2012

Maps on the Hill

February 29th

INTRODUCTION

Welcome to Maps on the Hill 2012. Each year maps and geospatial applications are used in government, business, and education for a wide variety of applications. The goal of this event is to provide a platform for mapping professionals and students to share their hard work with Utah's elected leaders. Maps on the Hill highlights the critical role that geospatial information plays at all levels of decision making. Maps on the Hill 2012 has attracted map makers from all backgrounds including local, state, and federal government, private companies, and higher education.

Maps on the Hill is organized by the **Utah Geographic Information Council (UGIC)** in cooperation with the State of Utah's **Automated Geographic Reference Center (AGRC).**

The purpose of the **Utah Geographic Information Council** is:

-To act and operate as an information and facilitating organization to promote effective development, access, application, and cooperative use of high quality and meaningful geographic information in the State of Utah among all interested agencies, institutions, companies, and individuals.

-To promote cooperation among all levels of government and the private sector in addressing geographic-data and information needs and services in Utah.

-To promote coordination of programs, policies, technologies, and resources to optimize opportunities and minimize duplication of effort.

-To identify and provide recommendations to federal, state, and local agencies, and the private sector on mapping and geographic-data needs, priorities, and standards.

-To engage in any and all activities and pursuits, and to support or assist such other organizations as may reasonably be related to the foregoing and following purposes.

-To solicit and receive contributions, purchase, own, and sell real and personal property, to make contracts, and to engage in any activity to further the goals of the Council. This may include such activities as publication of directories of geographic information groups and products, and the organization and sponsorship of an annual conference.

UGIC
Utah Geographic Information Council

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PRIVATE INDUSTRY/CONSULTANTS

Alta Planning + Design

Map of Potentially Suitable Areas for Bike Share Stations in Calgary, Alberta

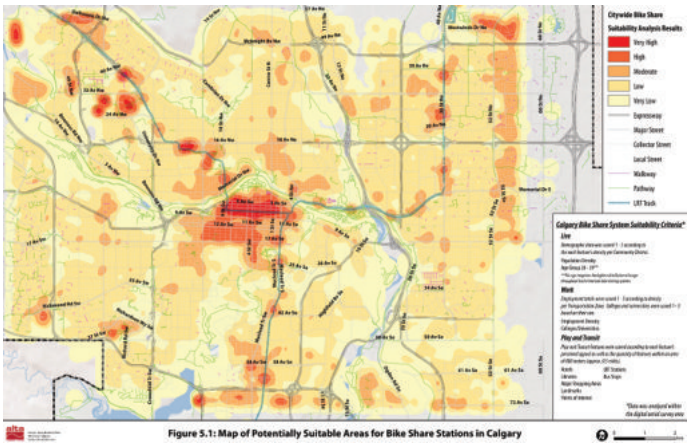
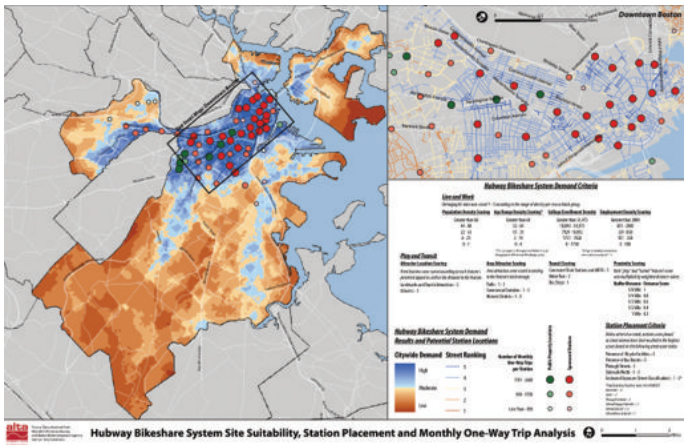


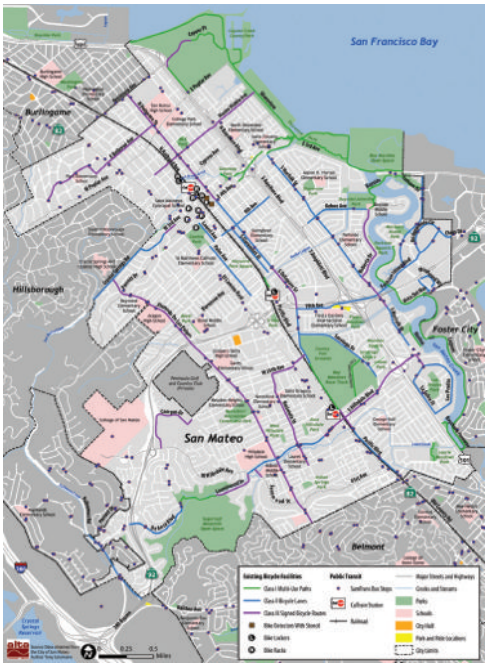
Figure 5.1: Map of Potentially Suitable Areas for Bike Share Stations in Calgary

Hubway Bikeshare System Site Suitability, Station Placement, and Monthly One-Way Trip Analysis



Hubway Bikeshare System Site Suitability, Station Placement and Monthly One-Way Trip Analysis

City of San Mateo map



Biography:

Brandon Dalton
Planner

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Alta Planning + Design is North America's leading multi-modal transportation firm that specializes in the planning, design and implementation of bicycle, pedestrian, greenway, park and trail corridors and systems. Founded in 1996, Alta has grown to over 90 staff in 20 offices and an international workload. Alta's mission is to create active communities where bicycling and walking are safe, healthy, fun, and normal daily activities.

We have experience working in all size communities, from a few thousand to millions, from rural to mountain and desert to suburban and urbanized areas. We strive to tailor each project to the community's unique setting, history, and culture through an active public participation process. Alta staff are proud to have designed and implemented over 5,000 miles of bikeways, walkways, and trails.

Alta staff are at the forefront of the sustainable transportation movement. We strive to make biking, walking, and mass transit an integral part of our daily lives. We are active in the Association of Pedestrian and Bicycle Professionals, the Institute of Transportation Engineers, the Transportation Research Board, and are conducting national studies for the U.S. Department of Transportation. We lead pedestrian and bicycle trainings nationwide, and have been involved in award-winning plans and projects. Alta is proud to be a founding sponsor of the NACTO (National Association of City Transportation Officials) Cities for Cycling Project, for which we developed a design guide based on the best national and international bikeway practices, policies and programs.

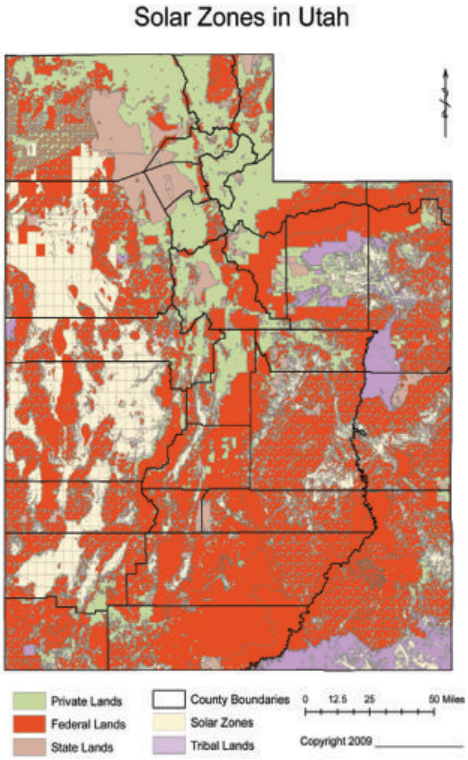
Energy Development Consulting/Convenient Cartographer

Solar Development in the State of Utah

My map and submission focus on solar zone locations throughout the state of Utah. From my previous experience, is seems a huge focus on energy in Utah is within the eastern portion of the state where large amounts of oil shale reserves are located. The map I am submitting represents the solar zone locations throughout the state and the feasibility we have to these locations. Some major complaints in regards to wind and solar revolve around transportation to and from sites, as well as the economic burdens that surround the installation and upkeep of some solar and wind farms. The goal of the map is to show how feasible the locations really are. The map will also show the accessibility of the locations throughout the state. Utah is not always viewed as a state good for solar and wind development as some other states like Arizona and New Mexico. The map(s) goal is to convey that may not be the case. Compared to the oil shale locations in the eastern portion of the state, the solar zones are distributed statewide. This map and abstract are not to denote oil shale resources throughout the state…it is just to express the importance of other alternative energy practices as well. We should be considering the importance of alternative energy resources in an ever changing world with increasing CO2 concentration and rapid global population growth. It is also important to seek development in the different areas of energy to be competitive with the global changes around us.

I did state the maps intentions are to show the feasibility of solar locations. Along with the solar zones themselves, that map will reflect transportation routes, nearby populations, and other pertinent information to show the possibilities for solar energy growth, as well as the possibility of job growth amongst those regions. The map(s) will also breakdown sections of prime locations versus locations that may not be as productive. This will be done by looking at surrounding populations, distance from roads to locations, slope and direction of slopes will be considered, as well as sensitive vegetation and endangered species. The final map product will provides specifics on what possible directions could be taken next to pursue solar energy development.

The primary map is a general overview of the state with a breakdown of valuable locations for solar development. Other examples will be provided with county breakdowns and illustrations of more specific data surrounding favorable areas.



Biography:

Tamara Frehner

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My name is **Tamara Frehner**, and I am from Salt Lake City, Utah. Geography and anthropology are my two passions. I graduated from the University of Utah in 2008 with a Bachelors of Science in Geography and later in 2010 with a second Bachelors of Science in Anthropology. The majority of my previous work experience and earlier education was in the finance industry. Although the experience was valuable and productive, I strived for more in the environmental and energy industry. In 2007 I started a job with an energy development company as an executive secretary. I was also the assistant to our land resources representative. The company I worked for sought new and improved ways to extract oil from oil shale with the upmost environmental concerns in mind. Working in this position I was appointed to create several maps for land and property acquisitions. I later was moved to be the assistant of our economic advisor where I was appointed to do the same tasks. I was laid off in 2009 with the struggling economy although it was by choice. Since, I have gone and aspired what I originally went to school to do. My primary goal was to promote alternative and green energy practices as well as education in those fields with my degree. To promote these objectives I started two small home-based companies; Energy Development Consulting and Convenient Cartographer. Convenient Cartographer provides general mapping services while the energy company focuses on land acquisitions for wind/solar and other clean energy development. The businesses have been operating for about two years and substantial growth is still needed. The hope is that growth will take place over the next two years with an improving economy. To keep myself "in the loop" I am an active member of SLUG, USAS, and have recently joined the Utah Association of Environmental Education. I also have affiliated myself with frequent mapping projects to maintain and enhance my GIS/mapping skills.

2i3D Stereo Imaging

3D Maps of Alta and Snowbird

The ability to view stereoscopic images through red/cyan glasses is not a new development. The method has been used for over a hundred years in making accurate maps from aerial photographs. But the thrill of exploring a mountain or canyon in 3D has been for the most part restricted to geologists and the class of map makers known as photogrammetrists.

The availability of government mapping data furnished free over the internet, combined with the advent of the computer and modern printing methods has made it possible to create maps with more three-dimensional realism than has ever before been possible.

At 2i3D Stereo Imaging we have been developing new methods to combine this data and make it available to the public in a useful format. If a person has the ability to see stereoscopic images in 3D, he or she will appreciate being able to see maps showing scaled-down mountains rising above the page. These maps permit the viewer to compare the symbolic detail of the map to the actual detail of a 3D color photograph of the same area.

To demonstrate this process, we are showing Utah's popular resorts Snowbird and Alta. A topographic map and an aerial photograph of the same area has been converted to anaglyphic 3D.

Biography:

Steve Richardson

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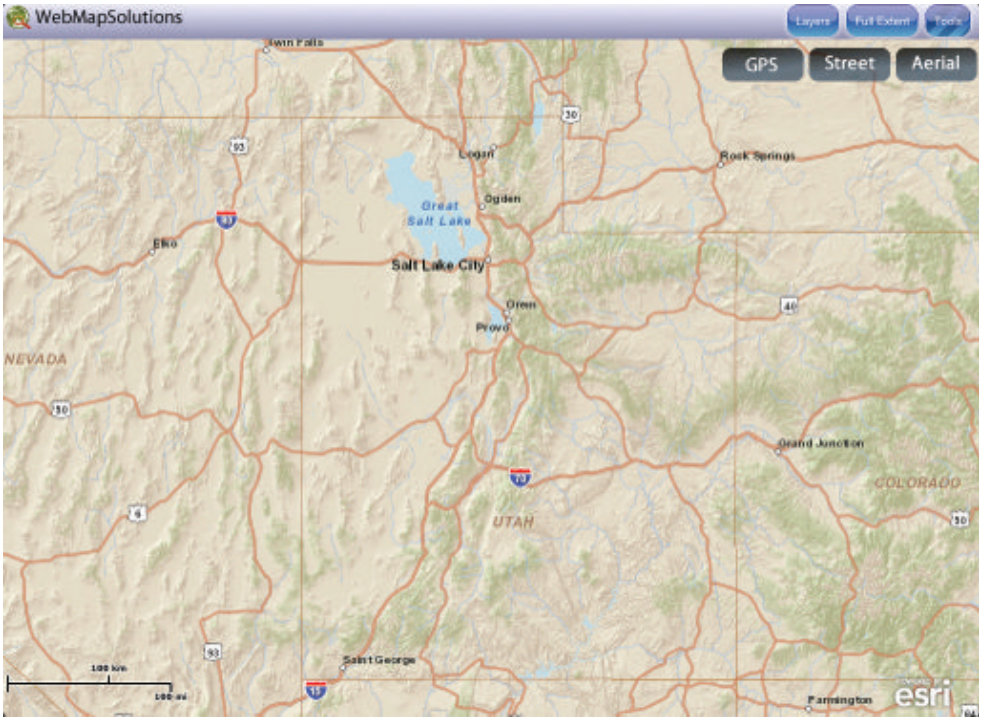
Steve Richardson graduated in 1973 from Brigham Young University in Geography. The following year he received a diploma from the Swiss School for Photogrammetric Operators. He worked 20 years at Kennecott Utah Copper in geology and mine planning, several years in GIS with the Utah Division of Water Resources, then 10 years with Questar Exploration & Production. He retired in 2011, and since then has been working with his son Ben at developing technology for 3D anaglyphic mapping. In addition to the maps to be shown, they have created 3D atlases of the Wasatch Mountains and of Zion National Park.

Bowen Collins & Associates, Inc.

Mobile Application for GIS Data



Many municipalities have detailed GIS data available (i.e. utilities, land use, maintenance logs) on desktops in their offices. For years, everyone from the City Manager down to the maintenance crew have been looking for a simple, easy way to access GIS data in the field. Our presentation will introduce a mobile application that makes it possible for municipal staff to simply and easily access their GIS data on their smart phones, iPads and tablets in the field.

The app not only displays the data, but it also has the ability to record and transmit notations back to the office. This app can be customized to meet many of the needs facing municipalities today. The key feature of the app is how easy it is to access and notate the data on a mobile device. A City Manager can use the app to look up the proposed zoning for a certain area as he meets with concerned citizens in their neighborhood. City staff can use the app to identify the size, type and direction of flow of a storm drain pipe in the field. A maintenance crew can use the app to document in the field the water valves they exercised or sewer lines they cleaned. The possibilities go on and on. There is no reason GIS data should be limited to a desktop in an office anymore!

Biography:

Matthew Stayner, P.E., CFM

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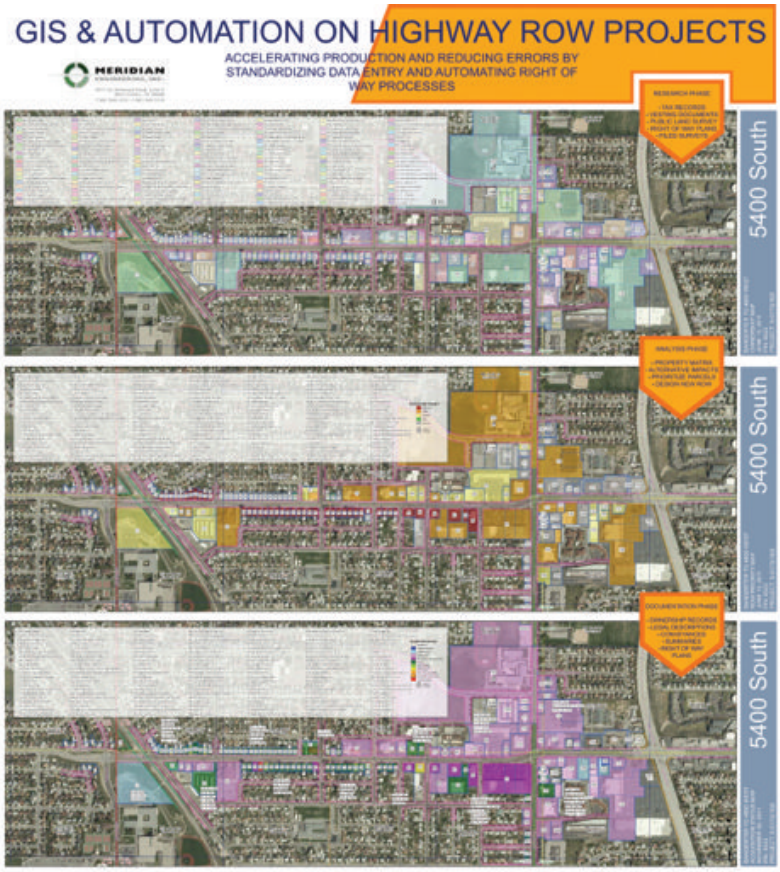
Mr. Stayner received his Masters of Science degree in Civil Engineering from the University of Utah where he completed graduate-level GIS course work. He is a licensed Professional Engineer and has seven years of experience as a private consultant in GIS and water resource related projects.

Meridian Engineering

GIS & Automation on Highway Row Projects



The documentation required for acquiring the right of way for new roadways is extensive and requires following specific legal and other standards. The smaller tasks that make up producing a quality existing right of way matrix and quality right of way design repeat from one ownership, or property, to the other and the documents produced are based on very well documented standards making it a perfect target for automation. An estimated 80 percent of the data needed to perform right of way tasks could benefit greatly from GIS and database technology. The extensive standards of the Utah Department of Transportation allow for the automation of the UDOT right of way design process to this large degree.

The right of way workflow developed encompasses three phases: research, analysis, and documentation. The results of the automation process, mostly during the documentation phase, contributed to a 50 percent decrease in the time spent on production of each submittal package. Automation allows the highly specialized staff that works on right of way tasks to concentrate on those aspects of the work requiring their specialized knowledge.

Future improvements will focus even more on increased automation with legal descriptions by pulling data dynamically from MicroStation drawings and alignment files. Inclusion of automated map reports indicating right of way status and linking to UDOT's Electronic Program Management (EPM) system and ProjectWise data management system have been explored along with the development of a web based interface to allow user to enter data offsite.

Biography:

Jefferson L. Searle, PLS

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Jefferson L. Searle, PLS, is a Professional Licensed Surveyor who holds a Bachelor of Science Degree in Geography from the University of Utah with an Undergraduate Certificate in applied Geographic Information Science. Areas of study included remote sensing, programming, database design, coordinate systems, mobile GIS and transportation. Mr. Searle has also holds an Associate of Science and Associate of Applied Science degree in Surveying from the Salt Lake Community College. He currently works in a technical capacity on surveying, mapping, right of way and GIS projects serving as an expert in high-accuracy GPS, coordinate systems and related technology.

Juniper Systems

Mobile Irrigation Mapping Software

Juniper Systems has created the IntuiTrace Irrigation Mapping Software, a state of the art mobile irrigation mapping tool designed specifically for landscape installation and maintenance professionals. By generating and storing accurate "as-built" documentation using advanced GIS and GPS technology, IntuiTrace creates new revenue opportunities and provides substantial cost savings for irrigation maintenance. Considering the large and diverse nature of today's landscaping crews, IntuiTrace is designed with the actual user in mind. Its intuitive user interface makes it easy for anyone to use, and its flexibility is sure to meet the needs of any landscaping professional, whether in the field or at the office.

Biography:

Jim Benson
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Founded in 1993, Juniper Systems, Inc. is now a world-leader in ultra-rugged handheld computers and intuitive field computing solutions. At Juniper Systems we design, manufacture and service all of our products at our Logan, Utah location. This centralization of design, production and service allows us to focus on quality, and lends to an excellent record of innovation and customer service.

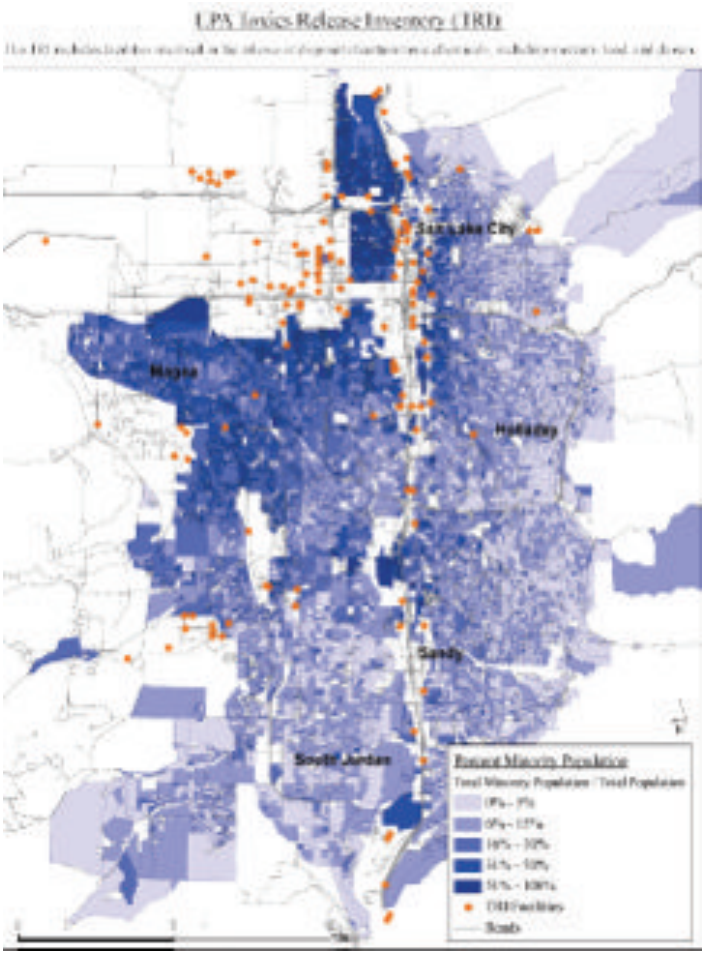
HIGHER EDUCATION

University of Utah

Environmental Justice in the Salt Lake Valley

Historically, the Environmental Justice movement has concerned itself with the distribution of environmental hazards across income and race. This map contributes to historical notions of environmental justice by showing the distribution of minority populations by percentage in the Salt Lake valley in relation to two EPA categories of polluting facilities. The purpose of this map is to provide spatial understanding of distributional outcomes and to start a broader conversation about the reasons behind those outcomes.

Population data comes from the 2010 U.S. Census and is shown at block level. Only blocks with a total population greater than 20 are displayed.



Biography:

Mike Mason
Student

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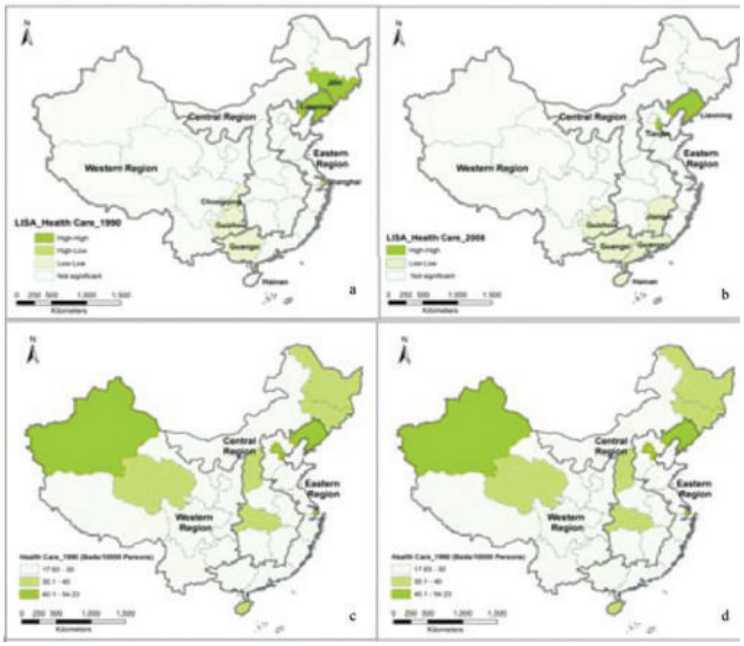
I am currently a student of Geography and Environmental Studies at the University of Utah. I have been interested in Environmental Justice since I began school, but learning how to use GIS software this last semester allowed me to approach the concept in a new way. Through this and hopefully future maps as well, I hope to become a more involved member of the local Environmental Justice community.

Health Care, Mortality, and China's Transition



Concerns over the effects of globalization and liberalization, especially in former socialist countries like China, have fueled the renewed interests in regional inequality and societal development. China's economic reform is an uneven process, with various layers and dimensions to the transition. The phenomenal economic growth and profound social change have been accompanied by intensified debates and conflicts over social and spatial ramifications of reforms, including unequal access to health care. This research analyzes health care inequality in China from 1990 to 2008, with three objectives: (1) to examine the spatial-temporal variations of health care inequality at multiple scalars (regional, provincial, and county levels); (2) to explore whether economic growth and market transition have worsen health care unevenness; (3) to analyze the impact of health care inequality on health outcome especially mortality. We apply GIS-based spatial statistical methods to detect the spatial-temporal patterns of health care, and implement multilevel regression to examine the linkage between health care, mortality and regional economic inequality. We have found that health care inequality is sensitive to the geographical scale and there exists significant spatial autocorrelation; the smaller the spatial scale, the larger the disparity. We have also found that reforms have not brought more equitable access to health care, and the transitions of decentralization, marketization, globalization, and urbanization have interactively contributed to health care inequality and mortality. This study concludes with policy and theoretical implications of the research.

Biography:

Yingru Li

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PhD candidate
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Yingru Li is a PhD candidate in Geography, with research interests in China's socioeconomic inequalities, retail location, GIS, and environmental studies. She has four papers published by top journals and is the winner of several research awards funded by Association of American Geographers and University of Utah. Yehua Dennis Wei is a professor in Geography, with research interests in regional and urban development, urbanization, globalization, land use, GIS spatial analysis and China. Wei is the author of over 80 referenced journal articles and book. He has received research funding and awards from NSF, World Bank, National Geographic Society, and etc.

Dr. Yehua Dennis Wei
Professor

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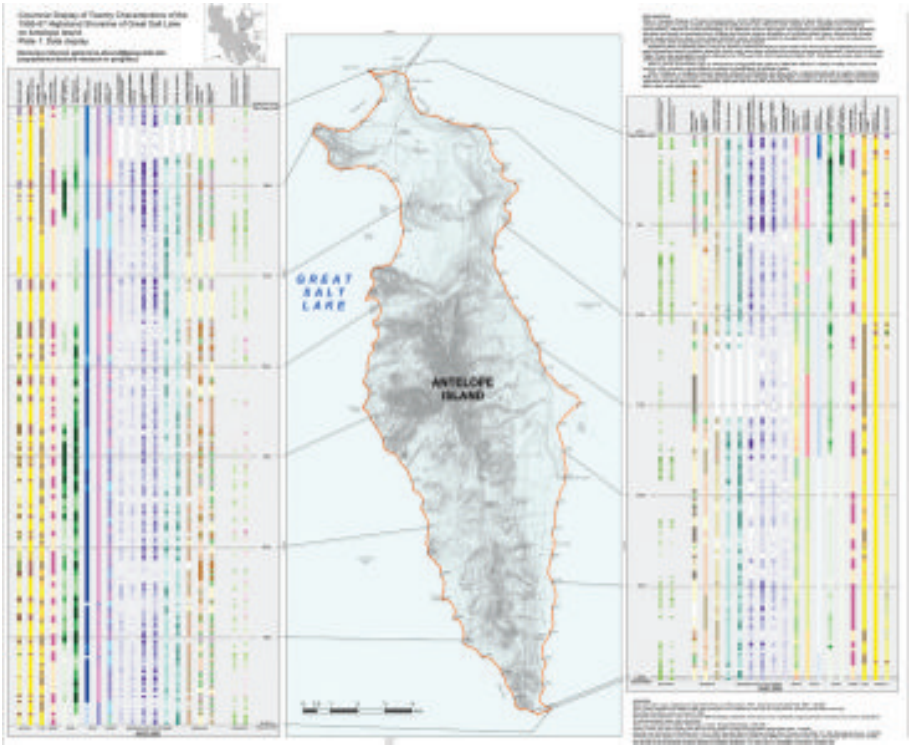
GIS-Columnar Display of Data Documenting Storm-Wave Processes on Antelope Island's Shores.



Shorelines and sediments of shallow closed-basin lakes record lake fluctuations and document lake processes. A detailed study of elevations of shoreline debris of Great Salt Lake provided evidence not only of fluctuations of the level of the lake but also on how the lake responds to winds blowing across it. Shoreline elevation and over thirty other attributes were documented for the 69-km, well-exposed, nearly-continuous shoreline expressions of Antelope Island. The challenge was how to display abundant data and interpret its meaning. The brightly colored columns of these two plates present data linearly, like a string of pearls that once encircled the island as a shoreline but now hang straight. The second display of columns show correlations, and lack of correlation of one attribute, storm-wave elevation (shoreline superelevation) a dozen other attributes. Storm wave damage can be expected where fetch (distance across open water) is great, where exposure is to the west, northwest, and southwest into strongest storm winds, and where shore zones are steep.

Biography:

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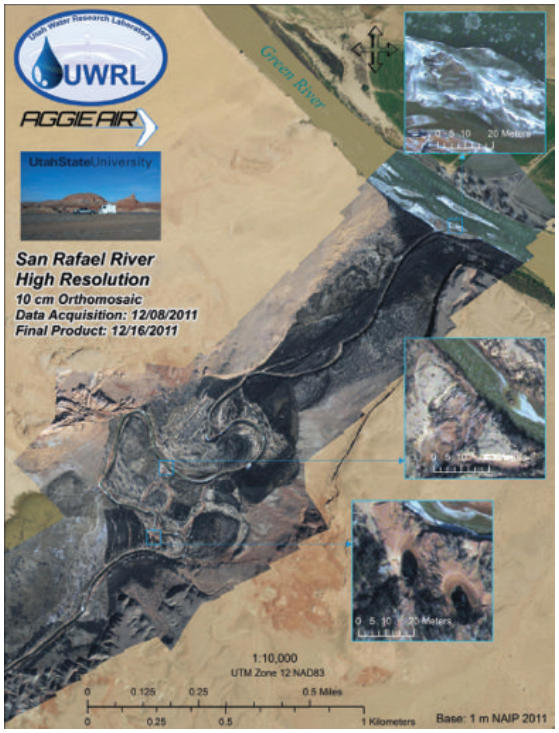
Utah State University

Utah Water Research Laboratory at Utah State University

For water related applications across the state of Utah, the Utah Water Research Laboratory has developed a small, low-cost source for multi-spectral aerial imagery called AggieAir. The imagery from AggieAir can be used to make maps of small areas quicker, more frequently, at finer resolution, and at a lower cost than many conventional remote sensing platforms (e.g. satellite and manned aircraft). Furthermore, AggieAir is independent of a runway, which gives the user the ability to launch the aircraft from virtually anywhere. This technology enables individuals and organizations to acquire aerial imagery they can afford and use effectively to lower cost and improve data. For example, water users such as farmers could use AggieAir to provide feedback about soil moisture so they can irrigate more efficiently and save water. Some applications AggieAir has been involved with include monitoring of soil moisture and evapotranspiration in irrigated agriculture, riparian habitat mapping, surveying construction projects, and wetland mapping and monitoring. See ***http://aggieair.usu.edu*** for more information.



The imagery that we will showcase at Maps on the Hill is a sample of a mosaic of the San Rafael River acquired using AggieAir for the Utah Division of Wildlife Resources. The DWR was interested in having up-to-date color and near-infrared imagery of the San Rafael River to map channel changes caused by record flooding this year. We were able to deliver the processed imagery (10 cm orthorectified mosaics) within a couple of days after the imagery was acquired.

Biographies:

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Mark Winkelaar works at the Utah Water Research Lab (UWRL) primarily as a GIS specialist, while performing piloting and maintenance duties for AggieAir. He has experience on multiple fish habitat mapping projects for numerous agencies throughout the Western U.S. Mark has a B.S. in Geography from Weber State University, and has been digitizing river centerlines, tracking fish locations, collecting and processing bathymetric data and interpreting imagery for water resource applications for over 15 years. He has assisted many USU graduate students and faculty at the UWRL involving GIS applications. Mark is responsible for launching, landing and recovering the AggieAir Platform.

Shannon Clemens has worked at the Utah Water Research Laboratory (UWRL) as an image processing, photogrammetry and GIS specialist while pursuing an M.S. in water resources engineering at Utah State University. Shannon generates orthorectified mosaics from imagery captured by AggieAir using EnsoMosaic by Mosaic Mill: a soft-copy photogrammetry software specific for unmanned aerial systems. She also works on radiometric calibration techniques, classification and other remote sensing applications using the AggieAir data.

Austin Jensen is currently working at The Utah Water Research Laboratory (UWRL) as a research engineer while finishing his Ph.D. degree at Utah State University. Before working with the UWRL, Austin worked at the Center for Self-Organizing and Intelligent Systems (CSOIS) as a research assistant where he has played a major part in creating the unmanned aerial vehicle (UAV) program at Utah State and in developing a low-cost autonomous UAV remote sensing platform called AggieAir. To meet an increasing demand for this platform, Austin has created a service center at the UWRL, which regularly flies AggieAir to capture aerial imagery.

PUBLIC UTILITIES AND METROPOLITAN PLANNING ORGANIZATIONS (MPO'S)

Blue Stakes

Blue Stakes of Utah: Excavation Activity in Utah, 2011

Blue Stakes of Utah is the "call before you dig" utility notification center for Utah. Excavators are required to have their dig site area checked for underground utility lines before excavating. The location can be described by giving the nearest address, intersection, highway milepost, railroad milepost and/or GPS latitude/longitude coordinates.

Blue Stakes personnel use map data provided by county and state GIS departments to find the dig site location and determine which of the 500+ utility owners in Utah have underground lines in the vicinity. Blue Stakes will then notify the affected utility owners about the upcoming excavation and each utility owner will mark its own underground facilities at the site with paint and flags within two business days.

The Blue Stakes contact center in Draper receives over 250,000 requests per year to have utility lines marked in Utah.

Excavation activities range from small (sprinklers, fences) to medium (new subdivision, road reconstruction) to large (new highway, new interstate pipeline, seismic exploration for oil & gas).

Since many excavation activities are in "new" areas, Blue Stakes relies on Utah's city, county and state GIS departments to share their map data, which is more current and accurate than data from commercial providers like Google, Mapquest, Garmin, etc. Blue Stakes must know where every new road is, since the excavator will contact Blue Stakes before building it!

Visit the Blue Stakes display to see a map of all excavation activity in 2011 and view the software to see which utility owners have underground lines in your area!

Biography:

James Wingate
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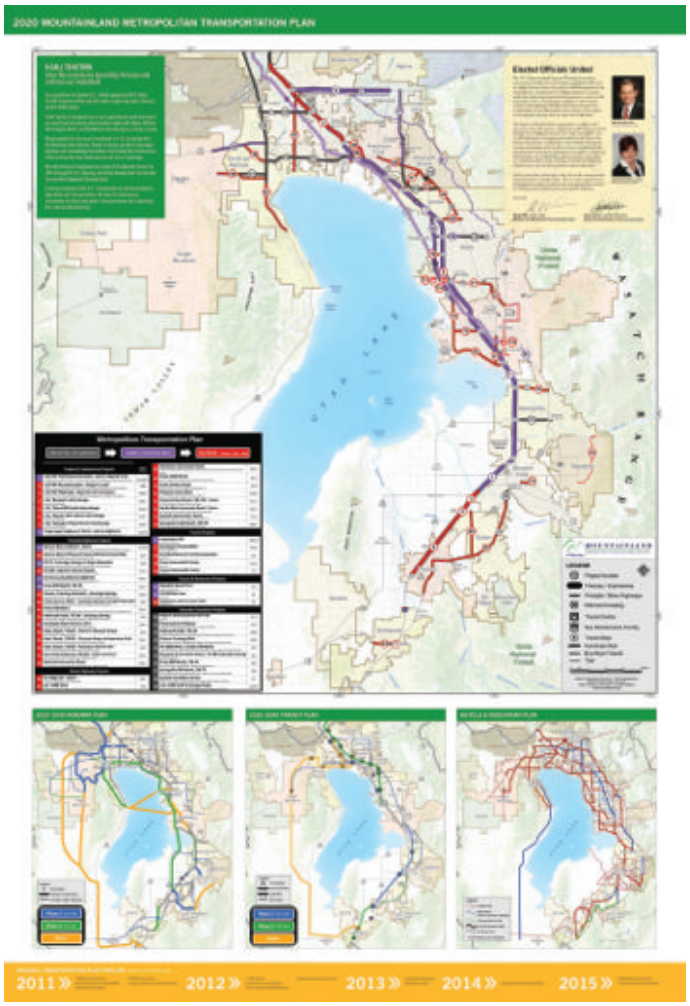
James Wingate has managed the Blue Stakes contact center department for the past 12 years. He is known throughout the GIS community as the guy who hounds city and county GIS departments to share their map data. His wife warns people to not "get him started" talking about utilities, maps, driving on Utah's rural roads or exploring slot canyons. James was raised in the Rose Park area of Salt Lake City and currently lives in Lehi. His educational background includes a BA in Geography from the U of U and an MPA from BYU.

Mountainland Association of Governments

2020 Mountainland Metropolitan Transportation Plan

As one of four MPOs in Utah, Mountainland provides a forum where local officials, public transportation providers, state and federal transportation departments can come together and cooperatively plan to meet the region's current and future transportation needs. This effort results in the Metropolitan Transportation Plan, the documents that contains which transportation projects are built and when.



Biography:

Kory Iman, GISP
Chief Cartographer

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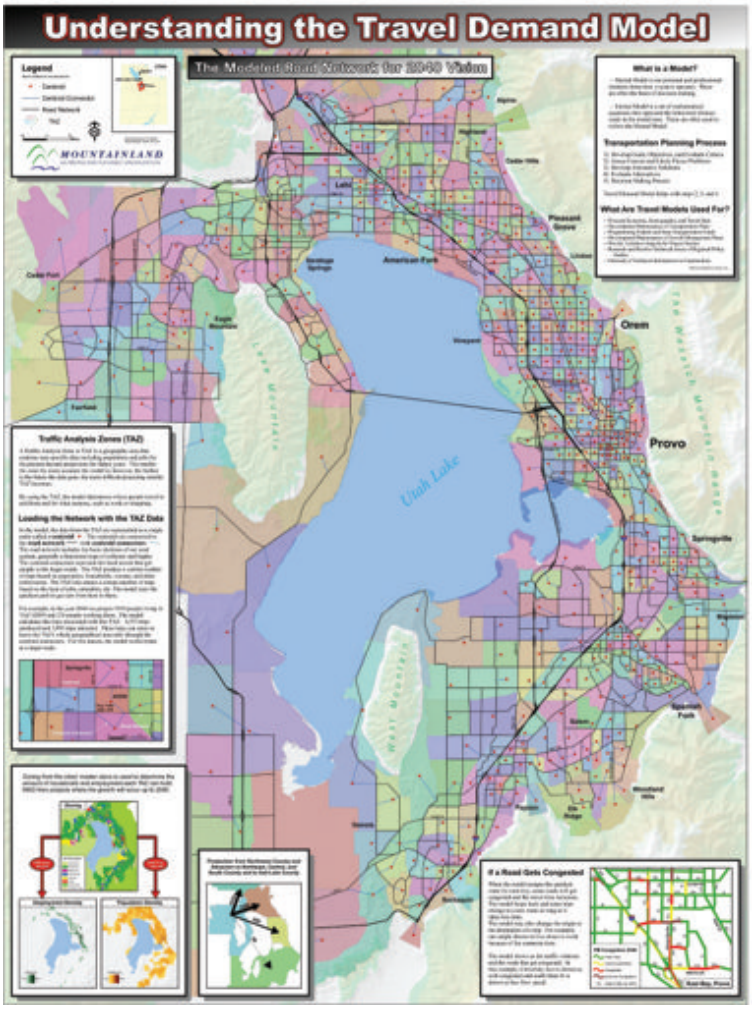
Kory Iman has 10 years of working GIS experience. He graduated with a B.S. degree in Geography and a certificate in GIS from the University of Utah in 2003. His resume consists of working for Utah Department of Transportation, Layton City, & currently is with Mountainland Association of Governments. He earned his GIS Professional (GISP) certificate in March of 2011. Kory is very passionate about the cartographic side of GIS and the importance of how communication is the key to understanding. One of Kory's maps was recently published in the ESRI Map book volume 26.

Understanding the Travel Demand Model

Transportation planning agencies from the Wasatch Front region use the Travel Demand Model to project future traffic patterns and volumes. This map is a simple visual and explanation of the complex model. It explains that demographic data is aggregated to a Traffic Analysis Zone. Then those demographics are used to determine how many trips are produced and how many are attracted to each zone. The numbers are put into algorithms to determine destinations and paths which load the road network and give us traffic counts or all roads on the network. This map was made to help the public understand the tool we use to aid in the selection of projects for our long range plan.



Biography:

Tim Hereth
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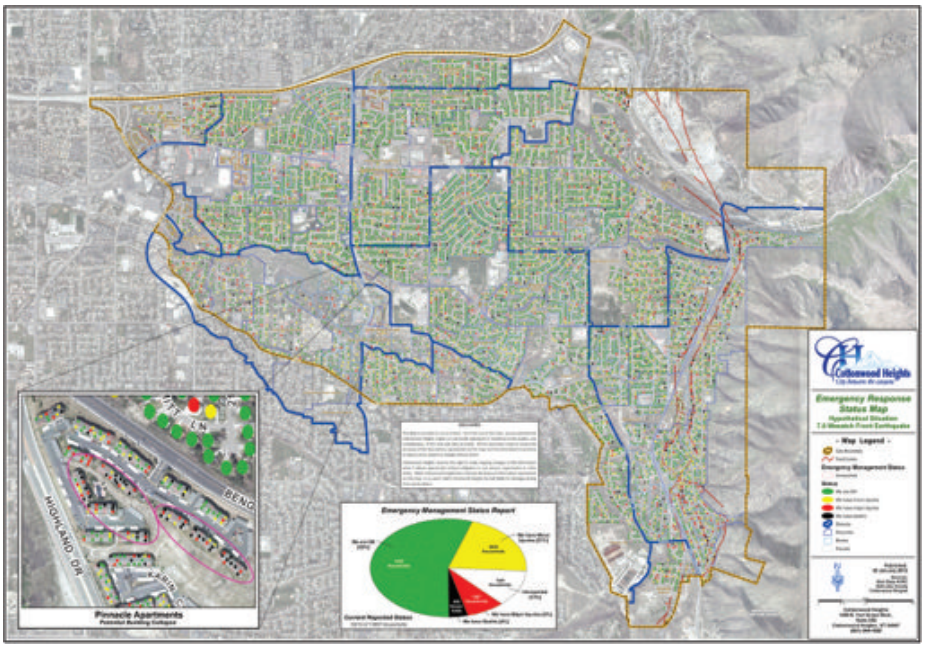
Tim Hereth studied and obtained a Bachelor's degree in Geography and minored in Urban Planning at the University of Utah. He worked for the Salt Lake County Flood Control and Engineering Department for nearly 2 years doing GIS and field work for the Water Quality Stewardship Plan. He has since be working for Mountainland Association of Governments for 3 ½ years as a GIS analyst working with the travel demand model.

CITIES AND MUNICIPALITIES

Cottonwood Heights

GIS in Cottonwood Heights



My maps describe how the City of Cottonwood Heights has been organized and the process that has been developed by this organization to react to a city/area/region wide emergency to provide information about the status of the city and to help emergency services to better react to the communities needs immediately after the event.

This organization has been developed through the efforts of the Emergency Preparedness Committee. This committee was formed at the request of concerned Cottonwood Heights citizens including some with Emergency preparedness church callings and amateur radio operators. The committee is comprised of Community volunteers and City staff. The committee as a whole meets monthly, with various citizen subcommittees often meeting more often. The committee is supported by the City of Cottonwood Heights with the City Manager, GIS Specialist, and Police representatives attending each committee meeting.

The city has been divided into several geographic based reporting areas called Districts. Each District is further subdivided logically into Precincts. Each Precinct is further subdivided into 7 to 10 household blocks with each block having a volunteer block captain.

In the event of an emergency situation block captains would quickly fill out predefined forms for their block which would be passed up to their Precinct EOC where it is entered into a predefined spreadsheet unique for the Precinct. This spreadsheet is then sent digitally using short wave radios to the District EOC where it is combined with other Precinct reports into a District spreadsheet. Each District would then send their data digitally to the City EOC where a city wide picture is created. Spreadsheets at the District and Precinct levels are also used by their respective EOC's using GIS software to help them to evaluate and respond to better serve the needs of their citizens.

Biography:

Kevin Sato
GIS Specialist

Cottonwood Heights
KSato@cottonwoodheights.utah.gov

Kevin has been working in the field of Geographic Information Systems (GIS) since 1989. Before becoming the GIS Specialist for Cottonwood Heights, Kevin was the GIS Coordinator for the Department of Public Utilities and the GIS Manager for Murray City from where he retired in 2005. He has served on the UGIC Board since 1997, serving as Board chair from 1997-2000 and 2007-2010. A member of the Urban Regional Information Systems Association (URISA) since 1997. He attended the University of Utah where his studies included Computer Science and Geography with an emphasis in GIS.

City of Hurricane

Small City Uses GIS Technology to Manage Large Area

The maps and demonstrations on display by the City of Hurricane are intended to illustrate how a small city is using GIS technology to efficiently manage infrastructure assets and land planning information. The maps presented show how spatial data collected by Hurricane is combined with data from other sources like Washington County, the State of Utah, and the Federal Government. Also on display is a demonstration on how Hurricane edits and maintains its own data and how they are migrating GIS data to the cloud for access from mobile devices.

Biography:

Joe Rhodes
GIS Coordinator

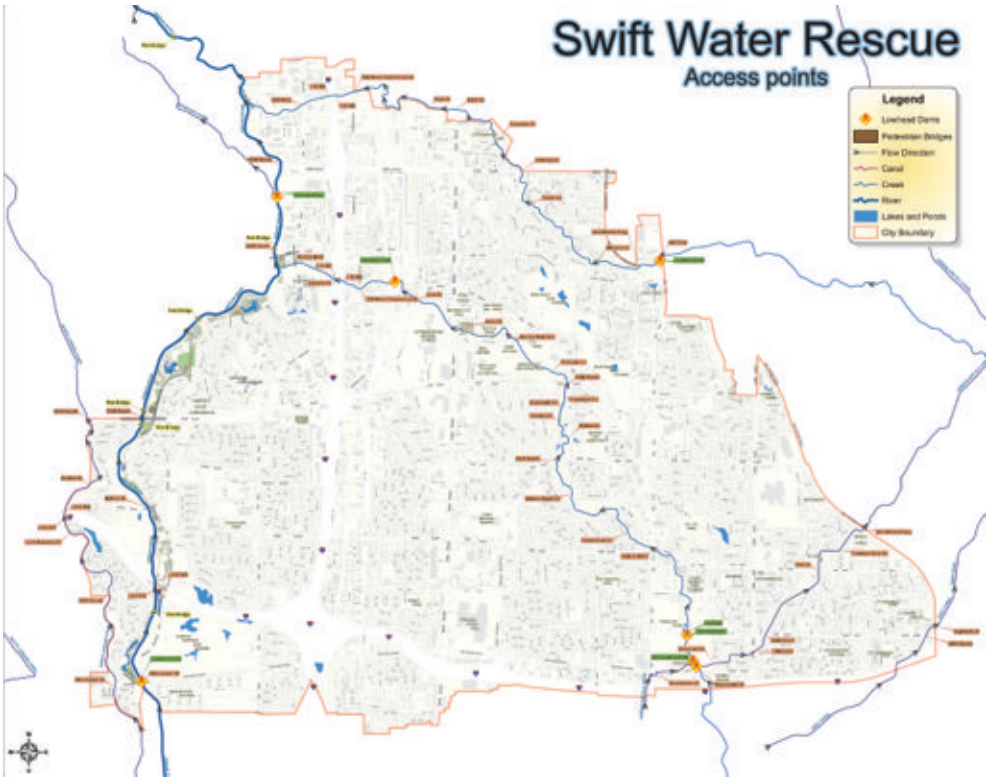
City of Hurricane
(435) 635-2811 x128
joe@cityofhurricane.com

Joe Rhodes is the GIS Coordinator for City of Hurricane and joined the city in 2006. He earned his bachelor's degree in Geology and Certificate in GIS from San Diego State University. He has over two decades experience in computer systems administration and programming in the public and private sectors. Prior to joining the City of Hurricane, he worked as a CAD/GIS Technical Manager for the City of San Diego and for SAIC as a Systems Specialist. As a GIS professional with the City of Hurricane, he is responsible for coordinating.

GIS data management with city departments and with other governmental agencies in Washington County. His efforts were recognized by the APWA Southern Utah Branch with the Outstanding Public Works Employee award in 2010.

Murray City

Swift Water Rescue Access Locations in Murray City



This map represents a sampling of ways the GIS is used as an aid in the daily functions of Murray City. The main focus map is an emergency pre-plan which represents Swift Water Rescue Access Locations, and is used by the Fire Department as a reference during possible drowning rescues. The map identifies access points and flow directions along canals, creeks and rivers. It also shows pedestrian bridges, and identifies lowhead dams, which are of particular concern during a rescue operation.

Other representations show how the GIS is used for facilities maintenance. For pavement management, pavement conditions are measured and recorded, then analyzed to determine the best use of Capitol Improvement and Class "C" Road funds. Sewer inspection videos are hyperlinked to the GIS database, and can be viewed by office personnel. Traffic signs and paint markings are catalogued using the Spatial IM infrastructure management application. This data provides valuable information used for budgeting and staffing. Power distribution maps and applications provide aid to outage management, system design, maintenance and operations. Trees have been catalogued in the City Arboretum, photographed and geotagged, to create an informational guide for visitors.

Biography:

Janie Richardson, GISP
GIS Administrator

Murray City Corporation
(801) 270-2460
jrichardson@murray.utah.gov

The Murray City GIS Division has been responsible for developing the Murray City GIS from its beginnings in the early 1990's. Murray City is somewhat unique, in that it provides its own Public Safety, including Police and Fire, as well as Utilities, including Sewer, Water, Storm Water and Power. The GIS Division supports these and all other facets of Murray City government, such as Engineering, Parks and Recreation, Community and Economic Development, Cemetery, Attorney, Recorder and Mayor's Office. The GIS Division is part of Murray City's Department of Administrative and Development Services.

Provo City

GIS in Provo City

Provo City web mapping applications have become a useful means of communicating with Provo City residents. Municipal governments collect an enormous amount of location-based data. Much of that data is associated with a specific address. The address is therefore a significant common point of reference between government and its citizens. Provo City currently has four citizen-focused web applications.

- ***maps.provo.org***, is designed as a general purpose application that tells a resident pertinent information at his/her address. Property information, neighborhood (with contact information), school districts, zone, voting precinct, local and state representatives, and garbage and recycling days are delivered in a quick query to the GIS database.
- On election night, ***electionmap.provo.org*** reports election results. Vote totals, as they come in, are displayed on a map. Individual races are displayed with totals, percentages both in a graph and according to individual precincts on the map. A simple very of this site is used to display results on Provo's Channel 17.
- In partnership with the Provo School District, Provo City GIS has developed a bus stop application that helps parents find all of the nearest bus stops for their children. It also tells parents if they live within the official walking distance of their school(s).
- ***Parkfinder.provo.org*** helps citizens locate parks based on the amenities they want. Looking for a park with a playground, BBQ grills, and a pavilion? Just select those criteria and all the parks that have those amenities are listed. Make a selection and see a map and park pictures.

Biography:

Phil Uhl
GIS Administrator

Provo City
(801) 852-6416
PUhl@provo.utah.gov

A graduate of Brigham Young University's Geography program. After a brief stint at CH2M Hill in Salt Lake valley, I began work for Provo City in 1999 as a GIS Analyst in the Community Development Dept. As GIS evolved at Provo City and became centralized, I transferred to the Information Systems Dept. In July 2010 I became the GIS Administrator for the City. Today the city functions on a federated GIS model with a centralized GIS core group that works with GIS professional in a several departments.

Stan McShinsky
GIS Web Developer

Provo City
(801) 852-6561
smcshinsky@provo.utah.gov

Stan McShinsky is the Geographic Information Systems (GIS) web developer for Provo City. He received his degree from Brigham Young University. Stan has been doing GIS work for more than seven years and is very dedicated to his work. He is a very creative developer that has created several online mapping tools. He has created and maintains several applications for Provo City that have been invaluable to those that use them on a daily basis.

Salt Lake City

Salt Lake City Bikeways Map

In recent years, Salt Lake City's bike network has expanded rapidly and successfully, contributing to a greater ease of use and feeling of safety by bicyclists on the roadway. With miles and miles of new bikeways in the City, it was necessary to create an updated bikeways map. Printed and distributed in May 2011, the Salt Lake City Bikeways Map was an almost complete redo of the last edition of the map, printed in 2006. It features more understandable symbols, color-coded bikeways, a message from Mayor Ralph Becker, sites of interest, connections to surrounding cities and counties, as well as comprehensive safety information and tips on riding effectively in all weather conditions. In less than five months, approximately 20,000 copies of the map were distributed by local businesses, especially bike shops. Map printing was paid for by advertising sponsors and by an Energy Efficiency Conservation Block Grant through the U.S. Department of Energy.

Biography:

Becka Roolf
Salt Lake City Bicycle/Pedestrian Coordinator

Tom Millar
Salt Lake City Bicycle/Pedestrian Program Intern

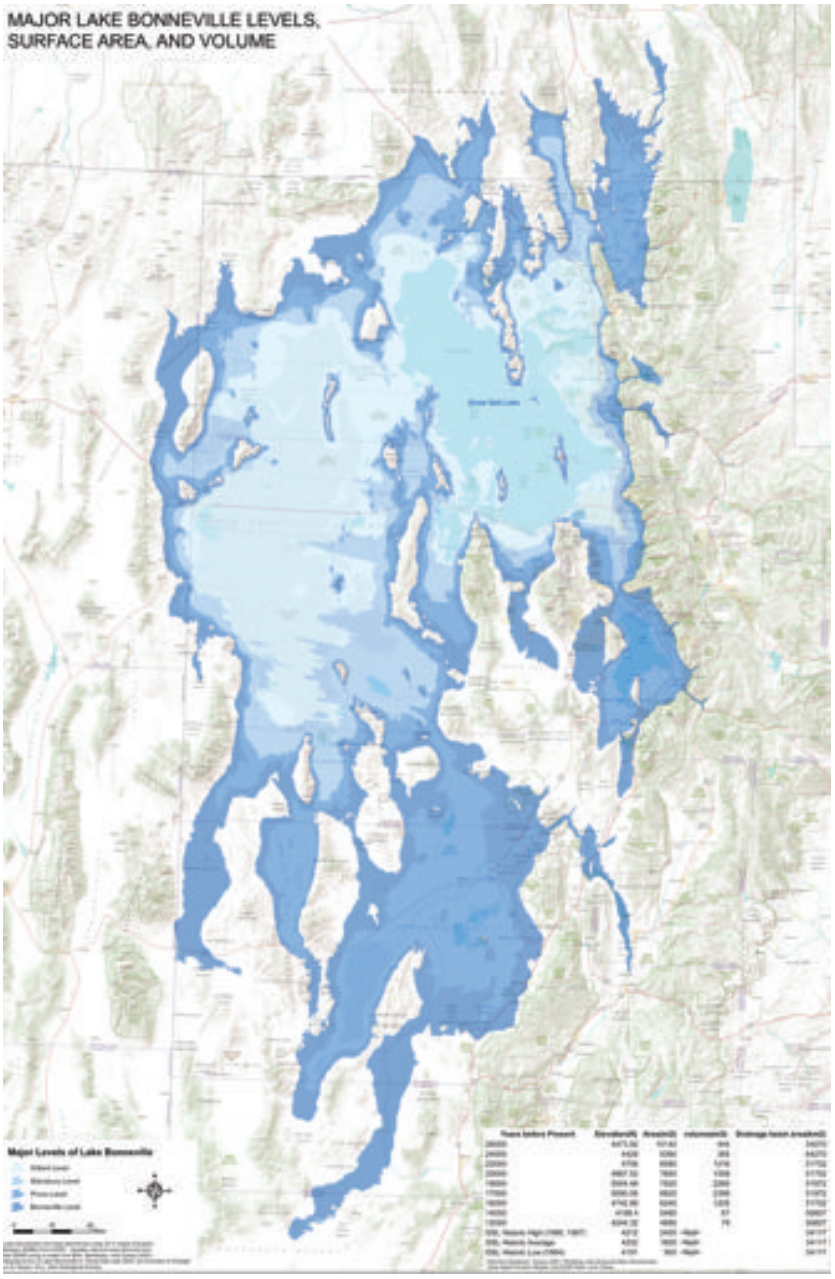
Salt Lake City Division of Transportation
349 S 200 E, Suite 450
Salt Lake City, UT 84111

Becka Roolf is the Bicycle/Pedestrian Coordinator for Salt Lake City, and an avid year-round commuting bicyclist. Becka was the lead cartographic designer. A former bicycle/pedestrian consultant and professional advocate with degrees from Harvard University and Allegheny College, Becka owns literally hundreds of maps, including many bike maps of other cities.

University of Utah Urban Planning student **Tom Millar** joined the team in early 2011; the map reflects his cartographic skills, design sensibility, and attention to detail. SLC GIS Coordinator Kevin Bell assisted with technical aspects. Many individuals in the bicycling community contributed route suggestions via an online collaborative map.

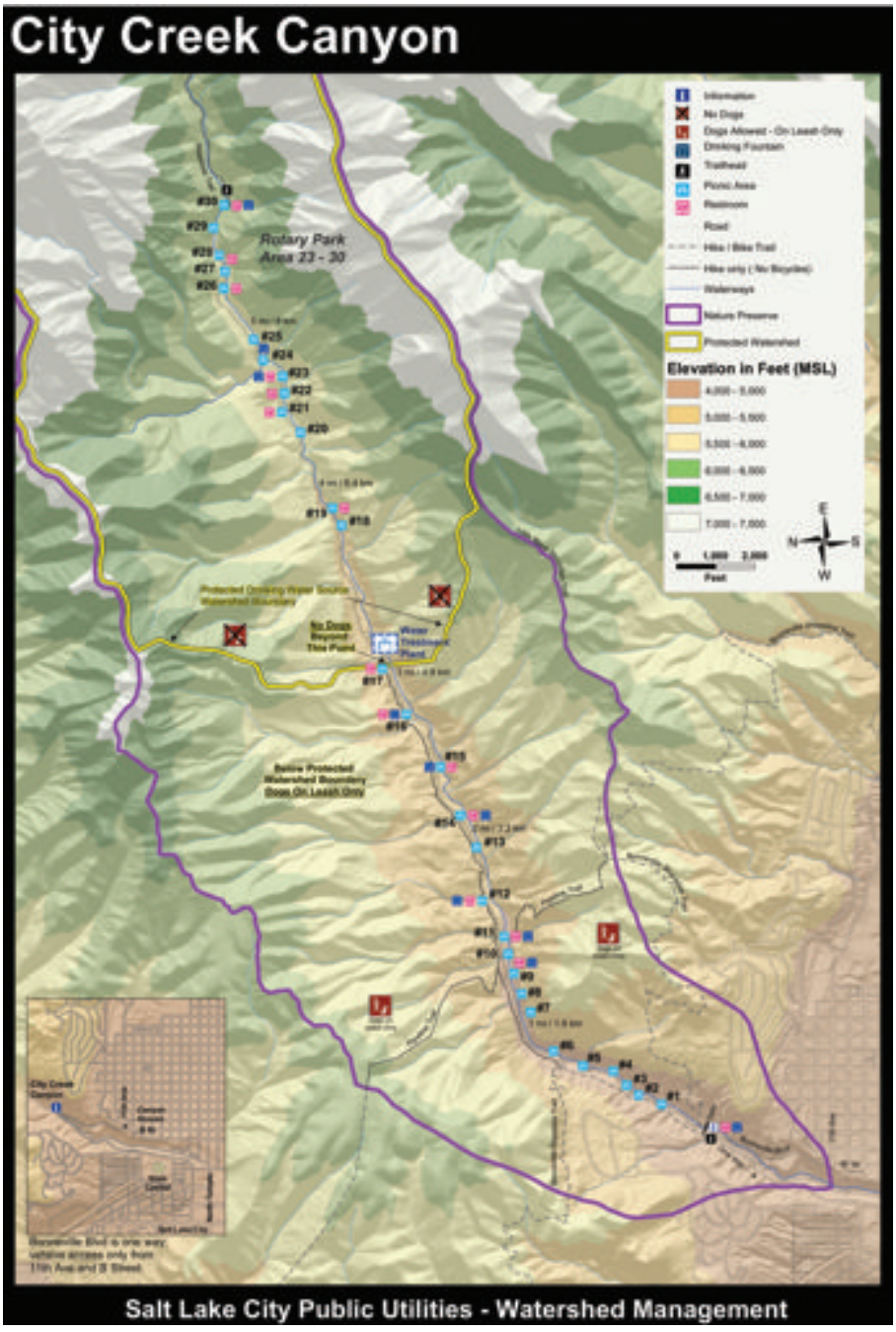
Major Lake Bonneville Levels, Surface Area, and Volume

The shorelines of Lake Bonneville are one of the most noticeable and known geologic features in the Salt Lake region. Teachers and students can explore geology easily just by walking out the door of the classroom. This map was created to help teachers know where the different shorelines of Lake Bonneville can be found and help students explore the geologic history of their home state. The surface areas, volumes, and drainage basin areas were determined using a Geographical Information System (GIS) with Digital Elevation Models from the state's Automated Geographic Reference Center (AGRC). Comparing areas and volumes throughout time can be used to look at climate change and determine how much wetter and colder it was during the last glacial maximum.



City Creek Map

City Creek Canyon is a beautiful canyon right next door to the State Capitol and next to downtown Salt Lake City. On top of all of the recreation available in City Creek Canyon it is a valuable source of high quality drinking water for Salt Lake City's residents. Salt Lake City's Department of Public Utilities is in charge of managing the canyon and insuring that residents can utilize its many opportunities for outdoor activities and still have safe, clean drinking water. This map shows residents the picnic areas and trails of City Creek Canyon as well as the region designated as a protected drinking water source.



Runoff 2011 Map

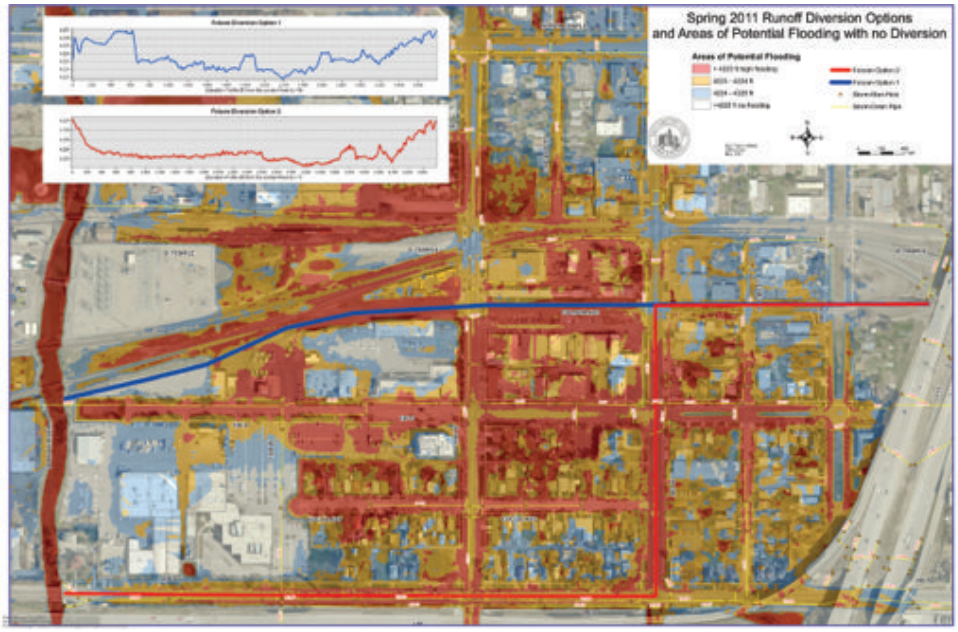
Although the snow fall during the 2010-11 was great for winter enthusiasts, it had the cities, counties and state of Utah preparing for floods during the spring months. The snow in City Creek Canyon was deep and if the temperature warmed too quickly, there was a threat of flooding around North Temple in Salt Lake City. To prepare for this possibility crews at Salt Lake City's Public Utility department worked day and night to prepare the storm drain system to take the water from City Creek. As part of this preparation the GIS Department created many maps to show where problem areas might be and the potential areas where flooding might occur if the storm drain system was overwhelmed. This map is an example of two options for new storm drain that would divert some water from the North Temple drainage system to Folsom Ave. The improvements to the system after the floods of the eighties, the preparation by the SLC Public Utilities, and the steady temperatures kept disaster from happening on North Temple.

Biography:

Tamara Wambeam
GIS Analyst

Salt Lake City Public Utilities
(801) 483-6746

Tamara Wambeam has a geography degree from the University of Wyoming and a master's degree in Geography from the University of Utah where she specialized in geomorphology and GIS. During her master's work she travelled to Canada, Bolivia, and throughout the Great Basin studying paleolakes. For the last 15 years she has been employed with Salt Lake City as a GIS Analyst in the Public Utilities Department.



Tracking the Oil Spill of 2010

In June of 2010 Chevron's oil line started leaking into Red Butte Creek. Spilling thousands of gallons of oil into the creek. GIS was used to view and monitor where the oil had gone and keep track of the clean up. A web based map was also added to share water quality issues with the public. You can identify sample tests as a GIS attribute on this map. ***http://maps.slcgov.com/oilspill/index.html***

Water, Sewer and Storm GIS layers!

This is a look at a daily use of GIS. Within Salt Lake City Public Utilities most everything is linked through GIS. From the billing system to maintenance system, using GIS is a daily operation. We can link customer information or even how much a project is going to cost to a GIS map. GIS is also used to tie in survey information, watershed issues, locating pipes in the field, work-korders management, homeland security and much more.

Biography:

Nick Kryger, GISP
GIS & IT Manager

SLC Department of Public Utilities
nick.kryger@slcgov.com

Nick Kryger is the GIS & IT Manager for Salt Lake City Department of Public Utilities. Nick has been working in GIS for over 20 years. He has a BS degree in Business Administration and in Industrial Relations and is a Microsoft Certified Systems Engineer. Nick is also a current board member and the past Chair of Utah Geographic Information Council

Sandy City

GIS in Sandy City

Sandy City will be displaying maps and products to illustrate how we use GIS in a municipal setting to make just about every city service more efficient. This will include entries from Community Development, Economic Development, Fire, Parks, Police, and Public Works. Our maps and electronic presentations will include: Integration of GIS and land management software, map showing changes in sales tax revenue by city area for the past 10 years, maps used to attract businesses, ArcGIS Business analyst, maps used by Fire crews to distribute Urban-Wildland interface fire prevention materials to homes in targeted areas, map of fire response areas for all of Salt Lake County, 4th of July parade and event planning maps, PR maps such as the Parks and Trails maps sent to residents, maps used in law enforcment for crime patterns and analysis, Monthly Traffic Accident (Hot spot) analysis map (used by traffic engineer to review accident data for intersections), web map application used to track sign inspections and quality, Tracking Server- web apps showing vehicle locations and routing, GIS as the basis for such things as locating valves for shutoff in a waterline break, assigning work orders, etc. We will also have a movie or slide show showing sequence of aerial photos from 1938 to 2010, showing Sandy's growth, and Election results maps, showing results and turnout by precinct.

Biography:

Ray Montgomery, GISP
GIS Administrator

Sandy City
Sandy City, Utah
(801) 568-7123
rmontgom@sandy.utah.gov

Ray Montgomery graduated from Dixie College in St. George in 1976 and received a BS in Geography from BYU in 1980. He worked for AAA Engineering and Drafting in SLC updating Defense Dept maps and doing layout work. He later worked for the APFO (Aerial Photography Field Office) in Salt Lake City doing photogrammetry. He was hired by Sandy City in 1988 to be their first GIS person. Since then, he has built Sandy GIS up to an enterprise system that has 5 full-time GIS employees, about 13 power users/editors, and over 120 casual users. Ray is married with three children.

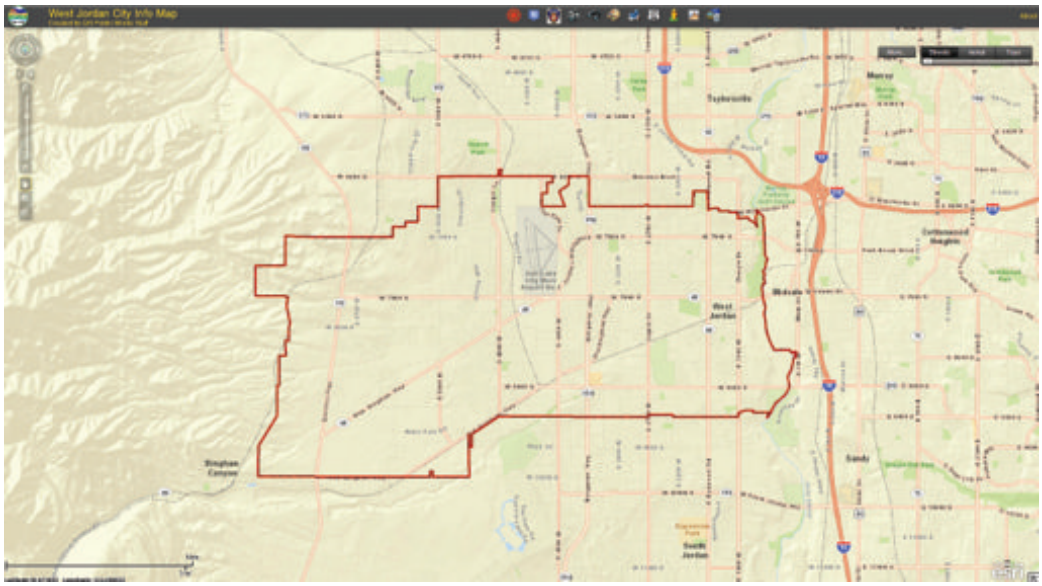
Ryan Kammerer
GIS Coordinator

Sandy Public Works
Sandy City, Utah
(801) 568-2989
rkammerer@sandy.utah.gov

Ryan Kammerer has been the GIS Coordinator for the Sandy City Public Works Department since January of 2011. Prior to that, he worked for the City of St. George and completed an internship with Teton Science School in Jackson, Wyoming. He has a Master's degree in Geographic Information Technology from Northeastern University and a BS in Botany from Humboldt State University. Ryan's interests include learning about new technology, rebuilding old computers, and camping with his family. Ryan is married with two children.

West Jordan City

West Jordan City Map



This interactive web map has been a work in progress for the past 2 years. The map was developed by Clint Hutchings, GIS Administrator and Interns from the University of Utah and BYU. The map is designed to assist West Jordan City residents to quickly and accurately find information about the city they live in. The map provides information on school boundaries, garbage pick-up days, voting precincts and voting locations. Residents are also able to look up their parcel information provided by information that comes from Salt Lake County or see live traffic cams provided by UDOT's Commuterlink. The city has been able to refer developers to the map so they can quickly find landuse and zoning information. We have also included some added features such as a route finder similar to what you would see on Google maps or Mapquest. The 'Street View' application lets you see a bird's eye view, street view and close -up map view of any area in the city. We have even added demographic information so you can see Household income in any area . We have included functionality to allow users to create their own custom map adding points, text, and measure areas.

Biography:

Clint Hutchings
GIS Adminstrator

City of West Jordan
8000 S Redwood Road
West Jordan, UT 84088
(801) 569-5174
clinthu@wjordan.com

Clint Hutchings has been the GIS Administrator for the City of West Jordan for the past 5+ years. During this time Clint has been working hard to promote GIS in the city. Clint has created a GIS master plan for the city, defined a GIS based Asset Management system for the city. Mr. Hutchings works hard to make GIS data available to the public by creating easy to use interactive GIS Web maps. Clint feels it is important to help GIS college students obtain real life work experiences and usually has 4-6 Interns working with him during any given semester.

COUNTIES

Davis County

Wasatch Front Trails Web Mapping Site

The Davis County Planning Department, would like to develop a Wasatch Front Trails Web Mapping site. This site would be an expansion of the existing Davis County Web Mapping application. The plan is to partner with the various State, City and County trails planning departments as well as other public and private trails entities. This effort would provide region-wide data to a broad audience. This effort would allow a single point of reference for all trails data across the Wasatch Front, and would make finding trails data much easier for the end user. This information could be housed on a single server, and then displayed on multiple trails websites to allow access to a broad audience.

Biographies:

David Vance, GISP

Davis County Information Systems
28 East State Street
Farmington, Utah 84025
(801) 451-DAVE (3283)
dave@co.davis.ut.us

Scott A. Hess
Community Development Planner

Davis County Planning
28 East State Street
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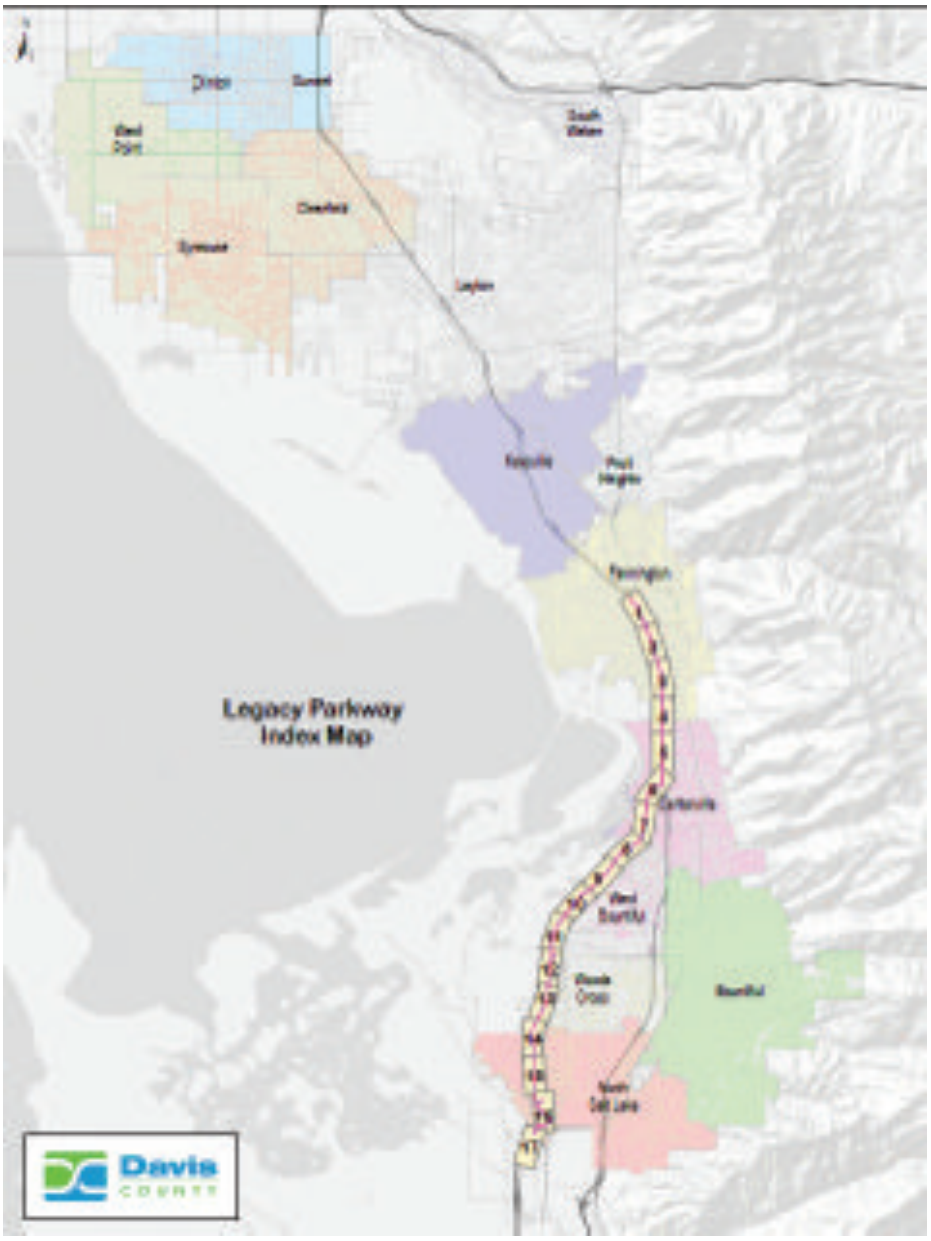
shess@daviscountyutah.gov



Davis County General Atlas

The Davis County 2012 General Atlas was published and released in December 2011. The Atlas was designed primarily to provide address information to emergency responders, but it also contains an enormous variety of other geographical data about Davis County. The book is 252 pages, full color, 11" x 14" in dimension, and is a first of its kind for Davis County.

Included are over 95,000 address annotations contained in the Address Map Series portion of the book. This section has 187 pages that show the populated core of Davis County with one square mile per page. There are approximately 14,000 street annotations and over 100,000 parcels also shown, with a comprehensive street index at the back of the atlas.

The Thematic Map section of the atlas contains 50 maps depicting various geographical information such as School Boundaries, Voting Precincts, the Great Salt Lake Meander Line, Antelope Island, Land Ownership, Parks and Golf Courses, ZIP Codes, Hill Air Force Base, Pipelines, Power Transmission, Natural Terrain, and more.

The Atlas was greatly enhanced by the addition of 199 color photos that were voluntarily contributed by numerous individuals. In the spring of 2011, the Davis County Information Systems Department launched the Atlas Photo Challenge. This program encouraged anyone to send in their photographs of Davis County with the chance of being published in the Atlas.

It has been said of the atlas that "the useless maps are too big and the photos are too small!"

Biography:

N. Jeffrey Baker
GIS Specialist

Davis County, Utah
(801) 451-3449

N. Jeffrey Baker has been involved in GIS for 18 years. He started as a GIS Technician in 1995 for the City of Scottsdale, Arizona, where he worked for three years before taking employment with Salt River Project in Phoenix. His primary duties at SRP included modeling the company's water delivery infrastructure in the GIS, mapping of water-related legal matters across the greater part of Arizona, and aerial photography processing and management. He spent ten years at SRP. He then accepted a position with the City of Florence, Arizona as the GIS Coordinator for the next two years, where he implemented the entire GIS program for the City. He is currently employed with Davis County.

While in Arizona, he volunteered with the Pinal County Sheriff's Department as a Search and Rescue Specialist for over seven years. He and his wife Tonya have nine children, and they currently reside in Layton, Utah.

Salt Lake County

Your property lines are under attack every day

Over time, Salt Lake County has evolved into an urbanized metropolitan area. With this urbanization came increased road construction, utility work and other development-related activity occurring in and around your property every day. This activity jeopardizes the system of survey monuments that control property lines, which are by and large, located within the 3,600 miles in the roadway in Salt Lake County. All of the approximately 350,000 parcels of land within Salt Lake County are measured and described from at least one of some 12,000 survey monuments. These monuments are part of a network of both original government land corners established in the 1850's, and thousands of more recently placed accessory monuments. If these monuments are removed, disturbed or destroyed, property owners are unknowingly placed at risk for boundary disputes, clouded titles, and potential legal issues. The Salt County Surveyor's Office uses historical records, Geographic Information Systems (GIS), Global Positioning Systems (GPS) and other modern and traditional surveying technologies to maintain and perpetuate the Public Land Survey System within Salt Lake County. Safeguarding and maintaining an accurate record of these points and having the ability to restore them is a key role of the Salt Lake County Surveyor's Office in the protection of your property.

Did you know?

Utah state law makes it unlawful (a class C misdemeanor) to remove, disturb or destroy any monument without prior notice to the County Surveyor (USC 17-23-14 and USC 17-23-15).

Biographies:

Mark Miller
GIS Coordinator

Salt Lake County Surveyor's Office
2001 S State St Suite N1500
PO Box 144575
SLC, UT 84114-4575
(801) 468-2019
MMiller@slco.org

For the past 15 years **Mark Miller** has held the position of GIS Coordinator for the Salt Lake County Surveyor's Office. Outside of public service he served as a board member for UGIC from 2002-2006. Mark graduated from the University of Utah with a bachelor's degree in Geography with an emphasis on GIS.

Reid Demman is currently serving as your elected Salt Lake County Surveyor. Over the course of a 35-year career, he has been involved in hundreds of surveys and development projects in the Salt Lake Valley. Fourteen of those years have been spent in leadership, management, and an administrative capacity. He is a license Professional Land Surveyor with experience ranging from working on and managing survey crews, to working as an engineering design and review technician, and later, managing and leading engineers, surveyors, and technicians in an engineering office within Salt Lake County Public Works. In November of 2006, he was elected as your County Surveyor, taking office in January 2007. In 2010 he was re-elected to serve a second 4 year term. Prior to being elected he served four years as the Chief Deputy County Surveyor. This past year Reid was honored to be recognized for his leadership in being elected by his peers nationally as President of the National Association of County Surveyors (NACS). He currently lives with his family in Draper and enjoys golf, vintage cars, architecture and photography.

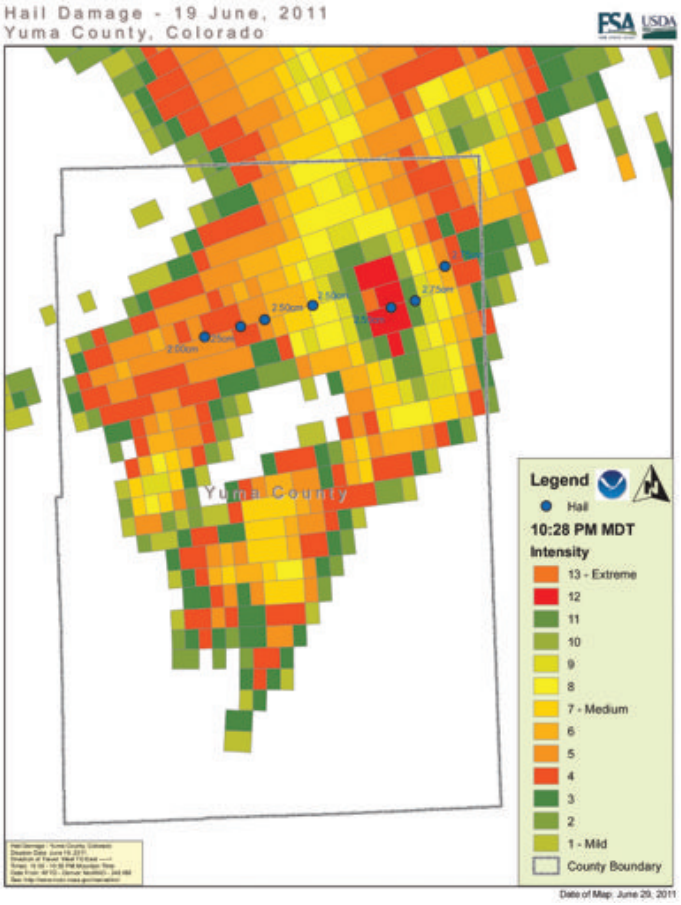
FEDERAL AGENCIES

US Department of Agriculture/Farm Service Agency (USDA/FSA)

Data Sharing by the Farm Service Agency

The US Department of Agriculture/Farm Service Agency (USDA/FSA) manages programs for farmers and ranchers that assist them during times of severe drought, storm or natural disaster. In order to know which farmers and ranchers are covered, the USDA/FSA has created a large database (Proprietary to the USDA) of all the farm lands in Polygon format. This is referred to as the Common Land Unit layer (CLU). The CLU program has been on-going since 2006 and will eventually tie into all USDA/FSA databases showing producers and service center personnel the crop type, irrigation (if any) methods, programs signed up for and etc… Part of this program allows the State office to utilize other data sources such as roads, streams, lakes, shaded relief and every other imaginable layer to use as a reference to provide analysis based on the desire of the operator. Because the CLU data are used for program assistance monitoring, the State of Utah State office has connected with other federal and state agencies which allow us to use their proprietary data. Examples are:

- Bureau of Land Management (BLM) Grazing Allotments
- National Forest Service (FS) Grazing Allotments, road-less areas, roads and trails
- State of Utah State Trustlands
- National Oceanic and Atmospheric Administration (NOAA) NexRAD Radar data



Aside from the GIS aspect of USDA/FSA assisting the Farming and Ranching community, the USDA/FSA also manages the National Agriculture Imagery Program known as NAIP. The facility is here in Utah and is called the Aerial Photography Field Office or APFO. It is located at 2222 West 2300 South in Salt Lake City. Tours can be set up by contacting David Davis at the APFO at 801-840-2933

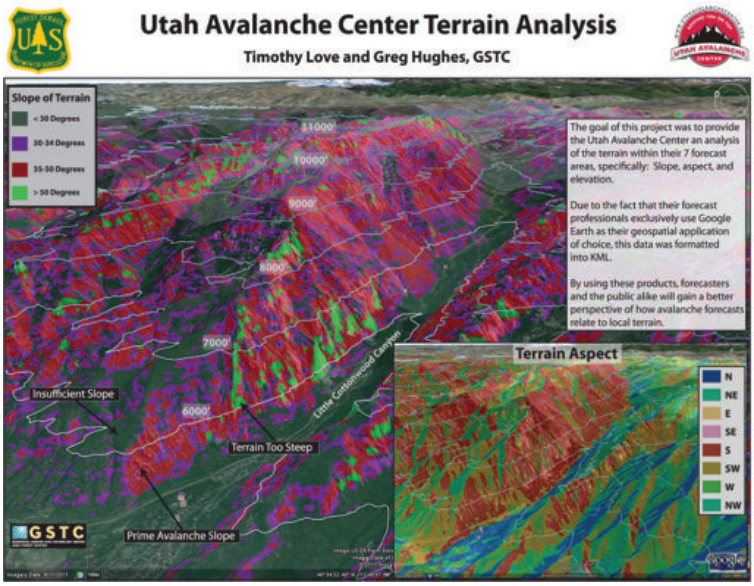
Biography:

Rodney Johnson
GIS Coordinator/Specialist
State Geodata Administrator
State Web Master
SLR/SAAR
Disaster Operations Coordinator

USDA/FarmService Agency - Utah
125 South State Street #3202
Salt Lake City, UT 84138
(801) 524-4535
Rodney.Johnson@ut.usda.go

US Forest Service

Understanding Avalanche Danger with Maps



The U.S. Forest Service Utah Avalanche Center (UAC) issues daily avalanche advisories. This provides critical avalanche information to the public so they can safely recreate in Utah's famous winter snow. Avalanche danger can vary dramatically according to 1) the steepness of the slope, 2) which direction the slope faces (aspect) and 3) elevation. Because of this complexity, it is difficult for the public to visualize which terrain is safe and which is dangerous. A 3-dimensional image is one of the best ways for someone to visualize terrain. We will present a number of online, 3-D maps to help the public visualize avalanche danger by aspect, elevation and slope steepness. These maps were created by the U.S. Forest Service Geospatial Technology and Service Center (GSTC) based on 10-meter Digital Elevation Models from the U.S. Geological Survey and segmented for each of the seven forecast zones of the UAC. Using GIS geoprocessing techniques, GSTC developed the three categories of terrain type, segmented them into appropriate levels, and exported the results into Google Earth KML format. By presenting this geographic information in a standardized format, forecasters and public alike are able to use free visualization tools to view the information in a manner that best suits their needs. The methodology was developed over Utah's forecast areas, but may be applied over all Avalanche Centers' areas of responsibility.

Biography:

Bruce Tremper
Director

Utah Avalanche Center
bruce@UtahAvalancheCenter.org

Bruce Tremper has been the Director of the Forest Service Utah Avalanche Center since 1986. He has published a number of scientific papers on various avalanche topics as well as the avalanche education video "Winning the Avalanche Game" and recently wrote the popular book "Staying Alive in Avalanche Terrain," published by Mountaineers Books. He has been an invited speaker and consultant in Switzerland, Japan, Norway, Canada and New Zealand. He was in charge of coordinating backcountry avalanche safety for the 2002 Olympic Winter Games in Salt Lake City. Finally, Bruce has been featured on over a dozen national and international television documentaries about avalanches including programs produced by National Geographic, PBS, Discovery Channel and regularly appears on many of the national network news programs.

Andrea Rodriguez
Business Portfolio Manager

U.S. Forest Service Geospatial and Technology Center
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arodriguez@fs.fed.us

STATE OF UTAH AGENCIES

Department of Health—Bureau of Epidemiology

Geomapping Analysis and Comparison of *Chlamydia trachomatis* infections among Highly Affected Populations in Utah

Chlamydia trachomatis is the most reported infectious disease in Utah and the United States. Chlamydia infections in Utah have steadily increased over recent years and continue to pose a public health threat, particularly within specific populations. Understanding those most affected using mapping and geographical technologies are assisting State and Local Health Departments in targeting their prevention efforts and interventions.

- Specific Aim 1: Understand geographical and temporal trends of reported Chlamydia infections throughout the state of Utah and identify areas for targeted interventions.
- Specific Aim 2: Understand differences in trends between high morbidity populations geographically.
- Specific Aim 3: Support targeted interventions and further need for services throughout Utah to decrease the spread of Chlamydia infections and prevent complications such as Pelvic Inflammatory Disease.

Biographies:

Matthew S. Mietchen, MPH
HIV/STD Epidemiologist

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Matthew Mietchen, MPH - Mr. Mietchen began working in the STD field in 2008 during an internship with the HIV/STD/Viral Hepatitis Program at the Utah Department of Health. He was trained to be a Disease Investigation Specialist (DIS) and worked in STD Prevention until 2010 when he was hired in the new Communicable Disease Analysis and Reporting Program as an epidemiologist focused on HIV and STDs.

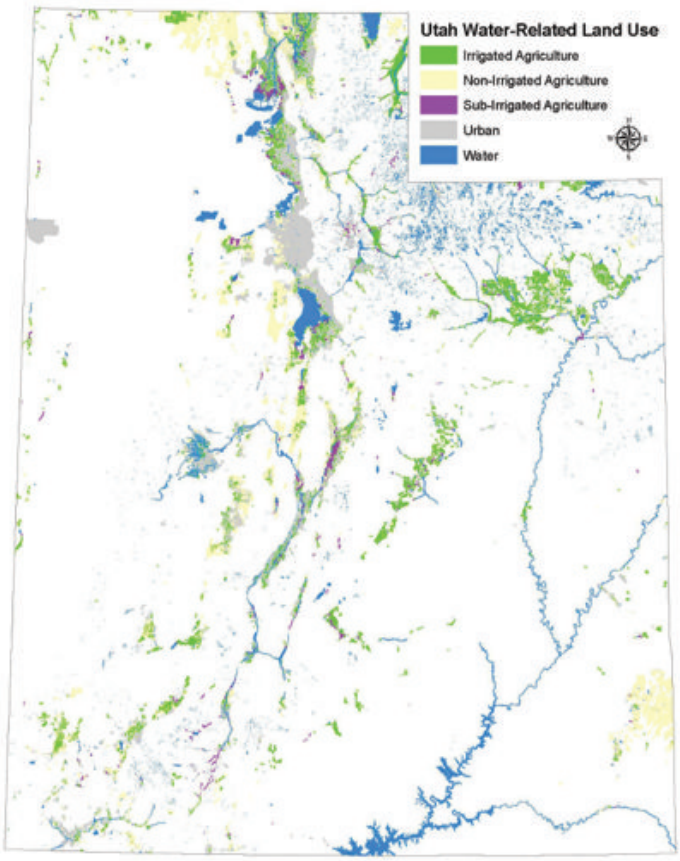
Jerry Carlile, MSPH - Ms. Carlile first started working for the Utah Department of Health in 2003, when she was hired as the epidemiologist for the Tuberculosis Control Program. She began working on the STD surveillance team in 2008.

Erin Hellstrom, BS - Ms. Hellstrom joined the Communicable Disease Prevention Program in 2009 as the coordinator for the STD prevention campaign 'Catch The Answers'. In 2010, she was hired as the STD Prevention Specialist and continues to enjoy working in the Communicable Disease Prevention Program.

Lynn Meinor, RN, MS - Ms. Meinor is currently the Communicable Disease Prevention Program Manager at the Utah Department of Health. Her program's prevention efforts are focused toward decreasing the spread of HIV, STDs, and Viral Hepatitis.

Department of Natural Resources—Division of Water Resources

Utah's Water-Related Land Use



The Division of Water Resources develops a State Water Plan to help coordinate and direct the activities of local, state, and federal agencies concerned with Utah's water resources. As a part of this objective, the Division of Water Resources collects water-related land use data for the entire state. This data includes the types and extent of irrigated crops as well as information concerning dry land agriculture and urban areas.

The data are used for various planning purposes which include: determining cropland water use, evaluating irrigated land losses and conversion to urban uses, planning for new water development, estimating irrigated acreages for specific areas and developing water budgets. Additionally, the data are utilized by many other local, state and federal agencies.

All boundaries of individual agricultural fields and urban areas are precisely digitized. The division uses NAIP imagery and other digital images in a heads-up digitizing mode for this process. Field crews are then sent to label and field-check the data. Each crew uses a GPS unit and a Tablet PC to track the crew's location and digitally edit the data during the field labeling process. Once processed and checked, the data is filed in the SGID maintained by the Utah AGRC.

The division uses 11 hydrologic basins as the basic collection units. County data is obtained from the basin data. The data collected statewide covers more than 2,700,000 acres of dry and irrigated agricultural land. This represents about 5% of the total land area in the state.

Biography:

Aaron Austin
GIS Analyst

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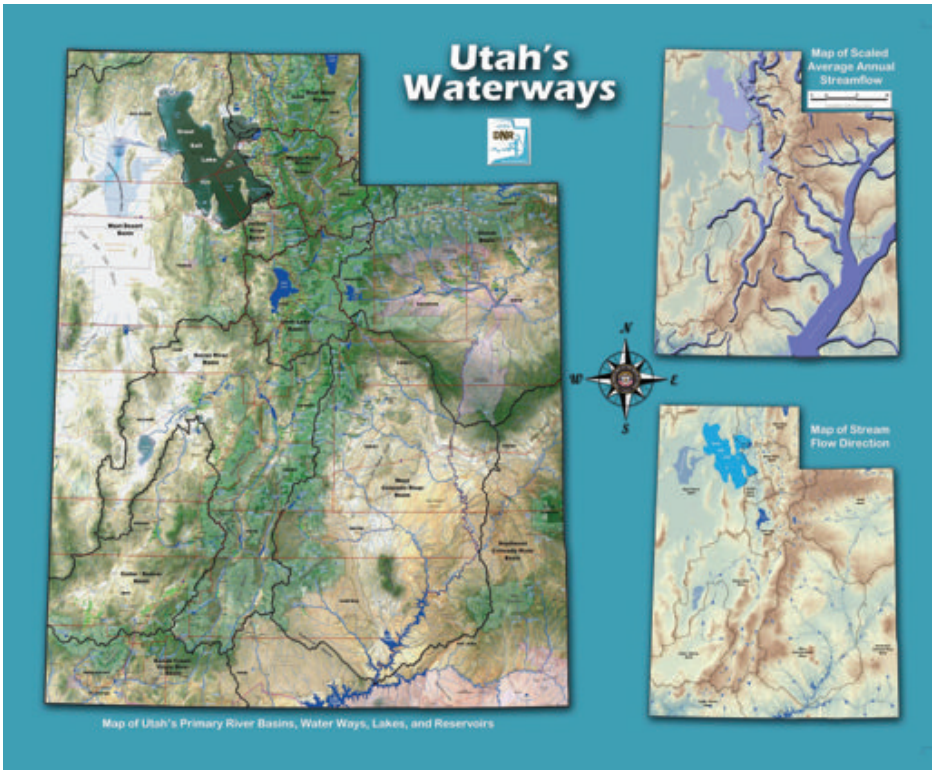
Aaron Austin graduated from Weber State University in 2006 and has worked as a GIS Analyst since that time. He works extensively with the production of the Utah Water-Related Land Use Data, which includes: vector digitizing, editing, field collection, quality-checking, analysis and summary as well as training field crews and assigning digitizing and quality-checking tasks. Aaron is also involved in the planning processes that utilize the data. He works on the team tasked with developing Statewide Water Budget supply and use calculations on a yearly basis and assists engineers that use the data to develop Basin and State Water Plans and Reports.

Utah's Water Ways



The mission of the Utah Division of Water Resources is: **To Plan, Conserve, Develop and Protect Utah's Water Resources.** Utah's water resources play an integral role in the life of every Utahn. From a morning shower to a weekend trip down the Colorado River, water is interwoven into nearly every activity. Use of Utah's water resources has allowed the rugged landscape to be settled, has provided Utahns with numerous employment and recreational opportunities, and has made possible a high quality of life. The far reaching vision of Utah's leaders, coupled with modern engineering technology, has allowed Utah's water supply to be harnessed and used on a large scale. This vision has allowed us to always have this life-giving resource readily available in spite of its relative scarcity in Utah's semi-arid climate.

In order to meet future water needs in the state brought about by growth, Utah must continue to effectively plan, conserve, develop, and protect this precious resource. This collection of maps help us better understand various aspects of our water here in Utah including a detailed view of water features in the state, a "scaled" stream flow map to help us better see how much water is flowing in our waterways, and finally a water directional flow map which helps us better understand the hydrology of our water.

Biography:

Eric Edgley
Technical Services Manager

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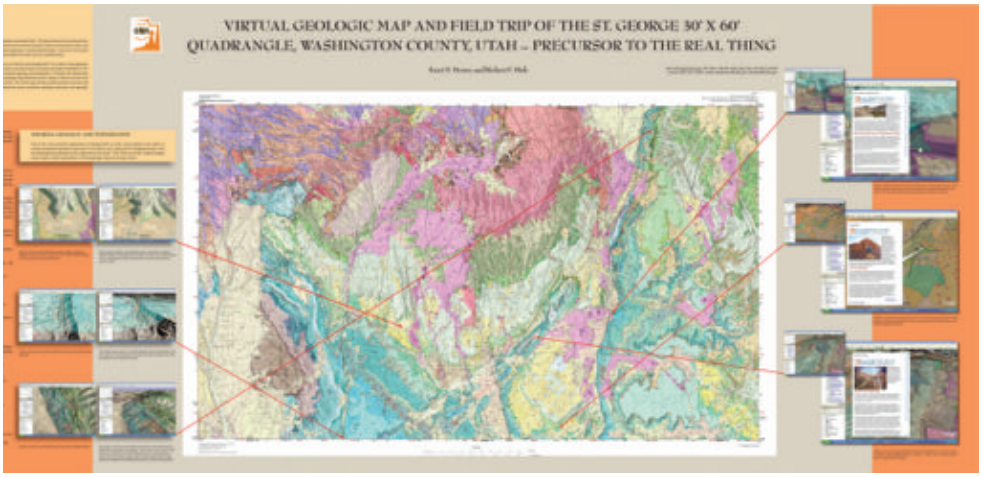
Eric Edgley graduated from Brigham Young University in 1996 and then again from Utah State University in 2001 after completing a Masters' degree in Geography. He has worked at the Division of Water Resources since 1999 as a GIS Analyst and then as a manager of the Technical Services section of the division since 2003. He helps manage various projects that include building GIS datasets for water planning efforts, analyzing terrain data for water system designs, and creating maps for the state's water conservation and education efforts.

Department of Natural Resources—Utah Geological Survey

Virtual Geologic Map and Field Trip of the St. George 30' x 60' Quadrangle, Washington County, Utah



The Utah Geological Survey published the geologic map of the St. George 30' x 60' quadrangle in southwest Utah. The area is known for its extraordinary geologic diversity, rapidly expanding population in a region with significant geologic hazards, and significant tourist economy based in part on several local, state, and national parks created because of their geological significance. This new geologic map displays the regional geology in unprecedented detail. However, while useful to geologists, such standard geologic maps remain largely incomprehensible to many people who could benefit from their use and understanding.

To make it easier for non-geologists to visualize the relationship between the geology and modern landforms, we used Google Earth to create a virtual geologic map and field trip, in addition to our standard map publication. Our virtual map uses a variety of overlays and Google Earth placemarks to present geological highlights of the region, and the 3-D visualization brings maps to life, thus dramatically showing the relationship between geology and topography. Coupled with placemarks that serve to highlight selected geologic features; clickable map features serve to identify geologic map attributes; and a variety of field trip routes that explain the local geology, the geologic map is now useful to a much wider audience. The virtual map will also enable people to preview real field trip routes, stimulating interest in actually getting people outdoors to observe and begin to understand the rocks, landforms, geologic resources, and geologic hazards in the region. ***http://geology.utah.gov/geo_guides/st_george/index.htm***

Biographies:

Kent D. Brown, Lance Weaver, and Robert F. Biek

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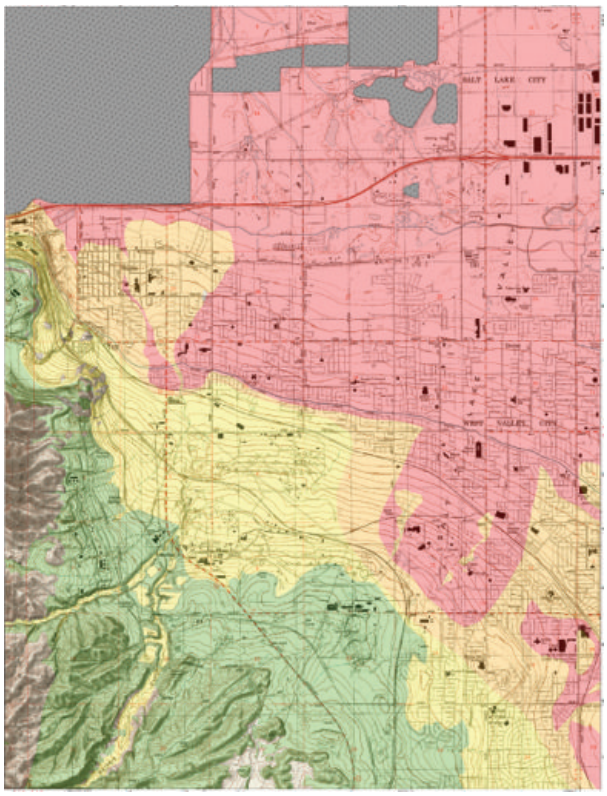
Kent Brown is a GIS Analyst and Photogrammetrist with the Utah Geological Survey's Geologic Mapping Program. He joined the UGS in 1983 with a focus on cartography, geographic information systems (GIS), and development of the program's geologic map publication methods.

Lance Weaver is a Project Geologist working with the Utah Geological Survey's Information Outreach Program. He focuses on Enterprise GIS systems, geologic outreach articles and web applications as well as assisting UGS personnel with various technology needs.

Robert Biek is a Senior Scientist with the Utah Geological Survey's Geologic Mapping Program. Since joining the UGS in 1996 his mapping has focused on southwest Utah and the Wasatch Front.

Geologic Hazards Maps



New development and redevelopment in urban areas along the Wasatch Front is proceeding at a rapid pace; in many areas, geologic hazards have not been mapped to meet the needs of new and evolving geologic-hazard ordinances. Geologic-hazard mapping has begun in areas of high projected growth where recent Quaternary geologic mapping has been completed, specifically the western part of Salt Lake Valley and Utah County. Additional mapping is planned to continue in Salt Lake, Utah, Davis, Weber, Wasatch, Summit, and Uintah Counties.

The geologic-hazard maps, based on 7.5 minute U.S. Geological Survey topographic quadrangles, will address hazards associated with earthquakes, landslides, flooding, debris flows, indoor radon, shallow ground water, rock fall, and problem soil and rock. Maps are being prepared by compiling a geographic information system (GIS) database incorporating available site- specific geotechnical investigation reports, previous geologic-hazard studies, new Quaternary and bedrock geologic mapping, Natural Resource Conservation Service (NRCS) soil data, and field data.

Our final products will be folios of geologic-hazard maps and accompanying text documents that address critical geologic hazards. While site-specific geotechnical investigations should be performed for all development, the maps will identify areas where additional, specialized geologic-hazard investigations are necessary prior to development as well as provide information that may be used for emergency planning and community risk assessment for existing home and business owners. The Utah Geological Survey will provide copies of the published maps to local governments within the study areas, and will work with communities as requested to help prepare geologic-hazard ordinances.

Biography:

Jessica J. Castleton
Geologist, Hazards Mapping

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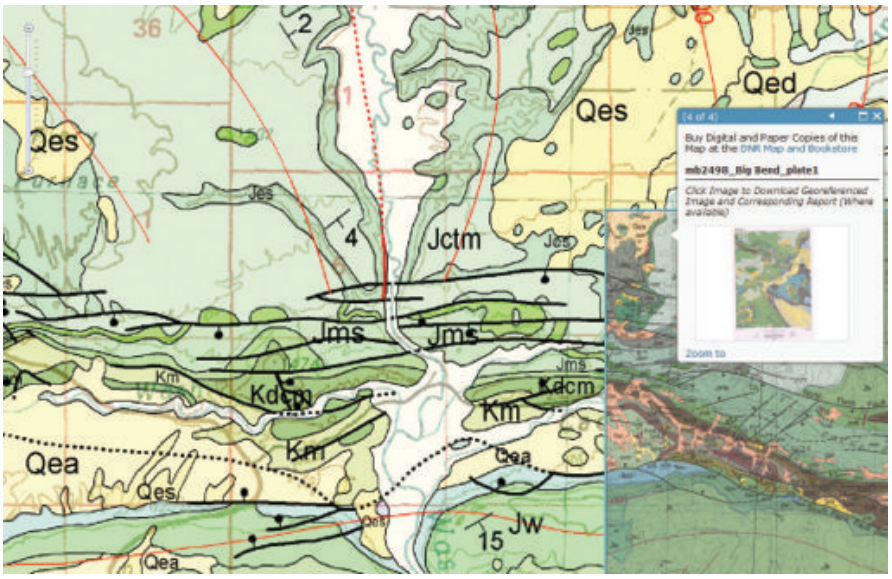
Jessica Castleton is a geologist for the Utah Geological Survey in the Geologic Hazards Program where she creates geologic hazard maps and conducts geologic hazards monitoring. She received her B.S. Degree from Weber State University and worked in consulting before being hired by the UGS. She enjoys running, cycling, cross country skiing, paddling, live music, traveling and long road trips.

Utah's Geologic Maps Online



Prior to now, Utah's geologic maps were difficult for the general public to view in a user-friendly interface. They were always available to view in both paper and digital formats; however, this was generally done one map at a time, making it difficult to find the correct map and spatially orient yourself. With the advent of ArcGIS Server, displaying Utah's geologic maps online is now possible with this online application. A seamless mosaic of each geologic map draped over the user's choice of base map provides a simple viewing interface. The application's map scales range from 1:500,000 (less detail) to 1:24,000 (more detail). All of Utah's geology is mapped at a minimum scale of 1:250,000, while much of the state's geology is mapped at a more detailed scale. While zooming in with the application, maps of greater scale will begin showing up where they're available. This map is also available to both Android and iPhone users who download the ArcGIS app. Viewing this map from your phone unlocks the capability to tell you exactly what geologic formation you're standing on. Later versions of this application will give the user expanded capabilities. Allowing the user to click and learn about Utah's geologic formations, and the ability to download high quality geo-referenced images along with their full report are two perks to look forward to in the future.

Biography:

Marshall Robinson
Geologist

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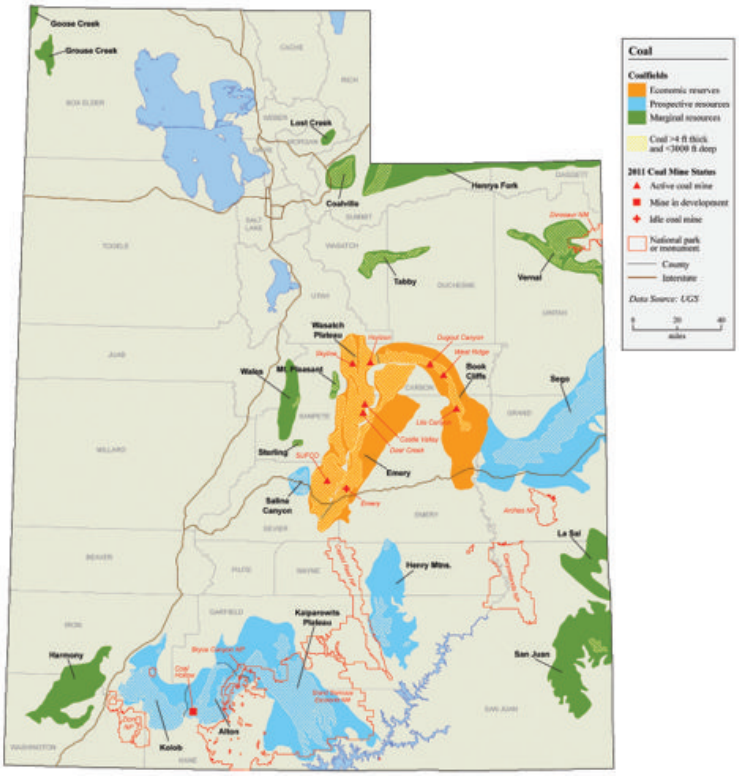
I am native to the Pacific Northwest, and grew up in southwestern Washington. I studied geology at Brigham Young University, where I graduated in 2007. I have been married for almost 6 years, and have a 3½ year old daughter. My family moved to Clovis, California in early 2008 where I worked as a geologist at BSK Associates. We returned to Pleasant Grove, Utah where I now work for the Utah Geological Survey as a geologist.

Utah's Energy Resources and Infrastructure Map



Utah is fortunate to have the abundant resources necessary to provide affordable and secure energy now and in the future. Having a firm grasp on the location of various energy resources, as well as current infrastructure, is the first step towards proper and prudent management and development. Recently, the Utah Geological Survey released Utah's Energy Landscape, a publication offering a comprehensive illustrated description of Utah's entire energy portfolio. Together with numerous graphs and facts describing various energy statistics, this publication includes a series of maps showing locations of Utah's conventional and unconventional energy resources, areas potentially suitable for renewable energy development, and locations of energy infrastructure such as power plants, pipelines, and processing facilities. Identifying where Utah's energy commodities are located is vital for future infrastructure planning. For example, a concentration of potential renewable energy sources, including wind, solar, and geothermal, can be found in southwestern Utah in Millard, Beaver, and Iron Counties. The proximity of these renewable energy sources could benefit their future development by simplifying needs for new infrastructure.

On display will be several state-wide energy maps including fossil fuel resources (oil, natural gas, and coal), renewable resources (wind, solar, and geothermal), unconventional resources (oil shale, tar sands, and uranium), and energy infrastructure (power plants, transmission lines, pipelines, processing facilities, etc.). Copies of Utah's Energy Landscape will also be available.

Biography:

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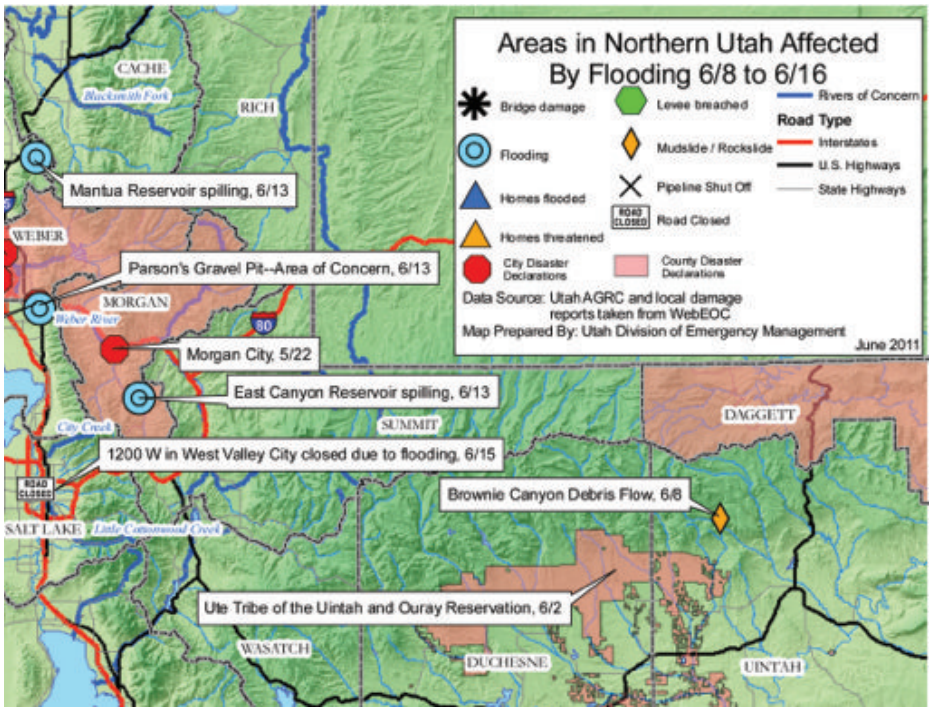
Michael Vanden Berg has worked in the Energy and Minerals program of the Utah Geological Survey for over 8 years. He has degrees in geology from Calvin College (B.S.) in Grand Rapids, MI and the University of Utah (M.S.). Michael specializes in the geology of conventional and unconventional hydrocarbon deposits of the Uinta Basin, but also studies energy in Utah as a whole and how it relates to Utah's economy (including writing the Energy chapter for the Economic Report to the Governor).

Department of Public Safety—Division of Emergency Management

Response and Preparedness to Major Disasters in Utah

Recent events have shown the destructive power that natural disasters can cause throughout the state of Utah. The Utah Division of Emergency Management continually works to assist Utahns in preparing for, responding to, recovering from and mitigating the effects of natural disasters. This set of maps highlights the extent of two of the predominant hazards in Utah: flooding and earthquakes. One map examines the damages of two flooding events statewide in the past year, while the second map shows some of the destructive power of a potential major earthquake along the Wasatch Front.



Biography:

Josh Groeneveld
GIS Planner

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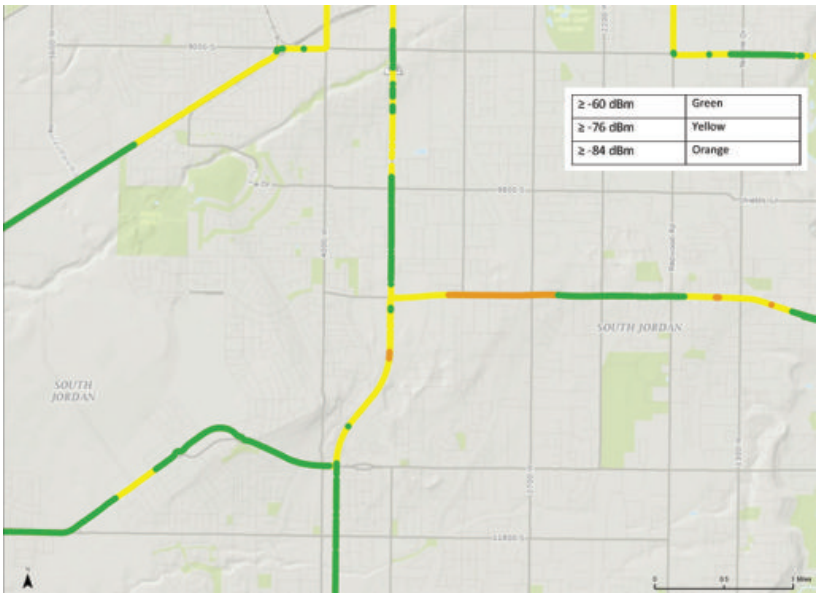
Josh Groeneveld is a GIS Planner for the Utah Division of Emergency Management. He started as an intern in September of 2010 and was hired full-time in June 2011. He holds a bachelor's of science in geography from Western Michigan University and a master's of science in geography from the University of Utah.

Automated Geographic Reference Center (AGRC)

Mapping Utah's Mobile Broadband Availability

In July of 2011, Isotrope LLC, a subcontractor for the Utah Broadband Project (UBP) drove over 6000 miles of targeted Utah roads collecting cellular and mobile broadband availability data. With 6 smart phones (one for each of the major carriers) mounted in a roof-top storage box and connected to a logging device, a wealth of data on speed, signal strength, and technology platform was collected to support the broadband planning component of the UBP. The data was also shared with the major carriers and is available to other interested parties upon request. These maps highlight some of the resulting data, and its relevance to other related endeavors such as broadband infrastructure planning and emergency response.



Biography:

Christy Heaton

Automated Geographic Reference Center
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(801) 538-3037
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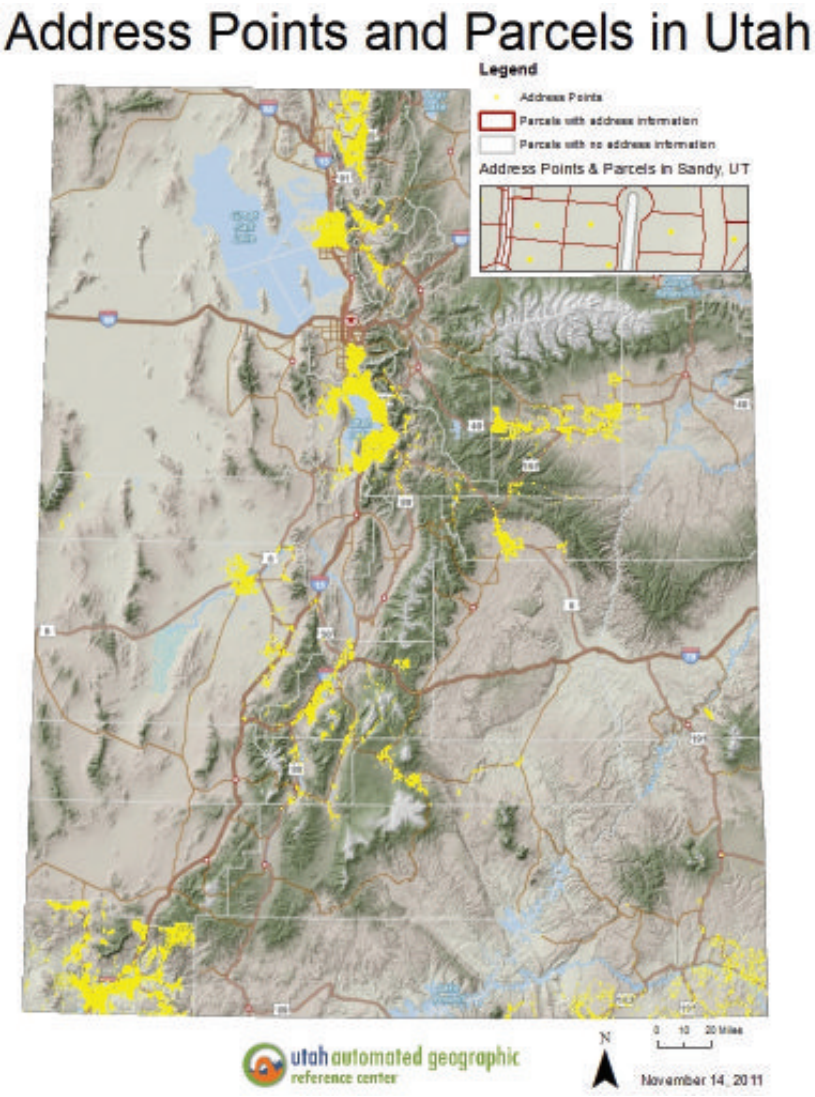
Christy Heaton graduated from the University of South Dakota with majors in Anthropology and Spanish. After spending a year abroad she moved to Utah and got a GIS certificate from the University of Utah. She's worked for the AGRC for 2 years and has been involved in various projects such as State History, State Broadband, and Utah Redistricting.

A Statewide Address Point Resource

Address point data has gained traction in recent years in the mapping community. Address points are used to most accurately locate address locations. In many ways, address points are one of the most important facilitators for integrating information across organizations. Emergency response, election management, service optimization, fraud detection, and location services are just a few of the application areas. AGRC's current efforts to support a statewide address dataset include: county grants, integration of address location management into VISTA (the state's voter and election management application) statewide address locating services, emerging best practices, and forthcoming opportunities.



Biography:

Jessie Pechmann

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Jessie Pechmann graduated in 2009 from Beloit College in Wisconsin with a degree in Anthropology. While studying abroad her junior year in Tanzania, Jessie taught herself GIS as part of a research project. Upon returning to the states, Jessie took classes in GIS and started with AGRC in August 2009. Since then, Jessie has completed a GIS Certificate at the University of Utah and is now full time with AGRC. She's been involved with ongoing addressing improvement efforts as well as projects with State History and the Utah Broadband Mapping Project.

GIS-Enabling Utah's Voter and Elections Management Database

The Utah Lt. Governor's Elections Office made a decision in early 2011 to develop a geospatial approach to voter-precinct assignments within the statewide voter and elections database (VISTA). This approach incorporates mapping technologies with voter precincts and voter addresses. The foreseen advantages were:

- Improving quality control related to re-districting and re-precincting for the 2012 election cycle.
- High-accuracy dataset precincts of to reduce the potential for boundary conflict.

These maps illustrate AGRC's involvement in Elections Management, which includes mapping support for counties and maintaining a statewide website showing Utah's political boundaries.

Biography:

Bert Granberg

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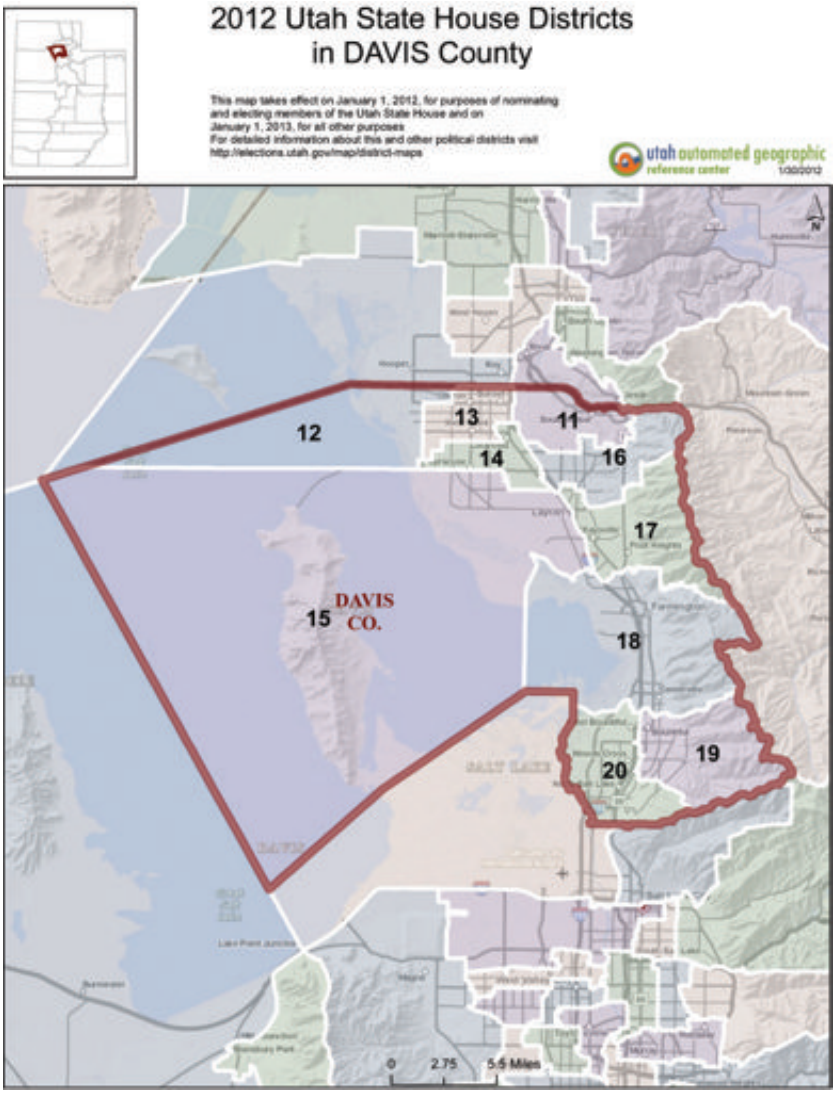

Utah Terrain Base Map service

The Utah Terrain Base Map service is one of several thematic base map web services maintained by the Automated Geographic Reference Center (AGRC). Intended to provide a detailed terrain-themed reference, the Utah Terrain Basemap is accessible as a service to mappers and web application developers. The Terrain Base Map and its thematic base map service siblings are currently utilized by web applications for Utah's Departments of Transportation, Natural Resources, Agriculture and Food, Environmental Quality, and Health, as well as the Governor's Office of Economic Development, Office of Elections, the State and Institutional Trust Lands Administration, and Salt Lake City. All geographic features shown on the Utah Terrain Basemap are rendered directly from geospatial data housed in Utah's State Geographic Information Database (SGID). The SGID data repository, formalized in State statute in 1991, consists of hundreds of layers of geospatial data compiled by AGRC in close coordination with local, state, and federal government and private sector partners.

Biography:

Zach Beck

Automated Geographic Reference Center
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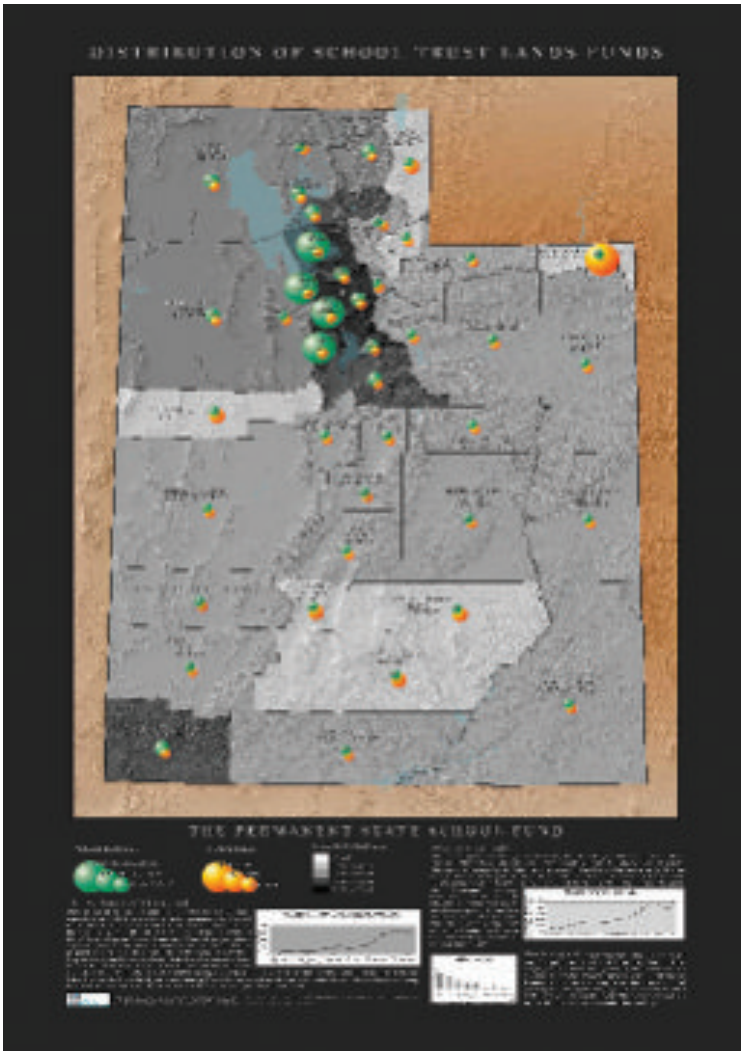
zbeck@utah.gov

School and Institutional Trust Lands Administration, SITLA

The Distribution of Trust Lands School Funds



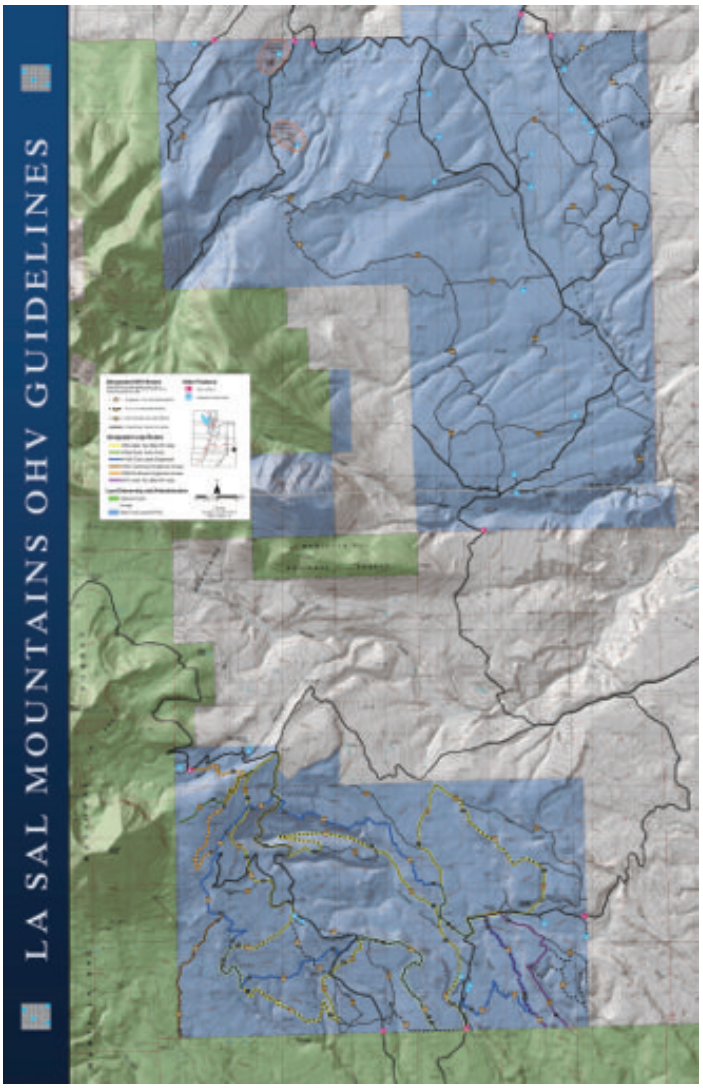
There are 3.3 million acres of school trust lands in Utah. These lands generate revenue, all of which is saved in the permanent State School Fund. This fund is invested and the interest and dividends are distributed to every public school in the state through the School LAND Trust Program. School Community Councils prepare plans, approved by local school boards that identify an academic need and a proposed solution using the annual dividend. The School LAND Trust Program is responsible for distributing School and Institutional Trust Lands Administration (SITLA) funds to the individual school districts throughout Utah. Each school district receives an equal distribution of 10% of the available funds allocated through the Minimum School Program ACT each fiscal year. The remaining 90% of the funds is distributed on a per student basis, with each district receiving its allocation based on the number of students in the district as compared to the state total.

This map displays, using 3D symbology, the distribution of the permanent school trust fund, on a 2D platform. The 3D spheres on the map represent total funds received per school district and total per student spending for fiscal year 2009. The spheres display the data in a graphical design that shows the vast difference in distribution of district funds based on proximity to major population centers around the state. The spheres were selected in lieu of typical pie charts or bar graphs to enhance the visual depth and overall attractiveness of the map. The Map is a successful attention grabber that creatively displays an otherwise uninteresting subject; a subject that is commonly shown in a spreadsheet.

The U.S. Congress, in exchange for not taxing federal land, gave lands to Utah schools at statehood. The lands are held in a legal trust for our public schools. Schools own 3.3 million acres. The lands are managed by the School and Institutional Trust Lands Administration (SITLA) and must, by law, be used to generate money for our public schools. The money is put in a permanent savings account, which is never spent, but invested by Richard Ellis, Utah's State Treasurer. An Investment Advisory Committee appointed by education representatives act in an advisory capacity to the State Treasurer. The interest earned from the permanent fund now goes to each school in the state. Each school will get its share of the trust lands money.

Elected parents, elected teachers, and the principal serve on the School Community Councils. Plans are prepared to address their greatest academic need with the dividend. Local School Boards approve the plans, and funding is sent to each school with an approved plan before the school year begins. Funding for the program has increased to $27.1 million in the 2008-09 school years. For more information please visit ***www.schoollandtrust.org*** and ***utahtrustlands.com***

Utah State Trust Lands—La Sal Mountain Blocks OHV Travel Map and Recreational Guidelines



The Utah School and Institutional Trust Lands Administration (SITLA) launched an OHV pilot program, Fall 2010, in the La Sal Mountains with a simple bottom line: off-highway vehicle users can protect their privileges by using designated trails The pilot program will mitigate significant resource damage caused by OHVs. A 2009 road inventory showed a 40 percent increase in motorized trails on SITLA's La Sal Mountains since the mid-1990s. In response to this increase, designated OHV routes have been selected to restore damage caused by poorly located and unnecessary off-road-motorized travel. The plan restricts travel to designated routes for all motorized travel. OHV routes are divided into three classes: ATV (width 52" or less), single-track (width 26" or less) and All Motorized Vehicles, (Routes which do not have a designated width class, provided that the vehicle width does not exceed the existing disturbed travel surface of the route). This travel map will be placed at 10 informational kiosks, which are located at key entrance points to the two large SITLA land blocks. Signage and trail work will be completed over a three-year period beginning in summer 2010.

Biography:

Jessica Kirby, GISP
GIS Manager

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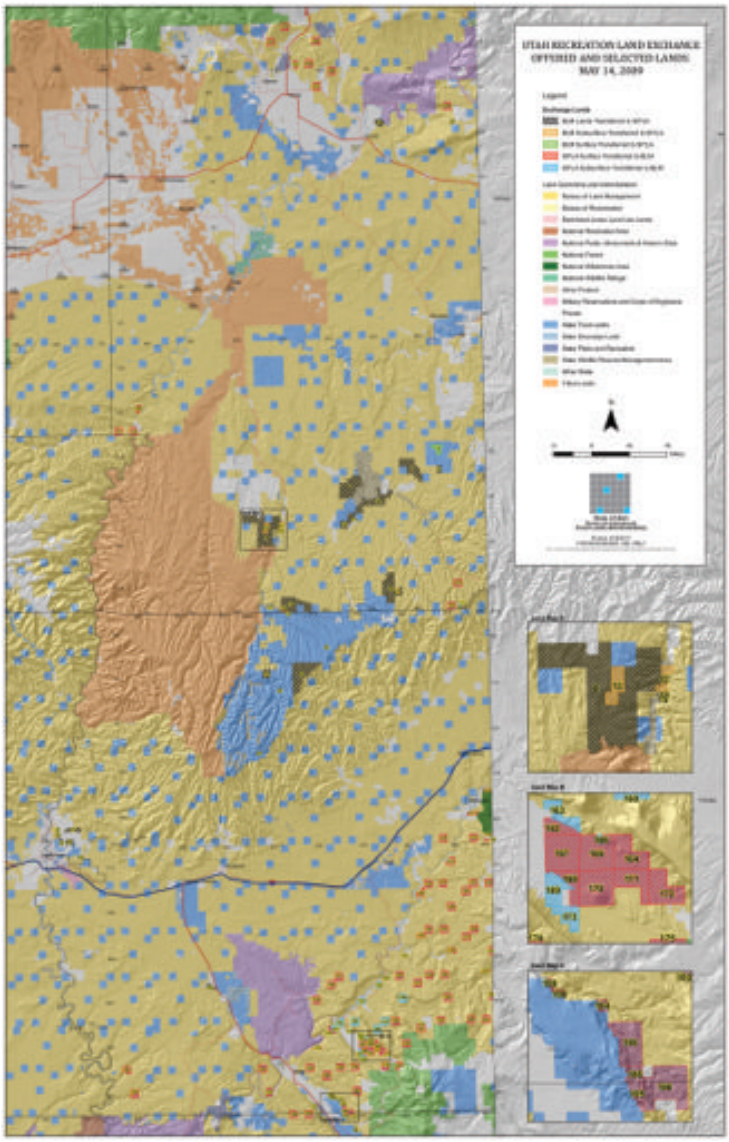
Jessica Kirby is the GIS Manager for the State of Utah School and Institutional Trust Lands Administration (SITLA); she has worked with the agency since 2005. Before joining SITLA she worked as a lead Remote Sensing Analyst on the Southwest REGAP vegetation project at Utah State University. She graduated from Colorado State University with a Bachelor of Science Degree in Natural Resource Management and is a certified GIS professional, GISP. She has received numerous awards for her work in GIS, including being recognized as an outstanding employee by former Governor John Huntsman Jr. and has been featured in Volume 26 of the ERSI Map Book. Originally from Colorado, she moved to Utah in 2000 with her husband to pursue his education; 11 years later Utah is their home; Shortly after seeing the Wasatch Mountains, the decision to stay in Utah was easy. She is a mother of two (ages 4 and 7 months), is passionate about the outdoors and spends most of her free time hiking, skiing or discovering new places to "get away" with her family.

Utah Recreation Land Exchange



The purpose of this map is to depict the offered and selected lands included in the Utah Recreation Land Exchange. The Bureau of Land Management (BLM) and the State of Utah School and Institutional Trust Lands Administration (SITLA) are involved with this Exchange. The offered and selected lands shown on this map are based on two official maps produced by the BLM (May 14, 2009).

The Utah Recreation Land Exchange involves approximately 35,000 acres of BLM land (surface and subsurface) and approximately 45,000 acres of SITLA land (surface and subsurface). The offered and selected lands lie within Uintah, Grand and San Juan Counties.

The BLM and SITLA have assigned a number to each parcel of selected land. Each parcel has been labeled on this map according to its parcel number for clear identification. Clusters of parcels or parcels that are small in size have been identified on the map by using inset maps.

Biography:

Kate Staley
IT Analyst I

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I currently work as a GIS Analyst for the State of Utah School and Institutional Trust Lands Administration (SITLA). I have worked with SITLA for 5 years. I started with SITLA as an intern in June of 2006 and was hired on full time a year later. I graduated from the University of Utah in May of 2006 with a Bachelor of Science in Geography. In May of 2007 I received an Applied GIS Certificate from the University of Utah.

Utah Department of Transportation

GIS Mapping at UDOT

UDOT uses GIS and Maps to solve daily business needs. From our state highway map, Commuterlink, and planning applications geospatial information and solutions helps us make the transportation system better for Utahn's. For this event, we will display some of our current and historical hard copy maps as well as web based GIS products and databases. We will present how UDOT uses GIS and how we are attempting to interact with other State Agencies on a geospatial level.

Biography:

Frank Pisani
GIS Manager

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