CASE STUDY

Cannabis Farms Having Serious Impact on Surroundings

CHALLENGE

The cultivation of Cannabis in rural parts of California has been increasing which has resulted in significant environmental impacts in the watersheds of California; such as, increased pollution in the local, regional, and state water supplies, increased soil erosion, as well as increased nutrient and pesticide laden runoff. California's extreme drought conditions have further magnified these impacts.

SOLUTION

The State Water Resources Control Board (SWRCB) and the California Department of Fish and Wildlife (CDFW) were tasked with trying to regulate this activity. As part of this effort, they contracted with Formation Environmental and VESTRA Resources, Inc. to design a Cannabis Identification and Prioritization System (CIPS), which acts both as a repository of geospatial information on grow locations and a tool for helping the agencies prioritize their regulatory efforts based on the potential impact individual grows have on water resources, fish, and wildlife.

Formation Environmental worked to capture grow locations using remote sensing technology and developed raster datasets which include percent slope, length of slope, evapotranspiration and proximity to surface water. These raster datasets are used along with information on the proximity of threatened fish and wildlife to model the level of threat associated with each grow, allowing the agencies to establish priorities for action.

The CIPS application, designed and developed by VESTRA, uses Esri's GIS platform, high resolution photography, and remote sensing technologies to identify marijuana grow sites in oak woodland, riparian, and conifer environments. CIPS identifies all of the grow sites within a watershed, estimates the number of plants at each site, the slope of each grow site, the distance to the nearest watercourse, and the class of the watercourse, and uses this information to calculate overall threat to water quality. The total number of plants, along with industry fertilizer application rates are used to estimate total nitrogen load to the watershed and the estimated amount of water diverted from surface waters. The system also incorporates change analyses to determine the total graded area in a watershed and changes to the watershed.

BENEFIT

CIPS allows the user to quantify impacts, evaluate trends (e.g., magnitude of development within a watershed, increasing or decreasing grows, etc.), and allows SWRCB and CDFW staff the ability to quantify efforts in reducing threat in a watershed.

CIPS identifies, quantifies, and classifies grow sites based on threats to water quality and permit tier criterion within specific geographic areas.

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CALIFORNIA Water Boards
STATE WATER RESOURCES CONTROL BOARD
REGIONAL WATER QUALITY CONTROL BOARDS
CALIFORNIA DEPARTMENT OF FISH and WILDLIFE