

# **Sustainable Remediation Forum (SURF)**

**SURF 25: February 5 – 7, 2014**

**Pasadena, California**

SURF 25 was held in Pasadena, California on February 5 – 7, 2014 and focused on “Building Public and Private Partnerships for Sustainable Remediation.” Individuals that participated in the meeting, along with contact information, are listed in Attachment 1. The meeting marked the 25<sup>th</sup> time that various stakeholders in remediation—industry, government agencies, environmental groups, consultants, and academia—came together to discuss the use of sustainability concepts throughout the remediation life cycle. Meeting minutes are posted for members at [www.sustainableremediation.org](http://www.sustainableremediation.org). Members should log in and access the minutes by clicking “SURF Meeting Minutes” under “Member Resources.”

## **Day 1**

The meeting began with Mike Rominger (meeting facilitator) discussing meeting logistics, ground rules, nonconfidentiality assumptions, export control laws, and antitrust issues. In addition, he thanked Parsons for hosting the meeting and current SURF sponsors for supporting the organization. (Members interested in sponsorship opportunities should contact the SURF Treasurer at [treasurer@sustainableremediation.org](mailto:treasurer@sustainableremediation.org).) Presentation slides for Day 1 are provided in Attachments 2 through 6.

## ***Updates from Committees and Technical Initiatives***

Members provided updates on the recent progress of the Communications Committee, Membership Committee, Academic Outreach Initiative, and Social Aspects of Sustainability Initiative. Summaries of these updates are provided below.

- **Communications Committee**

At the beginning of her presentation, Maile Smith (Initiative Co-Chair) reviewed the structure of the SURF organization and asked participants to consider volunteering for open positions on the organization chart (see Attachment 2). Then, she described the three primary areas that the Communications Committee supports SURF: maintaining a repository of information through the website, providing a forum through social networks for green and sustainable remediation experts to share information, and communicating with SURF members through efforts such as the newsletter. Maile reviewed the committee’s plans for 2014, including reorganizing the website, recruiting a social networking team, and issuing the newsletter quarterly with increased article submissions from members. Presentation slides are provided in Attachment 2.

- **Membership Committee**

Jake Torrens (Initiative Co-Chair) described the activities of this committee, including the development of a strategy to increase membership. The value proposition developed

last year was part of this effort. Committee members continue to work with other committees to leverage work and show the benefits of SURF membership.

- Academic Outreach Initiative

Keith Aragona (Initiative Co-Chair) presented the purpose of this initiative, which is to establish relationships with students, professors, and researchers so that green and sustainable remediation will be established in universities, students will be involved with technical initiatives, members will collaborate with principal researchers to advance the field, and SURF membership will grow.

In 2014, initiative members will work to reestablish the mission of the group, determine what makes a vibrant student chapter (and support it), apply learnings to other chapters (and support them), become intentional about engaging SURF with the student chapters more frequently, and expand relationships with faculty. Presentation slides are provided in Attachment 3.

- Social Aspects of Sustainability Initiative

Members of this initiative are developing a white paper about the social aspects of sustainable remediation. Kristin Mancini (Initiative Co-Chair) reviewed the objectives of the white paper as follows:

- Illustrate the importance of performing a complete sustainability assessment when evaluating contaminated site remediation projects.
- Provide tools for evaluating impacts of the social and socio-economic nexus of remediation.
- Share knowledge of existing case studies where the impact to the social and socio-economic nexus have been evaluated,

Currently, initiative members are writing the first two sections of the white paper. Participants discussed the possibility of using an environmental justice model to develop tools (i.e., taking environmental justice and reverse engineering it) and tapping into SURF's student resources to accomplish this task. Presentation slides are provided in Attachment 4.

Kristin asked participants to share their experience with existing frameworks or specific challenges relating to the social aspect of sustainable remediation. One participant described his company's sustainable return on investment efforts, which is aimed at providing a framework to quantify social value. After some discussion of challenges related to integrating social aspects into remediation, participants seemed to agree that risk communication is a primary challenge. Community stakeholders can have difficulty understanding the technical language associated with remediation (e.g., metrics). Participants seemed to agree that obtaining and reviewing different methods of

engagement may be useful to help develop a toolkit for the community as part of the white paper.

### ***AB 440: The Return of the Brownfield Redevelopment Market?***

Thierry Montoya (AlvaradoSmith) and Canaan Crouch (SullivanCurtisMonroe) discussed how new legislation, California Assembly Bill 440 (also known as the Gatto Act), will affect the environmental cleanup process in the state. The Bill is in direct response to the abolition of the California Redevelopment Agencies and their authority formerly granted through the Polanco Act of 1990. The presenters explained that AB 440 provides a format for transforming blighted urban properties from their current state to usable properties. With this Bill, cities and municipalities are empowered to pursue the cleanup of blighted properties, as did the predecessor redevelopment agencies, and are protected from the environmental liability. The difference is that they are now legally empowered to cause an owner of a blighted property to conduct a Phase I and/or Phase II environmental assessment to determine the property's environmental status. If contaminated, the city or municipality may require the property to be cleaned up. If the property owner does not comply, then the city or municipality is legally entitled to conduct the assessment and cleanup of the property on their own and charge the property owner for all of their expenses. All of this work can all be conducted without taking on the liability for the impacts to natural resources like groundwater. Presentation slides are provided in Attachment 5.

Initial questions from participants focused on the responsible party's liability. One participant asked if the responsible party is exempt from liability if a change in property use occurs in the future. Thierry said that a change in legal standards in the future remains a possibility; the responsible party is not immune. When asked what happens when a responsible party cleans up the site on their own, Thierry responded that immunity would be granted.

Additional questions focused on how citizens benefit from this Bill. The presenters believe that the Bill allows citizens an avenue for resolving environmental issues associated with brownfields by focusing on the buyer, not the seller. In response to a question about gentrification issues, Thierry/Canaan said a balanced approach is necessary and city representatives would need to take community members' concerns into account when considering development.

### ***Brainstorming Discussion: Case Study Initiative***

John Simon (Initiative Chair) provided an overview of the progress of this initiative and asked participants for input in building an case study inventory. Initiative members have established an annotated case study outline, a case study presentation PowerPoint format, an example case study, and a case study tracking database. The goal is to gather and review green and sustainable remediation case studies and post them on SURF's website. Once complete, the case studies will be available as a member resource for sharing best practices. John asked participants for their suggestions in building an inventory of case studies. A detailed listing of

suggestions is provided in Attachment 6, along with John’s presentation slides. During discussions, participants seemed to agree that nonmembers as well as members of SURF should be able to submit case studies. In addition, one participant believed that case studies should be made available in the public area of the website (vs. available to members only) and suggested that the Board of Trustees vote on this topic. Next, initiative members will develop an action plan based on these discussions and begin promoting the need for case studies by February 14, 2014.

## **Day 2**

The presentation slides for Day 2 are provided in Attachments 7 through 13.

### ***Opening Remarks***

Virginia Grebbien (Parsons) provided opening remarks on Day 2. She described the parallels between recycled water projects 25 years ago and sustainable remediation today, emphasizing the need to push the value proposition that sustainability brings and share lessons learned. Virginia believes that holistic approaches are the “next big thing,” acknowledging that it is hard to evaluate something holistically and in an integrated manner because it requires a crossing of cultures. Overcoming these obstacles will take leaders and the ability to merge objectives. Virginia ended her remarks by welcoming everyone to Pasadena, encouraging them to have fun and learn something.

### ***From Ecology to Resiliency: The Growing Need for Partnerships***

Ted Bardacke (Deputy Director of Sustainability for the Office of Los Angeles Mayor Eric Garcetti) provided an overview of the growth of ecology into the emerging field of resiliency and how this transformation requires a new set of partnerships. Ted showed the flag of ecology, which (at the time of its use) represented holistic scientific thinking. The science of ecology was built out of a partnership, that is, scientists from different disciplines discussed how systems worked together to produce the environment in which we lived. In time, ecology gave way to environmentalism, which emphasized our actions occurring within a web of social relationships. This shift in thinking required another level of understanding. In 1989, thinking shifted from environmentalism to sustainability with the publication of *Our Common Future* (commonly referred to as the Brundtland Report) in 1987. In this report, sustainable development is defined as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs.” The concept of needs particularly applies to the “essential needs of the world’s poor, to which overriding priority should be given.” Rather than trying to balance the economic, social, and environmental aspects of life to achieve a stable society, “resilience looks for ways to manage an imbalanced world” (A. Zolli, *Resilience: Why Things Bounce Back*). Although these approaches differ, they are similar in that both need to reach out and partner with professionals who manage and eliminate risks. In Los Angeles, the Office of Public Safety hired a Chief Resiliency Officer who is working to establish the new set of partnerships necessary to address long-term sustainability. Presentation slides are presented in Attachment 7.



Participants' questions focused on the following:

- Time-Scale Challenges

On a macro level, Ted believes that sustainability has a holistic element and occurs over the long term whereas resiliency focuses more on managing risks over the short or long term.

- Definition of Acceptable Risk

Ted believes that the definition of acceptable risk is psychologically and culturally determined and that the level of acceptable risk is diminishing as people observe climate change impacts in weather. Discussions of the term “acceptable” is a societal discussion (i.e., what are we willing to pay for the potential of “saving” something in the long term?). Ted described the following three ways (i.e., the three As) to think about climate change adaption and risk management:

1. Armor – Harden to an extremely low level of risk (i.e., bulletproof)
2. Abandon – Pick up and leave because of extremely high risk (e.g., New Orleans)
3. Adapt – Modify thinking and behavior to determine risk that is acceptable (i.e., what you're willing to live with)

Ted explained that the latter method (i.e., adapt) takes the notion of risk and flips it. For example, an individual accepts the fact that every year his basement is going to flood so he adapts his basement accordingly. He no longer sees basement flooding as a risk.

- Definition of “Willing to Pay”

One participant asked if the term “willing to pay” is being used in terms of the environmental economic term “willingness to pay.” In other words, should remediation professionals be asking stakeholders and/or society how much they are willing to pay for long-term (i.e., sustainable) outcomes of remedial activities? Ted believes that SURF can lead the discussion and help determine the purpose of remediation and the aftermath.

- Integration of Sustainable Remediation into Cleanups

One participant asked if, from a city's perspective, sustainable remediation will be included as part of overall cleanup obligations. Ted said that one core goal is “housing in the right place at the right price,” which is focused on increasing the overall supply of housing in transit-priority areas. He believes the challenge with integrating sustainable remediation is the quick turnaround needed.

At the end of the discussion, one participant commented about “the three new Rs: risk, resiliency, and relationships” and encouraged participants to focus not only on fixing problems, but assessing the range of dimension of the problem.

### ***Forming Sustainable Partnerships at Remediation Sites***

Debbie Taege (The Boeing Company) presented a stormwater management case study of a former liquid rocket testing and research energy facility in Ventura County, California. In collaboration with the Los Angeles Conservation Corps, Pollinator Partnership, and the Wildlife Habitat Council, a biofilter was designed to not only manage stormwater, but also serve as a wildlife habitat and an educational tool. An Expert Panel formed in 2008 was involved in the planning and design and serves as a neutral technical resource. The design consists of a cistern that traps large sediment and debris and a sedimentation basin that captures smaller silt particles. The water is treated as it percolates downward through the biofilter before discharge. The Los Angeles Conservation Corps built a gazebo on-site and placed over 2,000 native plants on top of the biofilter. The Pollinator Partnership helped in the selection of native species and the evaluation and modification of the seed mix used throughout the site. In 2012, the site received the Corporate Lands for Learning Certification from the Wildlife Habitat Council. Presentation slides are provided in Attachment 8.

Participants asked questions about the presence of solar panels on-site and the tracking of sustainability metrics. Debbie said that solar panels are installed where appropriate and feasible on-site, noting that one outfall monitor is powered by a solar panel. She also said that her company's remediation group internally tracks sustainability metrics and shares lessons learned through brown bags.

### ***LEED Rating System: 10 Pros and Cons***

Dominique Smith [U.S. Green Building Council - Los Angeles Chapter (USGBC-LA)] provided an overview of three areas in which her organization is committed to and working strategically with partners, as well as the strengths and weaknesses of the LEED (Leadership in Energy and Environmental Design) rating system. Presentation slides are provided in Attachment 9.

- Strategic Partnerships

The USGBC-LA is partnering with schools to conduct greening projects (e.g., school gardens, recycling, murals), performing advocacy work through USGBC-California, and working on building retrofits and workforce development. The Los Angeles Chapter is committed to these initiatives and working with strategic partnerships to achieve goals.

Last year, a community partners program was launched as a way to collaborate with public, private, and nonprofit organizations. The first project is being implemented in El Monte, California and the partners involved include the Chamber of Commerce, a credit union, a high school district, and a nonprofit company called Grid Alternatives that is providing residential solar services for free.

- LEED Rating System Pros and Cons

Dominique reviewed 10 pros and cons of the LEED rating system (see Attachment 9) that can be applied generally to other rating systems in the hope of inspiring further

dialogue with participants about the possibilities of a rating system for sustainable remediation projects.

Dominique challenged participants to think about the synergy between SURF and LEED. Participants discussed how engineers are becoming more involved, which results in modifications to the LEED standards. In this way, the standards and program as a whole remain relevant. Dominique emphasized the importance of baseline measurements and verification during this process.

### ***Brainstorming Discussion: Groundwater Conservation and Reuse Initiative***

Jake Torrens (Initiative Co-Chair) and Carl Lenker (Gannett Fleming) provided the current status of this SURF technical initiative and brainstormed next steps with participants.

- Initiative members' article "Integrating Groundwater Conservation and Reuse into Remediation Projects" will be published in the Spring 2014 issue of the *Remediation Journal* (Volume 24, Issue 2). The purpose of the article "...is to stimulate a more holistic view of the groundwater associated with remediation projects and to promote conservation and beneficial reuse of a vital natural resource." The article outlines a vision of the future and areas that need to be further evaluated to achieve the vision.
- Participants discussed how to leverage the information in the article to achieve the greatest impact. Ideas discussed included developing a press release, presenting the information at conferences, and identifying potential regional partners. A detailed list of the items discussed during this brainstorming is provided in Attachment 10.

### ***Case Study: Transformation of a Superfund Site to an Ecological Habitat***

Bruce Wilkinson (Haley & Aldrich) and Mary Rager (Pollinator Partnership) showed a video and presented a case study of a Superfund site in Kansas that was transformed into an ecological habitat. Bruce provided a brief background of the location and history of the site, a former chemical recycling facility. The planned cleanup that involved excavation and on-site treatment of soil via thermal desorption was revised to include limited soil excavation with off-site disposal, an in situ chemical oxidation perimeter trench to eliminate off-site slurry disposal, an on-site water treatment system, and restoration using native prairie grasses. Mary presented the development of the pollinator prairie, which consists of mostly native plants that provide pollinators like bees, birds, and butterflies, especially monarch butterflies, sources of food, shelter and safe areas for breeding. The prairie design featured five different pollinator types and involved collaboration with several partners, including Monarch Watch, Monarch Joint Venture, Wildlife Habitat Council, and the Community Advisory Group. A video and plant lists for every garden are available at [https://pollinator.org/pollinator\\_prairie.htm](https://pollinator.org/pollinator_prairie.htm). The Environmental Protection Agency (EPA) Region 7 awarded the project a LEAFS (Leading Environmentalism and Forwarding Sustainability) Award (<http://www.epa.gov/superfund/programs/recycle/info/chemicalcommodities.html>). Presentation slides are provided in Attachment 11.

Discussions focused on how the community dynamic has changed, volunteer participation, health and safety concerns, and maintaining community support (see below).

- Community Dynamic

One participant commented that the project seemed to have changed the community dynamic, with residents having pride in the garden and renewed community spirit.

- Volunteer Participation

At the planting event, 120 volunteers participated. Bruce believes this high turnout was the result of years of open communication with the community.

- Health and Safety Concerns

The EPA alleviated potential community concerns by coming to the site and declaring it safe.

- Community Support

Although the project spanned from 2002 to 2011, community engagement and support was maintained. Two meetings were held each year and communication was open and transparent.

### ***Creating a Powerful Property through Partnerships***

Andy Meserve (Tangent Energy Solutions) presented a case study of the transformation of a landfill adjacent to a former DuPont manufacturing site in Newport, Delaware into a 584-kilowatt, five-acre solar farm that produces sufficient energy to power 60 homes. The project reused a portion of this federal Superfund site that had limited redevelopment potential and provides reliable, renewable energy with zero emissions to the environment (vs. 350 tons of greenhouse gas). The project is the first of its kind in the Mid-Atlantic U.S., setting a precedent within EPA Region 3. At the same site, DuPont is partnering with the Wildlife Habitat Council to create a pollinator meadow in one area and a beneficial habitat on two landfills totaling over 20 acres. Activities to date have included implementing a beetle program to biologically control invasive plants, planting wildflower seeds to create three pollinator meadows, and installing several swallow boxes to provide additional habitats for birds. DuPont plans on installing duck boxes, purple martin houses, and an osprey platform in 2014. Presentation slides are provided in Attachment 12.

### ***Stakeholder Engagement in Sustainable Remediation: A Case Study***

Stella Karnis (CN) presented information about the stakeholder engagement process at a site impacted by metals due to a historic derailment of zinc copper concentrate. The process has allowed CN to build trust with the stakeholders with the objective of ultimately reaching a practical solution for the site (a rail corridor bordered on each side by wetlands). Because the site is located in an area that is difficult to access, logging roads had to be upgraded. CN has been working with the regulators at the site for over seven years, as well as the neighboring landowner. Site remedial options are limited, with the two primary options being stabilization

and excavation. These remedial options were assessed using CN's sustainability tool (GoldSET), and the indicators, weighting, and input parameters were discussed with the regulator and the neighbor. These discussions have helped clarify the expectations of these stakeholders and CN's objectives and have resulted in adjustments to the tool based on useful feedback. The regulator is supporting the use of the tool, the approach, and the results in stakeholder meetings, which include the First Nations (to be led by the Province) and an environmental group. Current work involves simplifying the reporting results of the sustainability assessment for stakeholders that may have less technical knowledge. Presentation slides are provided in Attachment 13.

### ***Case Study Initiative Follow-Up***

John Simon (Initiative Chair) asked participants if SURF should solicit feedback from regulators active in SURF on the case study template before finalization. Participants seemed to think this was a good idea; one participant suggested that the effort be integrated into the outreach work of the Sustainable Remediation Initiative.

### **Day 3**

Participants started the third day of the meeting reflecting on important ideas presented and discussed over the last two days.

- Seize opportunity to help water conservation through remediation.
- Engage stakeholders early and often regardless of conflicts.
- Implement sustainable practices at the beginning of a project and continue communication throughout the project.
- Consider portable solar devices for remediation projects (e.g., sampling).
- Expand stakeholder definition to outside of the “usual suspects.”
- Ask stakeholders what they want.

### ***Possible Themes for Future Meetings***

Participants brainstormed about possible themes for future meetings:

- Compile case studies, and expand value proposition so that interpretations are integrated into the value proposition.
- Learn from higher level sustainability representatives how SURF's initiatives fit into larger sustainability corporate objectives, and educate these representatives about sustainable remediation to influence the practice.
- Engage and discuss the pros and cons of short-term outlooks on remediation with finance professionals.

- Use Envision to rate the sustainability of a remedial system.
- Develop a toolkit for students about sustainable remediation.

### ***Comparison of Four Environmental Footprint Assessment Tools***

Paul Favara (CH2M HILL) summarized the results of the first comprehensive comparison of the four most utilized remediation footprint assessment tools. As of 2013, the most commonly applied footprint assessment tools are the Sustainable Remediation Tool (SRT), SiteWise, Spreadsheets for Environmental Footprint Analysis (SEFA), and SimaPro. All four tools use the following general approach to estimate the environmental footprint of a remediation option or alternative:

1. Practitioners input different features of the remediation option.
2. The tool cross-references the inputs against the data resources in the tool and calculates the associated emission, energy, and other information for each input.
3. The total environmental emissions, energy, and other information are reported and represent the environmental footprint of the option or alternative.

A comparison of these tools was performed using input from the same project to help understand consistencies and differences between the tools' results. Several experienced footprint assessment practitioners evaluated the four tools using the same project inputs. The input information for the tool comparison was the 90% design for the Grants Chlorinated Solvent Plume site, in Grants, New Mexico. The design used the following three different technologies to remediate contaminated groundwater: ISCO, in situ thermal treatment, and enhanced reductive dechlorination. The practitioners coordinated their inputs to ensure that the information from the remedial design was interpreted similarly so as to minimize the impacts of interpretation input on tool results. The results for each tool were analyzed numerous ways to identify areas of commonality and significant differences. Evaluation results showed similarities for some metrics parameters and differences - sometimes significant - for other metrics. Paul ended his presentation by showing the impacts of the differences on project decision making and making recommendations to achieve more consistency in the results of these footprint assessment tools. Presentation slides are provided in Attachment 14.

### ***Brainstorming Discussion: 2014 Goals***

Nick Garson (SURF President) reviewed SURF's 2013 organizational goals and asked for participants' feedback about the organization's goals in 2014. Detailed notes from this discussion are provided in Attachment 15. At the end of the discussion, one participant emphasized the need for SURF to maintain leadership in the technical space where sustainable remediation, remediation, corporate sustainability, and scientific environmental issues intersect.

### ***Climate Adaptation and Resiliency Planning: The Role of Remediation and Partnering***

Randy Britt (Parsons) presented an overview of climate adaptation and resiliency planning and emphasized the need for stakeholder partnering and collaboration throughout the process. Randy said that the primary goal of climate adaptation and resiliency planning is to mitigate the impact of climate events on utilities; transportation; defense, security, and fire protection; and active remediation sites. Emergency response is one component of this planning. Where emergency response focuses on actions *after* an event, climate adaptation and resiliency planning address measures to protect infrastructure and critical facilities and functions *before* an event occurs. This planning involves performing vulnerability and hazard risk assessments, identifying critical sites, conducting life-span analyses, and developing adaptation strategies. These activities require collaboration between stakeholders such as meteorologists, emergency response professionals, engineers, hydrologists, and seismic experts. Randy ended his presentation by mentioning the federal funding available for these planning activities and the EPA's draft agency *Climate Change Adaptation Plan* issued for public review and comment on February 9, 2013. Presentation slides are provided in Attachment 16.



**Attachment 1**  
**SURF 25 Participant Information**

## SURF 25 Participant Contact Information

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**Attachment 2**  
**Communications Committee Update**

# SURF Organization



## Board of Trustees

### Officers:

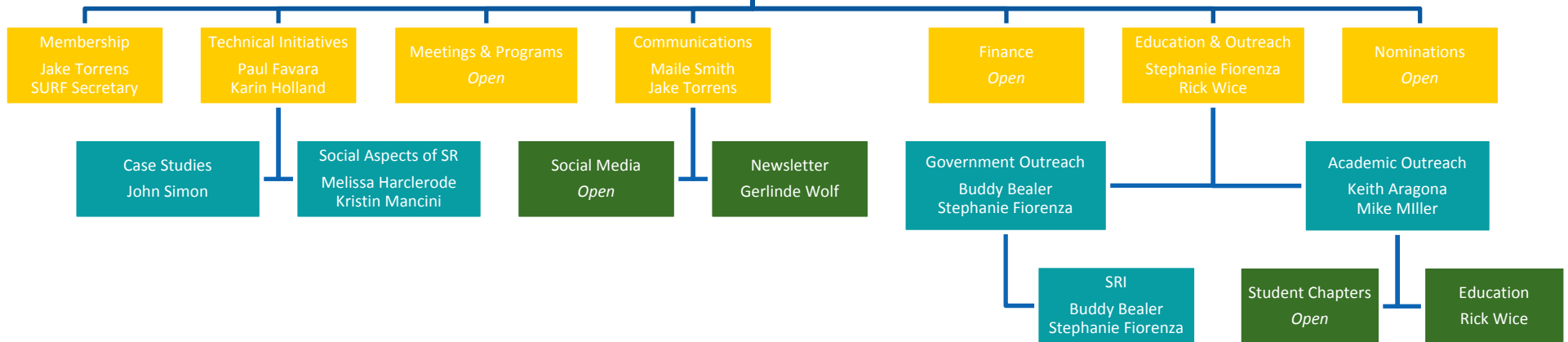
Nick Garson, President; Angela Fisher, Vice President;  
Amanda McNally, Secretary; Keith Aragona, Treasurer

### At-Large:

Buddy Bealer, Melissa Harclerode, Olivia Skance, Jake Torrens, Rick Wice

Meeting Facilitator: Mike Rominger, MCR Facilitation Services  
Technical Editor: Kathy Adams, Writing Unlimited

Auditor: Frank Brulenski, Smart Devine  
Legal Support: Karyllan Dodson Mack, K&L Gates



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University

Colorado  
School of  
Mines

University of  
Illinois at  
Chicago

Colorado State  
University

# Communications



We support SURF in three primary areas:

- Maintaining the repository of information
- Providing the forum for GSR experts to share information
- Communicating with SURF members

webinar series (virtual meetings) to replace in-person meetings; continue with A&WMA partnership

## WEBINARS

provide a venue for SURF members to publish and present their work

## MEMBER FORUM

develop outreach materials and support initiatives to spread the work and word, for both technical and general audiences

## PUBLICATIONS

mission statement available at:

[www.sustainableremediation.org/communications-and-outreach](http://www.sustainableremediation.org/communications-and-outreach)

## WEBSITE

2014: re-organize to promote most heavily used elements and eliminate little/never used elements

## SOCIAL NETWORKS

2014: recruit a social networking team to take the lead on website news, LinkedIn, and Twitter posts, with a goal of >1 new post per week

## NEWSLETTER

2014: four quarterly publications; solicit short articles from SURF members

contact:

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**Attachment 3**  
**Academic Outreach Initiative Update**



# AOI UPDATE

Team:

Mike Miller

Stephanie Fiorenza

Rick Wice

Keith Aragona

1

Haley & Aldrich, Inc.

## BACKGROUND

- Academic Outreach Initiative began around 2010
- Purpose is to establish relationships with students and professors/researchers
  - Establish GSR in universities
  - Get students involved in technical initiatives
  - Collaborate with principal researchers
  - Gain future SURF members and colleagues
- Two main components of AOI: student chapters and faculty outreach
- Student chapters (SC)
  - Faculty advisor
  - SURF mentor/liason
  - Student chapter officers
  - Student members

2

Haley & Aldrich, Inc.

# What are the chapters doing?

- Advertise SURF through flyer within engineering and other departments
- Organize field trips to local remediation sites
- Conduct trainings for students (on remediation and GSR)
- Hold monthly meetings – attendance ranges between 5 and 20 students
- Attend campus activity fairs
  - Networking
  - Raise awareness about SURF, sustainability, & remediation

## UPDATE

### 2013

- Student Design Competition framework complete
- Were not able to gain enough support from SCs to implement in 2014
- Shelved the program while we strengthen SCs

### 2014:

- Reset/re-establish our mission
- Determine what makes a vibrant chapter – and support it!
- Apply learnings to other chapters – and support them!
- Become intentional about engaging SURF with the SCs more frequently
- Expand relationships with faculty

# REQUEST FOR SUPPORT

## Short term needs

- Develop a mission statement for SCs
- Develop a welcome kit for SCs
  - For new SCs coming on
  - For new students within existing SCs
- Identify SURF SC mentors to establish the direct link with the organization

**Attachment 4**  
**Social Aspects of Sustainability Initiative Update**

# Social Aspect TI



## **Team Members:**

- Co-Leads – Melissa Harclerode and Kristin Mancini
- Members:
  - Angela Fisher, Jake Torrens, Karina Tipton, Olivia Skance and Rick Wice
- Board Liaison – Melissa Harclerode

## **Objectives:**

- Prepare a White Paper to address the following:
  - Illustrate the importance of performing a complete sustainability assessment when evaluating contaminated site remediation projects.
  - Provide tools to the remediation sector for evaluating impacts to the social and socio-economic nexus of remediation.
  - Share knowledge of existing case studies where the impacts to the social and socio-economic nexus have been evaluated for the remediation sector.

## **Accomplishments:**

- Finalized White Paper Outline
- Background information posted on DropBox
- TI Team split into two groups, one group is writing *Section I - Introduction* and the second group is writing *Section II - Importance of Evaluating the Social Aspect of Remediation*

## **Next Steps:**

- Complete a rough draft of Sections I and II.
- Continue background research.

## **Upcoming Meetings/Presentations:**

- SURF 25 Breakout Session

## **Help Needed:**

- Help Needed: Board
  - None
- Help Needed: Membership
  - Volunteers to help prepare Sections I and II



## **Attachment 5**

### **AB 440: The Return of the Brownfield Redevelopment Market?**

# AB 440

(aka The Gatto Act)

*The Return of the Brownfield  
Redevelopment Market?*

PRESENTED BY:

Thierry Montoya, Esq. — Alvarado Smith, APC  
Canaan Crouch — SullivanCurtisMonroe



INTRODUCTION TO AB 440





## INTRODUCTION TO AB 440



AB 440 is a Brownfields Remediation tool conceived to:

- Transform “blighted” and contaminated areas in urban centers;
- Encourage infill development to reclaim underutilized urban properties, converting them to productive use; and
- Revitalize urban centers, reducing continued suburban sprawl and reducing greenhouse gas emissions

## HOW DOES IT WORK?

AB 440 grants cities, counties, and housing authorities the power to:

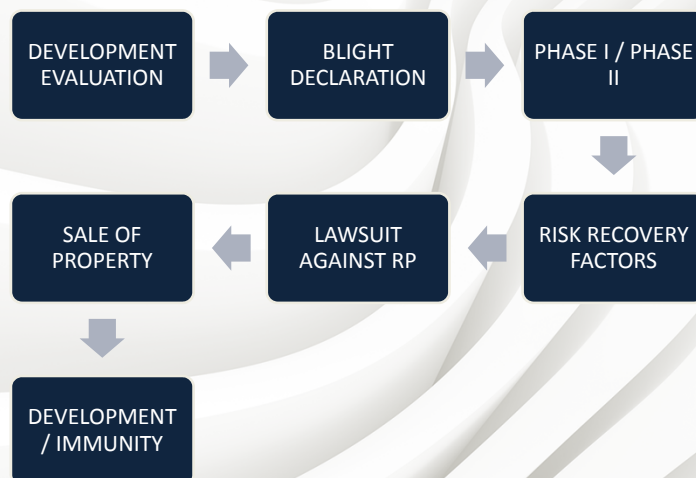
- Cause a property owner to cleanup sites under consultation with appropriate regulatory body (i.e. RWQCB or DTSC).
- Unlike the Polanco Act, their authority is no longer limited to the former Redevelopment Areas → Now State-wide.
- Immunity follows the chain-of-title, rather than an entity


## How DOES IT WORK? [CONTINUED]

AB 440 grants cities, counties, and housing authorities the power to:

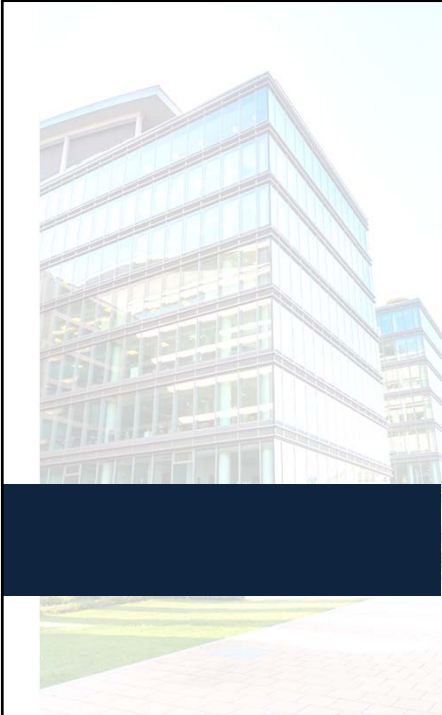
- Does NOT offer any immunity for Tort Liabilities
  - 3rd-Party Bodily Injury or Property Damage;
  - Non-Governmental allegations of Clean Up; or
  - Legal Defense Expenses
- Opens up public & private funding options

## THE AB 440 PROCESS



- 
- Blight Declaration
  - Property's Marketability
  - Municipal Familiarity with Law
  - Property Reuse, Tax Revenue
  - Society's Benefit (i.e., "Broken Windows")
  - Government Intrusive Taking/Eminent Domain
  - Regulatory Agencies – Unpredictable, Sometimes Slow

## CHALLENGES AND OPPORTUNITIES



### WHERE ARE THE OPPORTUNITIES AND PITFALLS FOR YOU?

- Municipalities
- Citizens
- Owners
- Developers
- Consultants & Contractors

## ABOUT THE PRESENTERS

### **Thierry R. Montoya, Esq.**

Thierry specializes in environmental, land use, engineering and construction related issues. He earned his J.D. from University of Notre Dame. Thierry has earned a Martindale-Hubbell "preeminent rating, a "Superb" AVVO rating, and is an OC Metro "Top Land Use" attorney for 2011-13.



### **Canaan Crouch, P.G.**

Canaan specializes in Environmental and Professional Liability exposures, and runs the Environmental, Chemical & Engineering Division at a retail commercial insurance brokerage. As a former environmental consultant in Southern California, Canaan has extensive experience managing the environmental compliance for a variety of public and private clients.



QUESTIONS?

THANK YOU  
*for your time.*

**Attachment 6**  
**Brainstorming Discussion: Case Study Initiative**



# Case Study Initiative



## **Team Members:**

- Lead – John Simon
- Barbara Maco, Wactor & Wick
- Venkat Jayaraman, Amec
- Carl Lenker, Gannett Fleming
- Kevin Morris, ERM
- Jake Torrens, Amec
- Amanda McNally, AECOM
  
- Board Liaison – Nick Garson

## **Objectives:**

- Compile case study examples of sustainable remediation implementation

## **Accomplishments:**

- Proposal accepted by BOD
- Established CS Initiative team
- Four telephone conferences
- Prepared final CSI report template, final tracking template, example case study and presentation format

## **Next Steps:**

- SURF presentation – Feb. 6th
- SURF working group – Feb. 5th
- Distribute to SURF membership – Feb. 14<sup>th</sup>
- Initiate promotion for case studies – Feb. 14<sup>th</sup>
- Prepare example case study – by Jan. 31<sup>st</sup>

## **Upcoming Meetings/Presentations:**

- Feb. 5 – 7 SURF meeting

## **Help Needed:**

- **Help Needed: Board**
  - Promote SURF members to develop case studies
- **Help Needed: Entice SURF members to complete case studies**
  - Discuss during SURF meeting



Completed by: J. Simon  
Date: October 25, 2013

1

# CSI: Overview



- Case study template with instructions
  - Promotes consistency
- Tracking template
- Example case study
- Presentation format



2



**Case Study:** Site Name, city, state (may be anonymous, but suggest at least including state) (e.g., Former Acme Petroleum Terminal, Anytown, New Jersey or Former Petroleum Terminal, New Jersey)

<b>Site Overview</b>	<p>Basic site information – Industrial, commercial, residential, mixed use, former uses (primarily those that caused contamination), current status</p> <p>Example – The site is in an industrial area of southern New Jersey located along the Delaware River. It had been used as a petroleum terminal from 1983 to 1999 and is currently capped with an electrical solar field that powers the groundwater extraction and treatment system.</p>
<b>GSR Project Outcome</b>	<p>Describe estimated environmental footprint reductions, and social/economic benefits anticipated or realized; description can be qualitative and/or quantitative [Note: this may be the longest section of the case study.]</p> <ul style="list-style-type: none"> <li>Outcome 1 (include metric, for each)</li> <li>Outcome 2</li> <li>Outcome 3</li> </ul>
<b>Background &amp; Drivers</b>	<p>Discuss driver for GSR portion of the project; can include any other relevant drivers (e.g., development potential prompted owner to undertake voluntary cleanup).</p> <ul style="list-style-type: none"> <li>Background and drivers 1</li> <li>Background and drivers 2</li> <li>Background and drivers 3</li> <li>Example - GSR promoted by corporate sustainability program</li> </ul>
<b>Regulatory Program</b>	<p>Type of regulatory program (e.g., voluntary, state order, RCRA, Superfund, LUST)</p>

# CSI: Building Inventory



## • HOW DO WE GET CASE STUDIES?

- Incentives
- Enhancements
- Other promotional ideas
- Public or private (SURF members only)



# CSI: Building Inventory



- **Potential Publications**

- SURF Website
- Remediation Journal Column?
- Other Publications
  - Trade publications
  - Federal (Clu-in) and state websites



**Brainstorming Discussion:**  
**Building Inventory of Case Studies**  
**Case Study Initiative**

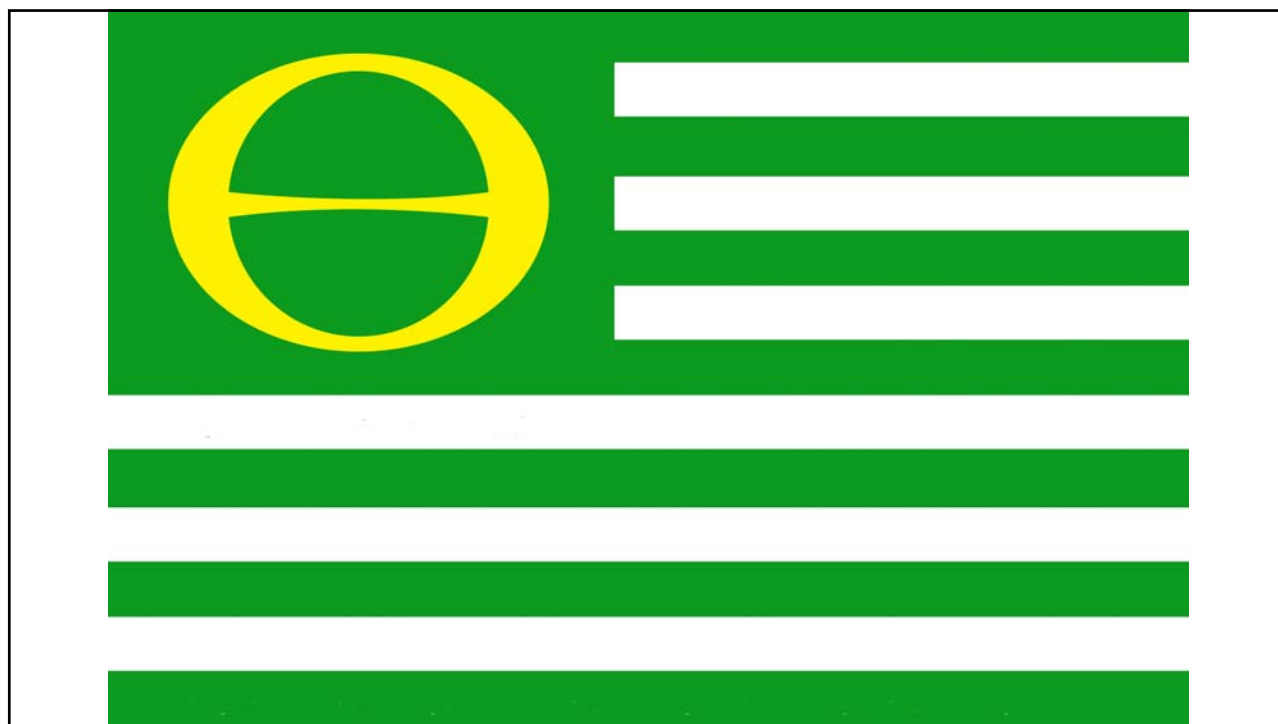
1. Use Incentives, Enhancements, and Other Promotional Methods
  - a. Tell each person attending a SURF meeting to bring two case studies to receive a free drink ticket at the group dinner.
  - b. Consider a press release.
  - c. Hold a case study competition with the winner getting a plaque and a press release about their case study. Create a proposal to submit to the Board of Trustees, then plug the competition at Battelle.
  - d. Charge \$10 more for a SURF meeting registration and give a t-shirt to participants that provide a case study.
  - e. Partner with an organization with greater brand recognition.
2. Publicize through Publications and Webinars
  - a. Highlight top five case studies in a publication.
  - b. Change case studies into narrative format for *Remediation Journal*.
  - c. Hold a webinar highlighting case studies.
  - d. Submit a short article for *Pollution Engineering*.
3. Capitalize on the interconnectedness of other SURF groups (e.g., use NICOLE case studies, evaluate trends).

Miscellaneous Potential Action Items:

- Include cover letter about greenwashing before case study template.
- Include key criteria that must be met in order for case study to qualify as sustainable.

## **Attachment 7**

### **From Ecology to Resiliency: The Growing Need for Partnerships**

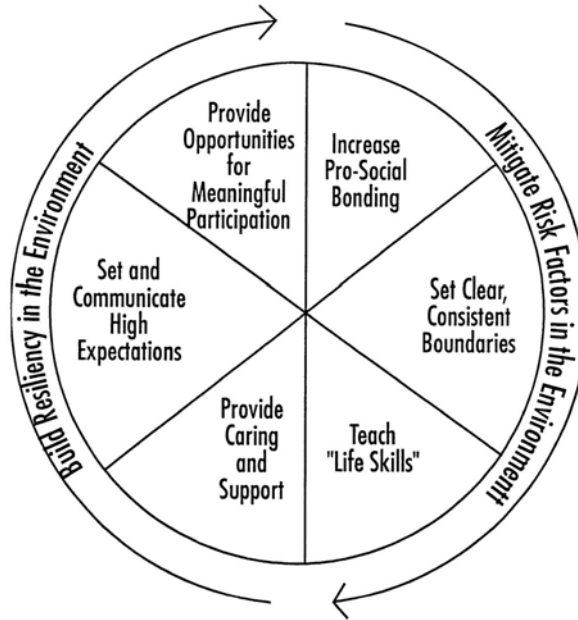




“Where sustainability aims to put the world back into balance, resilience looks for ways to manage an imbalanced world.”

- Andrew Zolli, *Resilience: Why Things Bounce Back*.

# The Resiliency Wheel



**Attachment 8**  
**Forming Sustainable Partnerships at Remediation Sites**



# Forming Sustainable Partnerships at Remediation Sites

**Deborah Taege**  
Environmental Remediation

## Agenda

Engineering, Operations & Technology | Environment, Health and Safety

- Boeing's **Corporate Commitment** to Sustainability
- **Site Background**
- Partnerships
- **Project Example**
- Conclusions



# Commitment to Sustainability

Engineering, Operations & Technology | Environment, Health and Safety

- Life Cycle Environmental **Footprint Reduction**
- Commitment to **Transparency**
- Environmental Stewardship **Strengthens Business**
- Shared Commitment to **Remediation and Restoration**
- Sustainable Remediation Program **Incentives**



3

## Sustainable Remediation Program Objectives

Engineering, Operations & Technology | Environment, Health and Safety

- Achieve **remedial action goals**
- Support **use** and **reuse** of remediated parcels
- Reduce **total pollutant** and **waste burdens**
- Minimize degradation or enhance **ecology** of sites
- Reduce **air** emissions and **GHG** production
- Minimize impacts to **water quality** and **water cycles**
- Conserve **natural resources**
- Achieve greater **financial return** from investments
- **Partnership** with stakeholders

4

# Santa Susana



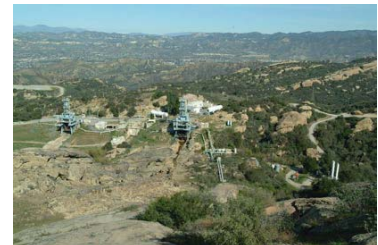
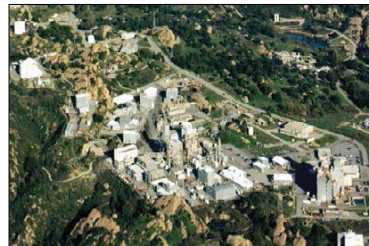
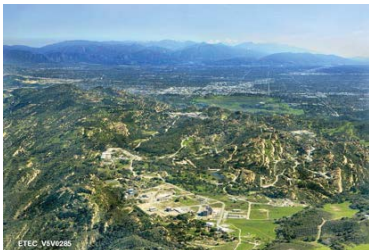
Protecting human health and  
restoring the environment

5

## Santa Susana – Past, Present, & Future

Engineering, Operations & Technology | Environment, Health and Safety

Operations



Clean-up



Restoration



6



# Santa Susana – Clean-up

Engineering, Operations & Technology | Environment, Health and Safety

## Beginning with the End in Mind

### → End Use: **Open Space**

#### → Considerations:

- Protection of sensitive plant/animal species
- Protection of cultural/historic resources
- Restoration of site after demolition/remediation activities
- Therefore, minimize intrusive activities while achieving cleanups goals



7



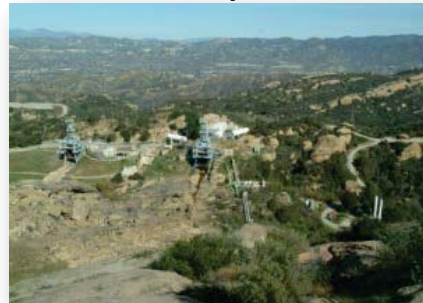
# Santa Susana - Restoration

Engineering, Operations & Technology | Environment, Health and Safety

## Burro Flats Pictographs



## Historic Aerospace Site



## Federally Endangered Species



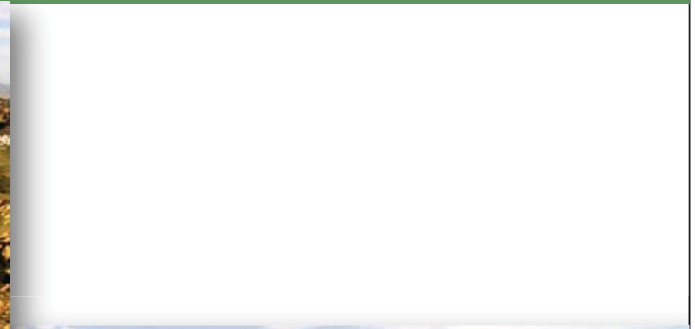
## Federal/ State Species of Concern



8

# Santa Susana Future

Engineering, Operations & Technology | Environment, Health and Safety



9

## Forming Sustainable Partnerships

Engineering, Operations & Technology | Environment, Health and Safety

- ➔ Comprehensive Public Participation Program:
  - ➔ Community outreach
  - ➔ Elected official briefings
  - ➔ Media updates
  - ➔ Newsletters
  - ➔ Website
- ➔ Include Stakeholders





# Biofilter Project

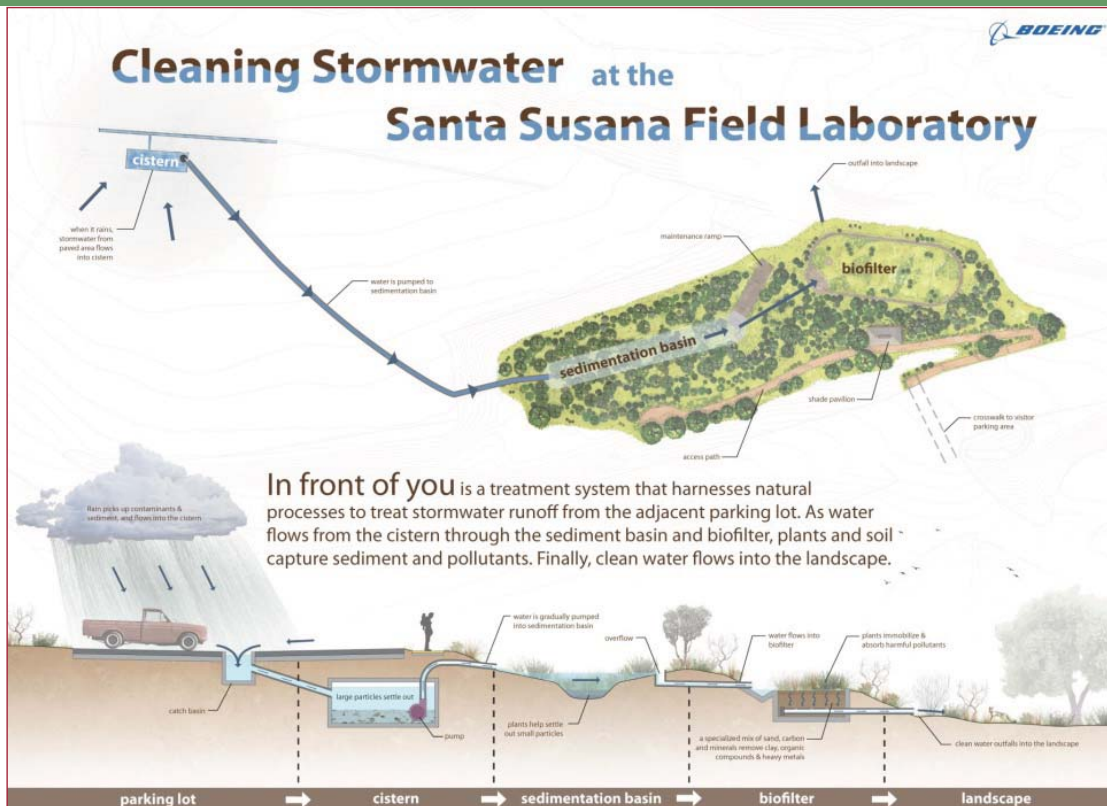
Engineering, Operations & Technology | Environment, Health and Safety



11

# Biofilter Project

Engineering, Operations & Technology | Environment, Health and Safety



12



# Biofilter Project

Engineering, Operations & Technology | Environment, Health and Safety



13

# Biofilter Project

Engineering, Operations & Technology | Environment, Health and Safety



14



# Stormwater Program Accomplishments

Engineering, Operations & Technology | Environment, Health and Safety

- Treatment of Stormwater
- Expert Panel
- Public Outreach
- Research
- Integration of non-profit Groups



## Awards and Recognition

Engineering, Operations & Technology | Environment, Health and Safety



Stormwater Biofilter Award

# How the Biofilter Meets SR Program Objectives

Engineering, Operations & Technology | Environment, Health and Safety

- ➔ Achieve **remedial action goals**
- ✓ Support **use** and **reuse** of remediated parcels
- ✓ Reduce **total pollutant** and **waste burdens**
- ✓ Minimize degradation or enhance **ecology** of sites
- ➔ Reduce **air** emissions and **GHG** production
- ✓ Minimize impacts to **water quality** and **water cycles**
- ✓ Conserve **natural resources**
- ➔ Achieve greater **financial return** from investments
- ✓ **Partnership with stakeholders**

## Summary

Engineering, Operations & Technology | Environment, Health and Safety

- ➔ Corporate **Commitment to Sustainability** is Important
- ➔ Start Sustainable Remediation with **End Use** in Mind
- ➔ **Communicate** Early and Often
- ➔ **Incorporate Stakeholders** into Decision Making Process



# Acknowledgements

Engineering, Operations & Technology | Environment, Health and Safety

- Paul Costa, Manager (Boeing)
- Kamara Sams, Communications (Boeing)
- Storm Water Expert Panel
- Stakeholders Mentioned



| 19



20

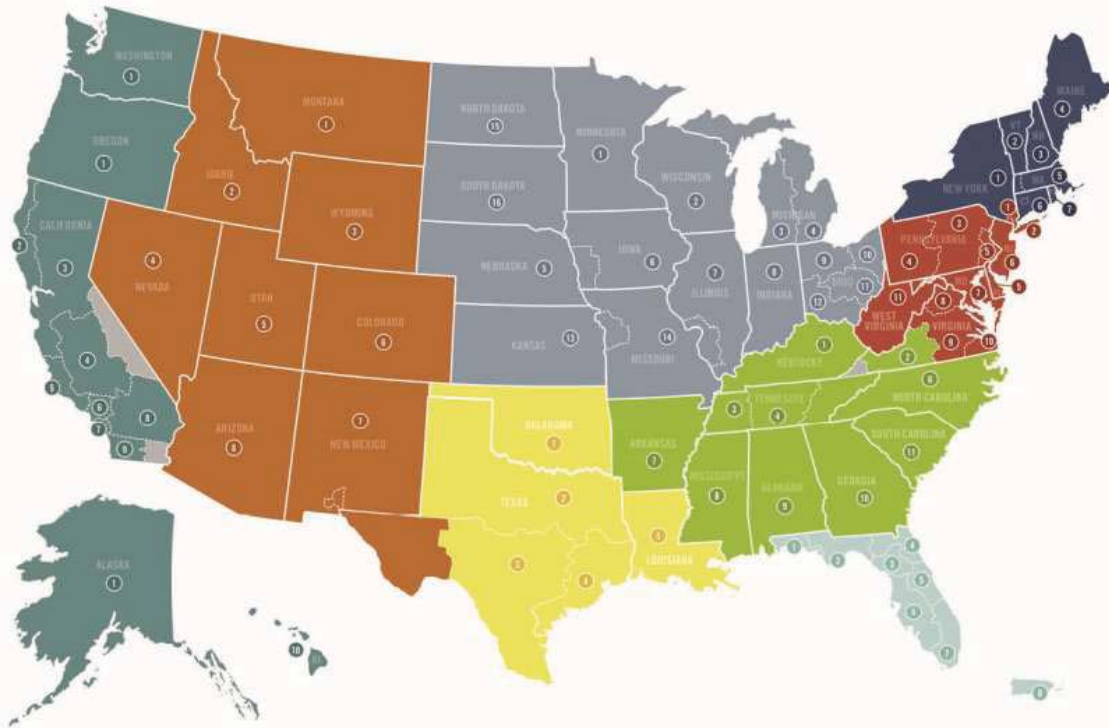
**Attachment 9**  
**LEED Rating System: 10 Pros and Cons**

# USGBC CHAPTERS

One community of individuals taking LOCAL action to deliver GLOBAL results through education, advocacy and outreach.

## NETWORK

77 Chapters  
30,000  
Individual Members



© U.S. Green Building Council, 2013

As of June 2013



**5,500**  
Active volunteers

**300,000**  
Hours donated  
annually

© U.S. Green Building Council, 2013

As of June 2013

USGBC's **national members**  
are organizations, corporations  
and institutions that make up a  
vibrant and diverse community.

**12,699**

© U.S. Green Building Council, 2013

As of June 2013

**188,015** LEED credentials held by  
professionals across all areas of practice.



© U.S. Green Building Council, 2013

As of June 2013



© U.S. Green Building Council, 2013

As of June 2013

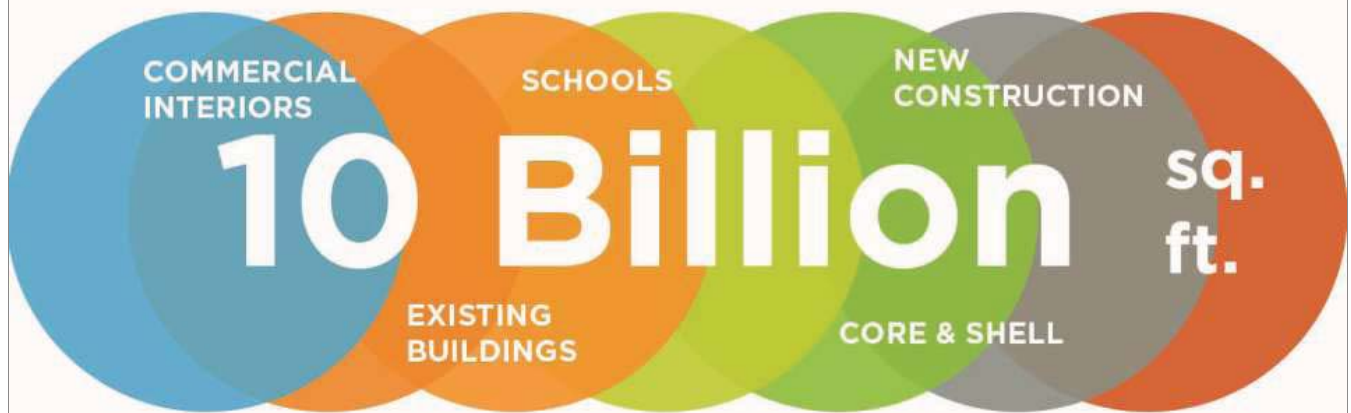


© U.S. Green Building Council, 2013

As of June 2013



# LEED CERTIFIED & REGISTERED COMMERCIAL PROJECTS



© U.S. Green Building Council, 2013

As of June 2013

## Commercial LEED Registered Projects

Total Currently Registered

35,996\*

© U.S. Green Building Council, 2013

\* As of June 2013

## **Commercial LEED Certified Projects** (Cumulative)

**17,863\***

© U.S. Green Building Council, 2013

\* As of June 2013

## **Square Footage of Commercial LEED Certified Projects** (Cumulative)

**2.6 billion\***

© U.S. Green Building Council, 2013

\* As of June 2013

# GREEN SCHOOLS ARE SPRINGING UP EVERYWHERE

LEED Certified:

**983**

Registered:

**1,890**

HECTOR P. GARCIA MIDDLE SCHOOL

© U.S. Green Building Council, 2013

Photo by James Steinkamp

As of June 2013

# HIGHER EDUCATION IS GAINING MOMENTUM

LEED Certified:

**2,198**

Registered:

**3,252**

© U.S. Green Building Council, 2013 Photo by Richard Mandelkorn

As of June 2013



# FEDERAL GOVERNMENT PROJECTS

**1,242** LEED certified  
projects,

representing **130** million sf

**4,068** registered projects,

representing **455** million sf

© U.S. Green Building Council, 2013

As of June 2013

# STATE GOVERNMENT PROJECTS

**456** LEED certified projects,  
representing **43** million sf

**1,019** registered projects

representing **136** million sf

© U.S. Green Building Council, 2013

As of June 2013

# LOCAL GOVERNMENT PROJECTS

**1,536** LEED certified projects,  
representing **125** million sf

**2,539** registered projects,  
representing **303** million sf

© U.S. Green Building Council, 2013

Photo by Peter Calvin

As of June 2013



# GOVERNMENT LEED INITIATIVES

**14** federal  
agencies or  
departments

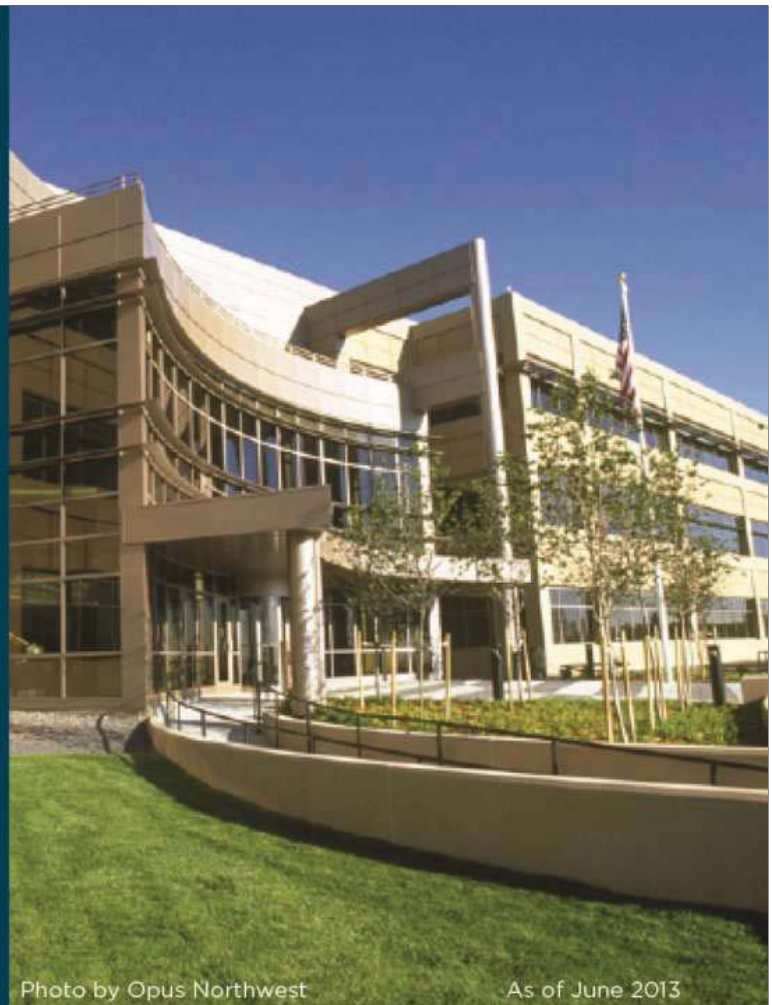
**30+** states

**400+** localities

© U.S. Green Building Council, 2013

Photo by Opus Northwest

As of June 2013





# LEED FOR HOMES

**400+** Green Raters

**111,355** registered homes

**39,318** certified homes

© U.S. Green Building Council, 2013



As of June 2013

# 47%

of Certified LEED Homes are  
**Affordable Homes**

As reported at time of certification.

© U.S. Green Building Council, 2013

# 1.5 MILLION

square feet certifies to LEED per

# DAY



© U.S. Green Building Council, 2013

Average as of June 2013



**WORLD GREEN BUILDING COUNCIL**

**22 Associated Groups**

**Conversations with 48  
countries to develop  
GBCs**

## 28 MEMBER COUNCILS

Argentina	Romania
Australia	Singapore
Brazil	South Africa
Canada	Spain
Chile	Sweden
Colombia	Taiwan
France	Turkey
Germany	United Arab Emirates
Hong Kong	United Kingdom
India	United States
Israel	
Japan	
Jordan	
Mexico	
Netherlands	
New Zealand	
Peru	
Poland	

© U.S. Green Building Council, 2012

As of June 2013

# LEED® INTERNATIONAL ROUNDTABLE MEMBERS



ARGENTINA GREEN BUILDING COUNCIL



GREEN BUILDING COUNCIL BRASIL



CANADA GREEN BUILDING COUNCIL



CHILE GREEN BUILDING COUNCIL



COLUMBIA GREEN BUILDING COUNCIL



EL SALVADOR GREEN BUILDING COUNCIL



GREEN BUILDING COUNCIL FINLAND



GERMAN GREEN BUILDING ASSOCIATION, E.V.



GUATEMALA GREEN BUILDING COUNCIL



SOUTH KOREA GREEN BUILDING COUNCIL



INDIAN GREEN BUILDING COUNCIL



IRISH GREEN BUILDING COUNCIL



GREEN BUILDING COUNCIL ITALIA



GREEN BUILDING JAPAN



JORDAN GREEN BUILDING COUNCIL



MEXICO GREEN BUILDING COUNCIL



NORWAY GREEN BUILDING COUNCIL



PANAMÁ GREEN BUILDING COUNCIL



PERU GREEN BUILDING COUNCIL



PLATINUM AND GREEN BUILDING PROFESSIONALS PARTNERSHIP



POLISH GREEN BUILDING COUNCIL



QATAR GREEN BUILDING COUNCIL



ROMANIA GREEN BUILDING COUNCIL



GREEN BUILDING COUNCIL RUSSIA



GREEN BUILDING COUNCIL ESPAÑA



SWEDEN GREEN BUILDING COUNCIL



TURKISH GREEN BUILDING COUNCIL



EMIRATES GREEN BUILDING COUNCIL



FONDATION POUR L'ENERGIE, L'ENVIRONNEMENT ET LE DEVELOPPEMENT



U.S. GREEN BUILDING COUNCIL

**LEED-EB Registered  
& Certified Projects**  
(Cumulative)

**8,912\***



# GREEN HOTELS

LEED Certified:

**226**

Registered:

**1,361**

© U.S. Green Building Council, 2013

Photo by Mark File

As of June 2013

# GREEN RETAIL STORES

LEED Certified:

**2,311**

Registered:

**4,167**

© U.S. Green Building Council, 2013

As of June 2013

# HEALTHCARE PROJECTS

**540** LEED certified projects,

representing **58** million sf

**1,449** registered projects,

representing **239** million sf

© U.S. Green Building Council, 2013

Photo by Mark Swendner

As of June 2013

## PRO

#1: The USGBC provided research-backed standards that gave green design credibility.

#2 LEED established a broad-spectrum, holistic approach to being green.

#3 LEED legitimized and mainstreamed green design as a business investment.

#4 The desire for LEED's status symbol often ensures follow through of green building practices.

## CON

#1 LEED's status symbol and point system encourage you to "game" the system and not actually think about the environment.

#2 LEED is difficult and expensive to do on your own.

#3 LEED is an isolated evaluation of a building's design which ignores context and performance.

#4 If LEED becomes a mandate, it loses its adaptability.

#5 LEED represents a conceptual framework that, while better than the status-quo, does not encourage forward-thinking design.

**However, one last PRO:**

The USGBC is receptive to change.



**Attachment 10**  
**Brainstorming Discussion: Groundwater Conservation**  
**and Reuse Initiative**

## **Brainstorming Discussion: Groundwater Conservation and Reuse Initiative**

1. Identify potential partners regionally.
2. Develop a webinar to communicate concepts more broadly.
  - a. Partner with Clu-In.
  - b. Certify professional development hours for geologists and engineers for participation.
3. Develop a press release that includes a testimonial from a recognized expert in field.
4. Share with colleagues and organizations.
5. Identify and obtain speaking engagements to share concept.
6. Leverage success with the Orange County Water District.
7. Engage SURF's student members to perform life-cycle analysis to quantify value of groundwater conservation and reuse.
8. Gather and report on additional case studies.
9. Help develop a best management practice for groundwater reuse.
10. Engage stakeholders and discuss incentives for water reuse.
11. Review SPUR's *Future-Proof Water: Where the Bay Area Should Get Its Water in the 21<sup>st</sup> Century*. (<http://www.spur.org/publications/spur-report/2013-03-18/future-proof-water>)

**Attachment 11**  
**Case Study: Transformation of a Superfund Site**  
**to an Ecological Habitat**

## Transformation of a Superfund Site to an Ecological Habitat Using Sustainable Remediation Principles and Public and Private Partnerships

6 February 2014



### Introduction

- Bruce Wilkinson; Haley & Aldrich, Inc.
- Mary Rager; Pollinator Partnership



## Outline

- Site Background – location and history
- Initial Remediation Work – installing the cap and turf grass, EPA approval
- Development of the Pollinator Prairie – selecting partners, design process, soliciting public input, project management
- Continued Outreach – WHC Certification, Website, local EMGs, School Groups
- Next Steps

3

HALEY & ALDRICH POLLINATOR PARTNERSHIP

## Site Background

### Former Chemical Recycling Facility (Olathe, KS)

- EPA Region 7 – CERCLA Consent Decree
- TCE & Metals contamination (soil/groundwater)



### Goals

- Eliminate exposure & remediate source areas
- Maintain positive community relations
- Site restoration - open green space & pollinator habitat

### Original Implementation Plan (2002)

- Excavate entire site to bedrock (~ 2 acres X 20 ft.), treat soils on-site via. thermal desorption, on-site reuse of soil as backfill
- Large footprint
  - Soil excavation with large equipment operating for extensive period of time
  - Significant power requirements for thermal desorption
  - Noise, dust, neighborhood truck traffic
    - Disruption to residents immediately adjacent to site



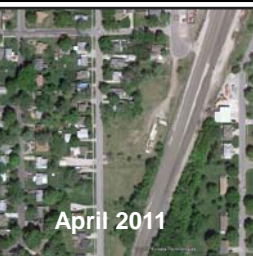
4

HALEY & ALDRICH POLLINATOR PARTNERSHIP

## Site Background (cont.)

### Revised Implementation Plan (2010)

- Limited soil excavation with off-site disposal - no idling trucks
- ISCO perimeter trench construction
  - Used bio-polymer slurry (food grade guar gum)
    - Guar gum broken down to water after use
    - Eliminated off-site disposal of slurry
- Constructed on-site water treatment system (eliminated off-site transport)
- Restored with native prairie grasses requiring minimal maintenance



April 2011



Circa 1970



June 2011



August 2011



October 2011

## Triple Bottom Line Objectives

### Environmental

- Compliance
  - Met EPA Consent Decree requirements
- Footprint Reduction
  - Air emissions - required waiting trucks to turn off engines
  - Eliminated offsite stormwater treatment (~84,000 gallons)
  - Use of “no-mow” type grass seed during restoration will eliminate 25+ mowing events per year on 5 acre site

### Economic

- Cost Reduction
  - Significantly reduced amount of soil excavation and off-site treatment

### Social

- Safety
  - No lost time accidents
- Communication
  - Transparent & frequent; good agency & community relations
- Reuse
  - Designed remedy with end use plan - open space/pollinator habitat
  - Received EPA Region 7 L.E.A.F.S. Award



**HALEY & ALDRICH** **POLLINATOR PARTNERSHIP**

## The Rest of the Story... “Development of the Pollinator Prairie”

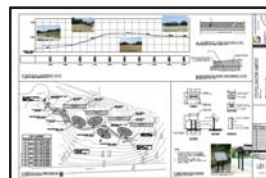
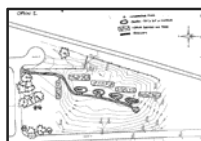
- Developed concept of the Pollinator Prairie
- Selected partners (public and private)
- Solicited public input
- Collaborative design process
- Involved volunteers at appropriate times

**POLLINATOR PARTNERSHIP**



**HALEY & ALDRICH**

**HALEY & ALDRICH** **POLLINATOR PARTNERSHIP**



## Selecting Plants

- Select plants for each of the 5 gardens
- Seeds vs. Plants
- Check availability
- Bloom chart

Name	Seed/Plts.	J	F	M	A	M	J	J	A	S	O	N	D
<i>Coreopsis tinctoria</i>	S			X	X	X	X	X	X	X			
<i>Coreopsis lanceolata</i>	S				X	X	X						
<i>Echinacea pallida</i>	S					X	X	X					
<i>Asclepias tuberosa</i>	P						X	X	X				
<i>Asclepias syriaca</i>	P						X	X	X				
<i>Helenium flexuosum</i>	S						X	X	X				
<i>Rudbeckia hirta</i>	S						X	X	X	X	X		
<i>Asclepias incarnata</i>	P						X	X	X	X			
<i>Eupatorium coelestinum</i>	S						X	X	X	X	X	X	
<i>Helianthus angustifolius</i>	S									X			

## Signage



Each garden has a unique interpretive sign



## Website

[http://pollinator.org/pollinator\\_prairie.htm](http://pollinator.org/pollinator_prairie.htm)

**POLLINATOR PARTNERSHIP** NAPP  
Your Source for Pollinator Action and Information.

Science & Consulting | Pollinator Week

Home About Us Planting Guides Useful Resources Shop Get Involved Donate

### The Pollinator Prairie

Welcome to the Pollinator Prairie - The Transformation of the Former C...

#### BEE GARDEN

The plants in this garden represent mostly native Kansas wildflowers that attract bees. Bees are essential pollinators. Most are solitary (one alone) versus others are social and live in colonies (honey bees and bumble bees). Pollination by bees results in the production of fruits, nuts, berries, seeds and things that are food for birds, mammals, millions of insects and ourselves. Bees pollinate many different kinds of wildflowers and flower shapes. Take a look at the flower shapes you see in the garden. Some are cone shaped like black-eyed Susan or coneflower. Others are tubular and others are tubular like heartstring (Penstemon sp.). Smaller bees, like sweat bees, prefer the cone-shaped flowers while larger bees, like bumble bees and carpenter bees, prefer to crawl inside the tubular flowers.

Download the plant list

Download the Bee Book

**Ladyfinger Bee, Megachile sp.**  
Ladyfinger bees are solitary bees that live alone and not in hives. Ladyfinger bees usually nest in hollowed out stems. They cut semi-circles of leaves that they carry to the nest. The leaves are used to line the nests. They are easy to spot because they carry pollen on the underside of their abdomen.

**Bumble Bee, Bombus sp.**  
Up to 11 species of bumble bees occur in eastern Kansas. These large bright yellow and black bees are known for buzz pollination, where they grip onto a flower and then buzz their wings until the pollen vibrates out. Plants like tomatoes can only be pollinated this way.

**Sweat Bee, Agapostemon sp.**  
Sweat bees gather nectar from a unique bacteria they have - collecting sweat when they nap on with...

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## Plant Lists for Every Garden

### Bee Garden Plants

#### *Asclepias syriaca*

**Common Name:** Common Milkweed  
**Pollinators:** Butterflies, Bees, Beetles  
**Bloom Color(s):** Purple  
**Height:** 2-6.5 ft.  
**Bloom Period:** May-August  
**Sun:** Full Sun  
**Soil:** Dry, Moist



#### *Baptisia alba*

**Common Name:** White Wild Indigo  
**Pollinators:** Butterflies, Bees  
**Bloom Color(s):** White  
**Height:** 2-5 ft.  
**Bloom Period:** April-July  
**Sun:** Sun, Partial Shade  
**Soil:** Dry, Moist



## The Rest of the Story... “Pollinator Prairie” Legacy



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## The Rest of the Story... “Pollinator Prairie” Legacy



14

Corporate Lands for Learning Certification  
(Announced in November 2013)

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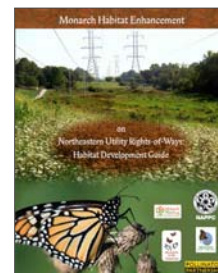
## Wildlife Habitat Council Corporate Lands for Learning Certification

- Link corporate habitat with students to aid in science education
- Show demonstrated outreach and engagement with school and scout groups, master gardeners and/or university researchers
- 147 Corporate Lands for Learning sites in 45 states
- Wildlife at Work, 665 sites nationally



15

## Pollinator Partnership



**Mission:** The Pollinator Partnership's mission is to promote the health of pollinators, critical to food and ecosystems, through conservation, education, and research.



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## **Special Thanks to....**

**Boeing**

**Joe Flaherty, Boeing**

**Jeff Field, EPA**

**Chip Taylor, Monarch Watch**

**Thelma Redick, Wildlife Habitat Council**

**Laurie Davies Adams, Pollinator Partnership**

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**HALEY &  
ALDRICH** **POLLINATOR  
PARTNERSHIP**

## **Thank You!**

**Bruce Wilkinson; Haley & Aldrich, Inc.  
BWilkinson@haleyaldrich.com**

**Mary Rager; Pollinator Partnership  
MR@pollinator.org**

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ALDRICH** **POLLINATOR  
PARTNERSHIP**

**Attachment 12**  
**Creating a Powerful Property through Partnerships**

# Creating a Powerful Property through Partnerships

Dina Toto, DuPont

Andy Meserve, Tangent Energy Solutions

1

## Bios

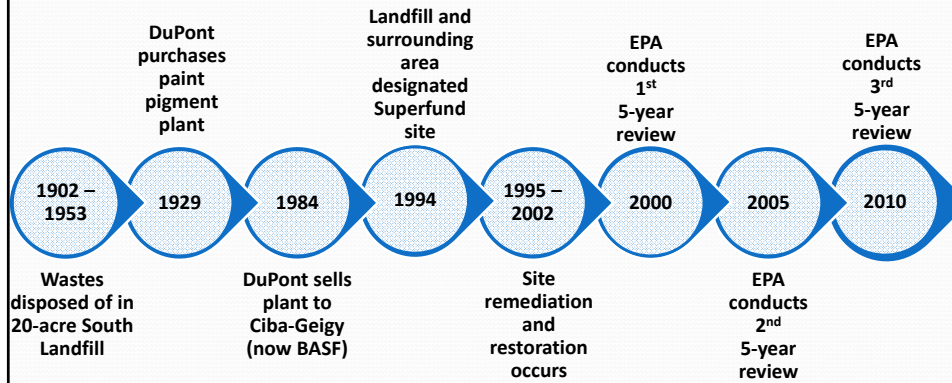
- Dina Toto is an environmental engineer with over 13 years of experience managing remediation projects. As a Project Director within DuPont's Corporate Remediation Group, Dina manages a remediation portfolio consisting of manufacturing plant sites and nonoperating sites. She participates in the CRG's Sustainability Network which aims to embrace sustainable approaches to remediation that provide a net benefit to the environment. Dina earned a B.S. in Environmental Engineering from Temple University and will pursue a MBA in March 2014 at the University of Delaware. In an effort to integrate sustainability into her life, Dina uses her sailboat to travel the Chesapeake Bay on the weekends.
- Andy Meserve is Vice President of Sales and Development at Tangent Energy Solutions, focused on developing growth businesses in the photovoltaic (solar electric) arena. He has 12 years of solar business development experience, including as Sales Director for GE Energy – Solar Technologies. In this position, he initiated and grew direct turnkey solar solutions that provided large electricity consumers financially viable renewable energy solutions. Andy has a B.A. from the University of Delaware, serves on the Board of Directors of the Delaware Solar Coalition, and served two terms as Vice President of the Mid-Atlantic Solar Energies Association.



2



## The Basics



3

## The Potential Risky Business of Reuse

- Environmental
  - Environmental and human health exposure
- Economic
  - Floodplain insurance restrictions
  - Reality of hazardous waste landfill
    - Lack of infrastructure
    - Lack of revenue-generating ideas
    - Unproven design and construction elements
  - Remedy repair cost
  - Superfund violation and penalties
- Societal
  - Loss of established performance on a 20-year effective remedy
    - Community confidence shattered
    - Regulator trust tested



4

## The First Step



Get off the dance floor...

- Implementing day-to-day tasks
- Focusing on short-term objectives only
- Working within budget and resource limitations
- Spinning (i.e., the grind)

...and onto the balcony

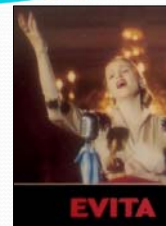
- Gain the clearest perspective
- Identify opportunities for sustainability
- Further understand limitations without fear
- Recognize innovative partnerships



5

## The View from the Balcony

- Identify potential partners with experience in reuse
  - Regulators
  - Other hazardous waste landfill owners
  - Wildlife Habitat Council
- Be open to a strategy that combines soft and hard benefits
  - Property developers
  - Investment firm
- Brainstorm reuse options that minimize or eliminate landfill cover disturbance
  - Challenge engineers to construct without excavation or land disturbance of any kind
  - Assess feasibility of utility application based on existing infrastructure
  - Create beneficial wildlife habitat for birds and pollinators on landfill cover



6

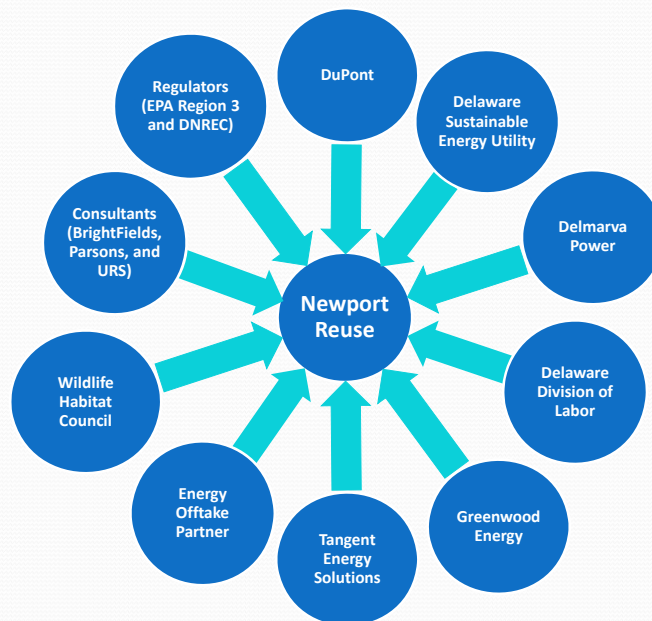


## Get Back Down on the Dance Floor!



7

## Choose Your Partners...Tangent Takes the Lead



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# Walking on Sunshine

- The Solar Array

- 584-kilowatt
- Five acres
- Sufficient energy to power 60 homes
- Zero emissions to the environment (vs. 350 tons of greenhouse gas)
- Precedent within EPA Region 3



- The Deal

- Use of DuPont Apollo Solar Modules (\$443,000 in sales)
- Receipt of yearly payments of \$7,000 through a 20-year solar land lease with the energy company
- Savings of about \$2,000 per year through sitewide maintenance reductions



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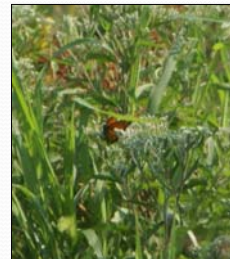
10





## Wildlife Habitat Program

- Certification for Wildlife-at-Work Program (2012)
  - Purple loosestrife biological control (beetle program)
  - Swallow box installation
- Habitat enhancement (2013)
  - Pollinator meadow established in three areas (~ 0.5 acres total)
  - Bird boxes installed at 10 locations
  - Purple loosestrife biological control (ongoing)



## Purple Loosestrife Biological Control



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## The Reward

- Environmental
  - Continued protection of human health and environment
  - Landfill cover integrity maintained during construction
  - Zero environmental incidents
  - Zero health and safety incidents
  - Precedent setting
- Economic
  - Property taxes paid from lease revenue for DuPont
  - 20-year power purchase agreement revenues for Greenwood
  - Local development, engineering, and construction job creation
  - DuPont Apollo panels used
  - "Big Box" retailer receiving hedge on electricity
- Societal
  - Enhanced wildlife habitat at the landfill
  - Enhanced regulator and community relationships



14





## What the judges had to say...

- Jack Markell
  - Governor of Delaware
  - "The DuPont Solar Power Project complements Delaware's commitment toward using clean, renewable energy sources...Generating solar energy benefits the residents of Newport, and positively impacts our state - increasing our competitiveness, reducing air pollution, improving public health and creating jobs." – *The News Journal*, December 8, 2013
- Shawn Garvin
  - EPA Region 3 Regional Administrator
  - "Under the RE-Powering America Initiative, EPA encourages renewable energy development on current and formerly contaminated land when it is aligned with the community's vision for the site...When we work together to turn an environmental problem into an opportunity, we create the best of what is possible..." – *The News Journal*, December 8, 2013

## Filling Our Dance Card in 2014

- Other DuPont sites
- Wildlife Habitat Council activities
  - Recertification application in May 2014
  - Continuation of beetle program, wildflower meadow, and swallow boxes
  - Expansion of bird box program
    - Wood duck boxes (obtained from DNREC)
    - Purple martin condos (recycled from another DuPont site)
    - Osprey platform (donated by URS)



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## Questions?

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## **Attachment 13**

### **Stakeholder Engagement in Sustainable Remediation: A Case Study**



## Delivering Responsibly

### Multi-Stakeholder Engagement - *a case study*

Stella Karnis  
Sr Manager Environmental Affairs

SURF 25  
February, 2014



#### OUTLINE

**Who are we?**

**Site Context**

**Approach to Stakeholder  
Engagement**

**Remedial Action Plan**

**Conclusions and Lessons Learned**



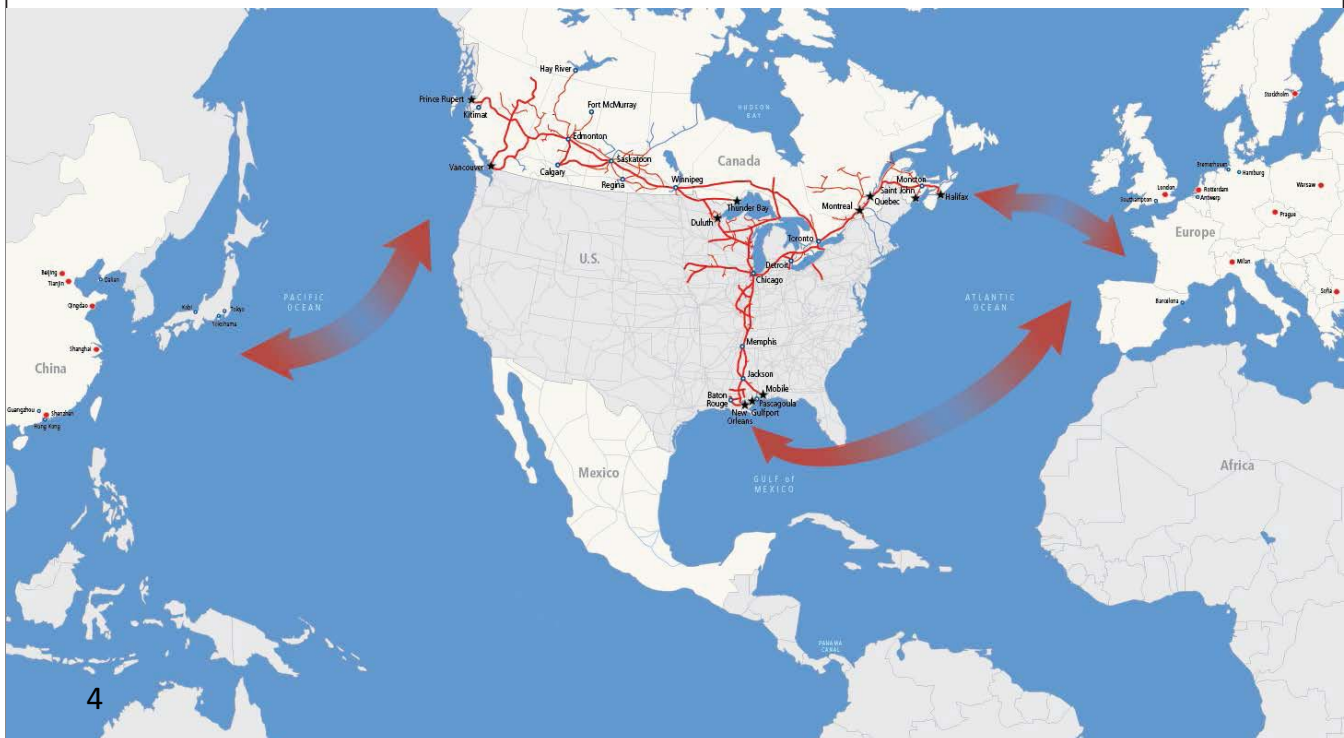
Who are we?



3

Who are we?

**CN is an important link  
in the global supply chain**



4

Who are we?

## Efficient transportation solutions



**Routing efficiency based on a unique North American franchise**



**Complete service offering combines effectiveness of short-haul trucking with efficiency of long-haul rail**



**Supply chain expertise**

5

What we do and who we are

## What CN Stands For



6



## Site Context



7

## Site Context

### Site History

- Derailment in late 70's with release of zinc concentrate
- Clean-up carried out by CN, reportedly in conjunction with the regulatory agencies
- No documentation for the derailment and clean-up activities available
- Tracks removed late 90's



8



## Access

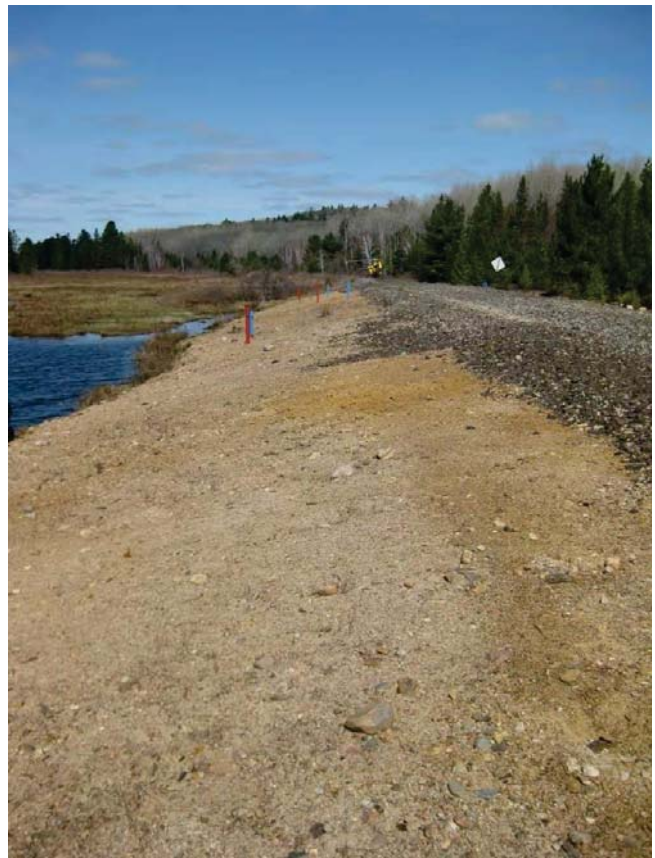
- Remote site
- Access via 6 km of unpaved road followed by 3.5 km logging road with portable steel bridge (temporary bridge) and 2.5 km travel along rail bed with a 14' wide concrete bridge.



9

## Site

- Limited work area (6-10 m wide flat rail bed)
- Wetlands on both sides
- Fish and Turtle Habitat



10

## Site



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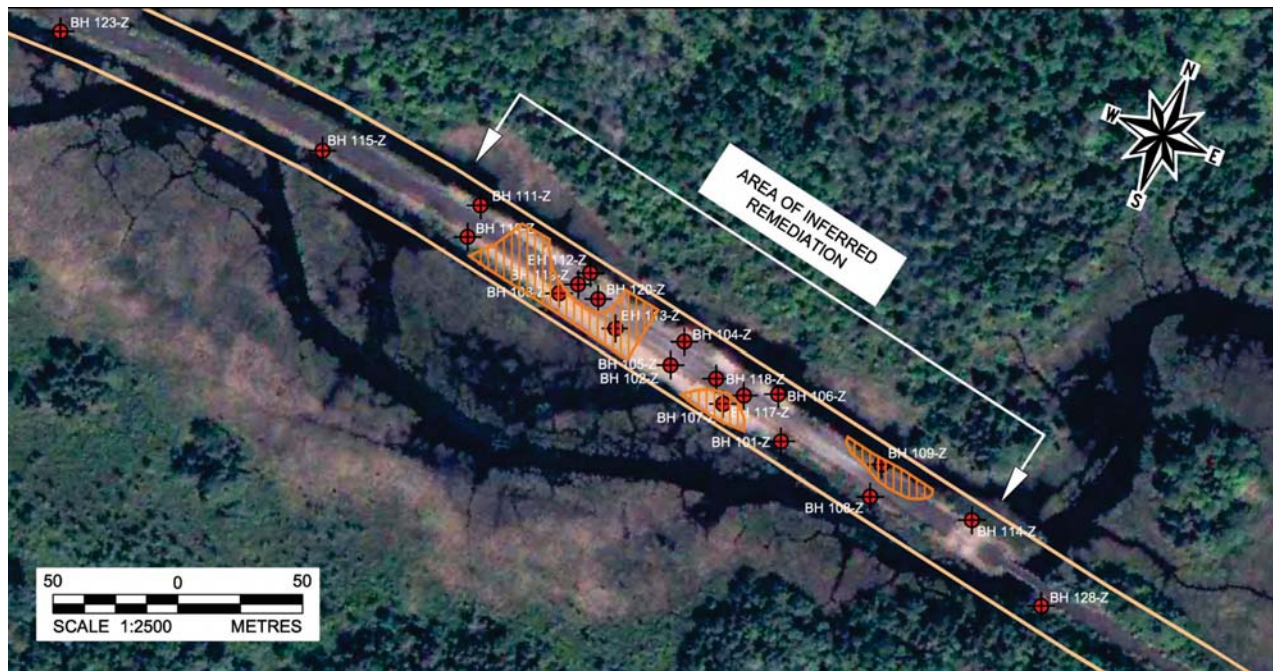
## Investigation History

- 1997 - Conducted work at several locations along the line.
- 2006 - Surface water and shallow soil sampling (first indication of zinc impacts).
- 2007/08 - Installed 13 monitoring wells (3 in 2007 and 10 in 2008) along the rail line with soil and groundwater sampling.
- 2008 - Sediment sampling in the wetlands adjacent to the rail line and in the river
- 2008/2009 – Species at Risk (SAR) assessment
- 2009 to Present (to date over 150 sampling locations for various media)
  - Additional monitoring wells installation (total of 20).
  - Surface water and groundwater seasonal monitoring program (May, July, October).
  - Additional sediment sampling in the wetlands adjacent to the rail line and in the river.
  - Terrestrial biological survey, fish community and habitat assessment
  - Surface water and sediment toxicity testing.
  - Benthic invertebrate and fish tissue sampling.

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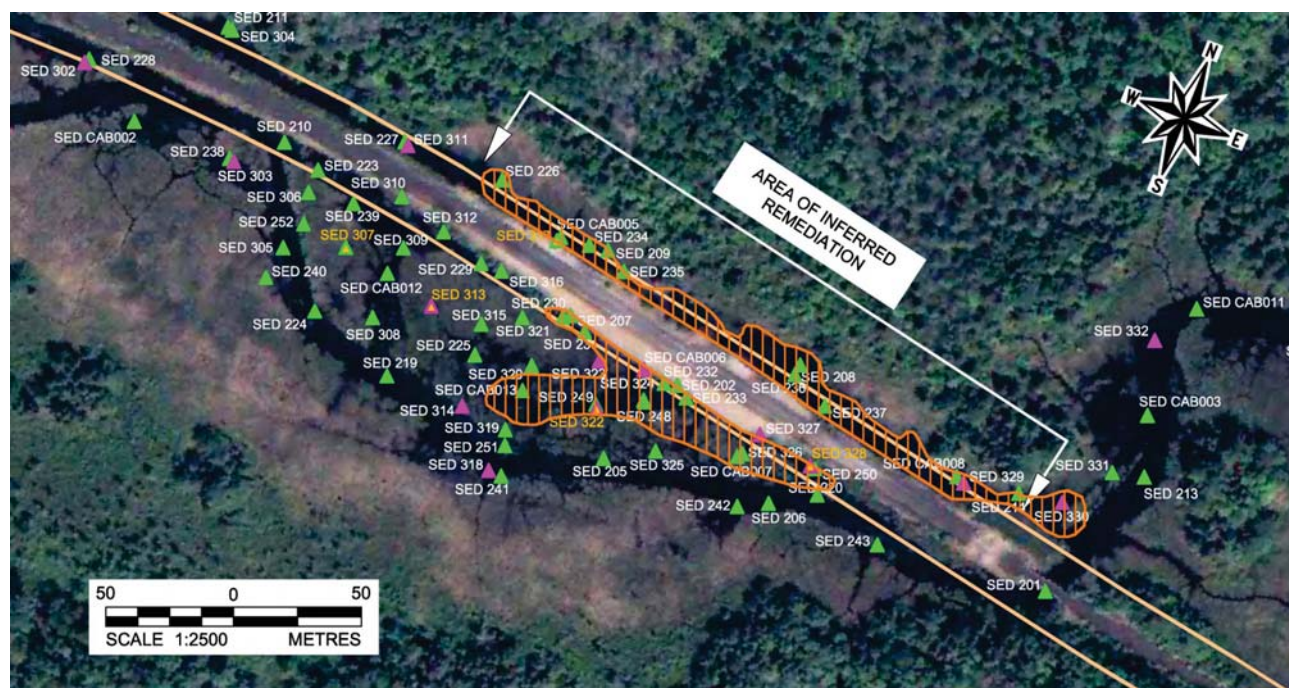


## Soil Quality



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## Sediment Quality



14



## Aquatic Surveys and Sampling



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## Risk Assessment

- The RA forms the basis for decisions regarding the need for risk management measures and/or remedial activities
- A peer reviewer was engaged throughout process to provide
  - technical review of the risk assessment
  - Support as we were outside of the regular regulatory process and the regulator did not have technical branch support.
- RA Workplan, Problem Formulation and RA report have been reviewed and comments addressed

### Conclusions:

- Remediation of limited impacted soil areas
- Remediation to reduce surface water impacts
- Remediation to reduce sediment impacts that pose potential unacceptable risk to sediment-dwelling organisms and terrestrial

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## Contaminants of Concern

Parameter	Soil	Groundwater	Surface Water	Sediment
Antimony	X	X		X
Arsenic	X			X
Cadmium	X	X	X	X
Cobalt	X	X	X	X
Copper	X	X		X
Lead	X	X	X	X
Nickel		X		
Selenium		X		X
Silver				X
Zinc	X	X	X	X

## Identification of Stakeholders

- Identification of Stakeholders at the beginning of the assessment stage
- Stakeholders included:
  - Lead regulator
  - Affected landowner (Provincial government)
  - Public Interest Group/Shareholder
  - First Nations
  - Other Provincial and Federal Agencies



## Approach to Stakeholder Engagement



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### Approach to Stakeholder Engagement

## Communication Plan

- Developed during the assessment stage and shared with the lead regulators to outline expectations

*The objectives of this communication plan are as follows:*

- Clearly identify methods for invite feedback from the stakeholders;
- Facilitate regulator and public stakeholder communication so that equitable solutions are developed to address credible concerns and aid in the efficient implementation of the project;
- Document internal and external communications.



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## Approach to Stakeholder Engagement

### Communication Plan

- Lead Regulator
  - Includes managers and technical leads
  - Monthly calls established
  - At least annual meetings
- Affected landowner
  - At least annual meetings
- Public Interest Group
  - Annual meetings
- First Nations
  - Information provided at the assessment stage
  - Regulator has the obligation and is the lead
- Other Provincial and Federal Agencies brought in as needed



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## Approach to Stakeholder Engagement

### Independent Review of Risk Assessment

- Various potential peer reviewers were approached for credentials
- Credentials sent to the lead regulator and the affected landowner (Provincial government)
- CN recommended the peer reviewer which was accepted by the regulator and affected landowner
- Peer reviewer involved from the Problem Formulation stage to final risk assessment reporting
- Allowed communication directly between peer reviewer and regulator
- Risk assessment accepted by the lead regulator in



22 January 2014

## Remedial Action Plan



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### Remedial Action Plan

## Remedial Options

**Objective is to address issues identified in the risk assessment**

•Conceptual remedial options being considered are:

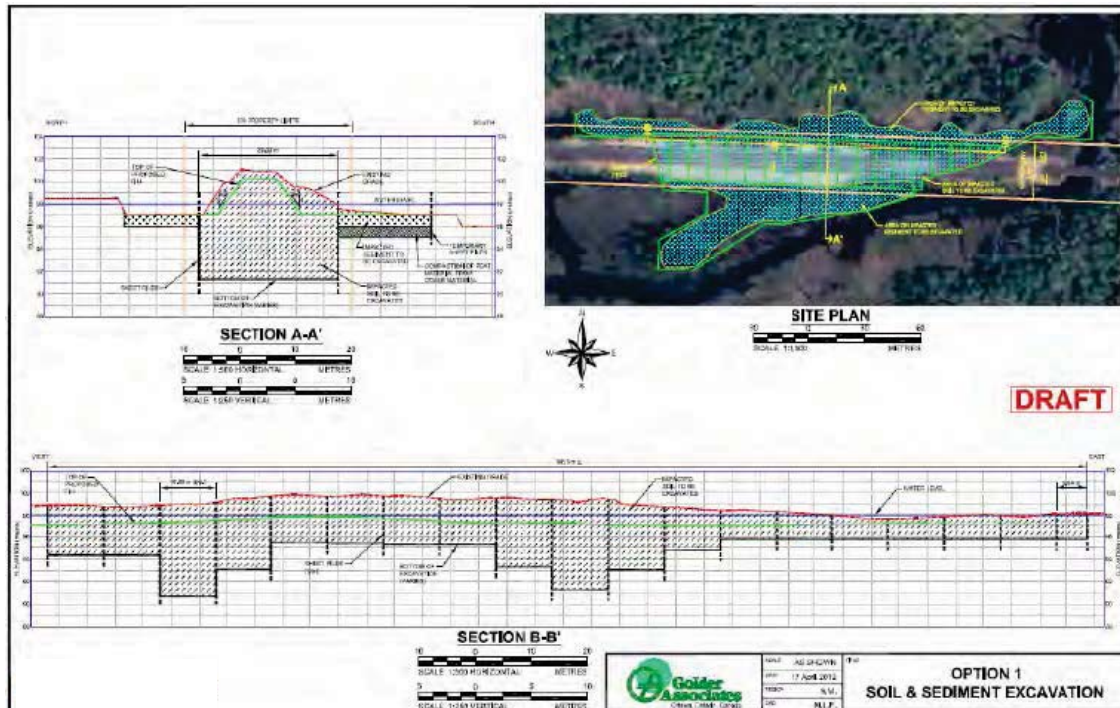
- OPTION 1 - Soil and sediment excavation
  - 1A - No backfilling
  - 1B - Backfilling to restore rail line corridor
- OPTION 2 - Sediment excavation and placement on the rail bed; soil and sediment capping and containment
  - 2A - Covered slopes
  - 2B - Exposed sheet piles
- OPTION 3 - Partial sediment excavation and placement on the rail bed; soil and sediment capping and containment
  - 3A - Cap mostly under water in South wetland
  - 3B - Cap above water

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## Remedial Action Plan

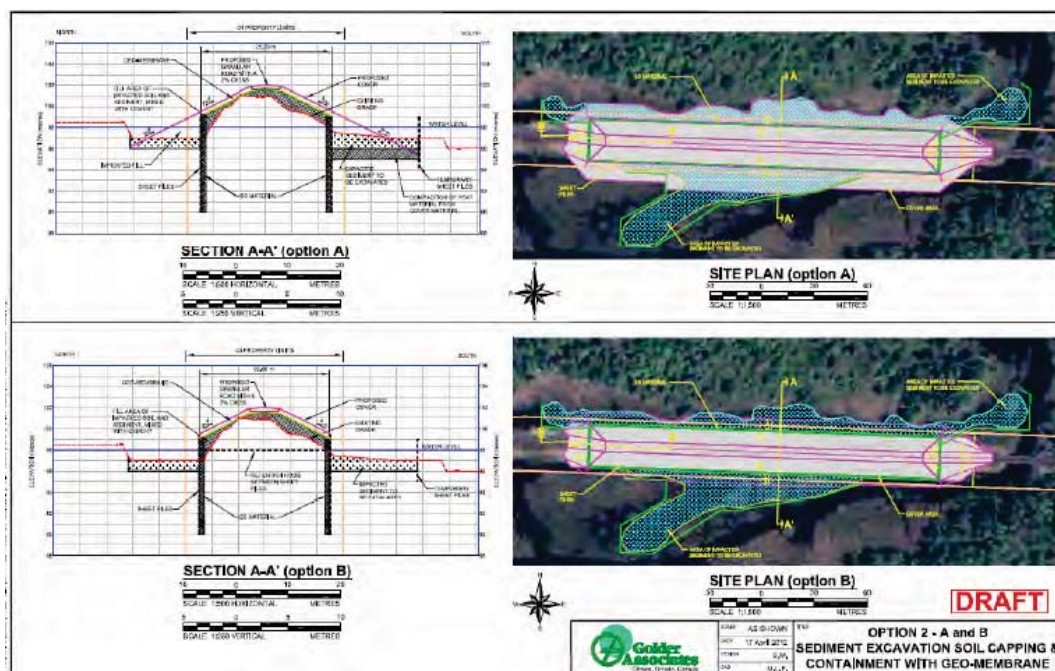
### Option 1



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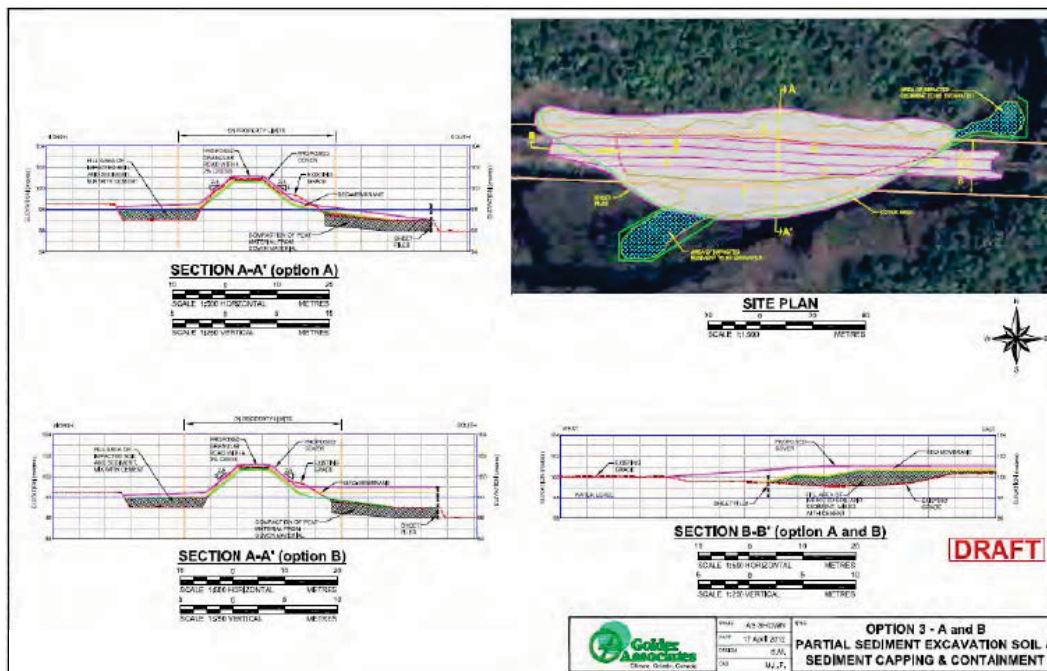
## Remedial Action Plan

### Option 2



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## Option 3



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## Volume Calculations

Option	Volume (m <sup>3</sup> )	Description
1A/B	20,000	Excavation of Impacted Soil
1A/B	6,500	Excavation of Impacted Sediment
1B	23,000	Fill Cover Material
1A - Soil and Sediment Excavation (no backfill)		
1B - Soil and Sediment Excavation, and Replacement with Clean Fill		
Truck load is ~10 m <sup>3</sup>		
2A/B	6,500	Excavation of Impacted Sediment
2A	11,200	Fill Cover Material
2B	3,600	Fill Cover Material
2A - Sed. Excavation, Soil-Sed Cap and Containment (covered slopes)		
2B - Sed. Excavation, Soil-Sed Cap and Containment (exposed sheet piles)		
3A/B	1,600	Excavation of Impacted Sediment
3A	8,500	Fill Cover Material
3B	12,500	Fill Cover Material
3A - Part. Sed. Excavation, Soil-Sed Cap and Containment (cap under water)		
3B - Part. Sed. Excavation, Soil-Sed Cap and Containment (cap above water)		

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# CN's Sustainable Remediation Option Evaluation Tool

**GoldSET-CN-SR Tool.** Web-based tool for comparing remediation (engineering) options at a Site (dev. in 2007/2008)

## •Objectives

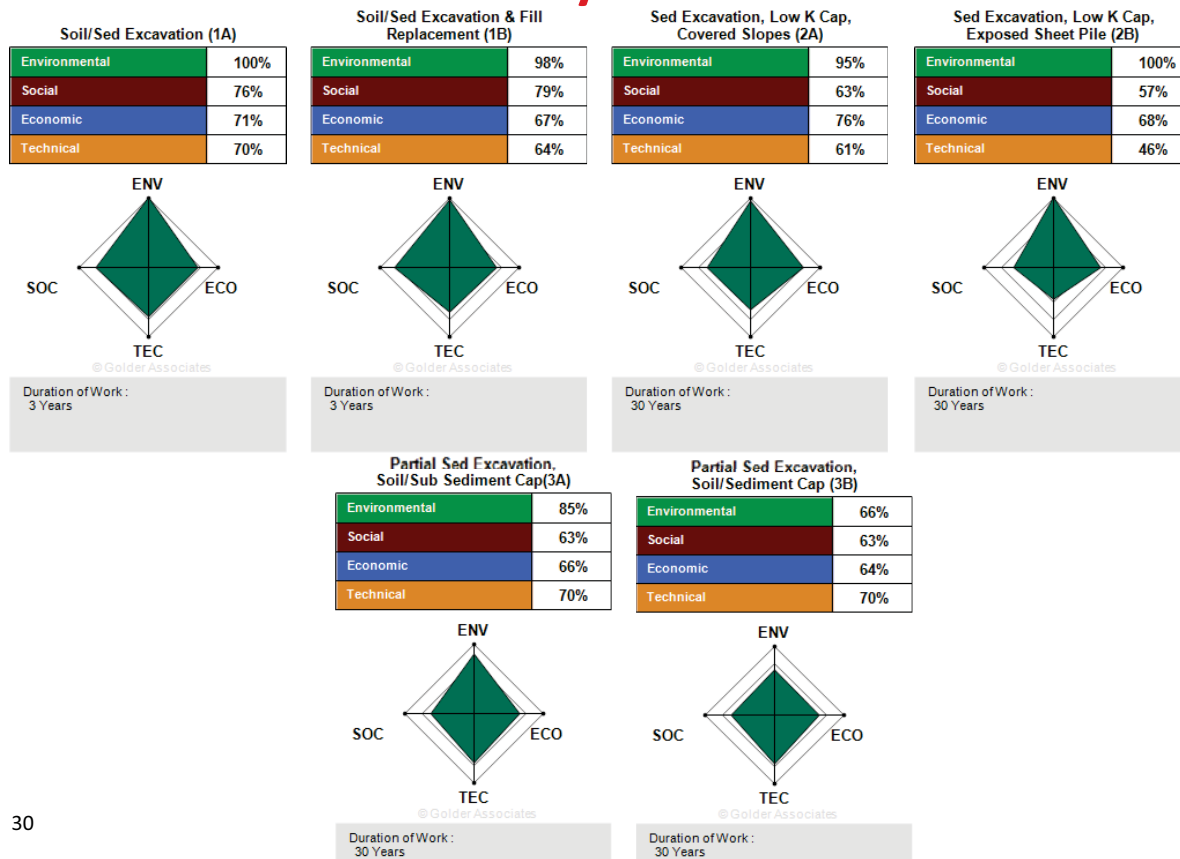
- Transparent decision tool
- Tailored to CN activities
- Measure direct and collateral impacts and benefits in a systematic way
- Maximize efficiency and optimize system to reduce overall impacts

## •4 main components:

- Indicator Descriptions
- Project Description
- Input Data and Results (scores)
- Quantitative Indicators including GHG emissions, energy consumption, waste management, water consumption, costing



## Results of Sustainability Evaluation – Round 1



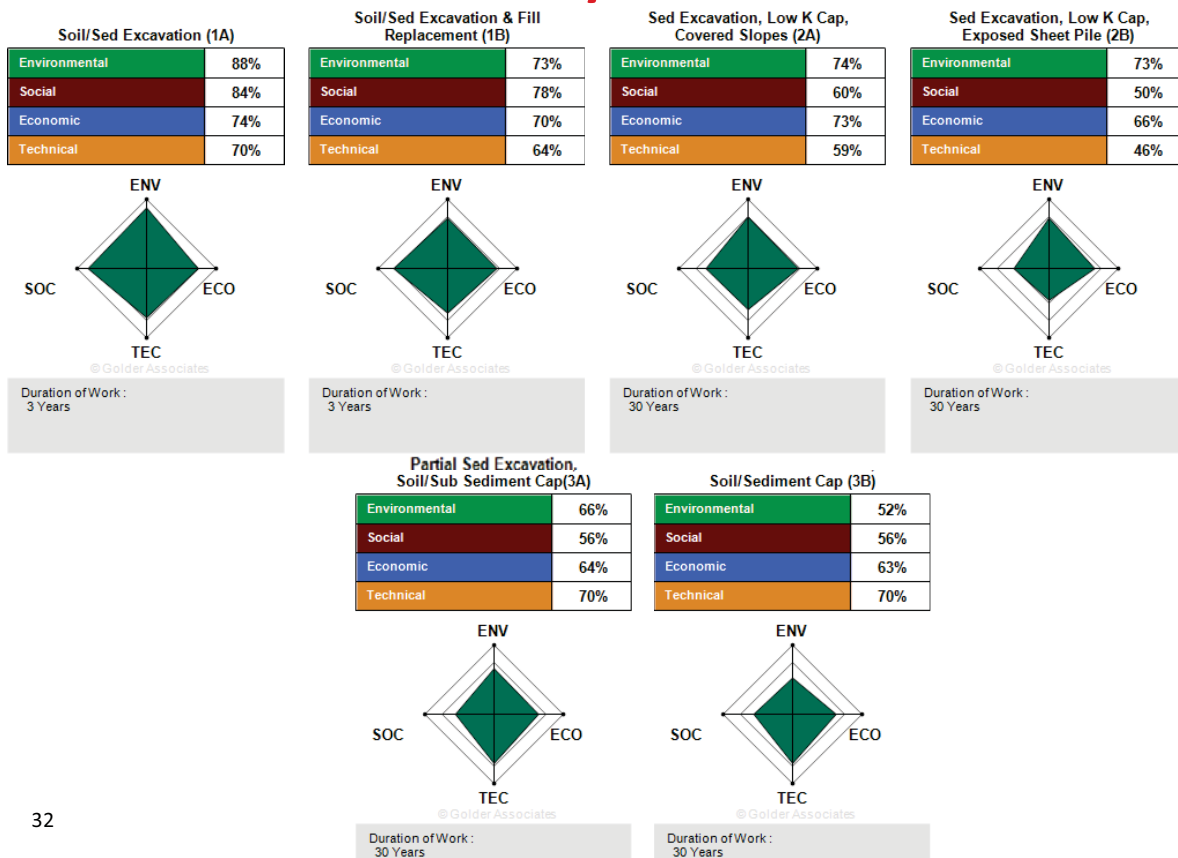
## Continuation of Stakeholder Communication

- Continued conversation with Public Interest Group
- Met with the lead regulator and the affected landowner (Provincial government) to go through the results of the sustainability evaluation
- Reconvened to discuss the indicators and weightings
- Incorporated some suggested changes not only to the calculations but also to the tool itself
- Lead regulator expressed interest in using the results from the tool in the stakeholder engagement process.



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## Results of Sustainability Evaluation – Round 2



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## Conclusions



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## Conclusions

- Beneficial to have regular formal and informal interaction with the lead regulator and other stakeholders in order to:
  - Keep stakeholders informed on the process and build trust.
  - Ensure minimal surprises or concerns on all sides
  - Keep us informed on personnel changes and other developments within the regulatory body, and let us better understand the approach and personalities of all the players involved.
  - Create ownership/accountability
  - Manage expectations
- Important to identify lead regulator that other agencies trust in order to streamline the process.

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## Conclusions

- Important to evaluate and score the sustainability indicators with experts from various disciplines to cover different perceptions and interests. This also adds to the objectivity of the tool.
- Stakeholders seem to appreciate the opportunity to provide their feedback on the sustainability indicators/weightings. It not only allows them to better understand sustainable remediation but also allows for buy-in into the project.
- Need to invest time to explain the tool used to them early on so that they can appreciate the various aspects and provide value to the project. Use of visualization tools to aid with this could be recommended.

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## Conclusions

- Be transparent and proactive
- Take the lead in managing communication before its managed for you...
- Ensure adequate internal communication with appropriate departments to ensure that consistency in approach is applied.
- Set clear objectives
- Be genuine about the interest in stakeholders' feedback
- Meet the commitments set
- Track and document actions to ensure transparency.



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## Acknowledgements

- **Stefano Marconetto (M.Sc., P.Eng.)** | Environmental Engineer | **Golder Associates Ltd.**
- **Tim Robertson (P.Eng., QPESA)** | Associate - Environmental Division Manager | **Golder Associates Ltd.**
- **Phil Moddle (P. Geo.)** | Principal, Office Manager | **Golder Associates Ltd.**



**Attachment 14**  
**Comparison of Four Environmental Footprint Assessment Tools**

## Comparison of Four Environmental Footprint Assessment Tools: Can You Have Confidence in the Results?

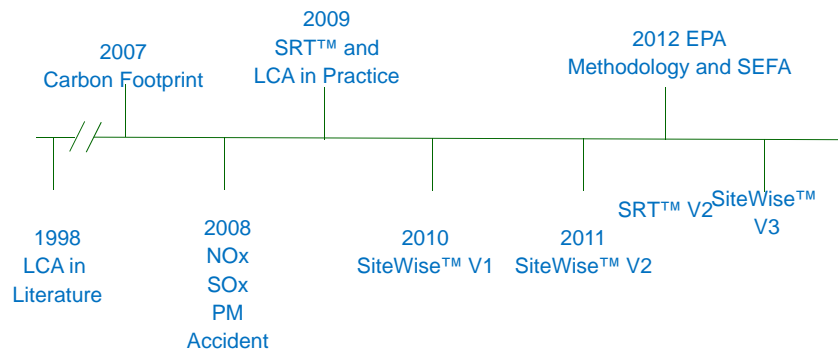


*Paul Favara  
Gainesville, FL*

## Agenda

- A brief history of the brief history of remediation footprint tools
- Study objectives and project background
- Comparison of tool results
- Decision making with different results
- Recommendations for future work

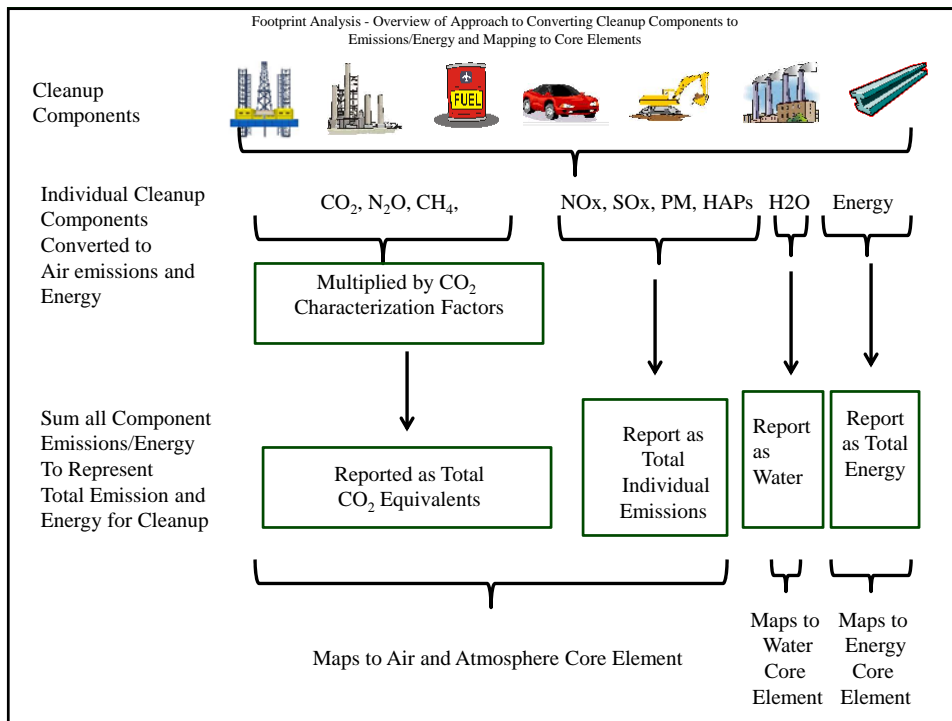
## A Brief History of the *Brief History of Quantitation of Remediation Footprints/Impacts*



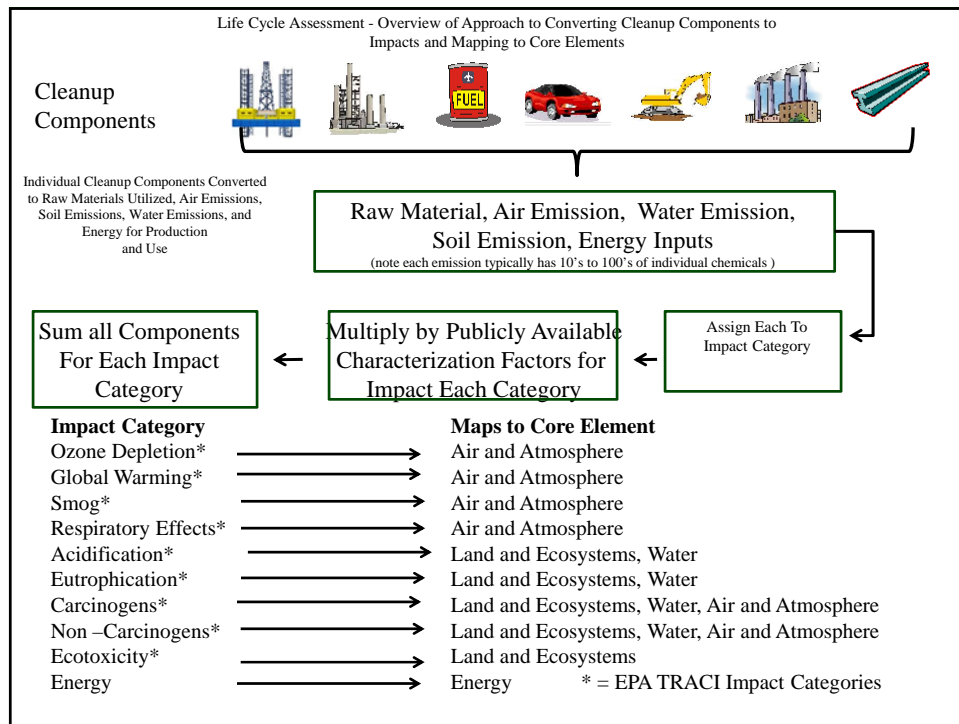
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## Study Objectives and Project Background

## Study Objectives

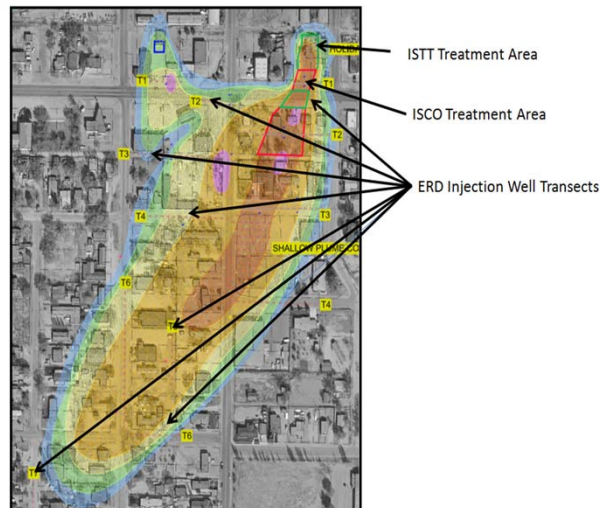
- Identification of key attributes of each tool\*
  - Tool structure, method of input, output, costs and licensing, training requirements, resource information, analytical and interpretation capabilities,
- Comprehensive comparison of three footprint tools and one LCA tool
  - SiteWise, SRT, SEFA, and SimaPro
  - Project level, technology level, unit level
- Evaluation of results and how results are interpreted
- Tipping points caused by different results
- Recommendations for future work

\* = not addressed herein but can be accessed in report

## Grants Chlorinated Solvent Plume, Grants, NM

- Site groundwater contaminated by two dry-cleaner facilities
- PCE and daughter products
- RAO's
  - Restore groundwater so COC's are less than MCLs
  - Prevent DNAPL from causing COC's in groundwater to exceed MCL's
  - Reduce COC's in groundwater to mitigate vapor intrusion pathway
- Remediation Design included
  - Vapor intrusion mitigation
  - Source area treatment
  - Shallow groundwater plume core and hot spot
  - Shallow groundwater plume periphery
  - Deep groundwater

## Site Overview (does not represent VIMs)



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## How to best determine tool differences

- Make sure all modelers were using the same design basis and quantities
- Would better represent tool differences, rather than interpretation differences in model input
- This approach did show interpretation of quantities used in models could, sometimes, vary significantly

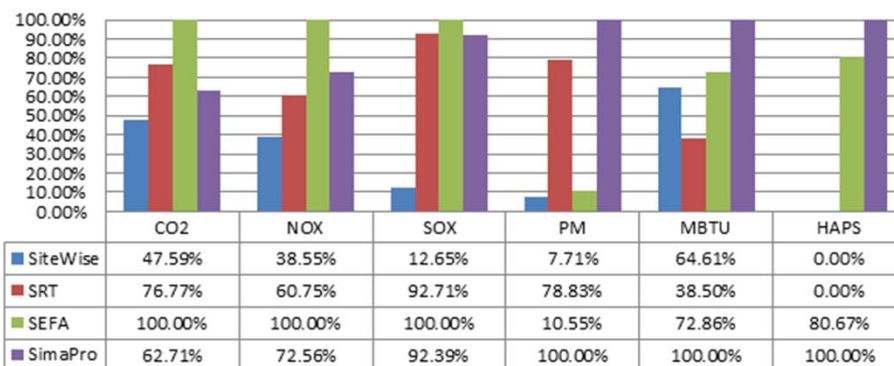
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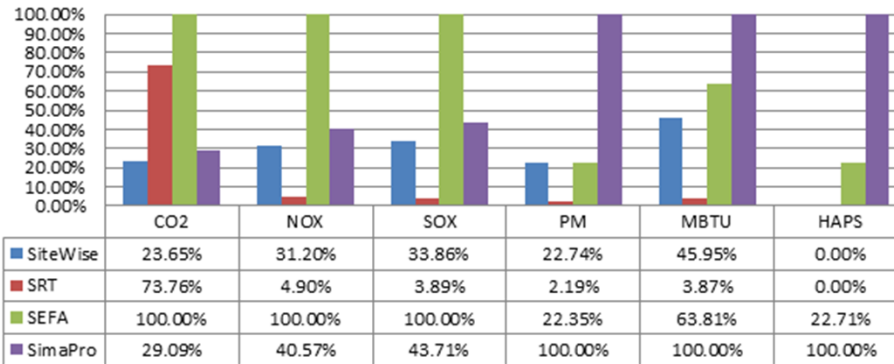
## Comparing Tool Results

### Summary, Overall, Normalized

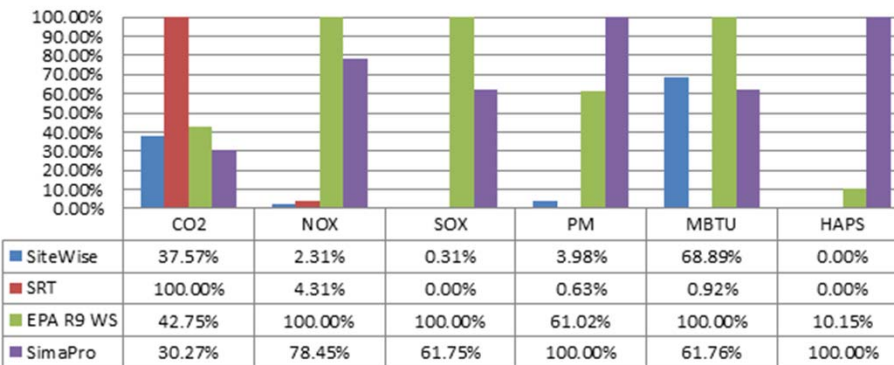




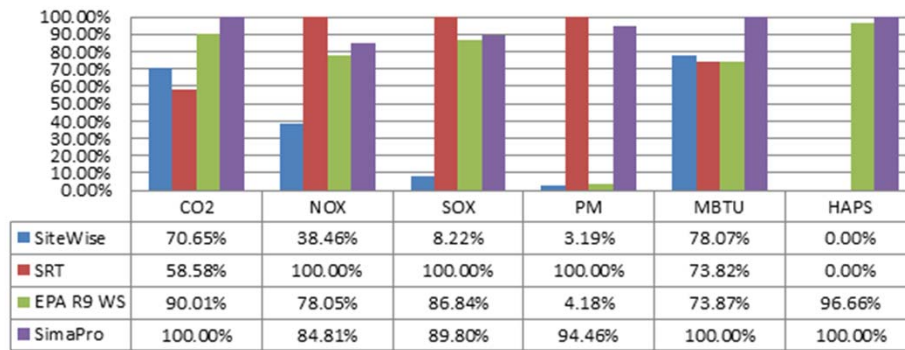
### Summary, ERD, Normalized



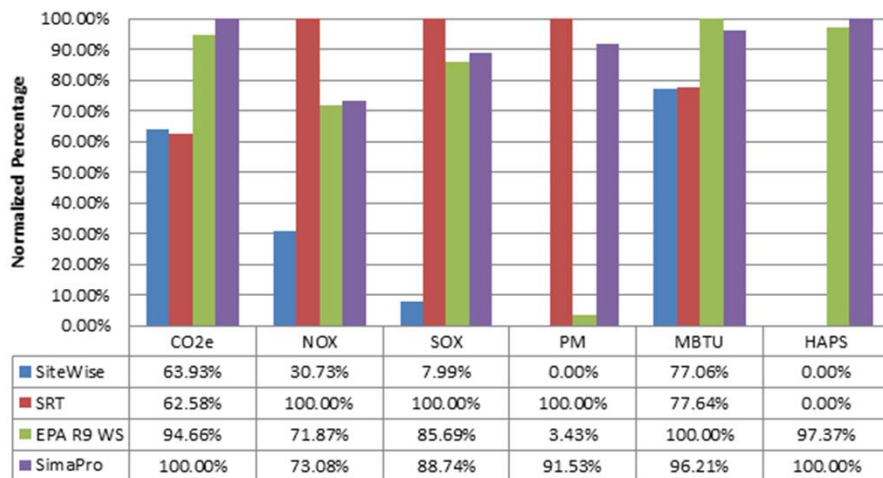
### Summary, ISCO, Normalized



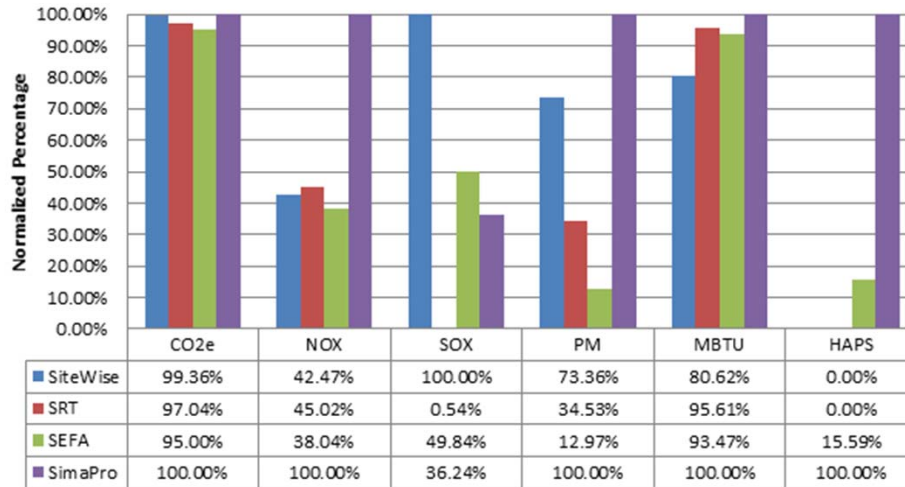
### Summary, Thermal, Normalized



### Energy per kwhr, Normalized



### Diesel, per gallon, Normalized

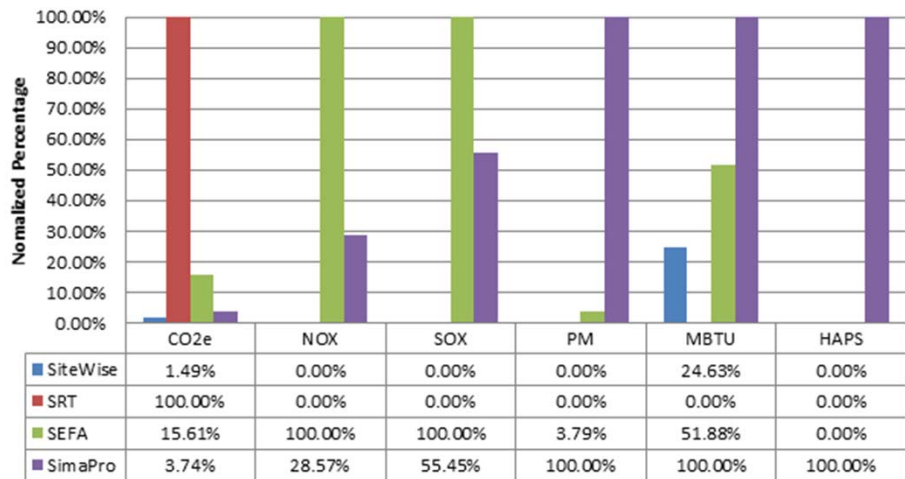


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### Substrate, per pound, Normalized

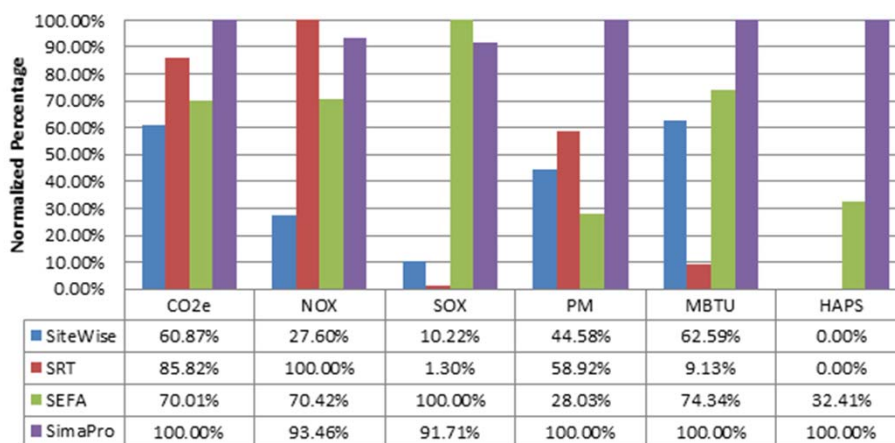


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### Transportation Scenario, Normalized 200 Tons of Material 100 Miles from Site



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### Recommendations from Footprint/LCA

- All Four Tools:
  - REC's to avoid GHG emissions
  - Careful monitoring of ISTT system to optimize energy use
  - Periodic re-evaluation of substrate to assure lowest footprint material is used over 10 year project life-cycle
  - Iron sulfide precipitation can provide abiotic reduction, and potentially decrease future substrate requirements
  - Source substrate to select lowest footprint material that meets needs
  - Monitoring program to prevent over-dosing of system
  - Source Potassium Permanganate from provider with the lowest footprint
  - Minimize fuel use, where possible

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## Recommendations from Footprint/LCA

- SiteWise, SEFA, SimaPro
  - Minimize potable water used for substrate delivered
- SiteWise, SEFA
  - Laboratory footprint is a noticeable contributor
- SEFA, SimaPro
  - Reduction of electricity footprint reduced emissions of HAP's
  - Vegetable oil has a high water footprint; sourcing oil from providers with a lower footprint – or using oils derived from regions that are not water stressed – minimizes water use
- SimaPro
  - The use of recycled oil in substrate can avoid significant eutrophication footprint
  - Substrate also has a respiratory, smog, and acidification footprint that can be reduced with less first time vegetable oil use

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## Summary

- Even with efforts to minimize inconsistencies in model input, significant differences observed
- Based on the inventory item for each component of project (e.g., substrate burden per unit weight)
- Even with similar footprint factors, build-up for estimates within tool varied, such as:
  - Different transportation fuel usage
  - Different production rates with drilling
- Considerations
  - How important is each metric
  - How important are different results in each metric
  - Differences can be real, or not real

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## Recommendations

- Tool users should have awareness of sources of inventory information and variability
- Each tool handles transportation differently
- Tools should use the similar inventory information
- Tool libraries should have different inventories for road and non-road uses
- Electricity should use local information due to its significance
- Some tools do not carry inventory information for NO<sub>x</sub>, SO<sub>x</sub>, and PM for materials
- A unified remediation industry inventory would help increase confidence in results
- Users should be familiar with strengths/limitations of each tool

## How Footprinting and LCA Tools Can Improve Remedy Development and Optimization

- Consider GSR before alternatives are developed – to improve the quality of alternatives that are being evaluated
- Based on FS evaluations, determine if a new or hybrid alternative should be developed or considered
- Use Footprinting/LCA as an optimization tool during design
- Use Footprinting/LCA as means to optimize operating remedies

## So....Can you have confidence in tool results?

- Yes, with some considerations....
- Make sure you understand inventory and assumptions/notes with inventory
- Critically evaluate results and see if they make sense
- Sometimes, apparent differences may not be real differences
- Differences in metric results may not be “a tipping point” in decision making

## Contributors

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- Mr. Kirby Biggs, USEPA
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## Questions and Answers

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**Attachment 15**  
**Brainstorming Discussion: 2014 Goals**

## **Brainstorming Discussion:**

### **2014 Goals**

#### **Questions**

1. Do we want to pursue partnerships and, if so, how would we do it?
  - a. Create a mechanism by which we can have partnerships (i.e., post a list on the website).
  - b. Contact the EPA Office of Atmospheric Programs to determine criteria for partnership. They currently have 21,000 partnering organizations under the umbrella of climate change. ("Partnering" does not imply a money exchange, more of an alignment of ideas and beliefs.)
  - c. Create a Partnerships Working Group under the Outreach Committee to engage organizations with like causes and initiatives.
  - d. Partner with the Department of Defense to add more validity.
  - e. Research how a partnership would work.
2. Do we want to establish a SURF Advisory Board to provide advice and guidance on technical initiatives, organization direction, and programs?
3. What do we see our organization being in five years? What is our ultimate goal? Are we a think tank? Are we developing curricula for universities? Are we a repository on the Internet for sustainable remediation? Do we merge with another professional organization?
  - a. Benefit is derived from growth (see Attachment 9). There is value in creating certification program and being a leader in that effort and from the effort the organization becomes a repository for case studies and data.
4. Do we merge with other SURF chapters?
  - a. Spread the workload between SURF and SURF Canada.

#### **Ideas**

1. Create video to describe SURF and its activities and share with members.
2. Grow student chapters.
  - a. Needs to coincide with growth/engagement of membership and interest in supporting student chapters.
3. Give an award annually at Battelle for case study.
4. Consider Envision because of commonalities of framework.
5. Need to make sure that we are not precluding membership in our organization.
  - a. Current membership categories are broad and individual based.
  - b. Members must have an undergraduate degree in any academic field or three years of experience in sustainable remediation.
6. Instead of creating the wheel, hop on the bandwagon. For example, the coordinator for the Remediation, Redevelopment and Regeneration conference offered to include sustainable remediation in the conference next year.



**Attachment 16**  
**Climate Adaptation and Resiliency Planning:**  
**The Role of Remediation and Partnering**

# Climate Adaptation and Resiliency Planning; the Role of Remediation and Partnering



Randy Britt, LEED AP

Director of Sustainability, Parsons

## Climate Adaptation and Resiliency Planning Overview

Climate Adaptation and Resiliency Planning is the next emerging development in the Sustainability space

The main goal of this type of planning is to mitigate the impact of climate events on:

- Electricity, Potable Water, and Natural Gas Supplies
- Storm water and Sewer systems
- Transportation
- Fueling Stations and Oil Storage
- Active Remediation Sites
- Data Centers
- Defense and Protection

## Question: Is This A Global Warming Issue?



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## Answer: Climate Change is Happening

- Climate change is happening regardless of the source
- Ocean levels are rising on the Atlantic and Pacific Coasts
- Average temperatures are increasing
- Climactic events like Super-storm Sandy are occurring with greater frequency and intensity, increasing the threat to human life, health, property, and infrastructure
- Continuing to manage resources and protect the environment is still important

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## Question: Is it the same as Emergency Response Planning?



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## Answer: No; Emergency Response is Just One Piece

- Emergency response planning is one component of Climate Adaptation Resiliency Planning
- Emergency response primarily addresses what should be done **after** an event
- Climate Adaptation and Resiliency Planning also addresses what prudent measures can be done to protect infrastructure and critical facilities and functions **before** the event occurs.

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## Focal Points: Utilities

- Protecting and upgrading vital infrastructure assets:
  - Generation/Transmission/Distribution
  - Water wells, reservoirs, aquifers, and aqueducts
  - Storm water and sewer systems
  - Fuel Refineries/Storage and Pumping stations
  - Data and Customer Service Centers
  - Telecom



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## Focal Points: Transportation

- Highways and Roads
- Bridges and Tunnels
- Railways
- Airports/Traffic Control
- Harbors/Marinas
- Fuel and Oil storage
- Gas stations



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## Focal Points: Defense, Security, and Fire Protection

- Air Bases
- Naval Stations
- Data Centers
- Command Centers
- Police Stations
- Fire Stations



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## Active Remediation Sites

- Site hardening
- Containment
- Groundwater Contamination
- Air Contamination
- Soil Contamination
- Contaminant Migration
- Vapor Intrusion
- Emergency and site power fuel storage

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## Conduct Risk Assessments: Vulnerability

- Estimate the likelihood that a major climate event will affect a specific site
- Determine how many times the site was impacted in the past with severe consequences
- Assess recent improvements to the site that may provide protection from future events
- Capture specific lessons learned from prior events
- Identify specific weak points in the site that need to be addressed prior to the next event



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## Conduct Risk Assessments: Hazards

- Identify the historical hazards of the region
  - Hurricanes and Tornadoes
  - Super-storms
  - Earthquakes
  - Brushfires
  - Floods or Storm Surges
  - Temperatures Extremes
  - Extreme rainfall or snowfall
- Assess the historical frequency of these major events and estimate the potential for significant change in the future



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## Conduct Risk Assessments: Identify Critical Sites

- Focus on what makes that site or facility critical
- Identify what will happen if the facility is unable to operate for varying periods of time
- Identify critical functions within facilities
  - Command centers
  - Data Centers
  - Telecom rooms
  - Emergency Power
  - Main Switchgear



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## Conduct Risk Assessments: Life-Span Analysis

- Confirm the length of time the site or facility has been operational
- Estimate how much longer the site can continue serving its functionality
- Determine if there are future plans for the site
- Perform analyses for:
  - Planned or Unplanned Obsolescence
  - Structural Integrity
  - Damage from prior events or age

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## Develop Adaptation Strategies

- Maintain and manage
- Protect and strengthen; Site Hardening
- Improve redundancy
- Analyze and recommend options for:
  - Relocation
  - Abandonment
  - Divestiture

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## Use Low Impact Development Designs

- Prioritize targets to maximize the use of available funds
- Utilize Low Impact Development Design and Construction methods
- Use materials that are recycled or have high recyclable content
- Minimize waste during construction, and recycle construction materials

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## Collaboration Between Stakeholders is Required

- Adaptation Risk Analysts
- Hazard Assessment Specialists
- Risk Managers
- Meteorologists
- Seismic Experts
- Program Managers
- Facility Managers
- Emergency Response Professionals
- Regulatory Affairs specialists
- Engineers:
  - Electrical
  - Mechanical
  - Civil
  - Structural
  - Geologists
  - Hydrologists
  - Environmental

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## Federal Guidance; Federal Funding



- EPA released its draft agency Climate Change Adaptation Plan on February 9, 2013 for public review and comment
- Federal funding is being released for a variety of Climate Adaptation and Resiliency activities, including:
  - Vulnerability and Hazard Assessments
  - Critical Facility and Infrastructure Identification
  - Proactive protection of Infrastructure

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## Entities Most Likely to Benefit

- Municipal
  - States
  - Cities
  - Counties
  - Public Transportation (Air, Rail, Highway, Ports)
- Large Commercial and Industrial Facility Owners
- Utilities
  - Electric, Water, Natural Gas
- Federal
  - DOD, EPA, USPS, GSA

## Next Steps

- The time to start is now; infrastructure improvements are long overdue
- Establish achievable goals
- Define specific projects
- Secure financing
  - Bonds
  - Rate changes
  - Federal subsidization
  - Incentives
- Assemble teams of experts
- Get to work