Denver Metro Nature Alliance Analysis

Model Criteria
March 31, 2017

Goal	Criteria	Criteria Weights	Methodology	Data (Description, Date)	Data Source
Provide Access to Natural Spaces			The _Provide Access to Natural Spaces model analyzes access to existing parks and open space. The analysis incorporates a two-step approach: 1) determines where there are gaps in public park availability across the landscape, and constructs a demographic profile to identify gaps with the most urgent need for public parkland. (2) incorporates natural space opportunities based on land use and cover characteristics, schools, community gardens, and potential for certified backyard wildlife habitat areas. The two components are combined using a weighted sum computation to map the opportunities to provide access to natural spaces.		
Park Needs		50%			
	AC01: Park Needs		Park Needs is based on two factors: Park gaps are based on a service area (walking distance) of a half-mile radius for all parks. Demographic profiles are based on ESRI 2015 block group forecasts to determine park need for percentage of population under the age of 19 and population density (people per acre)). The combined level of park need results takes the three demographic profile results and assigns the following weights: 50% = percentage of population under the age of 19 25% = population density (people per acre) 25% = low income households (<35k / year)	2016 ESRI Demographic data Publicly Accessible Parks and Open Space	Environmental Systems Research Institute (ESRI) See "Publicly Accessible Parks and Open Space" under Model Overlays for a description
Park Opportunities		50%			
	AC02: Proposed Parks and Open Space	16.6%	This model gives high priority to proposed parks.	Publicly Accessible Parks and Open Space	See "Publicly Accessible Parks and Open Space" under Model Overlays for a description
	AC03: Vacant Lands	16.6%	This model gives high priority to vacant lands. Data Considerations: -Adams did not provide local parcel data for this study. Parcel point data (national parcel data layer) used for this county.	Parcels Zoning / Land Use	Individual counties. Parcel Point Individual counties
	AC04: Natural Land Cover	16.6%	This model gives high priority to natural lands. No priority is given to urban and agricultural lands. Data Considerations: The 2011 land cover data covers most of the study area. 2011 NLCD is used as a surrogate where there are gaps in the 2011 land cover coverage.	2011 Land cover 2011 NLCD	Denver Regional COG (DRCOG) through Austin Troy @ CU Denver NLCD
	AC05: School Grounds	16.6%	This model gives high priority to school parcels that are registered as schoolyard habitats with the National Wildlife Federation and moderately high priority to all other school parcels.	K-12 Schools Schoolyard Habitats Parcels	DRCOG Brian Kurzel National Wildlife Federation Counties. Parcel point.
	AC06: NWF Backyard Habitats	16.6%	This model gives high priority to certified backyard habitats from the National Wildlife Federation.	Certified backyard habitats	Brian Kurzel National Wildlife Federation
	AC07: Community Gardens	16.6%	This model gives high priority to community garden parcels.	Denver Urban Gardens Urban Farms / Gardens Urban Farms / Gardens	Mikhaela Mullins - Denver Urban Gardens Eric Kornacki - Revision Nick Gruber - Produce Denver

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Support and Protect Healthy Natural Systems			**The Support and Protect Healthy Natural Systems analysis combines the criteria listed below to depict opportunity to support and/or protect healthy natural systems. The model uses the relative "criteria weights" in a weighted sum computation to map these combined areas on a scale of 0-5, with 5 representing areas to support and/or protect to further healthy natural systems.**		
	NS01: CDOW Riparian Vegetation Communities	15%	This model utilizes combines the Colorado Division of Wildlife Riparian Vegetation Communities dataset and the 100 year flood plain data to identify vegetated riparian corridors. The CDOW dataset was assembled in collaboration with CNHP using high altitude color infrared large format camera (LFC) and NAPP photography, and includes extensive ground-truthing. For areas not yet covered in this analysis (portions of Adams and Arapahoe counties), vegetated corridors were simulated by extracting vegetated areas from 2010 land cover data that exist along hydrologic corridors. The model assigns highest priority (5) to all Riparian Vegetation Communities and moderate high priority (4) to all other flood plain areas.	2000 Riparian Vegetation Communities Digital Flood Insurance Rate Maps (DFIRM) 2010 PLJV Land cover Rivers and Streams	Colorado Division of Wildlife FEMA Playa Lakes Joint Venture National Hydrography Database
	NS02: CO Natural Heritage Potential Conservation Areas	8%	This model depicts the 2010 Statewide Potential Conservation Areas (PCA) developed by the Colorado Natural Heritage Program (CNHP) . The PCA's represent CNHP's best estimate of the primary area required to support the long-term survival of targeted species or natural communities. PCA refers to the ability of a conservation area to maintain healthy, viable, targets over the long term (100+ years), including the ability of the targets to respond to natural or human-caused environmental change. The PCAs do not necessarily preclude human activities, but their ability to function naturally may be greatly influenced by them. PCAs at all scales may require ecological management or restoration to maintain their functionality and long term persistence. PCA's were ranked on a scale of 0-5, with 5 representing highest priority: B1: Outstanding Biodiversity Significance = 5 B2: Very High Biodiversity Significance = 5 B3: High Biodiversity Significance = 4 B4: Moderate Biodiversity Significance = 4 B5: General Biodiversity Interest = 3 Network of Conservation Areas = 3	2010 Statewide Potential Conservation Areas 2010 Statewide Network of Conservation Areas	Colorado Natural Heritage Program Colorado Natural Heritage Program
	NS03: TNC Aquatic Conservation Areas	8%	This model depicts Aquatic Conservation Areas as established in the Nature Conservancy's Central Shortgrass Prairie (CSP) 2006 Eco regional Assessment. Riparian systems are represented in both terrestrial and aquatic networks. The aquatic network represents the potential for conservation of riparian communities by incorporating the variability of the region's streams and rivers. This dataset depicts representative riparian system diversity and hydrologic integrity. This model assigns highest priority (5) to all Aquatic Conservation Areas.	2006 Aquatic Conservation Areas - Central Shortgrass Prairie (CSP) Eco regional Assessment 2006	The Nature Conservancy - CO State Office

NS04: TNC Terrestrial Conservation Areas	8%	This model depicts Terrestrial Conservation Areas as established in the The Nature Conservancy's Central Shortgrass Prairie (CSP) 2006 Eco regional Assessment. Riparian systems are represented in both terrestrial and aquatic networks. The terrestrial network depicts the majority of rare riparian communities. This model assigns highest priority (5) to all Terrestrial Conservation Areas.	2006 Terrestrial Conservation Areas - Central Shortgrass Prairie (CSP) Eco regional Assessment 2006	The Nature Conservancy - CO State Office
NS05: CWCB Environmental Focus Areas	8%	This model depicts Environmental Focus Areas as determined in the 2010 Statewide Water Supply Initiative study performed by the Colorado Water Conservation Board. Focal river segments for environmental attention within the South Platte region were identified by aggregating attributes such as habitat for threatened species, plains fish habitat, and imperiled woodland plant communities. Priority river segments were buffered by 1/2 mi to incorporate riparian corridor. This model assigns highest priority (5) to all Environmental Focus Areas.	2010 Statewide Water Supply Initiative (SWSI) Non-Consumptive Needs Assessment	Colorado Water Conservation Board via CDM
NS06: Important Bird Priority Areas	8%	This model depicts Waterfowl Priority Areas as defined by the Colorado Division of Wildlife, Audubon Important Birding Areas, Ducks Unlimited project locations by watershed, and Ebird bird sightings from 1996-2016. This model assigns the following ranking: Ducks Unlimited Project Locations = 5 Audubon Important Birding Areas = 5 Ebird sightings all species 1996-2016 (sum number of sitings within quarter mile radius; classified natural breaks) = 1-5 CDOW Waterfowl Conservation Priority Areas = 3	CDOW Waterfowl Conservation Priority Areas Audubon Important Birding Areas Ducks Unlimited Project Locations Ebird sightings all species 1996-2016	Colorado Division of Wildlife Audubon Colorado Ducks Unlimited - Rob Mcleod Ebird
NS07: Colorado State Wildlife Action Plan	5%	This model depicts the habitat ranking classifications from the 2015 Colorado State Wildlife Action Plan, as a way to highlight terrestrial conservation opportunity areas. This model follows the ranking (0-5) based on occurrence of important indicator species.	Habitat Classifications - 2015 State wildlife action plan	CO Division of Wildlife
NS08: SREP Priority Wildlife Linkage Areas	10%	This model depicts priority wildlife linkage areas as identified for the Southern Rockies Ecosystem Project. This project was focused on informing and aligning Regional Transportation Plans with State Wildlife Action plans. As part of a Colorado pilot, key wildlife linkage regions for targeted species were identified based on landscape features such as land cover, elevation, topography, and distance from roads. This model assigns highest priority (5) to Priority Wildlife Linkage Areas.	Priority Wildlife Linkage Areas	Center for Native Ecosystems (Southern Rockies Ecosystem Project)
NS10: Wetlands and Playas	15%	Playas are shallow, seasonal wetlands that lie in the lowest point of a closed watershed. Their basins are lined with clay soil, which collect and hold water from rainfall and runoff events. Playas are the center of biodiversity on the plains, supporting more than 200 species of birds and other wildlife. Playas are also the primary source of recharge for the Ogallala Aquifer, a 174,000 square mile groundwater formation that supplies nearly 100 percent of the High Plains water needs. Due to sedimentation and other impacts, playas are critically threatened wetlands, with more than 70 percent having been altered from their natural state. Maintaining native prairie grasses around playas, or if playas are in cropland, planting native grass buffers around them, is the best way to conserve the wetlands and protect them from sediment build-up. This model assigns highest priority (5) to probable playas, buffered by 100 feet.	2014 Probable Playa Areas	Playa Lakes Joint Venture - Colorado Playas Decision Support Tool
NS11: Greenspace and Tree Canopy	15%	This model gives high priority to areas of green vegetation and tree canopy. Mapped City/County of Denver tree canopy polygons, DRCOG 2011 land cover tree and grass as well as areas with an NDVI value above 125 are given high priority (5).	NDVI derived from NAIP 1m imagery 2013 Tree Canopy polygons 2011 Land cover	ESRI Living Atlas City of Denver Denver Regional COG (DRCOG) through Austin Troy @ CU Denver

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Enhance Trail Connectivity			**The Enhance Trail Connectivity model identifies opportunities for addressing gaps in connectivity across regional trails systems. The analysis incorporates a three-step approach: 1) determines where there are gaps in regional trail systems the landscape via a trail density analysis, 2) identifies needs for trails based on demographic profiles, proximity to transit stations, proximity to schools, and 3) incorporates opportunities for trails based on land use and cover characteristics. The three components are combined using a weighted sum computation to show the areas of greatest opportunity to enhance trail connectivity.**		
Low Trail Density	TC01: Low Trail Density	**20%**	This model analyzes density of trails. Areas with low trail density are ranked highest priority	Trails	See "Trails" under Model Overlays for a description
Trail Needs		**60%**			
	TC02: Close to Transit Stations	20%	This model is based on a concept from the "First and Last Mile" trails analysis. The concept is to provide bike access within a mile for residence-to-transit commute (1st mile) and within a mile of transit-to-work commute (last mile). A one mile walking distance analysis is computed from RTD bus stops, light rail stations, and park-n-rides. Bus stops are ranked as moderate priority. Park and rides are ranked moderately high priority. Light rail stations are ranked high priority.	2016 Bus Stops 2016 Park-n-Rides 2016 Light Rail Stations	RTD (http://gis.rtd-denver.com/MapServer/datadownload.aspx)
	TC03: High % of Kids Under 19	10%	This model ranks block groups with a high percentage of kids under 19 highest priority.	2016 ESRI Demographic data	ESRI
	TC04: High Population Density	50%	This model ranks block groups with a high population density (people per acre) highest priority.	2016 ESRI Demographic data	ESRI
	TC05: Close to Schools	20%	This model gives high priority to a one mile walking service area around k-12 schools.	K - 12 Schools	DRCOG
Trail Opportunities		**20%**			
	TC06: Vacant Lands	22%	This model gives high priority to vacant lands. Data Considerations: -Adams did not provide local parcel data for this study. Parcel point data (national parcel data layer) used for this county.	Parcels Zoning / Land Use	Individual counties. Parcel Point Individual counties
	TC07: Opportunities Close to Streams	6%	This model buffers streams by 500 feet and ranks areas within the buffer high priority.	NHD High resolution Streams	USGS National Hydrology Dataset (NHD)
	TC08: Planned Trail Opportunities	50%	This model gives high priority to planned and proposed trails.	Trails	See "Trails" under Model Overlays for a description
	TC09: Natural Land Cover	22%	This model gives high priority to natural lands. No priority is given to urban and agricultural lands. Data Considerations: The 2011 land cover data covers most of the study area. 2011 NLCD is used as a surrogate where there are gaps in the 2011 land cover coverage.	2011 Land cover 2011 NLCD	Denver Regional COG (DRCOG) through Austin Troy @ CU Denver NLCD

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Engage Vulnerable Populations			The Engage Vulnerable Populations model is based on data collected for the EPA Environmental Justice Screening Tool and demographic variables.. The criteria listed have results that identify areas of opportunity to engage vulnerable populations. In addition, an equally weighted combined result has been created to show areas of opportunity to engage multiple vulnerable population criteria.		
	SV01: Low Income Households	11%	Percentage of households below 2x poverty level	Low-income households, which is referred to as Percent Low-income in the EPA dataset. Percent Low-Income is defined as the percent of a block group's population in households where the household income is less than or equal to twice the federal "poverty level".	Environmental Protection Agency - EJSCREEN uses demographic factors as very general indicators of a community's potential susceptibility to the types of environmental factors. The source of all demographic data used in EJSCREEN is the American Community Survey (ACS) five-year summary file (2008 - 2012).
	SV02: Minority Population	11%	Percentage of population that is minority	Percent Minority is defined as The percent of individuals in a block group who list their racial status as a race other than white alone and/or list their ethnicity as Hispanic or Latino. That is, all people other than non-Hispanic white-alone individuals. The word "alone" in this case indicates that the person is of a single race, not multiracial.	Environmental Protection Agency - EJSCREEN uses demographic factors as very general indicators of a community's potential susceptibility to the types of environmental factors. The source of all demographic data used in EJSCREEN is the American Community Survey (ACS) five-year summary file (2008 - 2012).
	SV03: Less than HS Education	11%	Percentage of the population over the age of 18 that have less than a high school education.	Less than high school education are populations age 25 or older that have not obtained a high school diploma.	Environmental Protection Agency - EJSCREEN uses demographic factors as very general indicators of a community's potential susceptibility to the types of environmental factors. The source of all demographic data used in EJSCREEN is the American Community Survey (ACS) five-year summary file (2008 - 2012).
	SV04: Linguistic Isolation	11%	Percentage of households where no person over the age of 16 speaks English.	Linguistic isolation is defined as the percent of people in a block group living in linguistically isolated households. A household in which all members age 14 years and over speak a non-English language and also speak English less than "very well" (have difficulty with English) is linguistically isolated.	Environmental Protection Agency - EJSCREEN uses demographic factors as very general indicators of a community's potential susceptibility to the types of environmental factors. The source of all demographic data used in EJSCREEN is the American Community Survey (ACS) five-year summary file (2008 - 2012).
	SV05: Children Under 5	11%	Percentage of the population aged 5 or under	Individuals under age 5 is defined as the percent of people in a block group under the age of 5.	Environmental Protection Agency - EJSCREEN uses demographic factors as very general indicators of a community's potential susceptibility to the types of environmental factors. The source of all demographic data used in EJSCREEN is the American Community Survey (ACS) five-year summary file (2008 - 2012).
	SV06: Seniors Over 64	11%	Percentage of the population aged 65 or over	Individuals over age 64 is defined as the percent of people in a block group over the age of 64.	Environmental Protection Agency - EJSCREEN uses demographic factors as very general indicators of a community's potential susceptibility to the types of environmental factors. The source of all demographic data used in EJSCREEN is the American Community Survey (ACS) five-year summary file (2008 - 2012).
	SV07: Children 5-19	11%	Percentage of the population age 5-19	2016 Census Block Groups	ESRI
	SV08: Households Without a Car	11%	Percentage of households that do not have a vehicle available.	2016 Census Block Groups	ESRI
	SV09: People with Disabilities	11%	Percentage of population with a physical disability	2016 Census Block Groups	ESRI