:

Proposed Modifications to Table 4

Table 4 provides a summary of calculated factors of safety against shallow seated sliding. The table was not intended to support the cut-fill volume calculations. However, we now understand that several of the column titles in the original table may have given the impression that temporary spoils would only be placed within the EWS, which was not our intent.

In order to improve clarity and address concerns, we propose the following adjustments to the table, largely achieved through adding a row identifying the material types considered for each stability analysis. The proposed updated Table 4, is presented as follows:

Table 4. Summary of Factor of Safety Against Shallow Seated Sliding

Factor of Safety Against Shallow Seated Sliding				
Temporary Ground				Final Ground
ROW Area Work Surface	ROW Area Side Slopes	EWS	Rock Armoring	
Existing Soil & Rock and Backfilled Excavated Spoils	Existing Soil & Rock and Backfilled Excavated Spoils	Backfilled Excavated Spoils	Crushed Stone	Existing Soil & Rock and Backfilled Excavated Spoils
1.35	1.11	1.40	1.19	1.04

Note: Pipeline will be buried below bedrock surface, so will not be affected by shallow seated sliding.

Proposed Modifications to Figure 4

Figure 4 presents the "Anticipated Average Slope Inclination Values for the Temporary Ground" condition during pipeline construction. The slope inclinations shown on this figure for the temporary ground condition are generally different from the existing slope inclinations. The

computation package originally did not contain a figure showing the slope inclinations for the existing ground.

In order to improve clarity and address concerns, we propose to add another figure, Figure 4a, illustrating the slope inclinations for the existing ground and rename the current Figure 4, Figure 4b. These figures, combined with the current Figure 5, would summarize the average slope inclinations for each of the three ground surface configurations; existing ground (Figure 4a); temporary ground (Figure 4b): and final ground (Figure 5). Additional information has also been added to each of the three figures to show the anticipated surficial materials at various locations and the general movement of excavated spoils during each subsequent stage of construction. The proposed updated Figures 4a, 4b and 5, are presented as follows:

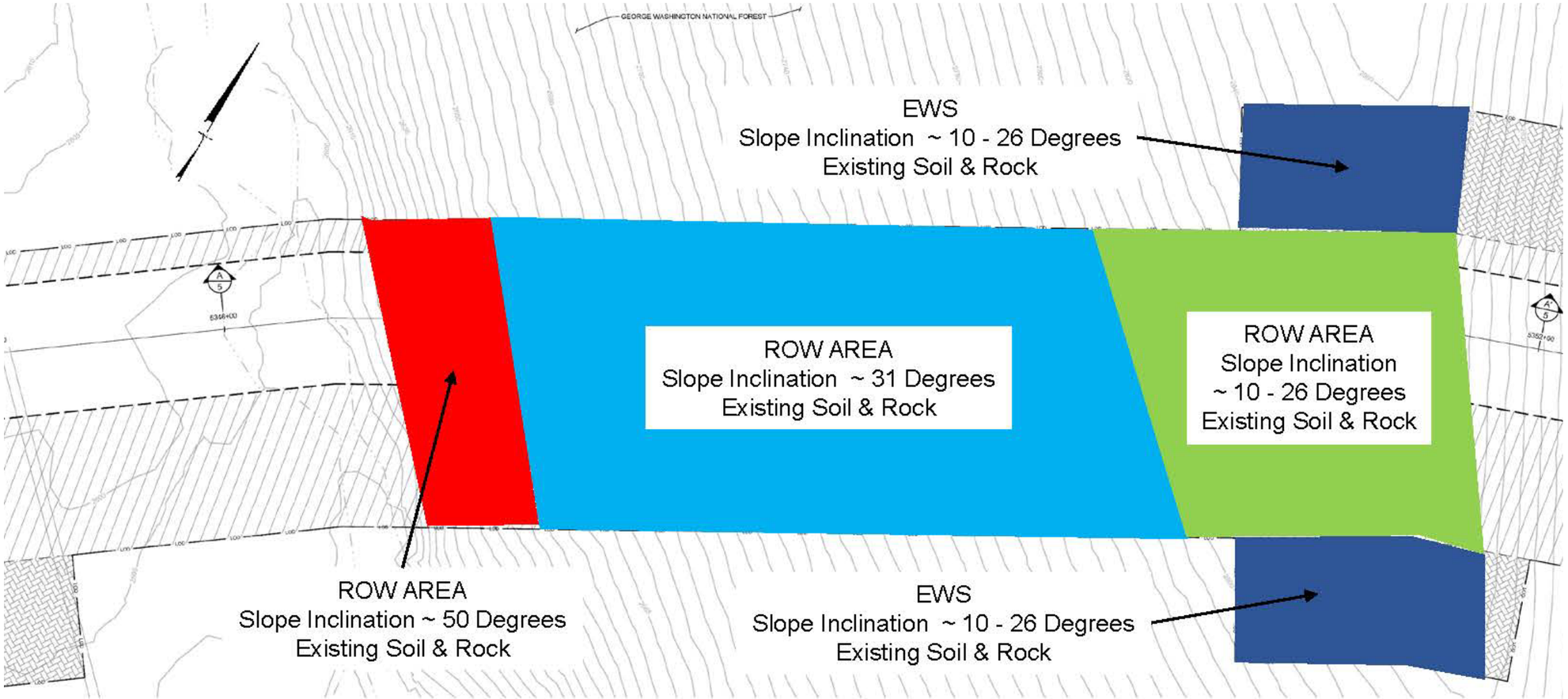

Figure 4a. Average Slope Inclination for the Existing Ground

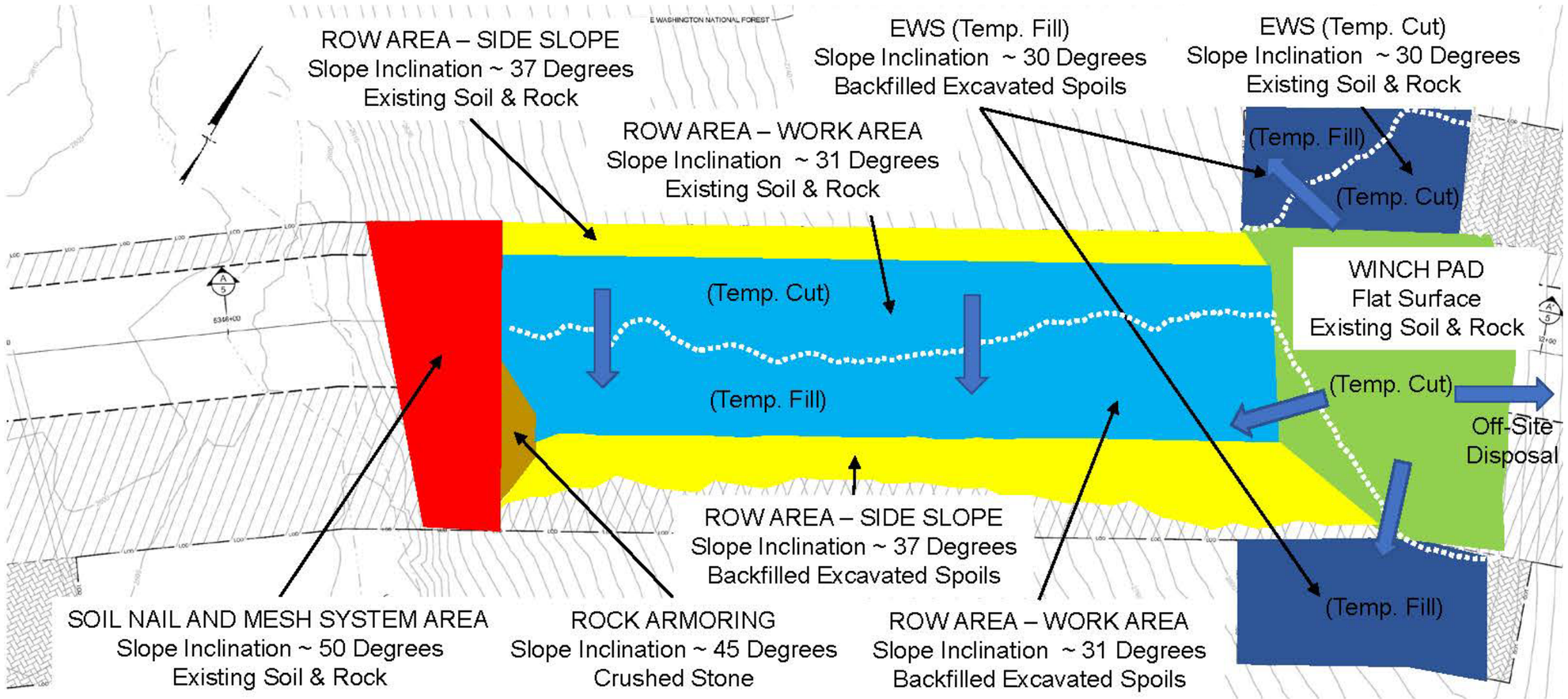

Figure 4b. Anticipated Average Slope Inclination for the Temporary Ground

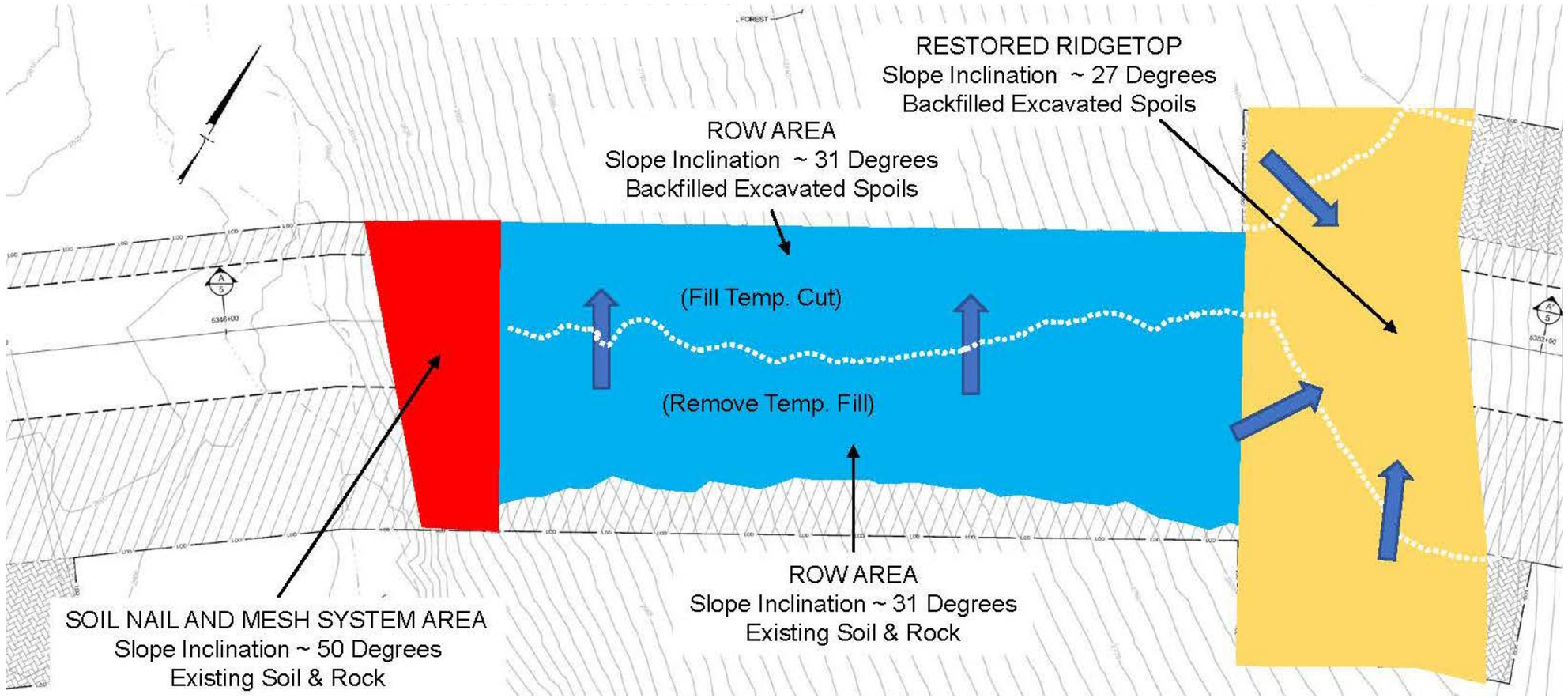

Figure 5. Anticipated Average Slope Inclination for the Final Ground