

## Sustainable Remediation, Green Remediation, Green and Sustainable Remediation!

Implementing these concepts helps projects be more successful and sustainable. It's good for society and the planet, a focus of regulators, and being incorporated by many private and public Site owners.



### Why Implement?

#### Australian regulatory requirements:

- NEPM 2013 Schedule 1 - when choosing remedial options consider sustainability
- State of Western Australia 'Assessment and Management of Contaminated Sites' 2014
- State of New South Wales 'Guidelines on Duty to Report Contamination' 2015

It Helps Protect | Human Health and the Environment. It's good for people and planet.

It Helps Relations | Communities and Regulators. It leads to faster, accepted project actions.

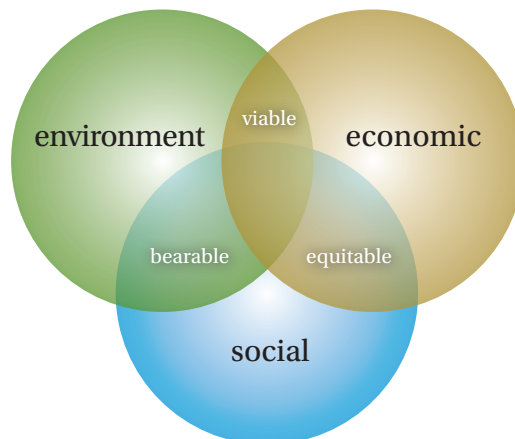
It Helps Conserve | Energy, Fuel, and Materials. If it uses less; it can cost less.

### What is Sustainability and Sustainable Remediation?

Sustainability Is: Meeting our needs today without affecting the ability of future generations (our grandchildren, their grandchildren etc.,) to meet their needs.

#### SUSTAINABLE REMEDIATION IS:

A remediation solution selected through the use of a balanced decision making process that demonstrates, in terms of environmental, economic and social indicators, that the benefit of undertaking remediation is greater than any adverse effects - SuRF ANZ



#### GREEN REMEDIATION IS:

Considering all effects of remedy implementation and taking actions to reduce the environmental footprints of the cleanups.

### How Geosyntec Can Help You Implement Sustainable Remediation:

Here are a few ways we can help you implement sustainable remediation

1. We are experienced. Geosyntec personnel have implemented and evaluated SR and GSR at many sites. We have co-authored ITRC and NRC sustainability documents, we have taught short courses.
2. We implement best management practices (BMPs) to take advantage of established methods.
3. We evaluate footprints and impacts of potential remedies as a part of the remedy selection process.
4. We engage the surrounding community and stakeholders in the Site management process.
5. We create sustainable whole site management strategies that manage environmental risk and re-establish beneficial site use / re-use.

# Geosyntec Case Studies



## Remedy Enhancement

### Commercial Cleaners Site

- Technical expertise for in-situ bio remedy selection and implementation
- Successful remediation in short time with low carbon footprint



## Remedy Selection

### DuPont, Pitt Consol Site

- 37 acre coal tar impacted site
- Quantitative comparison of 8 remedies
- Identified most sustainable remedy, an innovative approach to smoulder pollutant in situ (STAR)



## Remedy Selection

### NASA, Kennedy Space Center

- Evaluated three remedies for NASA
- Identified benefits and tradeoffs between remedies (e.g. water consumption vs. power usage).

## Geosyntec Practioners Shape the Sustainable Remediation Field



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**Matt Vanderkooy, M.Sc**  
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Teaches Sustainability Short Courses, Quantitative sustainability based remedy selection expert, completed projects for for mining (e.g. AMCOL) and industrial (e.g. DuPont) clients.

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## Sustainable Remediation Frameworks & Tools

	Type		Type of Analysis			When Best to Use		
	Framework	Tool	BMP	Qualitative	Quantitative	Strategy	Remedy Selection	Design & Construction
<b>Frameworks and Tools</b> (click on hyper-links below to find out more)								
<a href="#">ASTM Guide for Greener Cleanups (BMPs)</a>	●	●●●	●●●●		●	●	●	●●●
<a href="#">USEPA Greener Cleanups</a>	●	●●●	●●●●		●	●	●	●●●
<a href="#">USEPA Fact Sheets</a>		●●●●	●●●●		●		●	●●●
<a href="#">SuRF UK</a>	●●●	●●		●●●	●●	●●●	●●	●
<a href="#">ITRC Green and Sustainable Remediation 1 &amp; 2</a>	●●●	●		●●●	●	●●●	●●	●
<a href="#">SURF Framework for Integrating Sustainability</a>	●●●	●		●●●	●	●●●	●●	●●
<a href="#">SURF 9-Step LCA &amp; Footprint Process</a>	●●●	●●		●●●	●●	●	●●●	●●
<a href="#">Sustainability and the U.S. EPA</a>	●●●	●		●●●	●	●●●	●	●
<a href="#">SuRF-ANZ</a>	●●●	●●●		●●●	●●	●●●	●●	●
<a href="#">SiteWise™ – Footprints, some LCA</a>		●●●			●●●		●●●	●●
<a href="#">SimaPro – Footprints &amp; LCA</a>		●●●			●●●		●●●	●●
<a href="#">USEPA's SEFA – Footprints</a>		●●●			●●●		●●●	●●
<a href="#">SRT – Footprints</a>		●●			●●		●●	●●

Relevance: ●●● high ●● medium ● low