

**Table S1.** Soil diversity (pedodiversity) is represented by taxonomic diversity at the soil order level in the contiguous United States of America (USA).

<b>Soil Order</b>	<b>Area (km<sup>2</sup>)</b>	<b>Area (%)</b>	<b>General Characteristics and Constraints</b>
	<b>1,857,740.0</b>	<b>28.4</b>	<b>Slightly Weathered</b>
Entisols	820,179.8	13.4	Embryonic soils with an ochric epipedon
Inceptisols	767,051.7	12.5	Young soils with an ochric or umbric epipedon
Histosols	97,224.9	1.6	Organic soils with $\geq 20\%$ organic carbon
Andisols	57,761.2	0.9	Volcanic soils
	<b>3,436,342.0</b>	<b>56.2</b>	<b>Moderately Weathered</b>
Aridisols	53,8450.4	8.8	Dry soils. Common in desert areas
Vertisols	145,189.9	2.4	Soils with swelling clays
Alfisols	1,053,727.4	17.2	Clay-enriched B horizon with B.S. $\geq 35\%$
Mollisols	1,698,974.9	27.8	Carbon-enriched soils with B.S. $\geq 50\%$
	<b>942,348.4</b>	<b>15.4</b>	<b>Strongly Weathered</b>
Spodosols	207,924.4	3.4	Coarse-textured soils with albic and spodic horizons
Ultisols	734,424.0	12.0	Highly leached soils with B.S. $< 35\%$
<b>Total</b>	<b>6,120,908.6</b>	<b>100.0</b>	

Note: B.S. = base saturation. Entisols, Inceptisols, Andisols, Aridisols, Vertisols, Alfisols, Mollisols, Spodosols, and Ultisols are mineral soils. Histosols are mostly organic soils.

**Table S2.** An overview of the accounting framework used by this study for monitoring the United Nations (UN) land degradation neutrality (LDN) targets in the contiguous United States of America (USA) (adapted from Groshans et al. 2019 [26]).

OWNERSHIP (e.g., government, private, foreign, shared, single, etc.)					
Time (e.g., information disclosure, etc.)	STOCKS / SOURCE ATTRIBUTION		FLOWS		VALUE
	Biophysical Accounts (Science-Based)	Administrative Accounts (Boundary-Based)	Monetary Account(s)	Benefit(s)/ Damages	Total Value
	Soil extent:	Administrative extent:	Ecosystem good(s) and (dis)service(s):	Sector:	Types of value:
Past (e.g., post-development disclosures)	- Soil orders (Entisols, Inceptisols, Histosols, Andisols, Aridisols, Vertisols, Alfisols, Mollisols, Spodosols, Ultisols)	- Country (Contiguous USA); - States (48 states)	- Regulation (e.g., carbon sequestration);	- Loss of ecosystem good(s) and services	- Market-based value of ecosystem goods and services; - Market value of damages to ecosystem goods and services
Current (e.g., status)			- Provisioning (e.g., food production)		
Future (e.g., pre-development disclosures)			- Cultural (e.g., parks, etc.)		
<b>Conflicts of Interest (COI)</b>					
<b>United Nations (UN) Sustainable Development Goal (SDG) 15: Life on Land</b>					
<b>Loss and Damage (L&amp;D)</b>					
<b>Liability (Responsibility)</b>					

**Table S3.** Land use/land cover (LULC) classes by soil order for the contiguous United States of America (USA) in 2016.

NLCD Land Cover Classes (LULC), Soil Health Continuum	2016 Total Area by LULC (% from total country area)	Degree of Weathering and Soil Development									
		Slight				Moderate				Strong	
		Enti- sols	Incepti- sols	Histo- sols	Andi- sols	Verti- sols	Alfi- sols	Molli- sols	Aridi- sols	Spodo- sols	Ulti- sols
		2016 Area by Soil Order (% from Total Area in Each LULC)									
Woody wetlands	5.1	16.1	21.1	16.5	0.1	3.1	12.2	6.5	0.2	8.4	15.7
Shrub/Scrub	19.1	20.3	7.6	0.1	0.8	2.1	7.8	26.5	31.6	0.7	2.5
Mixed forest	4.3	8.4	24.4	1.2	0.7	0.4	18.5	3.6	0.0	15.1	27.7
Deciduous forest	11.1	6.1	23.0	0.6	0.1	0.5	26.3	8.8	0.0	8.0	26.6
Herbaceous	15.0	22.4	8.5	0.1	0.4	3.6	9.8	39.3	12.2	0.7	2.9
Evergreen forest	10.4	9.8	21.3	0.7	6.3	0.7	16.0	15.7	1.4	6.1	22.2
Emergent herbaceous wetlands	1.5	22.2	9.3	23.3	0.2	3.5	6.5	29.1	1.3	2.1	2.5
Hay/Pasture	7.6	6.1	10.7	0.3	0.1	2.8	35.0	21.4	0.6	2.0	21.1
Cultivated crops	19.6	7.3	6.2	0.6	0.0	3.7	21.3	53.0	2.2	0.6	5.2
Developed, open space	3.3	10.5	12.7	0.8	0.5	2.0	22.3	22.1	2.9	4.4	21.8
Developed, low intensity	1.6	14.8	11.1	1.0	0.3	2.6	24.0	20.2	3.3	4.1	18.7
Developed, medium intensity	0.7	21.2	12.1	0.8	0.3	4.0	20.2	20.2	4.3	3.4	13.4
Developed, high intensity	0.2	25.2	10.2	0.7	0.2	4.7	19.4	20.1	3.3	3.0	13.3
Barren land	0.5	52.9	8.6	0.5	0.7	2.6	3.7	5.4	19.3	1.8	4.5
<b>Total</b>	<b>100%</b>	<b>13.4</b>	<b>12.5</b>	<b>1.6</b>	<b>0.9</b>	<b>2.4</b>	<b>17.2</b>	<b>27.8</b>	<b>8.8</b>	<b>3.4</b>	<b>12.0</b>

Note: NLCD = National Land Cover Database. Inceptisols, Entisols, Andisols, Vertisols, Alfisols, Mollisols, Aridisols, Spodosols, and Ultisols are mineral soils. Histosols are most often organic soils.

**Table S4.** Change in land use/land cover (LULC) classes by soil order for the contiguous United States of America (USA) between 2001 and 2016.

NLCD Land Cover Classes (LULC), Soil Health Continuum	Change in Total Area by LULC (2001-2016) (%)	Degree of Weathering and Soil Development									
		Slight				Moderate				Strong	
		Enti- sols	Incepti- sols	Histo- sols	Andi- sols	Verti- sols	Alfi- sols	Molli- sols	Aridi- sols	Spodo- sols	Ulti- sols
		Change in Area by Soil Order, 2001-2016 (%)									
Woody wetlands	0.2	0.4	-0.5	1.7	0.1	1.6	0.1	0.4	0.0	0.1	-0.6
Shrub/Scrub	0.1	-0.3	7.5	21.1	28.6	-1.3	3.7	-2.8	-2.4	46.8	23.9
Mixed forest	0.2	-0.3	0.0	-1.5	-3.8	-0.5	0.6	-0.7	1.9	-0.7	1.2
Deciduous forest	-3.1	-4.3	-2.2	-3.3	1.0	-4.8	-2.2	-1.6	-1.1	-3.3	-4.7
Herbaceous	0.9	0.3	4.2	8.9	49.2	-5.6	1.4	-1.4	5.1	1.4	14.0
Evergreen forest	-3.0	-3.4	-5.2	-1.8	-7.4	1.2	-2.7	-4.2	-2.7	-2.8	1.0
Emergent herbaceous wetlands	-0.6	-1.8	2.8	-3.8	0.5	-7.1	-2.3	3.2	2.3	-6.0	4.6
Hay/Pasture	-7.9	-8.7	-6.8	-10.4	-6.3	-6.2	-7.7	-9.0	-6.4	-5.1	-8.1
Cultivated crops	4.0	4.7	3.9	-0.4	0.1	4.5	4.3	3.9	6.3	2.5	1.8
Developed, open space	3.2	2.5	2.7	3.1	0.3	3.8	3.0	2.7	10.3	1.7	4.1
Developed, low intensity	7.2	5.3	6.4	5.6	1.5	11.5	6.7	6.6	13.4	6.4	9.6
Developed, medium intensity	24.6	16.3	18.4	21.9	10.1	34.6	27.9	23.9	33.5	26.5	36.8
Developed, high intensity	28.1	16.1	22.5	30.1	15.4	34.5	35.7	29.3	47.7	29.4	39.8
Barren land	0.1	0.2	-0.8	9.2	0.3	3.3	-1.4	10.4	-1.3	-2.3	-5.9

Note: NLCD = National Land Cover Database. Inceptisols, Entisols, Andisols, Vertisols, Alfisols, Mollisols, Aridisols, Spodosols, and Ultisols are mineral soils. Histosols are most often organic soils.



(a) Hay/Pasture



(b) Cultivated crops

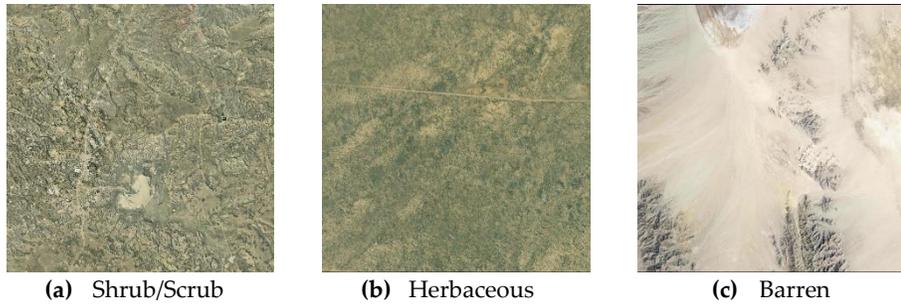


(c) Developed

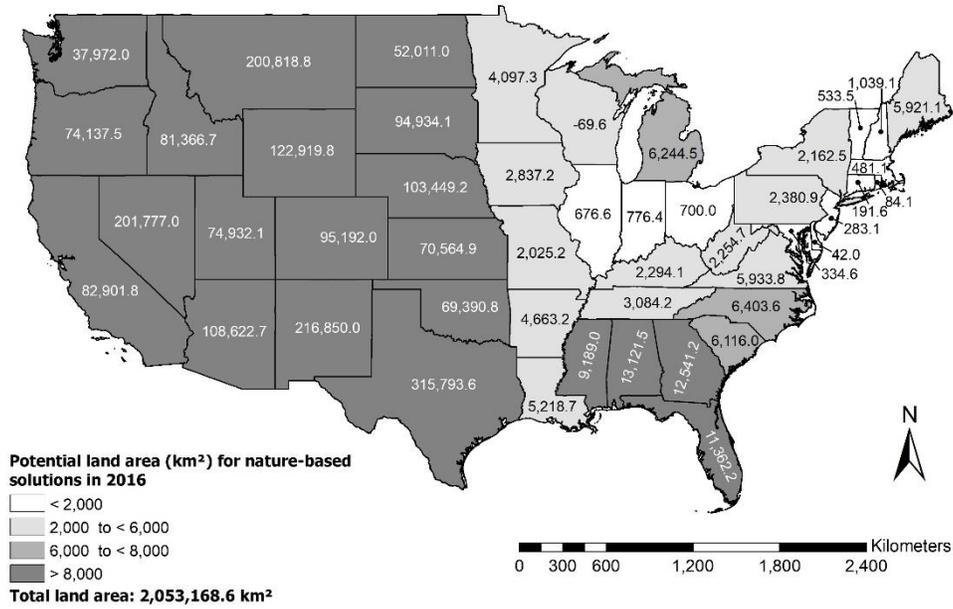


(d) Barren land

**Figure S1.** High-resolution aerial photos showing examples of land classes (LULC) which were used to determine anthropogenically degraded land (LD) in the contiguous USA by assuming that degraded lands are represented by the land classes (LULC) for agriculture (hay/pasture, and cultivated crops), development (developed, open space; developed, low intensity; developed, medium intensity; developed, high intensity) and barren lands. Representative examples were located using a land cover map of the contiguous United States of America (USA) for 2016 (based on data from the Multi-Resolution Land Characteristics Consortium (MRLC) with detailed descriptions of the land classes [25]).



**Figure S2.** High-resolution aerial photos showing examples of land classes (LULC) which were used to determine potential land for nature-based solutions (NBS) in the contiguous USA by assuming that these lands are represented by the land classes (LULC) for barren land, shrub/scrub, and herbaceous land cover classes. Representative examples were located using a land cover map of the contiguous United States of America (USA) for 2016 (based on data from the Multi-Resolution Land Characteristics Consortium (MRLC) with detailed descriptions of the land classes [25]).



**Figure S3.** The status of potential land for nature-based solutions (NBS) is presented as the total potential NBS land area (km<sup>2</sup>) in each state in 2016 for the contiguous United States of America (USA) (data for the 48 contiguous states). Potential land for NBS is limited to barren land, shrub/scrub, and herbaceous land cover classes, to provide potential land areas without impacting current land uses.

