

Willard Bay Settlement Request for Proposals

Description of the Mitigation and Education Project Utah State University

Introduction

Utah State University has crafted a strategy that will improve watershed ecosystems in Northern Utah through restoration and education projects in 3 locations owned or affiliated with Utah State University: Utah State University Botanical Center (Kaysville), Thanksgiving Point (Lehi) and Swaner Eco-Center (Park City). Locations were selected based on need for water quality improvements, high visibility to the public and established education programs in place. This project will connect the public with the watershed improvements and further educate about how citizens can make a positive difference in water quality and conservation.

Objectives:

Improvements at each of the physical locations to improve water quality and education opportunities

Expand the incorporation of existing USU Extension Water Quality education materials and programs into the offering at each of the three locations.

Demonstrate to the public the positive impact of watershed restoration through signage, exhibits and programs in high visibility locations along the Wasatch Front.

Use facilities as recruitment and training locations for additional citizen science programs like Utah Water Watch

Locations and Programs

USU Botanical Center Kaysville, UT

The Utah State University Botanical Center (USUBC) is a one hundred-acre environmental learning facility located in Kaysville, dedicated to helping all generations enrich their quality of life by conserving natural resources.

The Utah State University Botanical Center offers adult education, for-credit classes, and a comprehensive field trip program for elementary school children in Northern Utah. These unique, hands-on field trips are designed to fulfill the detailed requirements of the Utah State Office of Education Core Curriculum specific to grade level. Since 2005, over 30,000 students have participated in the environmental education field trip program at the USUBC.

The USUBC also includes over 25 acres of open water in four ponds. These ponds served as stock ponds for livestock and farm irrigation. Over time, Kaysville City directed water into the ponds and they now serve a critical role in the city's stormwater management plan. Water entering the ponds is high in nitrates and phosphates from the watershed upstream. Water flows through the ponds, then passes under I-15 and then travels to the marsh on the eastern shore of the Great Salt Lake.

Installations of water-conveyance structures as well as deepening the ponds and creating more wetland edge have improved water quality and stormwater management conditions. In addition, the ponds serve as an urban fishery, providing passive outdoor recreation opportunity to thousands of users.

In an effort to further improve water quality as well as develop additional educational opportunities, the USUBC has constructed a riparian stream environment upstream from the ponds. This project is designed to circulate water through the ponds, while introducing additional fresh water and stormwater, when available.

The stream project is approximately 3000 feet long and over 100 feet wide – comprising over six acres of property. Water will flow through the stream, enter the north UBC pond, move to the center UBC pond, and be pumped back to the wetland bio-filter near the west end of the stream project. Thus, increased flow and improved water quality in the UBC ponds will be achieved. This design allows for water quality improvement while minimizing pumping costs due to shortened pumping distance and reduced vertical elevation change.

Additionally, the stream will serve as an attraction for visitors and a great water quality educational tool to realistically demonstrate a small stream condition similar to the many streams that bisect the foothills and valley floor in northern Utah. This is very meaningful because of the public access available at the USUBC combined with the interpretive opportunities to teach people about the value of streams and riparian environments in arid environments, importance of stormwater management, and the interconnected relationships of natural systems.

To date, over \$350,000 has been invested in the stream project. Major earthwork and erosion control are complete. Pumping and piping systems have been installed. The stream can be turned on and functioning within a few hours. A graduate student thesis was funded and a site plan was developed for the stream that includes six plant community types to be demonstrated as well as circulation and interpretive locations.

The USUBC is now ready to move forward with the next phase of the stream project, which includes:

Fine grading: Refinement of existing coarse grading to best demonstrate different plant community types, accommodate ADA-compliant paths, and highlight stream and water quality education themes.

Trails/paths: One side of the stream to accommodate service vehicles, hard surface. Other side, narrower, soft surface.

Stream enhancement: Development of pools, small falls, ox bows, wider and narrower areas to simulate natural stream conditions.

Irrigation: Simple irrigation system to accommodate basic water requirements for establishment of native planting along the stream corridor that incorporates six different plant community types (riparian and upland examples of Mid-mountain, Foothill, and Valley Floor).

Plantings: Initial planting will be of “cabin mix” grasses for initial establishment and weed control. Then, native trees and shrubs will subsequently be added.

Bridges: Several stream crossings to accommodate and facilitate the visitor experience along the stream. Also accommodates service access

Interpretive signage – Education “nodes” and interpretive signage that coordinate with thematic messaging at other USU locations.

Thanksgiving Point Lehi, UT

The Jordan River flows through Thanksgiving Point. The project will restore wetland habitat and increase capacity for water quality education. Utah County has recently completed a number of improvements to the area adjacent to the Jordan River Parkway. These include addition of public restrooms, a pavilion that can be used for a variety of gatherings, and soon an east-west trail that will connect to the Jordan River Parkway. Thanksgiving Point has been identified in the Blueprint Jordan River planning documents as an area that could support a variety of recreation activities related to the Jordan River. It is strategically located by a UTA Front Runner Station, a mix of residential and commercial that utilizes the Parkway and a variety of educational offerings.

Adjacent to the Parkway is approximately 5 acres of wetlands owned by Thanksgiving Point. The restoration project request will rehabilitate these wetlands through dike repairs, removal of invasive species, planting native vegetation, habitat improvement and installation of boardwalk and interpretive signage. Education experiences will be designed for users of the Parkway as well as the school field trips and informal education activities that Thanksgiving Point provides. Additional water education activities will happen across the various museums at Thanksgiving Point including the newest museum, Natural Curiosity that includes one gallery with an educational focus on water. The “Waterworks” exhibit allows guests to learn about watershed, manipulating a 3-D watershed map, move water from location to location and participate in video and live presentations on the “Stage at Waterworks”.

The wetlands area are about two thirds choked with *Phragmites australis*, it will be eradicated before planting and construction begins. The submitted sketches (supplemental) show ideas for a zig-zag boardwalk to access the shallowest part of the south end of the wetland and a boardwalk to a bird-viewing pavilion on the north point. A Binocular Tower Viewer could be placed in the pavilion.

After removal of the phragmites, beneficial wetland plants for northern Utah can be planted including: Cattails, *Typha* sp. Cattails grow in dense clumps in freshwater marshes and are restricted to where the water depth does not exceed 2.6 feet. Duckweed (there are several Genera) Duckweed absorbs toxins which might find their way into the water and are beneficial food for fish. Baltic Rush, *Juncus articus* spp. littoralis, Baltic Rush is alkaline and saline tolerant and serves as erosion control where water flows through drainage ways. Arrowgrass, *Triglochin maritima*.

The Central Utah Project has all ready contributed to the “Waterworks” indoor exhibit and has committed to assist the project with assistance of repairs to the wetland dike and removal of invasive

species. Water quality improvements will be showcased indoors in the Waterworks exhibit as well as outdoors at the Jordan River.

Thanksgiving Point, USU Extension 4-H and USU Extension Water Quality will pilot a strategy that has been successful in other states to recruit teens to water quality monitoring underwater Remote Operated Vehicles (ROVs). Sea Perch ROVs, made from PVC pipe, small propellers, etc will be equipped with water quality sensors and a simple data logger to collect water quality information.

(http://www.seaperch.org/page.php?identifier=news&article_id=344)

Swaner Eco-Center Park City, UT

Overview of Swaner Preserve: The Swaner Preserve permanently protects nearly 1200 acres of open space including an historic farm, 800 acres of valuable wetlands, miles of streams, and diverse wildlife habitat. The Preserve also includes nearly ten miles of trails that are open to the public for mountain biking, hiking, and snowshoeing. Over 100 species of birds and nearly 50 species of wildlife can be found on the Preserve.

Request: The Swaner Preserve and EcoCenter will study and design in stream flows for East Canyon Creek through the Swaner Preserve in Park City. This new in stream flow allocation will enhance wetland ecosystems on the 1200 acre Swaner Preserve and maintain stream ecosystems of East Canyon Creek. The project will be led by Professor Sarah Null in the Department of Watershed Sciences at Utah State University, graduate students and Swaner personnel in partnership with the Snyderville Basin Water Reclamation District and the Weber Basin Water Conservancy District.

The primary objective of this project is to study and design in stream flow allocations during low stream flow conditions that can enhance wetland ecosystems on the Swaner Preserve while simultaneously providing flow to dilute endocrine disrupting chemicals (EDCs) from the East Canyon Water Reclamation Facility. A secondary goal is to educate the public about the critical nature of water flows to the health of the Swaner Preserve and East Canyon Creek. Enhancing in stream flow through the Swaner Preserve will improve the health and function of wetland and aquatic habitats in the Swaner Preserve while improving water quality problems and resulting biological effects in fish communities downstream.

East Canyon Creek, located near Park City in northern Utah, provides habitat for sensitive aquatic species, including native Bonneville cutthroat trout and non-native brown trout. The Snyderville Basin Water Reclamation District's (SBWRD) East Canyon Water Reclamation Facility releases treated water to East Canyon Creek. Ongoing research indicates that low in stream flows in East Canyon Creek do not adequately dilute wastewater effluent from the treatment facility, despite tertiary treatment (Luers, pers.comm.). As a result, elevated hormone levels occur in fish species from EDCs present in treated water. During summer and autumn low flow conditions, treated wastewater can comprise approximately 80-90% of flow. In contrast, during high flow conditions, treated effluent is only about 20% of natural flow and trace organic compounds which lead to elevated hormone levels are undetectable in fish samples (Luers, pers. comm.).

Park City and the surrounding area in Summit County have experienced rapid growth and development over the past three decades, with a tourist population that far exceeds permanent residents. Tourism

generates over \$1.6 billion for Summit County (Wikstrom Economic and Planning Consultants, Inc. 2009) and fishing and viewing wildlife are major recreation and tourist attractions. As population and tourism have increased in and around Park City, the volume of treated wastewater effluent has risen while in stream flows in East Canyon Creek have steadily decreased. The lowest 7-day average flow that occurs every 10 years (7Q10) has decreased from more than 16 cfs prior to 1990 to less than 2 cfs in the past decade. Although water from SBWRD's East Canyon Water Reclamation Facility is treated for discharge into the environment (including removing phosphorus from wastewater – for which a total maximum discharge load has been established in this watershed), stream water quality during critically dry periods has worsened because the proportion of treated wastewater to stream flow has increased. East Canyon Creek is becoming drier and wastewater that has been treated to regulated standards is causing cascading water quality problems and biological effects in aquatic organisms. *The work proposed here evaluates the potential to dilute toxic chemicals from treated wastewater in streams by increasing in stream flows into East Canyon Creek through the Swaner Preserve.*

The 1,200 acre Swaner Preserve and EcoCenter, owned and managed by Utah State University, is directly upstream from the East Canyon Water Reclamation Facility. The Swaner Preserve is managed to protect natural resources, maintain healthy ecosystems, and provide a place for people to interact with their landscape. In recent years in stream flow in creeks and wetlands on the preserve has been declining due to upstream urban development. This impacts the health, function, and long-term sustainability of wetland and aquatic ecosystems. The Swaner Preserve presents an opportunity to study and design in stream flow prescriptions for critically dry periods that will have dual objectives of improving aquatic, riparian, and wetland habitat on the preserve while diluting the proportion of treated wastewater released downstream in East Canyon Creek. The Swaner Preserve also provides a promising mechanism to implement in stream flow prescriptions.

Water Quality Monitoring at Each Location

The BMPs to be implemented at the three sites included in this proposal are intended to improve water quality and associated beneficial uses downstream and to inform the public on the importance of fully functioning stream systems. USU Water Quality Extension (WQE) will work with each of the partners in this project to clearly identify restoration objectives and to establish monitoring plans that will determine whether the site specific objectives have been met. WQE will follow the procedures established, which calls for monitoring to be an explicit part of the restoration project, extending from the early planning stages well past actual project completion. Through this approach, we will be able to document the success of the projects.

Specifically, WQE will provide the following services

Create a monitoring plan for each of the 3 restoration sites. Provide the equipment and training for project personnel or UWW volunteers to effectively monitor these sites. Manage, store and summarize or graph the water quality and other data for easy interpretation. To the extent possible, make these data available to the public through our UWW online database. Produce summary and final reports on monitoring results and will these publically available.

Placed Based Education Linked With High Quality Education

Watershed restoration and improvements will be coupled with a robust and education and outreach program provided by Utah State University's Water Quality Extension Team. Each location has established programs for K-12 schools and out of school time programs ex camps, afternoon/evening classes and public education displays. Water Quality Extension (WQE) provides educational and technical support for water quality projects and efforts throughout the state. They provide training and technical support for UDWQ and other agencies, local watershed coordinators, and local citizens on how to monitor restoration projects to determine their impact and effectiveness.

WQE also has developed educational and outreach materials and approaches on how best to inform the public about the value of water quality protection and stream restoration. The successful Utah Water Watch (UWW) program has empowered local volunteers to monitor water quality and collect credible data for watershed management. WQE has developed and assessed experiential curricula for teachers and informal educators (such as Stream Side Science) that encourage active discovery and exploration of streams and their watersheds. WQE has developed interactive displays and signage about specific water quality projects that can be easily modified for other watersheds and situations. Finally, we maintain a content rich website.

Conclusion

Utah State University respectfully requests:

\$476, 205 USU Botanical Center

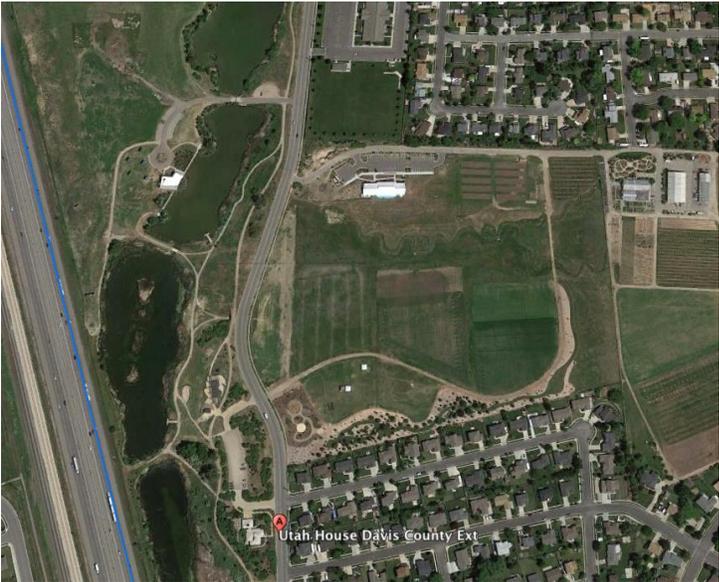
\$75,643 Swaner Preserve

\$210,000 Thanksgiving Point

\$87,000 USU Extension Water Quality Programs

Total Request: \$924,491

Supplemental Documents

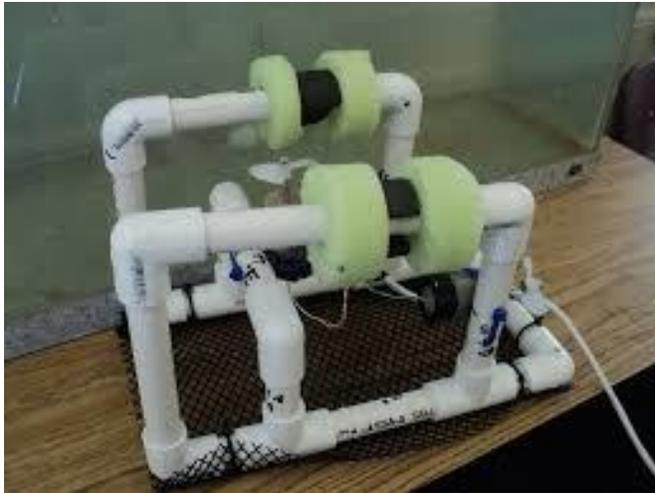


USU Botanical Center Kaysville, UT





East Canyon Creek with wetland ecosystems on the Swaner Preserve



Sea Perch ROV for Use for Water Quality Monitoring For Teens



Thanksgiving Point Wetlands and Jordan River Parkway



Thanksgiving Point Wetlands Proposed Walkway

Sample Team Vitas

DAVID THOMAS ANDERSON

Director, Utah State University Botanical Center

4870 Old Main Hill, Logan, Utah 84322

Agricultural Sciences Building, 120

435-797-1984 – office, 435-797-9733 – fax, email - david.anderson@usu.edu,
www.utahbotanicalcenter.org

Associate Professor of Professional Practice

Department of Landscape Architecture & Environmental Planning

4005 Old Main Hill, Logan, Utah 84322

Fine Arts Visual Building, 254

435-797-0514 – office

EDUCATION

MASTER OF LANDSCAPE ARCHITECTURE, 1993

Utah State University - Logan, Utah

Thesis: The Conceptual Design and Master Planning for the Fisheries & Wildlife Research Center

BACHELOR OF SCIENCE, 1990

Brigham Young University - Provo, Utah

Major: Ornamental Horticulture, Minor: Portuguese

PROFESSIONAL POSITIONS

UTAH STATE UNIVERSITY - Logan, Utah

Director, Utah State University Botanical Center, 2007 – present

UTAH STATE UNIVERSITY - Logan, Utah

Associate Professor of Professional Practice, Landscape Architecture & Environmental Planning
Department, 2012 -present

UTAH STATE UNIVERSITY - Logan, Utah

Associate Director, Utah Botanical Center, 1994 - 2007

UTAH WETLAND INTERPRETIVE NETWORK – Logan, Utah

Administrative Officer, 2003 – present UTAH STATE UNIVERSITY - Logan, Utah

Adjunct Assistant Professor, Environment & Society Department, 2002 - present

Adjunct Instructor, Landscape Architecture & Environmental Planning Department, 1995-2012

GRANTS -SELECTED

Anderson, D., Goodspeed, J. 2014, Accessible Entrance at the Ogden Botanical Gardens/River Parkway, Weber County Recreation, Arts, Museums, and Parks (RAMP), \$19,000

Anderson, D., Paulding, J., 2013, Support for Environmental Education Programming, Chevron, \$7,500 split between USU Botanical Center and the Swaner EcoCenter

Anderson, D. 2013, 9-11 Day of Service Grant, Utah Commission on Service and Volunteerism, \$5,000

Anderson, D. 2013, Interpretive Messaging Signage at the USU Botanical Center, Utah Division of Arts & Museums, \$6,000

Anderson, D. 2013, USU Botanical Center Greenhouse Improvements, Utah Agricultural Experiment Station \$20,000

Anderson, D., Goodspeed, J., 2013, Construction of Entrance Sign at the Ogden Botanical Garden, Ogden City, \$8,000

Anderson, D., 2012, Partnership with The Nature Conservancy of Utah – Wings & Water Program, \$195,000

Anderson, D., 2011, UBC Freeway Sign, Davis County Commission, \$15,000

Anderson, D., 2010, Urban Fishing Enhancement at the UBC, Utah Division of Wildlife Resources, \$122,771

Anderson, D., 2009, Enhancements at Wetland Discovery Point, Utah Reclamation Mitigation and Conservation Commission, \$260,000, \$100,000, \$30,000

Anderson, D., 2009, Riparian Stream Environment Development, Utah Division of Water Quality, \$100,000

Anderson, D., 2008, Wetland Discovery Point, Utah Division of Water Quality, \$150,000

Anderson, D., 2007, Wetland Discovery Point, Utah State Legislature, \$950,000

Anderson, D., 2006, Highway Enhancement along Interstate 15, Utah Department of Transportation, \$454,000

Anderson, D., 2006, Highway Enhancement along Interstate 15, Utah Quality Growth Commission, \$50,000

Varga, W., Anderson, D., Johnson, Paul, Kjelgren, R., Kopp, K., Kratsch, H., Rupp, L., Shultz, L., 2005, The Utah Botanical Center – A Regional Resource Visually Demonstrating Sense of Place and Stewardship in Constructed Landscapes, CSREES-USDA, \$831,947

Varga, W., Anderson, D., Kjelgren, R., Kopp, K., Rupp, L., Shultz, L., 2003 – 2004, Positioning the Utah Botanical Center to Promote a Transition to Water Efficient Landscaping Throughout the Intermountain Region, CSREESUSDA, \$747,591

Anderson, D., Varga, W., 2002-2003, Utah Botanical Center Pedestrian Greenbelt Trail and Associated Landscaping, Transportation Enhancement Project Utah Department of Transportation, \$473,982

Anderson, D., Varga, W., Olsen, S., 2001-2002, Trailhead Pavilion, Davis County, Utah, \$250,000

Anderson, D., 2001-2009, Rehabilitation of Kaysville Ponds, Utah Reclamation, Mitigation, and Conservation Commission, \$125,000, \$200,000, \$200,000, \$40,000

COURSE INSTRUCTION

LAEP 4930/6130 – Landscape Architecture Record Exam Preparation – 2 credit lecture

LAEP 1030 - Introduction to Landscape Architecture – 3 credit lecture

LAEP 1200 - Basic Graphics – 4 credit studio

LAEP 2200 - Advanced Graphics – 4 credit studio

LAEP 2700 - Site Analysis Methods – 5 credit studio

LAEP 4000 - Future Environments -

LAEP 4900 - Special Problems

LAEP 6910 – Graduate Reading Seminar

NR 5000 - Ecosystem Management

Thesis Committees – Various

PUBLICATIONS

Rupp, L., Varga, W., Anderson, D., Selection and Vegetative Propagation of Native Woody Plants for Water-Wise

Landscaping, Natural Resources and Environmental Issues: Vol. 17, Article 28, 2011

Anderson, D., Gunnell, J., and Olsen, S., Water Conservation Educational Programs, Roots, Botanic Gardens Conservation International Education Review, October 2007

Anderson, D., Call, J., Olsen S., and Varga, W., An Interdisciplinary Approach to Planning, Roots, Botanic Gardens Conservation International Education Review, October 2005

Olsen, S., Amundsen, D., Anderson, D., Guy, S., Community Interest Survey to Plan Utah Botanical Center, Journal of Extension, December 1998

AFFILIATIONS

Sustainability Council, Utah State University, 2004 – present

Member, American Public Gardens Association (APGA)

Member, U.S. Green Building Council

Member, National Association of Community Development Extension Professionals (NACDEP)

VITA

David W. Francis

Extension Associate Professor

Utah State University

BUSINESS ADDRESS

Utah State University Extension

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Lehi, UT 84043

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EDUCATION

MS in Agricultural Systems Technology (AST) – Agricultural Extension Education Emphasis, Utah State University, Logan, Utah. December 2000

BS in Environmental Studies – Environmental Education Emphasis with a Portuguese Minor, Utah State University, Logan, Utah. May 1999

PROFESSIONAL EXPERIENCE

Utah State University Cooperative Extension

2009-current **Extension Associate Professor**

2003 – 2008 **Extension Assistant Professor**

2001 – 2003 **Thanksgiving Point Institute Youth Education Manager**

AWARDS AND HONORS

National and Regional

- 2009 National Association of Extension 4-H Agents. **Distinguished Service Award.**
- 2006 National Association of Extension 4-H Agents. **Achievement in Service Award.**
- 2005 United States Department of Interior. **Take Pride in America Award** for the Utah Junior Master Gardener Program.

State and Local

- 2011 "Spirit of Extension". Utah State University
- 2007 Utah Non-Point Task Force. **Non-Point Source Water Quality Award**
- 2006 USU Extension Specialist Association. **New Specialist Award**
- 2004 Utah State University Extension. **Taggart-Ballard Award of Excellence**
- 2004 Governor Walker's Watershed Initiative. **Utah Watershed Education Award**

REFEREED JOURNAL ARTICLES

Hill, Paul A.; **Francis, Dave W.** (2014) Responding to the Needs of Geographically Dispersed Military Youth *Journal of Extension*, 52 (2) Available online at <http://www.joe.org/joe/2014april/a4.php>

Francis, D.W. & Jones, D. (2009). The perfect mindstorm: Building 4-H robotics. *Journal of Youth Development.*, 4(4).
http://data.memberclicks.com/site/nae4a/JYD_090404final%28r%29.pdf

Francis, D.W. & Rothlisberger, D. (2006). Weber Water Fair: A partnership for water conservation awareness for 4th grade youth. *Journal of Extension.* 44 (4). Available online at: <http://www.joe.org/joe/2006august/iw6.shtml>

Francis, D.W., Middleton, B., & Call, C. (2000). Performance based assessment for high school students in natural resource management. *The Agricultural Education Magazine.* 73(3).

SCHOLARLY PRESENTATIONS

National and Regional

Kahler J., Golden J. **Francis D.W.** (2011) "What's Happening in 4-H Science" National Association of Extension 4-H Agents Conference, Omaha NE

Francis, D. W., (2010) Children and Youth Garden Symposium, "Got Badges," American Horticulture Society, Passenda CA.

Francis D.W. (2009) Easy to Use Camp Ideas. National Children and Youth Garden Symposium. Cleveland Ohio.

Horton B. English T. Ripberger C. **Francis D.W.** (2009) 4-H SET Best Practices in Urban Communities. Urban Extension Conference. Milwaukee, Wisconsin.

Francis, D.W. (2008). Environmental Science through Hands on Discovery. National Children and Youth Garden Symposium. Newark, Delaware.

Francis, D.W. (2008). Trunks and Training: Growing the Utah Junior Master Gardener Program. Junior Master Gardener State Coordinators Conference. Chevy Chase, Maryland.

Parent, V. & **Francis, D.W.** (2008). Enter the World of Robots – From Fund Development to Program Development. Western Region Leader's Forum. Boise, Idaho.

Francis, D.W., Mayberry, C. & Wesley, J. (2007). Partnership for Hands-on Discovery: Utah 4-H and Thanksgiving Point. Presented at poster session at the National Association of Extension 4-H Agents Conference. Atlanta, Georgia.

Francis, D.W. & Seagraves, R. (2007). Tools for Creating and Sustaining Your JMG/Youth Gardening Program: Ideas from Across the Nation. National Children & Youth Garden Symposium. Chatska Minnesota.

Francis, D.W. & Parent, V. (2007). Using GPS/GIS Applications in Summer Camp Settings ESRI Educators Conference. San Diego, California.

Francis, D.W. & House, A. (2006). Moon, Mars, & Beyond. Western Region Leaders Forum. Salt Lake City, Utah.

Francis, D.W. (2006). Hands-on Environmental Science Experience for Youth Presented in the poster session of the 5th Natural Resource Extension Professionals Conference. Park City, Utah. (Poster)

CONTRACTS AND GRANTS

External Funding

Francis, D.W. 2011 (Co-Principal), MacArthur, S. (Co-Principal), "Engaging Teens as Healthy Living Teachers in Utah," Funded by National 4-H Council, Utah State University, \$55,500.00.

Francis, D.W. (2011) (Co-Principal), Rudd, Rachel (Co-Principal), Sagers, Stephen (Co-Principal) "Military 4-H Clubs," Funded by Kansas State University, \$30,000

Francis, D. W (2010) (Co-Principal), Parent, Vernon (Co-Principal), "Operation Military Kids 2011-2012," Funded by Kansas State University, State, \$103,000.

Francis, D.W. (2010) (Co-Principal), Rudd, Rachel (Co-Principal), Sagers, Stephen (Co-Principal) "Military 4-H Clubs," Funded by Kansas State University, \$30,000

Francis, D. W (2010) (Co-Principal), Parent, Vernon (Co-Principal), "Operation Military Kids 2010-2011," Funded by Kansas State University, State, \$92,000.00.

Francis, D.W., MacArthur, Stacey (Co-Principal),(2010) "Teaching Science to 4-H Volunteers," Funded by National 4-H Council, \$1,500.00.

Francis, D.W. (2008). Principal Investigator. Utah 4-H SET Teams. Funded by Governor's Office of Economic Development. \$105,000

Francis, D.W. & Jones, D. (2008). Grant Writer and Co-Principal Investigator. Support for Utah 4-H programs. Funded by the Daniels Fund. \$60,000

Francis, D.W. & Mayberry, C. (2008). Co-Principal Investigator. Tulips Journey North. Funded by the Burton Foundation. \$15,000

Francis, D.W. & Mayberry C. (2008). Collaborator. Summer Robotics Camps at Thanksgiving Point. Funded by IM Flash. \$5,000

Francis, D.W. & Mayberry, C. (2008). Co-Principal Investigator. 4-H Growing Leaders. Funded by American Forest Foundation; Project Learning Tree Green Works. \$950

Francis, D.W. (2008). Principal Investigator/Grant Writer. 4-H Summer Science Camps. Funded by Utah Governor's Office of Economic Development. \$10,000

Christen, J. & **Francis, D.W.** (2008). Energy Education. Funded by the National Department of Energy. \$4000

Mesner, N., **Francis, D.W.** & Messmer, T. (2007). A technology based approach to encourage children to spend more time outside. Funded by the United States Fish and Wildlife Service. \$86,086

Francis, D.W. & Mayberry, C. (2007). Co-Principal Investigator. Youth Leaders Engaged in the Arts. Funded by Target. \$4,000



Utah Reclamation Mitigation & Conservation Commission
230 South 500 East Suite 230 Salt Lake City, UT 84102-2045
Phone: (801) 524-3146 – Fax: (801) 524-3148

COMMISSIONERS
Jody L. Williams, Chair
Don A. Christiansen
Brad T. Barber
Dallin W. Jensen

May 2, 2014

Mr. Walt Baker, Director
Utah Division of Water Quality
P.O. Box 144870
Salt Lake City, UT 84114

Re: Utah State University Botanical Center Proposal for Willard Bay Settlement Funding

Dear Walt:

The Mitigation Commission is proud to have been a partner with the Division of Water Quality and others in the early development of the Utah State University Botanical Center ecosystem education facilities in Kaysville. We are impressed with the quality of the people both within the University itself and the many community leaders who support the Center.

We therefore offer our strong support for the UBC proposal for funding from the Willard Bay Settlement to complete the development of the riparian stream ecosystem component of the education facility.

USU has done an outstanding job of extending the resources of the University into the community to teach all of us how to live a balanced life within the natural ecosystems of the Wasatch Front. As the western United States seek to manage limited water resources through a difficult period of drought, the Utah State University Botanical Center plays an invaluable role in helping thousands of citizens to understand the dynamics and importance of the Wasatch Front ecosystems in our daily lives. Long-term success of our communities depends on such understanding.

We sincerely hope that the benefits that have grown from, and will continue to flow from, the USU Botanical Center will justify continued investment in its success.

Sincerely,

Michael C. Weland
Executive Director
Utah Reclamation Mitigation and Conservation Commission
230 South 500 East, Suite 230
Salt Lake City, UT 84102

cc: Commission Chair Jody L. Williams
Commissioner Don Christiansen
Commissioner Dallin Jensen
Commissioner Brad Barber
DWR Director Greg Sheehan

Dr. David Anderson, USU Botanical Center



The Nature Conservancy in Utah
559 East South Temple
Salt Lake City, UT 84102

tel [801] 531-0999
fax [801] 531-1003
nature.org/utah

April 15, 2014

Mr. Walt Baker
Utah Division of Water Quality
P.O. Box 144870
Salt Lake City, UT 84114

Re: Support for Utah Botanical Center Proposal

Dear Walt:

Recently I have learned of an interesting proposal being submitted by the Utah Botanical Center (UBC) to receive monies from the Willard Bay Settlement Fund. I am writing to endorse this proposal and the important work of UBC.

As you are aware, the Utah Botanical Center has played an important role in environmental education in Davis County and beyond. The facility runs effective outreach programs to teach Utahns about the importance of agriculture, wetlands, energy conservation and wildlife. The Nature Conservancy has partnered with UBC on a number of projects and we think highly of UBC's mission and management.

UBC is now applying for funds to expand and enhance a riparian system flowing into its existing pond. The improvements planned would help with water quality and afford important additional educational opportunities. This feature has been well thought out and will represent an important addition to UBC's facility.

We are pleased to support the application UBC has submitted and hope you and the Willard Bay Settlement Committee will give every consideration to this request.

Best Wishes,

Dave Livermore
Utah State Director

April 21, 2014

Utah Division of Water Quality
P.O. Box 144870
Salt Lake City, UT 84114

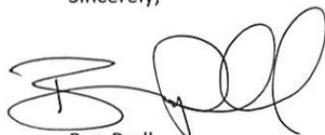
To Whom It May Concern,

The Botanical Center, located in Kaysville and operated by Utah State University Extension, is a wonderful facility that enables students from the Davis School District to learn about nature, the environment and our natural resources. Thousands of students from Davis District visit the Botanical Center, the Utah House and the adjacent ponds each year. The experience and knowledge gained is unmeasurable in value, as these students learn the importance of our natural resources and their duty to be responsible caretakers of these assets not only as students, but future citizens in the community.

Of particular interest to us at this time is the ponds and future development of a riparian area that will greatly enhance the learning experience of our students. Hundreds of fourth graders travel to the Botanical Center, where educational specialists conduct activities centered on the water cycle, wetland environments, animal adaptations and other related topics found in the Utah Science Core Curriculum. The proposed plan by USU Extension to add a stream and riparian area to the Botanical Center would greatly enrich the experience and learning that is already taking place.

The addition of this area will also enable the Botanical Center to offer a more robust curriculum that would broaden the student base that can benefit from the Center. We are confident that this addition will make the facility more significant for the secondary schools and increase the number of students impacted by the center. With this increase in outreach opportunities more citizens will be taught important principles regarding water quality and usage in our community.

Sincerely,



Ben Prall
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bprall@dsdmail.net



Rita Stevenson
Elementary Science Supervisor
Davis School District
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SETTLED IN 1850

April 24, 2014

Utah Division of Water Quality
P.O. Box 144870
Salt Lake City, Utah 84114

To Whom It May Concern:

I am writing in support of the USU Botanical Center's (USUBC) proposal for funding to complete the large stream project on the Botanical Center property.

The USUBC ponds receive a significant portion of Kaysville's stormwater from the neighborhoods east of the property. This stormwater flows through the ponds and then travels under Interstate 15 and continues west, ultimately arriving in the marshes on the eastern side of the Great Salt Lake. Consequently, the USUBC ponds serve an important role in helping to manage the city's stormwater, as well as improve the quality of it.

The stream project will circulate water from the ponds through the stream and redeposit the water in an upstream pond, creating a circuit. This will undoubtedly improve water quality by adding motion and oxygen to the water, as well as increasing opportunity for interaction with the purifying effect of wetlands.

In addition to improved water quality, the city will benefit from the additional trails that will be incorporated into the stream area. The trails, stream, and plants will all contribute to added educational value for Kaysville's children. For these reasons I urge your strong support of USU's proposal to complete the stream project.

Sincerely,

Steve A. Hiatt
Mayor

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