

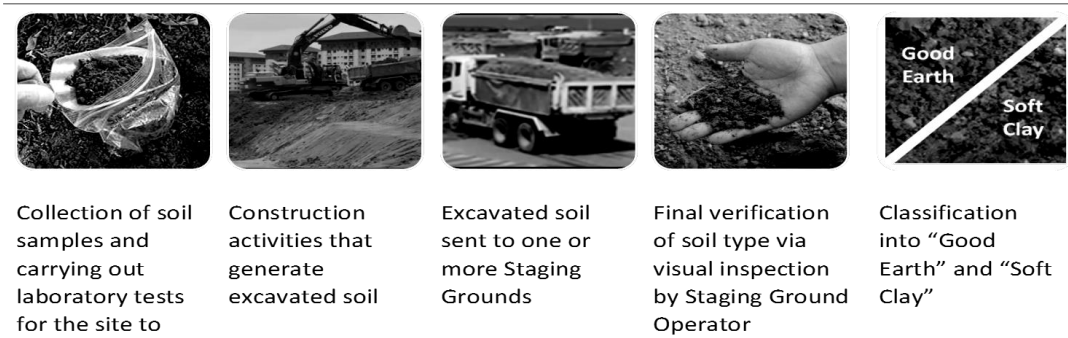


Figure. 1

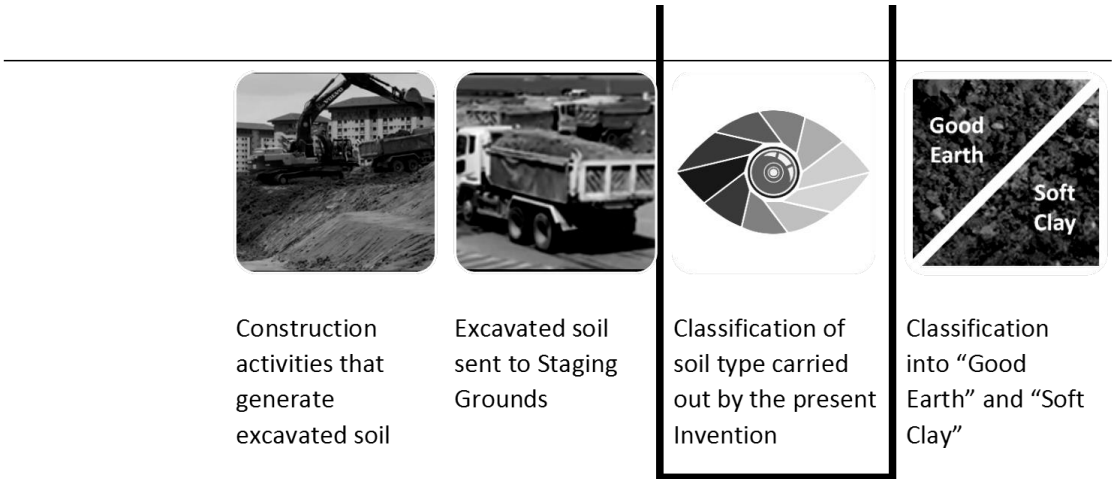


Figure. 2

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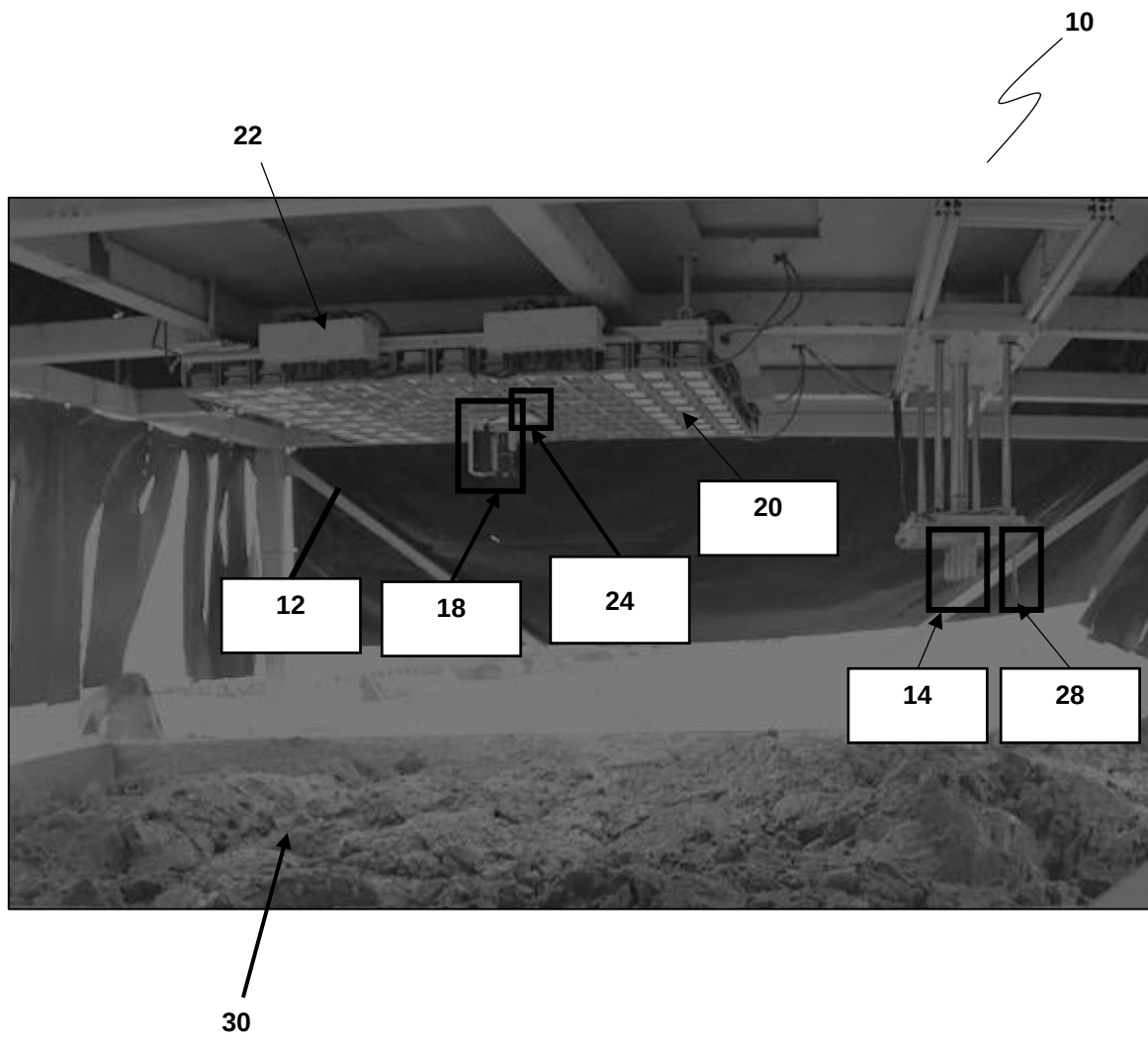


Figure. 3

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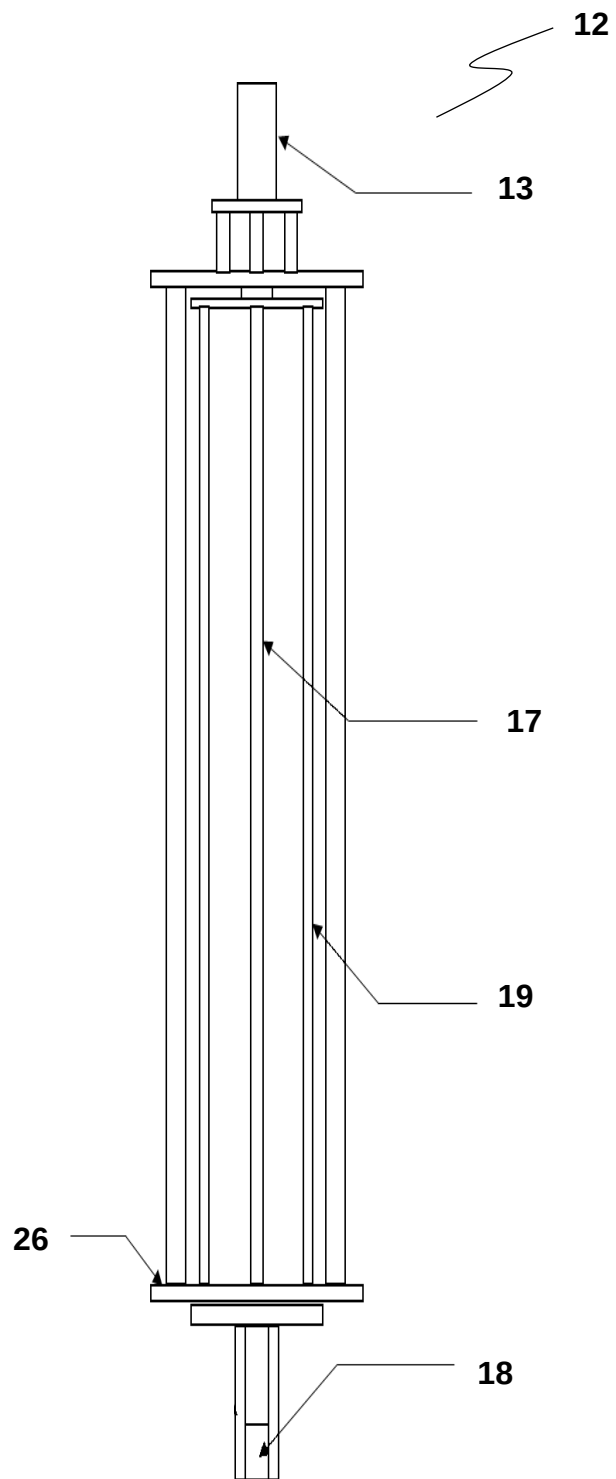


Figure. 4a

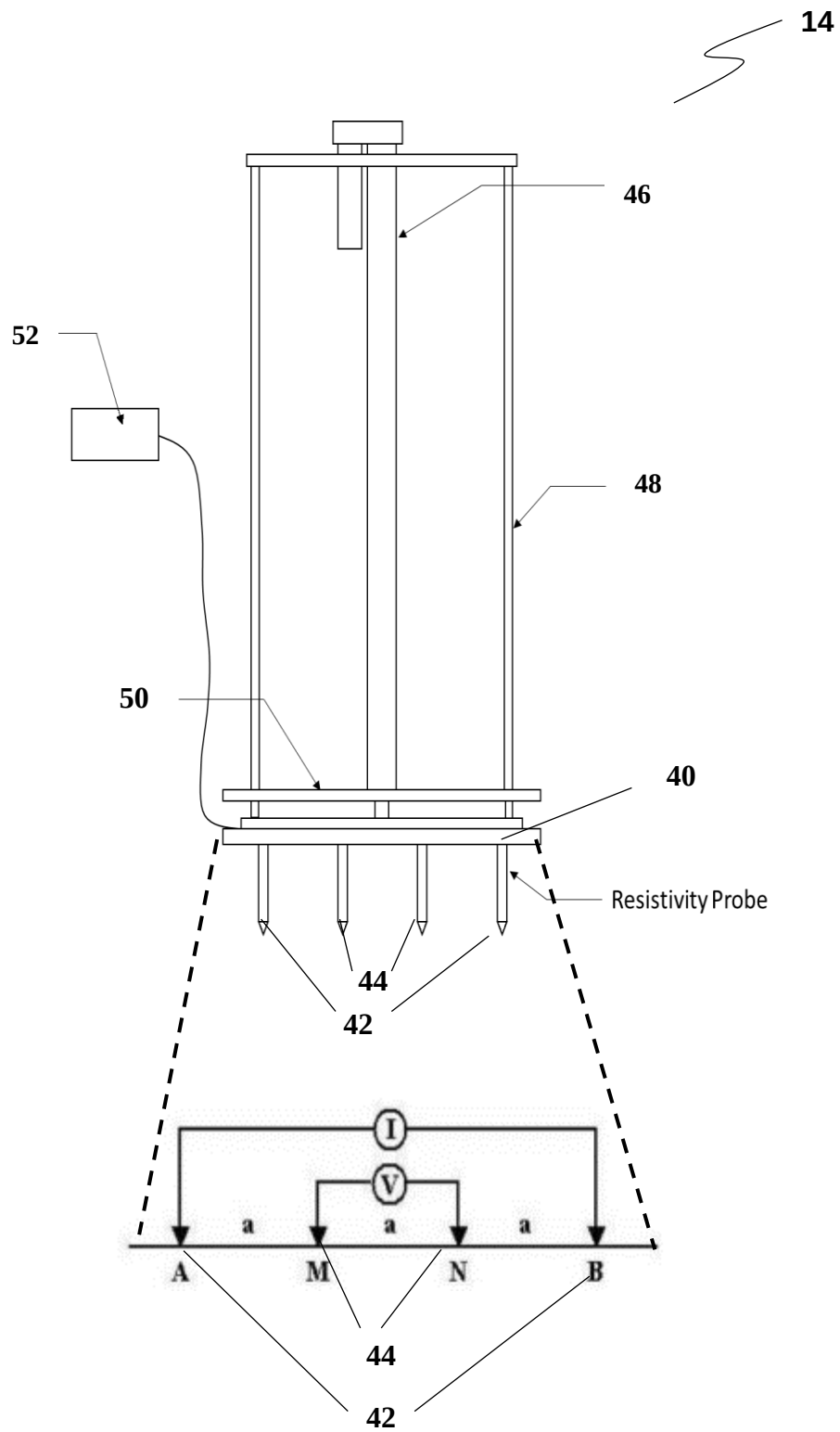


Figure. 4b

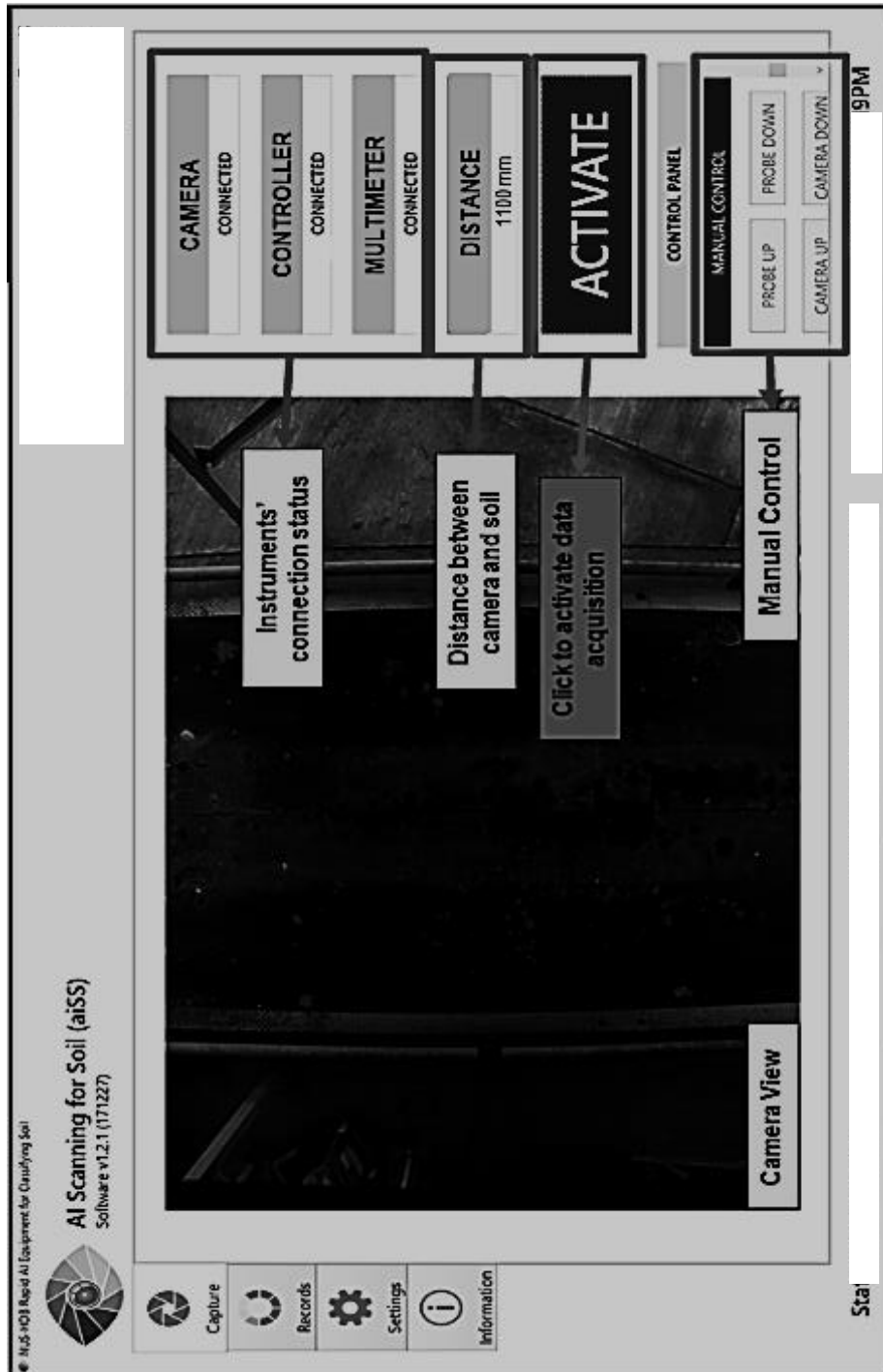


Figure. 5

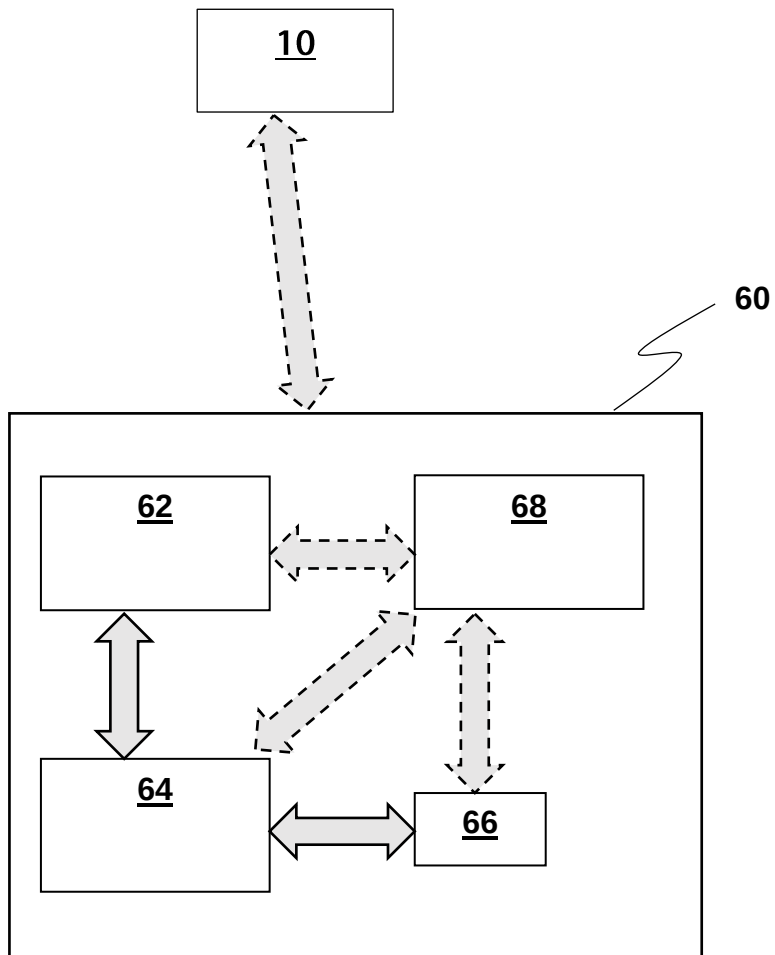


Figure. 6

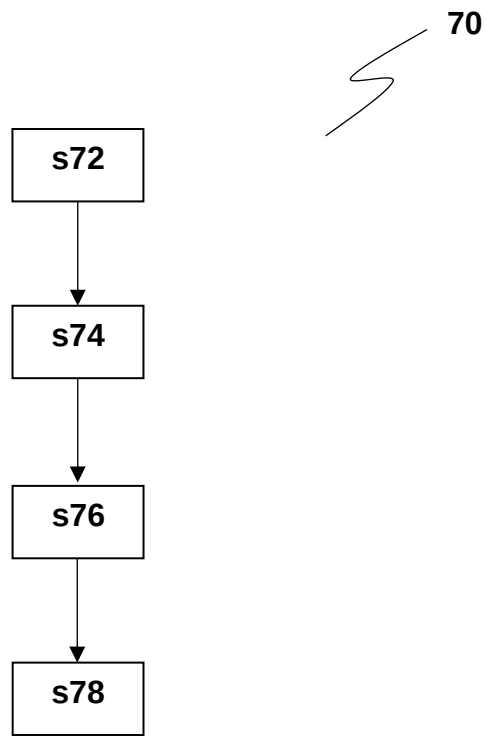
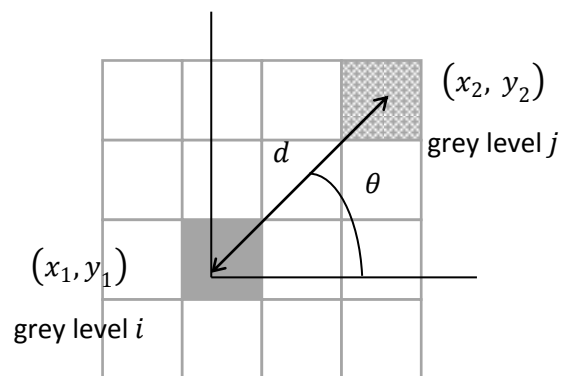


Figure. 7



$$d = \max(|x_1 - x_2|, |y_1 - y_2|)$$

$$\theta = \{0^\circ, 45^\circ, 90^\circ, 135^\circ\}$$

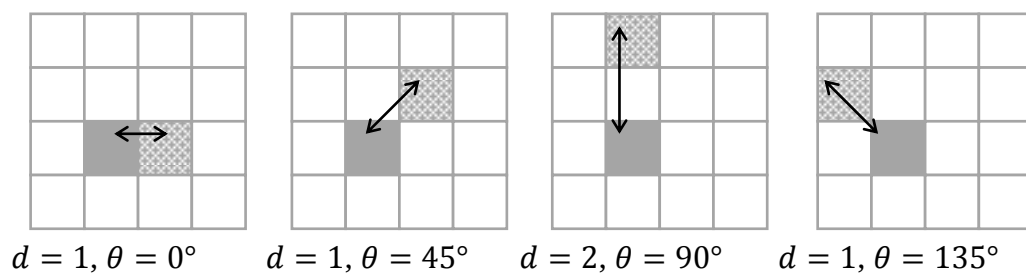


Figure. 8

GLCM Textural Feature	Abbreviation	Formula	Measurement for	Range
Angular Second Moment	ASM	$\sum_{i,j=0}^{N-1} P_{i,j}^2$	Uniformity of an image	[0, 1] High ASM indicates a very orderly image. ASM = 1 for a constant image.
Contrast	CON	$\sum_{i,j=0}^{N-1} P_{i,j} (i - j)^2$	Amount of local grey level variation in an image	$[0, (g - 1)^2]$ Low CON indicates smooth, soft textures. High CON indicates heavy, rough image textures. CON = 0 indicates a constant image.
Correlation	COR	$\sum_{i,j=0}^{N-1} P_{i,j} \left[\frac{(i - \mu_i)(j - \mu_j)}{\sqrt{(\sigma_i^2)(\sigma_j^2)}} \right]$	Linear dependency of grey levels on neighbouring pixels over the entire image	[-1, 1]
Entropy	ENT	$\sum_{i,j=0}^{N-1} P_{i,j} (-\ln P_{i,j})$	Statistical randomness, spatial disorder in an image	Ranges from 0 for a solid tone image and increases as disorder increases
Inverse Difference Moment	IDM	$\sum_{i,j=0}^{N-1} \frac{P_{i,j}}{1 + (i - j)^2}$	Homogeneity of an image	[0, 1]

Figure. 9

Possible Outputs from Decision- Making Matrix		Image and ANN Results			
		No Input	"Good Earth"	"Soft Clay"	Indistinctive
Electrical Resistivity Results	No Input	No Input	GE (Image Only)	SC (Image Only)	Mixture (Image Only)
	"Good Earth"	GE (RHO Only)	GE	Requires User's Discretion	GE (RHO Only)
	"Soft Clay"	SC (RHO Only)	Requires User's Discretion	SC	SC (RHO Only)
	Indistinctive	Mixture (RHO Only)	GE (Image Only)	SC (Image Only)	Mixture

Figure. 10

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Figure. 11