INSTITUTE FOR ENVIRONMENTAL SOLUTIONS

2007 ANNUAL REPORT

SCIENTIFIC SOLUTIONS FOR A BETTER ENVIRONMENT

THE INSTITUTE FOR ENVIRONMENTAL SOLUTIONS IS AN INDEPENDENT NON-PROFIT ORGANIZATION DELIVERING PROACTIVE TECHNICALLY SOUND SOLUTIONS TO COMPLEX ENVIRONMENTAL AND NATURAL RESOURCE PROBLEMS—WITHOUT UNWANTED SIDE EFFECTS.

FROM THE EXECUTIVE DIRECTOR

Greetings Friends:

2007 was a ground-breaking year for the Institute for Environmental Solutions in many respects. We have been in the field, lab, stakeholder workshops, parks, conference rooms, and up and down the Colorado Front Range gathering and analyzing data, forming partnerships, working with the community and staying true to our mission of solving environmental problems based on science, without unwanted side effects.

Our first major initiative, The Tree Project: Integrated Urban Environmental Improvement Through Tree Selection and Management, has developed into a successful program with many facets. While IES has been working toward the original goal of quantifying the impact trees have on energy and water conservation, carbon sequestration and global warming, stormwater management and air quality, we have gone many steps beyond. Challenging the status quo is one of IES's true strengths, and trees in the Colorado environment are no exception. Though trees have a quantified environmental impact, the caveats are that 1) they must be planted and 2) they must be planted the right way. Therefore, we have begun to research the social barriers to planting trees for environmental benefits and the level of knowledge Colorado citizens have about environmental impacts with some fascinating results. However, the research has not stopped there. Trees can be one of the most effective outdoor air quality improvement tools we have. New project plans are underway to apply IES research to improving air quality throughout the Front Range.

The Emerging Contaminants Project: Linking Science to Effective Action is gaining momentum as people begin to notice the 600-pound gorilla in the room. With so many sources of trace pharmaceutical and personal care product contaminants, removal techniques and stakeholders involved, 2008 will be critical as new program opportunities present themselves, and as we complete Phase 1 and launch into Phase 2 of the project.

Typical of a new organization, the major challenges for IES remain establishing a record of accomplishments and sources of sustainable funding. Thanks to our dynamic Board of Directors, staff members, graduate student interns, and Institute Associates, IES is well on its way to establishing a track record of success. We have launched a marketing plan, as we are reminded that even science driven environmentalists must compete for the ear of those in the community, the federal government, and everyone in between.

As the pieces of the projects and development efforts come together and IES grows stronger, we expect that 2008 will be exciting and successful. Real change is starting to happen. People want to work hard, make a positive difference, be recognized for their contributions, and help to improve their world. By engaging the positive motivations of people who share my dedication to improving the environment, IES is building a strong and unified team. Stakeholders have asked me, "Why are you doing this?" Personally, I am motivated by the call, "Be ashamed to die until you have won some victory for humanity" spoken by Horace Mann at Antioch College in 1859. If we – all of us – do not boldly and bravely tackle the really tough problems, the survival of our society is at stake.

Sincerely,
Carol E. Lyons, *Executive Director*

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INSTITUTE FOR ENVIRONMENTAL SOLUTIONS

INTRODUCTION

The Institute for Environmental Solutions (IES) is a Denver-based, non-profit 501(c)(3) organization dedicated to addressing complex environmental challenges. We advance objective, integrated solutions to our region's most pressing environmental concerns, such as air and water quality, and pollution control.

IES uses sound, independent science to:

- Find potential solutions to environmental problems
- Implement environmental improvement strategies
- Develop objective evaluation methods
- Measure and demonstrate cost-effectiveness

Over the past two years, IES has grown to 5 paid staff members, 15 active volunteers, and 24 Institute Associates working hard to accomplish our mission to deliver proactive, technically sound solutions to environmental and natural resource problems without unwanted side effects. Throughout 2007, our two main projects, The Tree Project: Integrated Urban Environmental Improvement through Tree Selection and Management, and Emerging Contaminants: Linking Science to Effective Action, have advanced past the conception and planning stages and taken important steps to achieving quantifiable results in 2008.

THANKS TO THE SPONSORS WHO HELPED MAKE 2007 SUCCESSFUL

Colorado Department of Public Health and Environment, Pollution Prevention Advisory Board

Xcel Energy Foundation

SmartWool Advocacy Fund

Boulder Department of Water Conservation

Considine Family Foundation

Brownstein | Hyatt | Farber | Schreck, P.C.

City of Golden

Tri-State Generation and Transmission Association, Inc.

THANKS TO THE TREE PROJECT STEERING COMMITTEE MEMBERS WHO CONTRIBUTED TO A SUCCESSFUL TREE PROJECT PHASE 2

Brian Braa, RLA

Howard Kiyota, Xcel Energy

Liz Gardener, Denver Water

Sheila Hayter, NREL

Carol E. Lyons, IES

Joe Schalk, City of Westminster

Keith Wood, Colorado State Forest Service

THANKS TO THE VOLUNTEERS WHO PARTICIPATED IN THE TREE PROJECT SUMMER PROGRAMS

Ken Wicklund, City of Longmont

Heather Hodgin, Colorado State University Extension

James Warren Andrews, City of Golden

Katie Davis, University of Denver

Kristin Salamack, University of Denver

Cindy Hanna, IES

Keith Wood, CSFS

Dave High, City of Golden

Chuck Gehringer, City and County of Broomfield

Mike Kopcha, IES

Annmarie Barnes, University of Denver/IES

Andrew Britton, University of Denver/IES

Steve Bertuglia, Softchoice, Co., Denver

THE TREE PROJECT: 2007 ACTIVITIES

THE TREE PROJECT
ENERGY • WATER • AIR

2007 was a year of hands-on field work, ground-breaking scientific analysis, and community outreach. IES launched The Tree Project Phase 2, which included field data collection in Golden, Colorado, independent energy, water and social analyses, and the formation of many valuable partnerships.

In June, IES Board and staff members, University of Denver graduate students, Colorado State Forest Service Community Foresters, City of Golden staff members, Master Gardeners and other volunteers completed field measurements for an i-Tree computer modeling analysis of Golden's urban forest. 115, 1/10-acre plots were selected and data were collected on land use, ground cover, and trees. Using the model, IES was able to determine urban forest health, species makeup, and environmental performance of existing tree species in terms of air pollution mitigation, energy savings, pest potential, allergy index, VOC emissions, and carbon sequestration in the City of Golden.

During the summer field program, data were collected for independent analysis on the impact of trees on energy and water conservation. For the energy analysis, 11 plots, including homes, office and institutional buildings were modeled using advanced Department of Energy (DOE) building energy simulation software. Through collaboration with the National Renewable Energy Laboratory (NREL), IES was able to determine the impact of trees on building energy use for Colorado's climate.

Soil moisture measurements were taken to determine the impact of trees on water conservation. This innovative study allowed IES an exciting first look at how trees can work into an environmentally sustainable landscape design in Colorado.

In addition to scientific analysis, IES took on the challenge of addressing the social barriers to tree planting, and determining the public's knowledge of trees and environmental benefits. In August, staff and volunteers attended Music and Movies in the Park in Golden and collected 300 individual surveys that, when put through statistical testing, showed some very significant results related to income and education levels and environmental habits and attitudes.

Following the completion of the Phase 2 Scientific Analysis, IES began work on the final report for Phase 2, which will be available on the IES website in early 2008. This report provides an overview of the work involved in Phase 2 and initial plans for Phase 3. It includes the history of The Tree Project, preliminary research, results of the workshops, and results of the scientific analysis.

Community and stakeholder involvement is an essential part of all IES projects. The Tree Project has been guided by our stakeholders from communities throughout Colorado through the Steering Committee, the Stakeholder Advisory Workshops and by our partners in the City of Golden. The Tree Project Steering Committee, the project Board of Directors, met monthly. The Steering Committee was crucial in providing technical and procedural oversight during this phase of complex research and analysis. IES hosted three Stakeholder Advisory Workshops during 2007, in February, July and November. Attendance at the Workshops ranged from 20 to 50. IES also reached out to the community through the *Golden Informer*, a monthly publication distributed to residents of our pilot city, and regional press releases. IES published five articles in the *Informer*, keeping residents informed on the groundbreaking research being conducted on their urban forest. IES meets regularly with our partners in Golden. We work with the Department of Parks and Recreation, the City Forester, and the Department of Planning and Development. Our meetings in Golden help to ensure that The Tree Project addresses the needs of our pilot city. Because our partners in Golden are so engaged and forward thinking, they help us to fulfill our mission to serve as a model for tackling complex environmental challenges. Together, IES and our stakeholders have bridged communication gaps between institutions and conducted a sound scientific investigation.

THE TREE PROJECT: 2007 PUBLICATIONS

- *The Tree Project Phase 1 Final Report*
- *City of Golden i-Tree Analysis, Street Tree Resource Analysis Tool (STRATUM) Analysis*
- *City of Golden Urban Forest Analysis: Urban Forest Effects Model (UFORE) Analysis*
- *The Tree Project: Integrated Urban Environmental Improvement Through Tree Selection and Planting, Phase 2 Final Report*
- *Tree Project Update, May 2007*
- *Tree Project Update, July 2007*
- *Stakeholder Workshop 3, July 18, 2007*
- *Stakeholder Workshop 4, November 13, 2007*

THE TREE PROJECT: PHASE 3 PROJECT PLAN

PHASE 3 OBJECTIVES

- Identify partners on both sides of the carbon trade and help them to efficiently and effectively harness the climate change mitigation potential of urban forests.
- Demonstrate the environmental benefits of trees by developing an easily replicable plan for an elementary school to improve its air quality.
- Develop a web-based tool to help homeowners optimize tree benefits, including energy and water conservation, by guiding the selection, planting, and maintenance of trees.
- Partner with municipalities, developers, property-owners, foresters and others to use the results of Tree Project research to inform public policy, development standards and tree planting decisions.
- Assist policy makers in finding the most effective and efficient means of achieving healthy air quality by improving ozone modeling with higher resolution tree effects and developing a strategy for using tree-planting as an ozone mitigation tool.
- Publish Tree Project findings in scientific and popular media.
- Evaluate The Tree Project against its objectives and IES core values to grow as individual researchers and as an organization.

EMERGING CONTAMINANTS: LINKING SCIENCE TO EFFECTIVE ACTION

EMERGING CONTAMINANTS

IES initiated its second major project, Emerging Contaminants, dealing with contamination from pharmaceutical and household products in wastewater effluent, in 2007. IES is launching the project with an ambitious pilot pharmaceutical take-back and evaluation program. After a period of stakeholder engagement and planning, IES will partner with a Front Range community to implement the pilot program.

AMERICAN WATER RESOURCES CONFERENCE (AWRA) SUMMER SPECIALTY CONFERENCE, VAIL, COLORADO. EMERGING CONTAMINANTS OF CONCERN IN THE ENVIRONMENT: ISSUES, INVESTIGATIONS, AND SOLUTIONS. JUNE 25-27, 2007

IES hosted a session at the AWRA Specialty conference this summer. We welcomed Martha Rudolph, CDPHE; Ken Lykens, MWH Global, Inc.; Kara Swanson, and Ken Fucik, SeaCrest Group to the panel of speakers in the session, "Linking Science to Effective Action". Kara Swanson presented:

- *Emerging Contaminants: A Unique Opportunity to Develop Effective Policy Based on Sound Science – Will We Take Advantage or Blow It? - Kara Swanson, Institute for Environmental Solutions, Denver, CO (co-authors: Aaron Gutierrez, Carol Lyons, Casey Laycock)*

18TH ANNUAL SOUTH PLATTE FORUM POSTER PRESENTATION OCTOBER 24-25, 2007, LONGMONT, COLORADO

IES Graduate Student Intern, Aaron Gutierrez, presented a poster at the South Platte Forum. The poster summarized IES's goals, and addressed tough issues like pollution prevention, known and unknown sources of contamination, and the multiple stakeholder-approach.

STAKEHOLDER GROUP

During the second half of 2007, The EC project gained momentum from stakeholder support. One of the primary goals of the project for the first three months of 2008 is to organize the Stakeholder Advisory Committee that will further refine the goals, priorities, and scientific analysis of Phase 2.

PARTNERSHIPS, COLLABORATION, FUTURE

IES is growing to meet the challenges of our unique mission. In 2007, we were encouraged by developing successful new partnerships and continued collaboration with Colorado State Forest Service Community Foresters, City of Golden, NREL, National Center for Atmospheric Research (NCAR), Xcel Energy, Tri-State Generation and Transmission, the Colorado Department of Public Health and Environment (CDPHE), Project Learning Tree, Roche Pharmaceutical, Dr. Thomas Borch and Dr. William Bauerle of CSU, The SeaCrest Group, and the Colorado Alliance for Environmental Education (CAEE), by way of expert volunteers, resource sharing, and grant funding for both The Tree Project and the Emerging Contaminants Project.

Our partnerships with stakeholders have been invaluable to the projects and the organization. They have helped shape the design of The Tree Project scientific analysis, and have guided the way that results will be implemented in Colorado communities. They have brought decades of expertise in tree research, economics, water and energy conservation, modeling, statistical analysis, survey methodology, communication, and outreach. The Emerging Contaminants project has made strides due to significant research by our partners in identifying emerging contaminant sources and removal techniques.

IES is proud to be a member of:

- Colorado Nonprofit Association
- Colorado Alliance for Environmental Education
- Colorado Tree Coalition
- GivingFirst of the Community First Foundation
- GoodSearch

In 2008, we will continue to seek grants that match our objectives and mission, as well as new partnerships with municipalities, corporations, education and outreach organizations, researchers and analysts, and community members.

The successful future of IES will be determined by accomplishment of project goals – improved environmental quality. Each project will be measured by policy changes, environmental ordinance adoption, and increased stakeholder involvement. IES's success depends on stakeholder involvement, so development and retention of relationships with these parties is vital; the more representative and engaged the stakeholders are, the more successful the project and its solutions.

Each project continues to break new scientific ground. Success means active, involved, and increasingly well-informed participants. Phase 2 of The Tree Project will result in new information that will expand knowledge on the subject in 2008. Results will be distributed to stakeholders, and academic and popular publications. The third phase will focus on implementation of results to achieve measurable improvements in the environment – unique with each project. IES will challenge its stakeholders and project teams to establish ambitious but achievable targets for measurable results. Replication of the process by others will demonstrate our long-term success.

STRATEGIC PLANNING, DEVELOPMENT, AND FUNDRAISING

IES has made great strides in strategic planning and development for the organization. This year marked the formation of the Board Development and Fundraising Committees and the completion of the organization's Strategic Plan by the Board Strategic Planning Committee. IES also updated its anti-discrimination policy in 2007.

The 2008 budget is ambitious. It is supported by a strong Strategic Plan which will help IES fulfill its mission and develop as an organization. The Plan is a vision of the next three years for IES, with key organizational goals and the marketing, fundraising, staffing, and project development strategies to accomplish them and to continue to build a solid foundation for IES. The Fundraising Plan was developed by the Board to ensure IES has the right strategy and the right tools to meet our 2008 budget targets. In the new year, IES is focusing its development activity on bolstering our donor tracking and recognition while we seek out new corporate and municipal partners. The Staff Development and Fundraising Committee also made great progress in 2007. Committee members improved the IES grant application process and were rewarded with a number of successful proposals.

INSTITUTE FOR ENVIRONMENTAL SOLUTIONS

FINANCIAL REPORT 2007

	IES Operating	Projects	TOTAL
Ordinary Income/Expense			
Income			
Fund Transfer Income	$ 234	$ 14,443	$ 14,678
Grants	18,654	36,601	55,255
Interest	64		64
Unrestricted Board Contribution	6,975		6,975
Unrestricted Contribution	11,245		11,245
Total Income	**$ 37,173**	$ 51,044	$ 88,217
Expense			
DIRECT EXPENSE			
Dues/Training/Registration Fees	$ 530	$ 550	$ 1,080
Internet/Website	240	20	260
Meeting/Conference Supplies	423	936	1,359
Mileage	365	2,532	2,897
Office Rent/Equipment			
Office Supplies	1,414	1,049	2,463
Parking/Transportation	50	31	81
Postage/Shipping	125	225	350
Printing/Reproduction	545	184	729
Software	669	669	
Taxes	2		2
Technical Equipment	1,605	1,605	
Telephone Services	313	239	551
Total DIRECT EXPENSE	$ 4,005	$ 8,041	$ 12,046
LABOR			
Executive Director			
Administrative Expense	$ 5,250	$ 2,845	$ 8,095
Grad Student/Interns	532	8,145	8,676
Professional/Technical Staff	333	5,273	5,605
Research Associates	3,351	29,575	32,926
Total LABOR	9,465	45,837	55,302
Total Expense	**13,470**	53,878	67,348
Balance	**$ 23,703**	$ (2,834)	$ 20,869
Balance Forwarded, January 1, 2008			20,869
2008 Grants Receivable	$ 2,385	$ 7,155	$ 9,540

THE INSTITUTE FOR ENVIRONMENTAL SOLUTIONS WELCOMES YOUR SUPPORT!

Help support scientific solutions for a better environment! Contributions and grants to support the IES mission are most welcome. Financial contributions are tax-deductible. Credit card donations can be made through GivingFirst.org, or please visit our website or call our office. Community First Foundation pays all credit card fees on donations made at **www.GivingFirst.org.**

IES welcomes participation by all individuals and organizations that support our mission and goals.

- **PROFESSIONALS** interested in environmental solutions may join IES as Institute Associates. Please contact us for more information.
- **STUDENTS** at graduate school and advanced levels are invited to apply for Intern positions, listed at the IES website.

Please call or email us with your questions, comments, and requests for more information.
We welcome your inquiries and input.

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Keep an eye on IES projects, events, and news!

For press releases, events, publications and other news, go to the IES website, **www.I4ES.org**, and click on IES News.

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