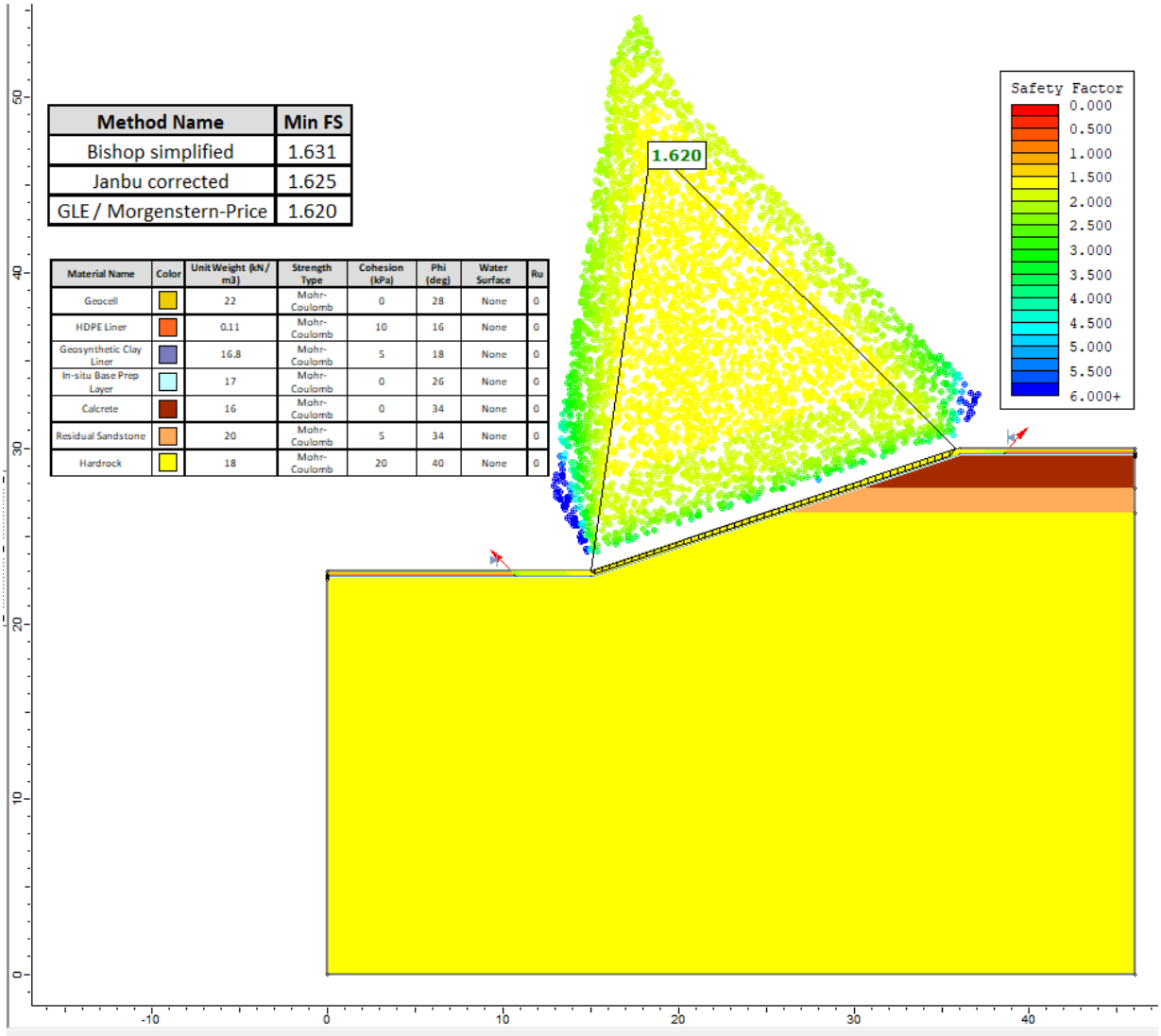
ANNEXURE F- INTERFACE STABILITY CHECKS

INTERFACE STABILITY

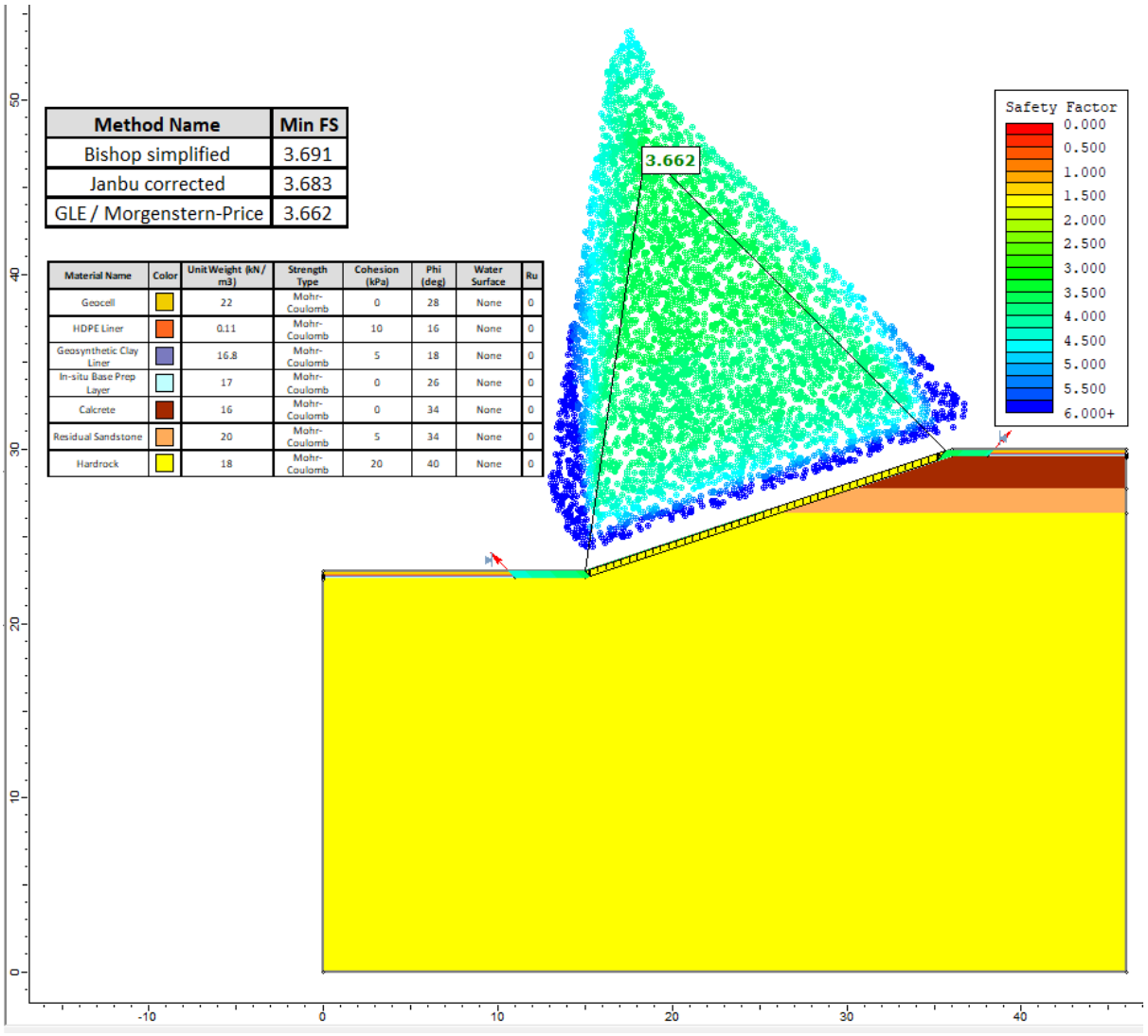
Stability Analysis was undertaken on each of the liner interfaces using the SLIDE 3 part of the Rock Science Suite of Geotechnical Software. Analysis was undertaken for the case of the empty PCD, i.e. with no loading, when the PCD is full of water, and the worse case scenario when the PCD is full of water and with a loading from a seismic (earthquake) event.

Scenario 1 – No Loading (water) on slope

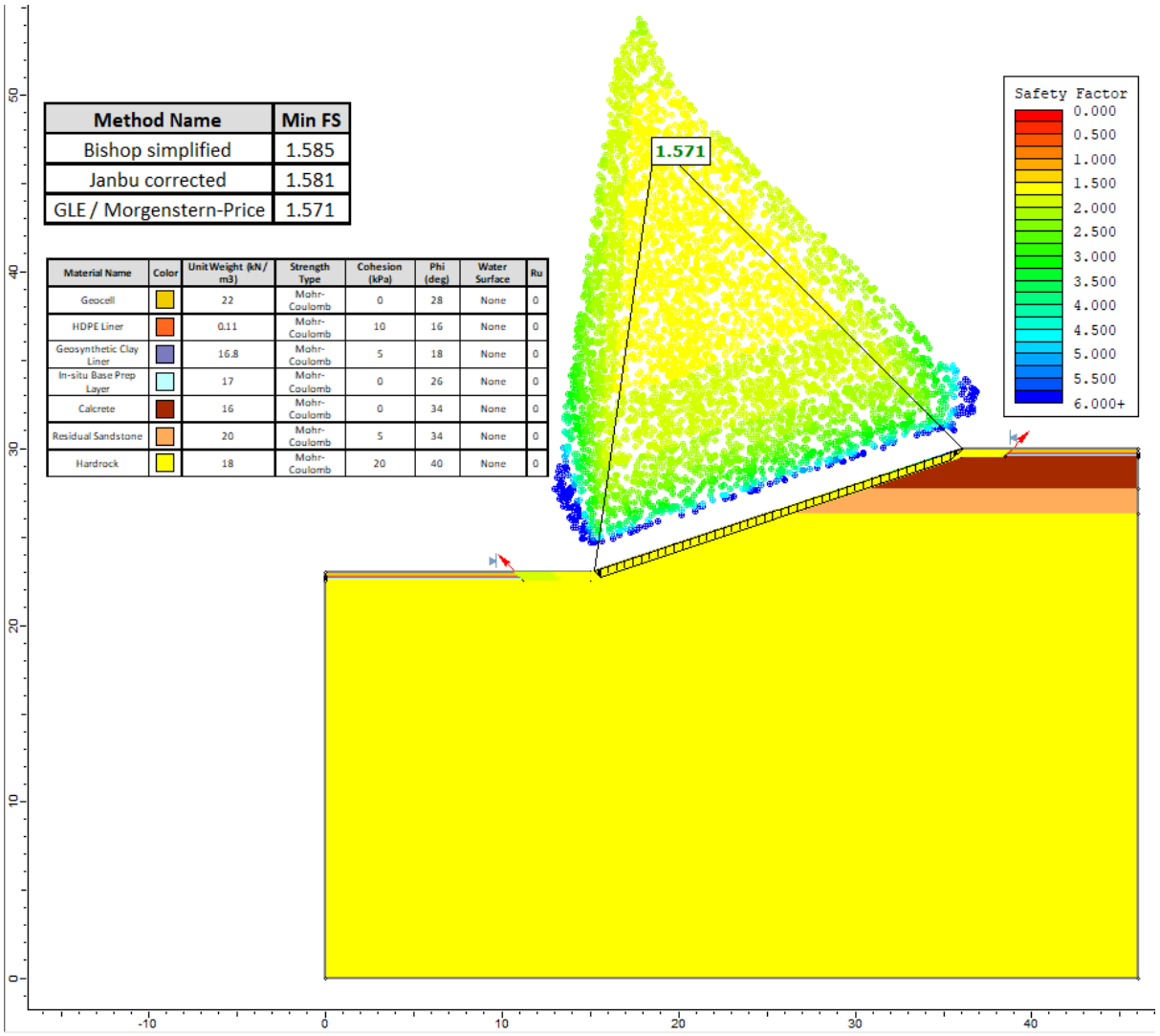
Geocell – HDPE interface



GCL – Base Prep

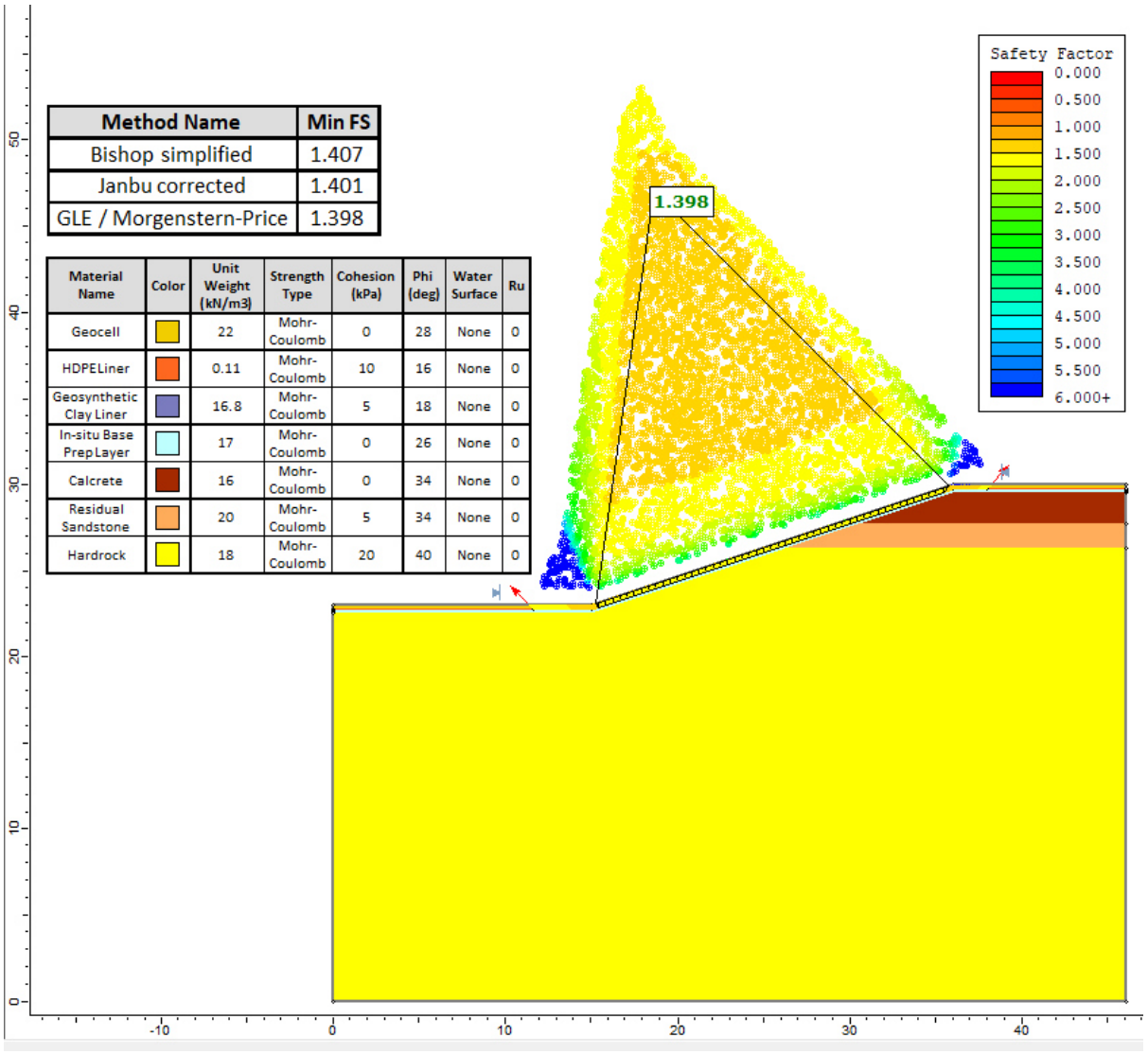


Base Prep – in-situ Ground



No external Loading (water) on slope – but there is Seismic loading

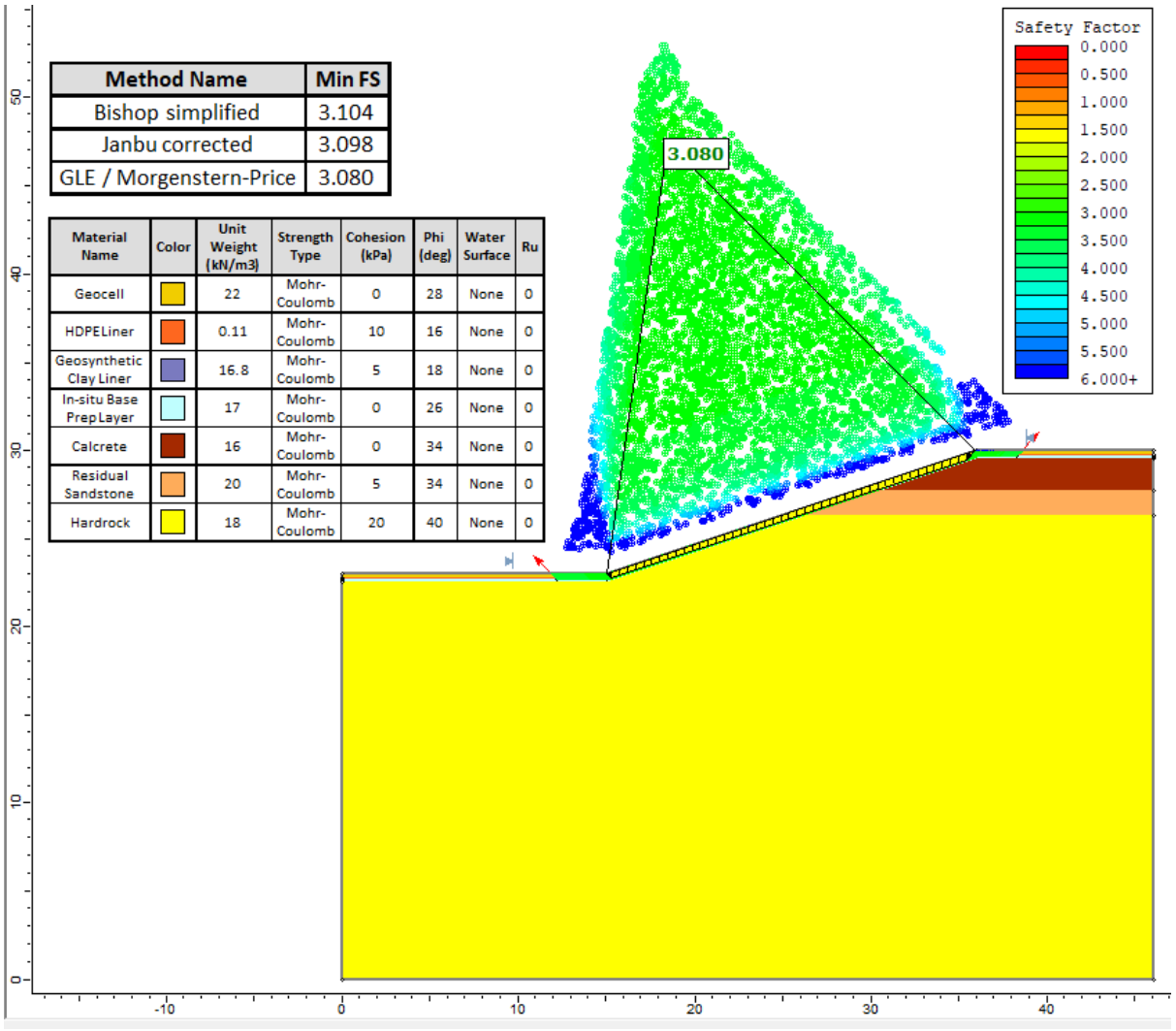
Geocell - HDPE



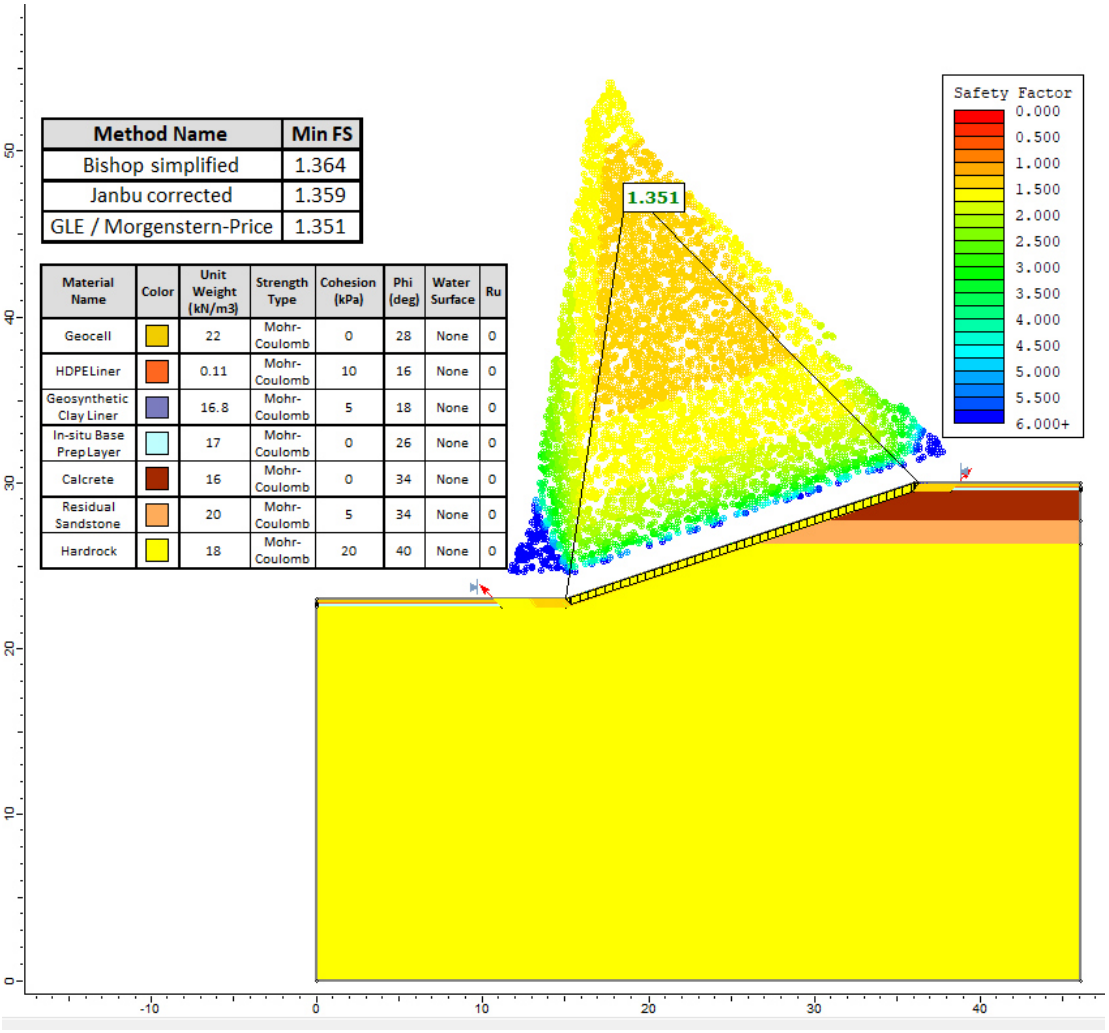
Method Name	Min FS
Bishop simplified	1.407
Janbu corrected	1.401
GLE / Morgenstern-Price	1.398

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Ru
Geocell		22	Mohr-Coulomb	0	28	None	0
HDPELiner		0.11	Mohr-Coulomb	10	16	None	0
Geosynthetic Clay Liner		16.8	Mohr-Coulomb	5	18	None	0
In-situ Base Prep Layer		17	Mohr-Coulomb	0	26	None	0
Calcrete		16	Mohr-Coulomb	0	34	None	0
Residual Sandstone		20	Mohr-Coulomb	5	34	None	0
Hardrock		18	Mohr-Coulomb	20	40	None	0

GCL – Base Prep

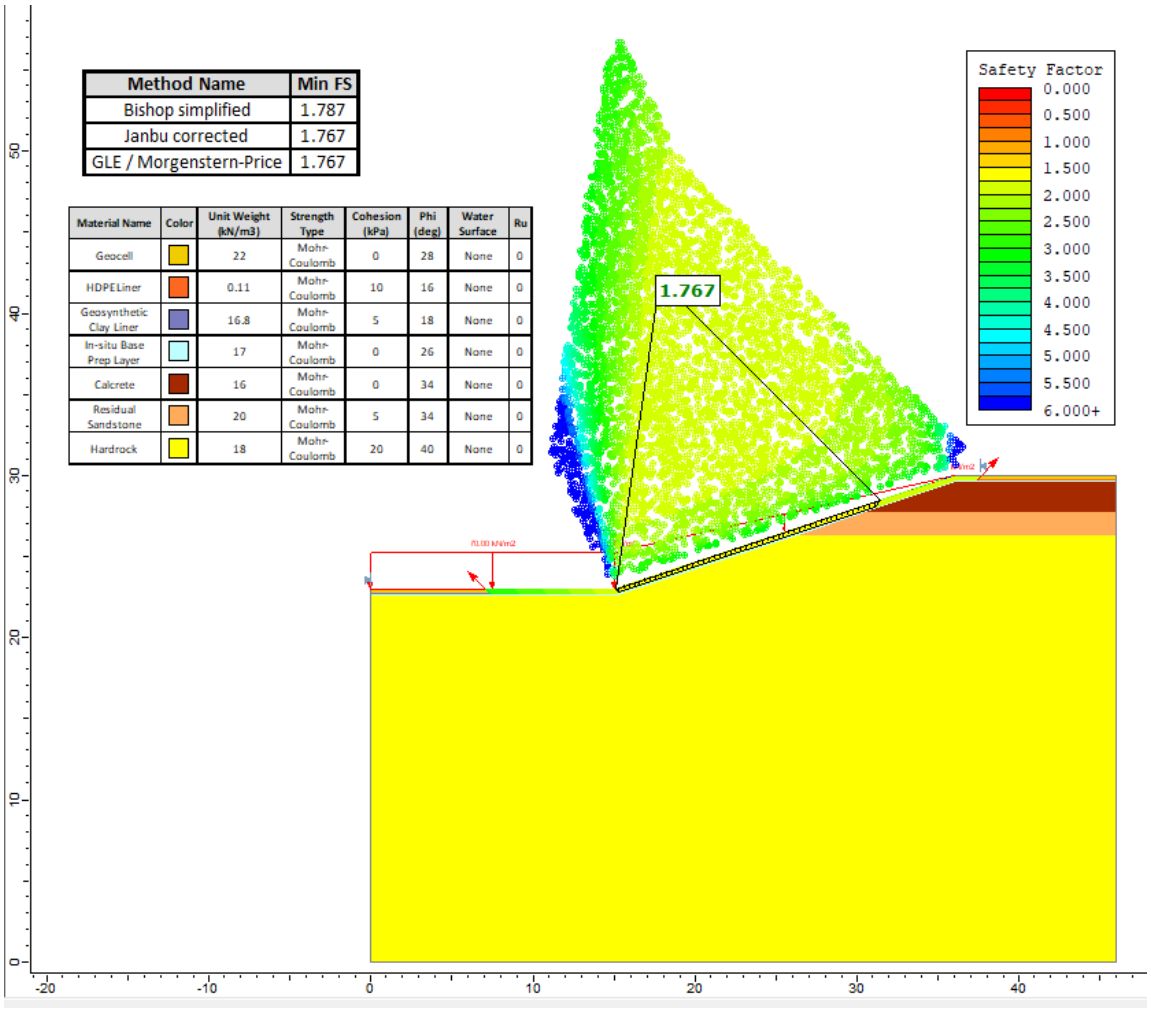


Base Prep - Ground



External Loading (water) Applied

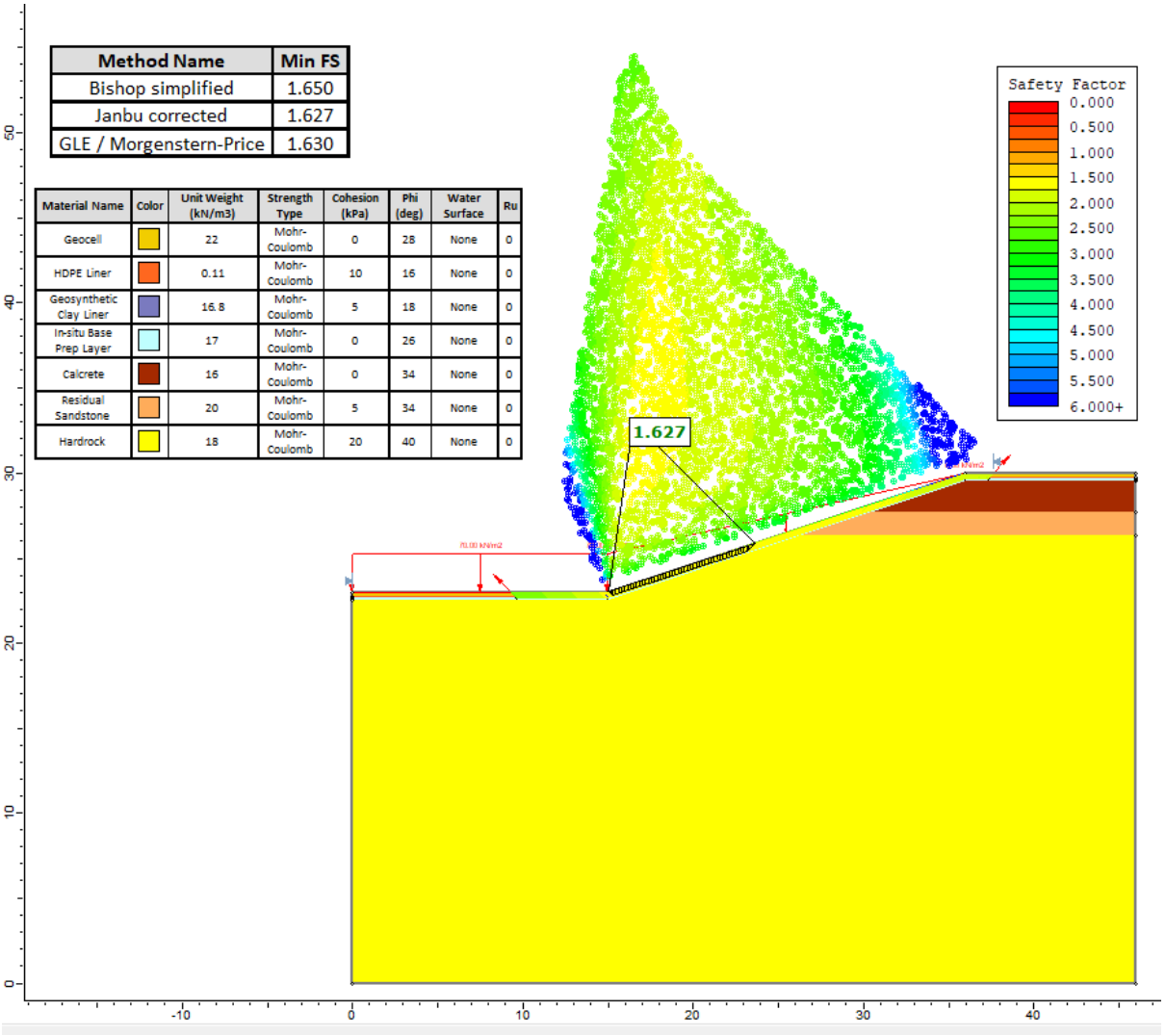
Geocell – HDPE



HDPE - GCL

Method Name	Min FS
Bishop simplified	1.650
Janbu corrected	1.627
GLE / Morgenstern-Price	1.630

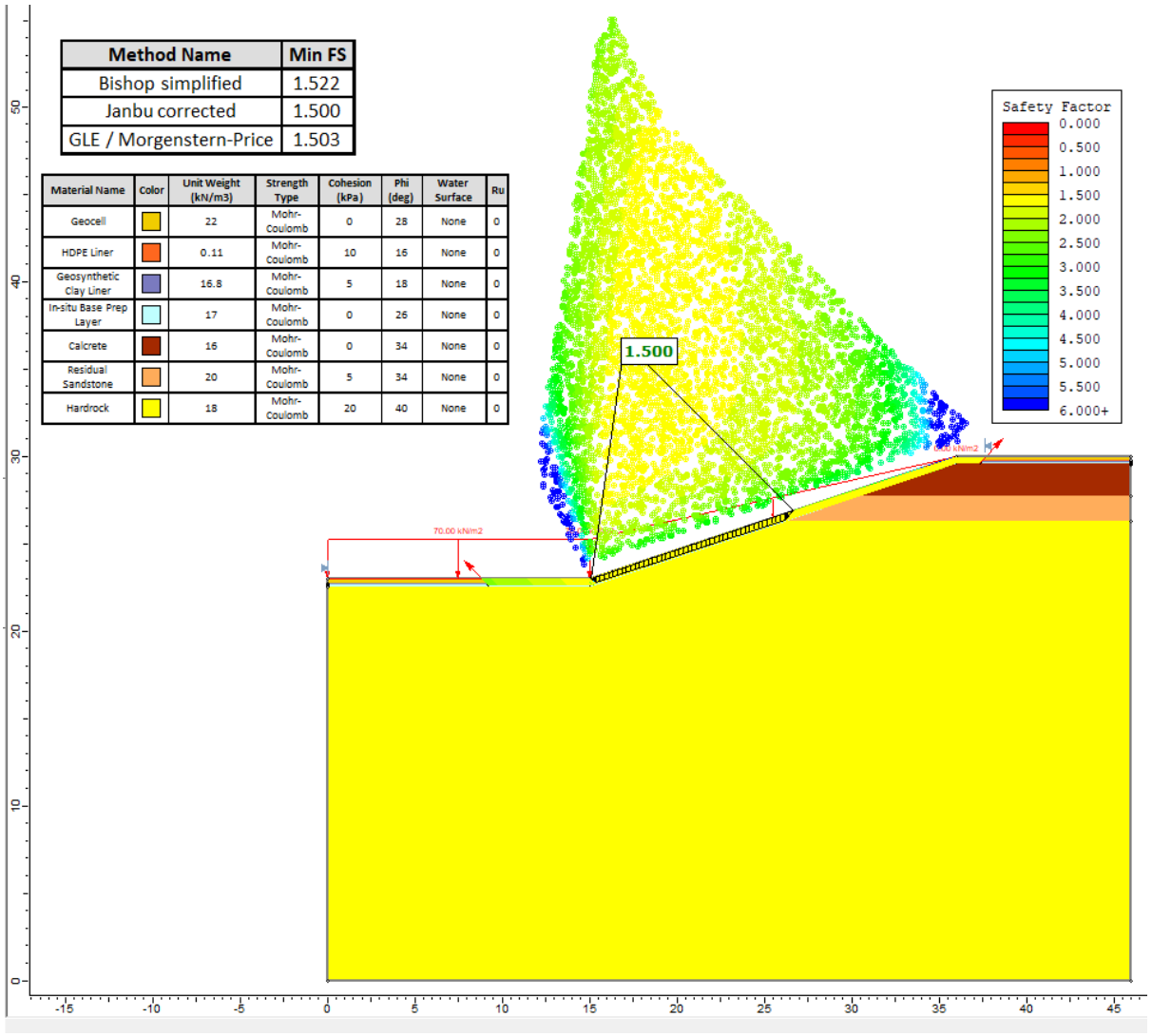
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Ru
Geocell		22	Mohr-Coulomb	0	28	None	0
HDPE Liner		0.11	Mohr-Coulomb	10	16	None	0
Geosynthetic Clay Liner		16.8	Mohr-Coulomb	5	18	None	0
In-situ Base Prep Layer		17	Mohr-Coulomb	0	26	None	0
Calcrete		16	Mohr-Coulomb	0	34	None	0
Residual Sandstone		20	Mohr-Coulomb	5	34	None	0
Hardrock		18	Mohr-Coulomb	20	40	None	0



GCL – Base Prep

Method Name	Min FS
Bishop simplified	1.522
Janbu corrected	1.500
GLE / Morgenstern-Price	1.503

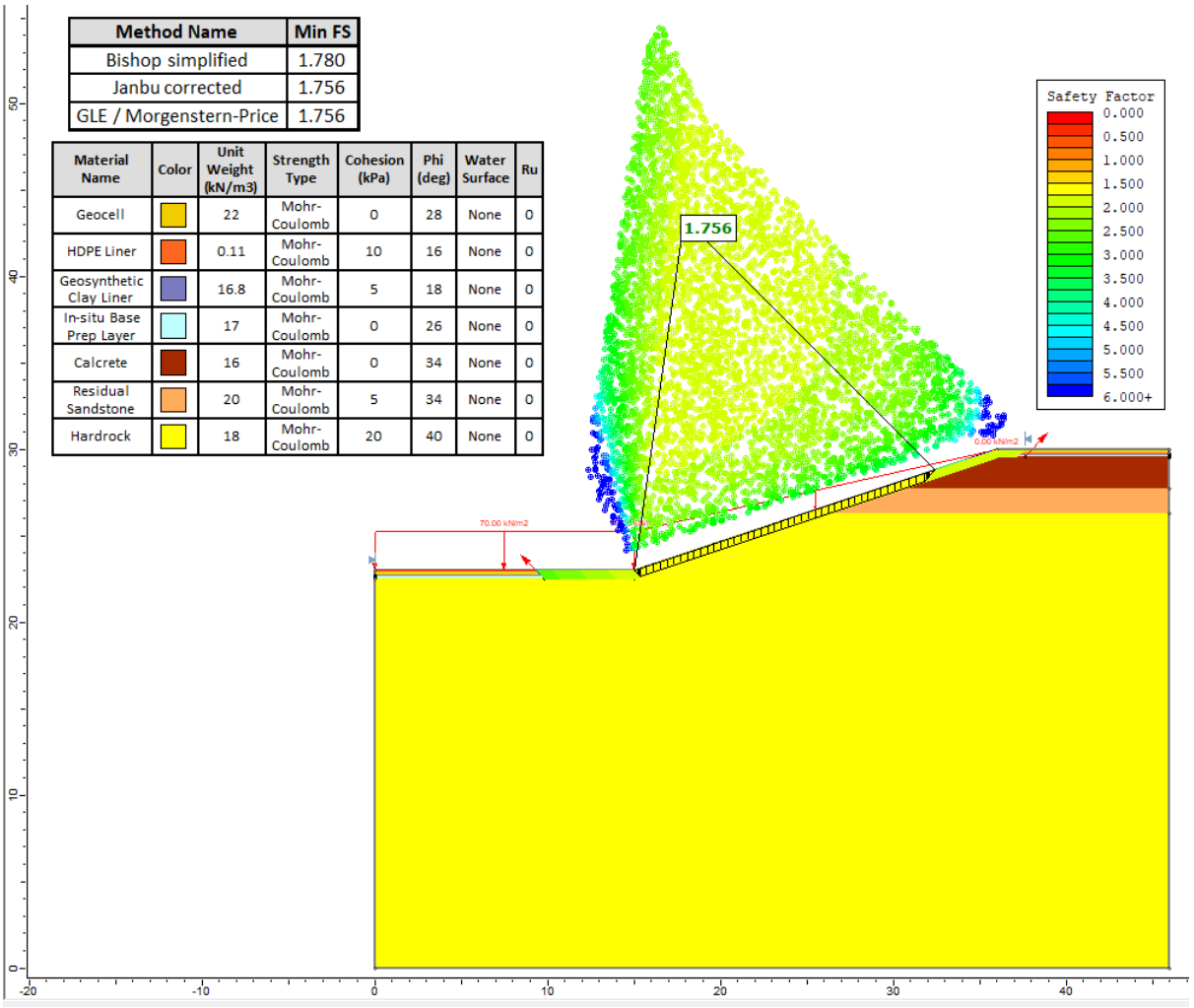
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Ru
Geocell		22	Mohr-Coulomb	0	28	None	0
HDPE Liner		0.11	Mohr-Coulomb	10	16	None	0
Geosynthetic Clay Liner		16.8	Mohr-Coulomb	5	18	None	0
In-situ Base Prep Layer		17	Mohr-Coulomb	0	26	None	0
Calcrete		16	Mohr-Coulomb	0	34	None	0
Residual Sandstone		20	Mohr-Coulomb	5	34	None	0
Hardrock		18	Mohr-Coulomb	20	40	None	0



Base Prep – in-situ Ground

Method Name	Min FS
Bishop simplified	1.780
Janbu corrected	1.756
GLE / Morgenstern-Price	1.756

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Ru
Geocell		22	Mohr-Coulomb	0	28	None	0
HDPE Liner		0.11	Mohr-Coulomb	10	16	None	0
Geosynthetic Clay Liner		16.8	Mohr-Coulomb	5	18	None	0
In-situ Base Prep Layer		17	Mohr-Coulomb	0	26	None	0
Calcrete		16	Mohr-Coulomb	0	34	None	0
Residual Sandstone		20	Mohr-Coulomb	5	34	None	0
Hardrock		18	Mohr-Coulomb	20	40	None	0



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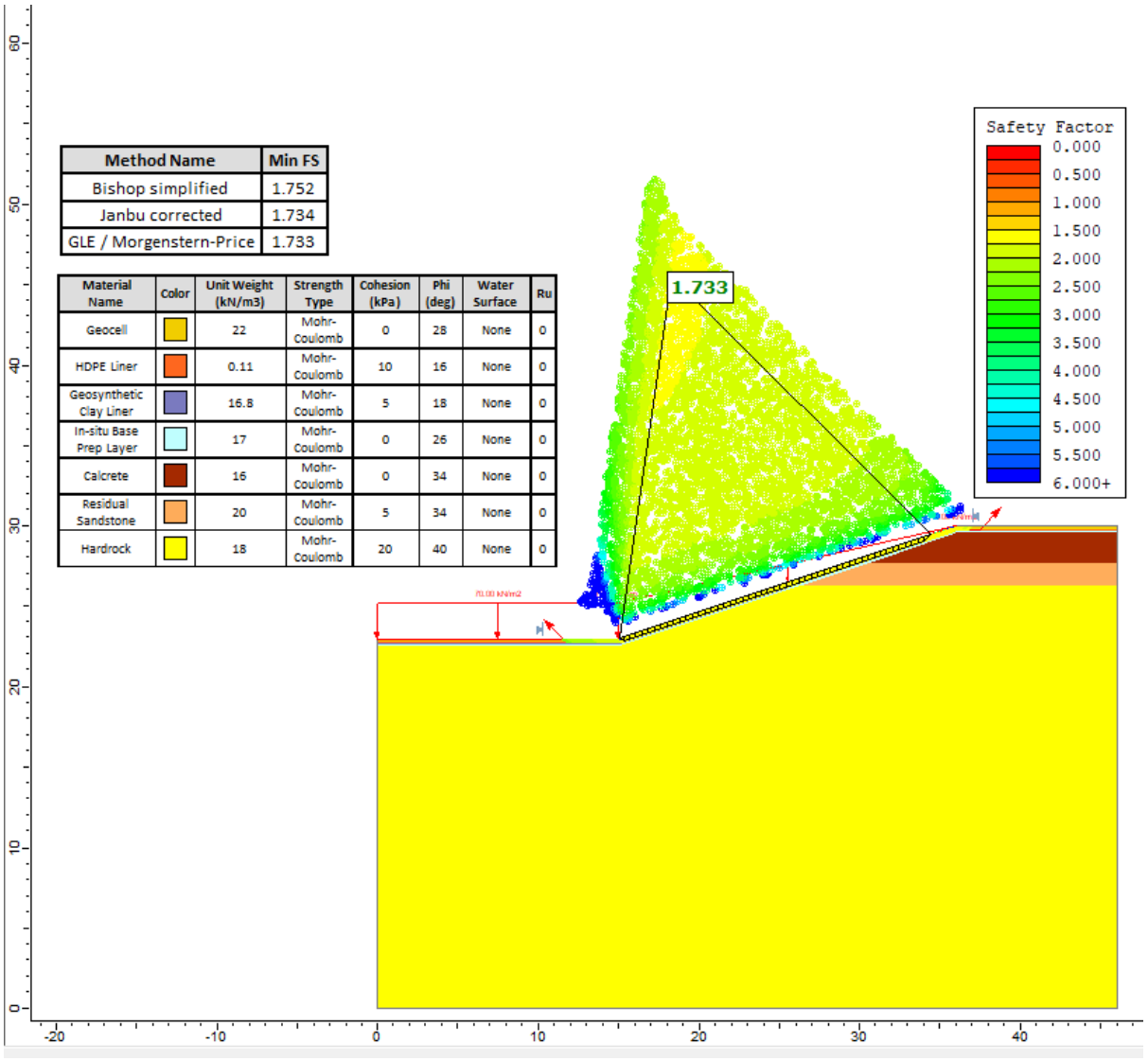
External Loading (water) + Seismic

Geocell - HDPE



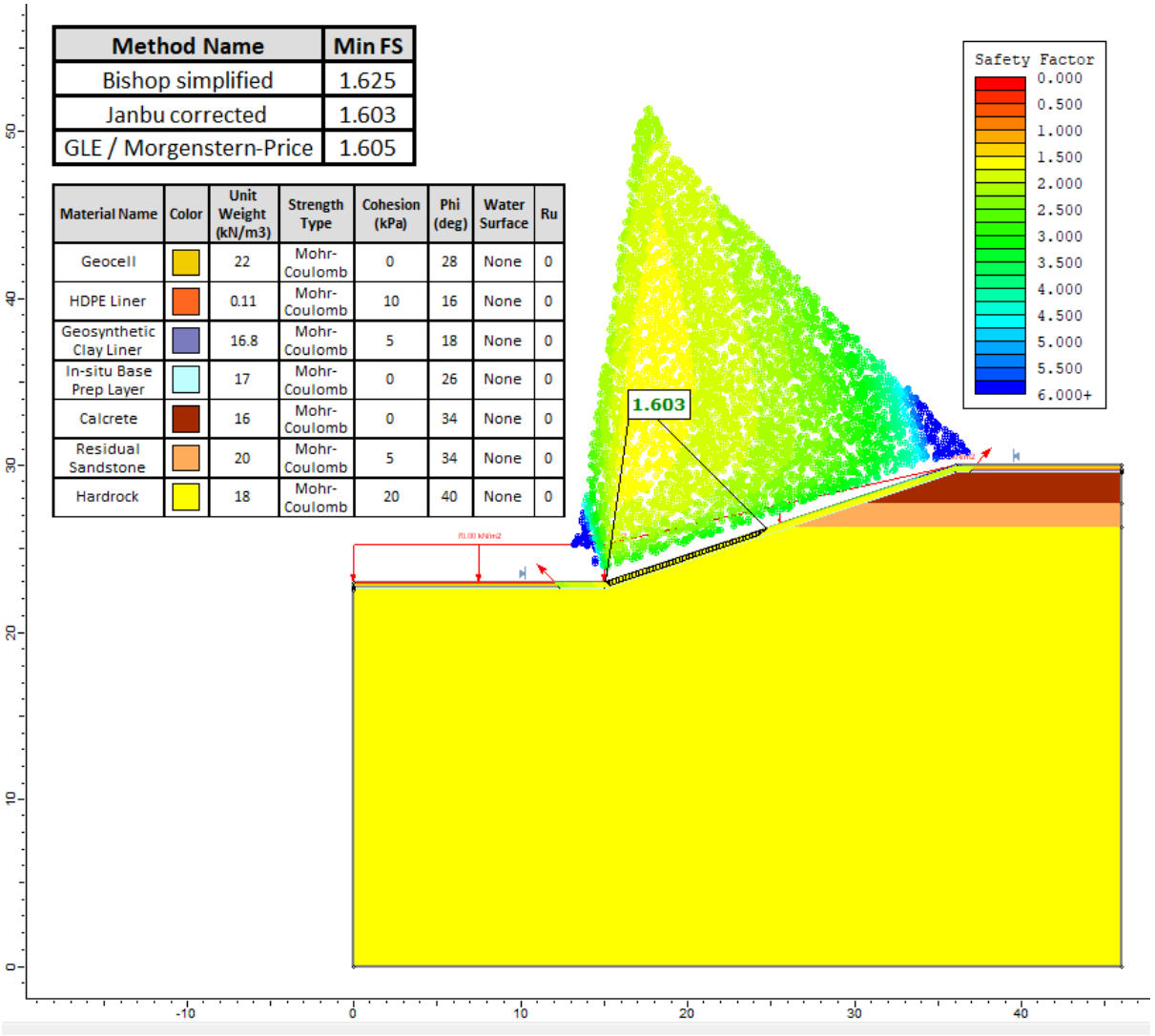
Method Name	Min FS
Bishop simplified	1.752
Janbu corrected	1.734
GLE / Morgenstern-Price	1.733

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Ru
Geocell		22	Mohr-Coulomb	0	28	None	0
HDPE Liner		0.11	Mohr-Coulomb	10	16	None	0
Geosynthetic Clay Liner		16.8	Mohr-Coulomb	5	18	None	0
In-situ Base Prep Layer		17	Mohr-Coulomb	0	26	None	0
Calcrete		16	Mohr-Coulomb	0	34	None	0
Residual Sandstone		20	Mohr-Coulomb	5	34	None	0
Hardrock		18	Mohr-Coulomb	20	40	None	0

HDPE - GCL

Method Name	Min FS
Bishop simplified	1.625
Janbu corrected	1.603
GLE / Morgenstern-Price	1.605

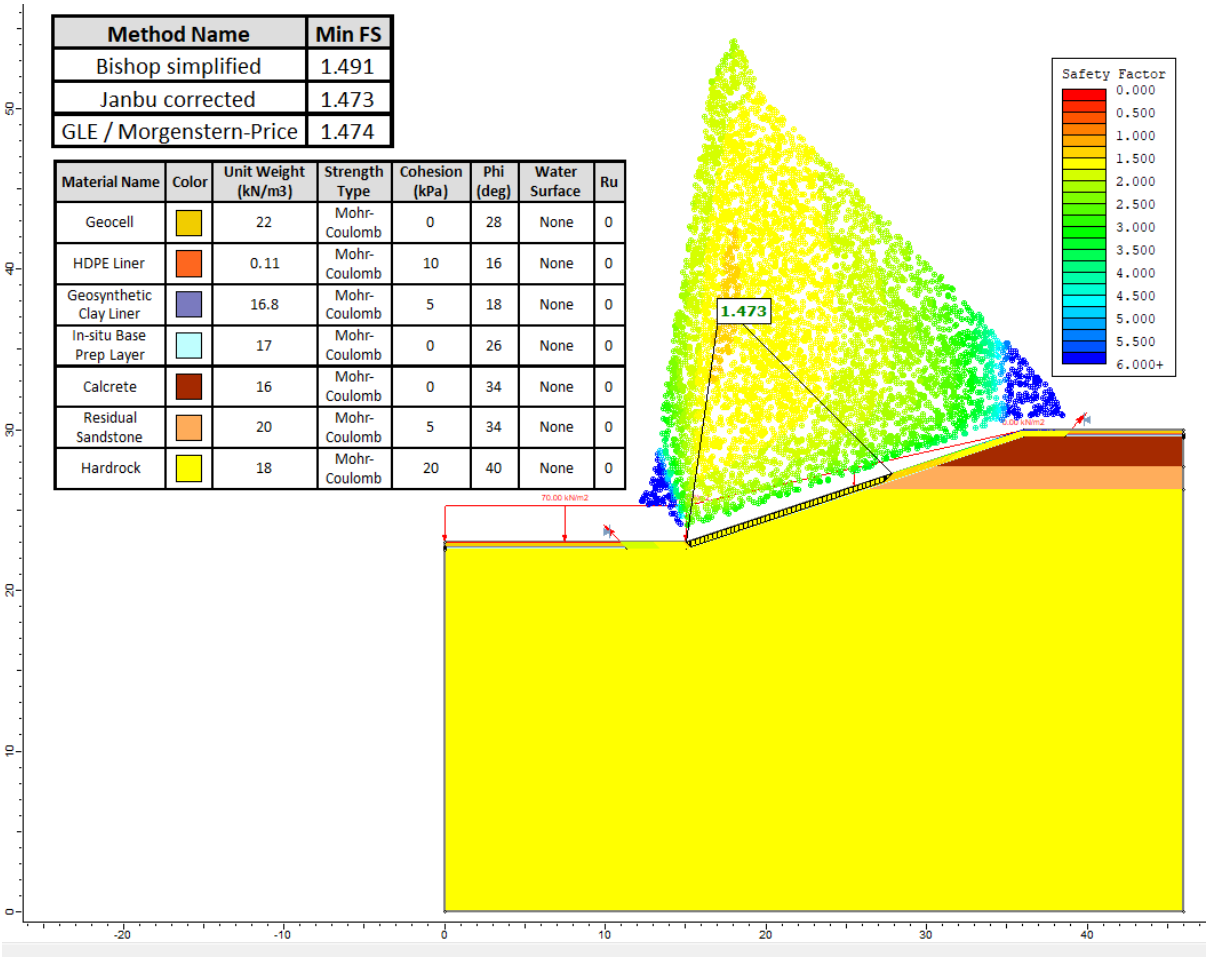
Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Ru
Geocell		22	Mohr-Coulomb	0	28	None	0
HDPE Liner		0.11	Mohr-Coulomb	10	16	None	0
Geosynthetic Clay Liner		16.8	Mohr-Coulomb	5	18	None	0
In-situ Base Prep Layer		17	Mohr-Coulomb	0	26	None	0
Calcrete		16	Mohr-Coulomb	0	34	None	0
Residual Sandstone		20	Mohr-Coulomb	5	34	None	0
Hardrock		18	Mohr-Coulomb	20	40	None	0



GCL – Base Prep

Method Name	Min FS
Bishop simplified	1.491
Janbu corrected	1.473
GLE / Morgenstern-Price	1.474

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Ru
Geocell		22	Mohr-Coulomb	0	28	None	0
HDPE Liner		0.11	Mohr-Coulomb	10	16	None	0
Geosynthetic Clay Liner		16.8	Mohr-Coulomb	5	18	None	0
In-situ Base Prep Layer		17	Mohr-Coulomb	0	26	None	0
Calcrete		16	Mohr-Coulomb	0	34	None	0
Residual Sandstone		20	Mohr-Coulomb	5	34	None	0
Hardrock		18	Mohr-Coulomb	20	40	None	0



Base Prep – In-situ ground

Method Name	Min FS
Bishop simplified	1.730
Janbu corrected	1.708
GLE / Morgenstern-Price	1.707

Material Name	Color	Unit Weight (kN/m3)	Strength Type	Cohesion (kPa)	Phi (deg)	Water Surface	Ru
Geocell		22	Mohr-Coulomb	0	28	None	0
HDPE Liner		0.11	Mohr-Coulomb	10	16	None	0
Geosynthetic Clay Liner		16.8	Mohr-Coulomb	5	18	None	0
In-situ Base Prep Layer		17	Mohr-Coulomb	0	26	None	0
Calcrete		16	Mohr-Coulomb	0	34	None	0
Residual Sandstone		20	Mohr-Coulomb	5	34	None	0
Hardrock		18	Mohr-Coulomb	20	40	None	0