Sustainable "Green" Solutions During Development at Impacted Land Sites

Beneficial Reuse Strategies

Project Navigator, Ltd. (PNL) works on major remediation projects, which can lead to land development.

Many of our projects commenced work purely driven by the need to achieve health based driven remediation standards.

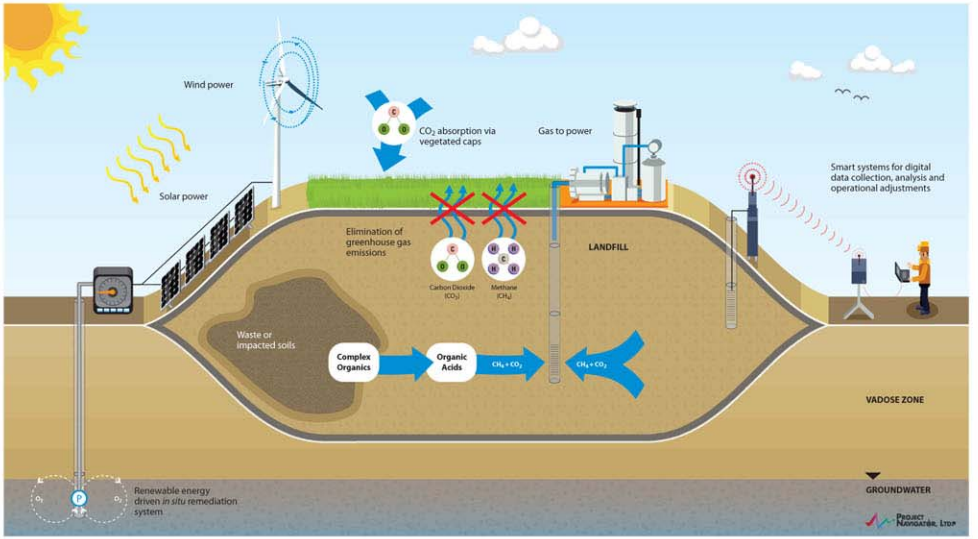
However, in the last few years, apart from an increasing goal of putting the sites back into productive use, as brownfield sites, our clients are demanding solutions which are sustainable, have a low carbon footprint, and exploit green technologies.

Within PNL, from our own thinking about how large jobs have also evolved, we have derived some rules for the road (see 6 points at right):

1. **Front load project strategy analysis and with all stakeholders explore different options.**
2. **Define your best end state vision, but be flexible and have a back up plan.**
3. **Run project economics, being especially mindful of long-term O&M costs.**
4. **Explore methods to drive down O&M costs via the introduction of data management and renewable energy systems such as wind and solar.**
5. **Use the EIR process to assess and define project "impacts" which may be costly to mitigate.**
6. **View sites not just as land parcels which require remediation, but use the land platform to exploit renewable energy options.**

Green Remediation Systems for Landfills

Green technologies and systems which use renewable energy and reduce the carbon footprint of conventional site remediation approaches



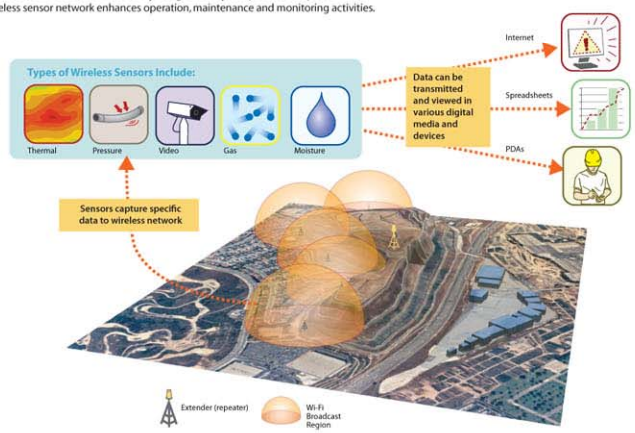
Data Management Case Study

A Former Landfill in Monterey Park, CA

PNL created a Wi-Fi coverage zone ("umbrella") over the site by using relatively inexpensive and proven technology. The resulting wireless sensor network enhances operation, maintenance and monitoring activities.

Features

- Visualize landfill subsurface processes on a real-time basis
- Enhanced ability to predict landfill behavior (gas, oxidation, settlement)
- Rapidly pinpoint location of critical events (cracks, leaks, etc.)
- Cost-effectively and constantly monitor sensitive areas (for settlement, subsurface "fires", intruders, etc.)
- Reduced Costs
- Increased Safety
- Relatively low cost
- Low environmental and political risks
- Solar-powered
- Little construction needed
- Scalable and flexible



Examples of Sites with Beneficial Reuse Potential

BKK Landfill
West Covina, CA

583 acres. Class I (195 acres) and Class III (160 acres). This site is capped with 5 ft. thick, 10-7 cm/sec clay. It sits adjacent to residences. There are VC migration issues on southern perimeter. PNL is currently managing landfill maintenance and working on the Class I Landfill. Work is being performed for a group of RPs. We are optimizing gas migration control adjacent to residences at SE location. The landfill was in poor operating condition when PNL's team took over site operations in 2005.

Tex Tin Superfund Site
Texas City, TX

180-acre former smelter facility in Texas City, TX. One of our team members is the overall project manager for the just completed environmental clean-up. Future projected uses of the property are as an intermodal facility for the Port of Texas City.

Waste Disposal Inc.
Santa Fe Springs, CA

40-acre former landfill in Santa Fe Springs, CA. One of the team members acts as the overall project manager for the site's owners. Once all environmental work is completed (2004) the land will be available for development. The site has convenient freeway access and there are conceptual development plans for large high end tilt-up space.

Former Refinery Site
Alma, MI

30-acre former refinery site that was available for light to general industrial use. PNL assisted site owner to create various conceptual development scenarios and strategies for transfer of the land. City, County, State and Federal agencies offered significant incentives to potential developers. Strong potential as an ethanol plant.

About PNL

Project Navigator, Ltd. (PNL) excels at controlling the strategic direction of demanding environmental projects, which may be a precursor to development.

Since 1997, PNL has managed numerous multi-party projects through difficult environmental challenges.

In addition to traditional engineering services, PNL is well known in the environmental industry for creative approaches in managing voluminous amounts of project information and presenting complex issues in simple, comprehensive ways.

Tools include:

- **Geographical Information Systems**
- **Projectoolbox.com**
- **Graphics**
- **Pixel-Grid Geolocation Applications**
- **Blogs**
- **WiFi**

Los Angeles Area One Pointe Drive, Suite 320, Brea, CA 92821, Tel: (714) 388-1800, Fax: (714) 388-1839 | **San Francisco Area** 2300 Contra Costa Boulevard., Suite 520, Pleasant Hill, CA 94523, Tel: (925) 969-9574, Fax: (925) 969-9558
Houston Area 10497 Town and Country Way, Suite 830, Houston, TX 77024, Tel: (713) 468-5004, Fax: (713) 468-4515 | **Philadelphia Area** 7 Great Valley Parkway, Suite 214, Malvern, PA 19355, Tel: (610) 251-6851, Fax: (610) 903-4287
Seattle Area 9120 Northeast 141st Place, Bothell, WA 98011, Tel: (206) 390-3948, Fax: (425) 820-7107 | **www.projectnavigator.com**

PROJECT NAVIGATOR, LTD.®

Project Navigator, Ltd.

Environmental Planning for Sustainable Development

Project Navigator has six main offices.

- Brea, CA (714) 388-1800
- Pleasant Hill, CA (925) 969-9574
- Seattle, WA (206) 390-3948
- Houston, TX (713) 468-5004
- Malvern, PA (610) 251-6851
- Raleigh, NC (919) 539-1928