

Dump to DEUR Guide to ADEQ Programs

A discussion with:
Scott Green, Caitlin Burwell and
Travis Barnum; Dan Sola moderator



May 11, 2023



QUESTIONS? *



*If not, we're going to have to ask them ourselves





Brownfields Grant Program

3S07 - Staff/FTEs

Brownfields
Scott Green, RG

Environmental Scientist III
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Jessica Abac

Hot Topics

1. EPA's Review Time for SAPs
2. EJ Reporting for Grant and EPA
3. Assessment Grant

Mission Outcomes

TARGETED BROWNFIELDS

ASSESSMENTS

\$600K Value to Arizona:

Coconino County – Historic Courthouse/Jail

Pinal County – Pinal Airpark Housing

Pima County – Roger Road WWTF

COMPETITIVE GRANTS

\$2.4M Awarded: White Mountain Apache Tribe,
Tucson, Show Low and Cochise County

Budget Highlights & Current Universe



FY23 Funding = \$1.4M

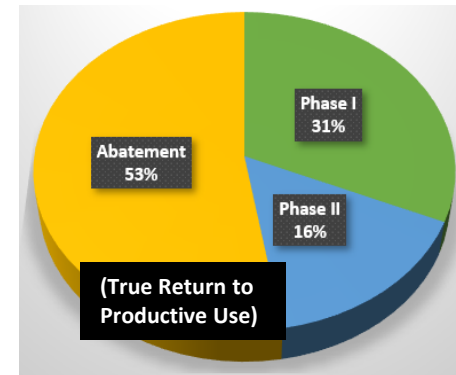
State Response Grant (SRG) 128a = \$575K

New SRG (BIL) = \$840K

CURRENT UNIVERSE

- 2 Phase Is
- 5 Phase IIs
- 9 Abatements

HOW THE MONEY HAS BEEN SPENT



- Focus on Arizona's small and rural communities' Brownfields needs
- Available to Tribes, non-profits, local governments, hospitals, police, school and fire districts
- Does **not** require any **cost share or matching funds**
- Awards are made according to available funds
- **Non-competitive**

What actions/activities can ADEQ provide to my project?



Assessment - Land Use History



2017



2009

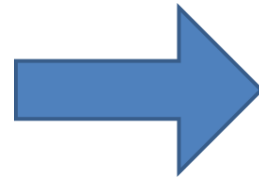


- Brownfields Assessment Grants – provides funds to perform Phase I and Phase II environmental site assessments, asbestos surveys, and lead-based paint inspections



Brownfields Cleanup Grants – provides funds to carry out cleanup activities for asbestos and lead-based paint on sites owned by the applicant





Grantee

Competitive

Non-Competitive

Application Period – specific/discrete

Application Period – year round

Then what actions/activities
can EPA provide?



Types of Grants

Area-Wide Planning

Assessment (Coalition)

Cleanup (Site Specific)

Multi-Purpose (Assessment & Cleanup)

Revolving Loan Fund

Workforce Development

Technical Assistance

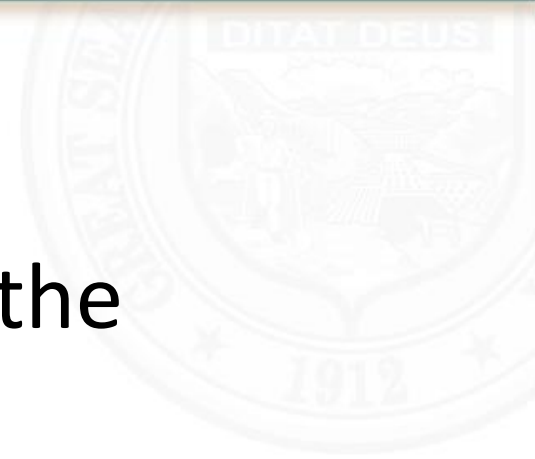


WIFM?



- Promote economic development and/or create jobs
- Creating new business opportunities
- Increasing tax revenue
- Restoring blighted areas to productive use

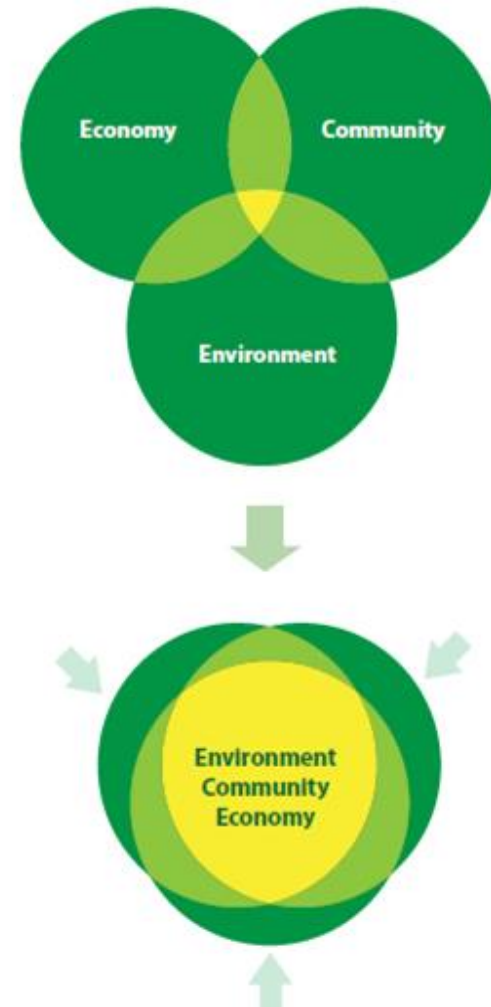
- Protect human health and/or the environment
- Reducing environmental hazards
- Improve public services
- Redevelopment may be less expensive than developing previously undeveloped land



Brownfields Eligibility Requirements

- Site must meet the definition of a Brownfields
- Property cannot be located in a Superfund or WQARF area
- Applicant cannot be the responsible party for any contamination
- There cannot be any formal enforcement actions against the property
- Some kind of redevelopment plan should be under consideration for the property
- Applicant must own the property for a cleanup grant

- Prospective Purchaser Agreement (PPA)
- Declaration of Environmental Use Restriction (DEUR)
- Voluntary Remediation Program (VRP)
- Underground Storage Tank Revolving Fund (UST RF)





Prospective Purchaser Agreement (PPA)

- The property is within a WQARF registry site or ADEQ has sufficient information to determine the extent of the contamination,
- The purchaser did not cause or contribute to the contamination and is not affiliated with any person who may be responsible for the contamination,
- The purchaser's use or development of the property will not exacerbate the contamination or interfere with ongoing remedial actions,
- The purchaser completes and submits an application to ADEQ before the sale of the property closes, and
- The purchaser provides a **substantial public benefit**, which must be more than the mere continuation of a business on the property.

Voluntary Remediation Program (VRP)

Facilitating the Productive Reuse of
Contaminated Land

Voluntary Remediation Program (VRP)

3S06 - Staff/FTEs

Voluntary Remediation Program Scott Green, RG

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Budget Highlights & Current Universe

FY23 Funding = \$1.4M



State Response Grant (SRG) 128a = \$382K
New SRG (BIL) = \$264K (PER/ERE/IND only)
DEURs = \$38K
VRP Fund = \$735K

CURRENT UNIVERSE

- 53 Active Sites
- 289 Closed Sites
- 90 Active DEURs
- 5 DEURS in Progress

Hot Topics

1. Cleanup to Background-Soil Rule
2. Tempe Marketplace Landfill – Residential Use DEUR
3. Fmr. Capital Casting & Tempe Groundwater Recharge



TOWN CLEANUPS – SMELTER LOCATIONS

Clarkdale (FMI) Active; Jerome (FMI) Active
Bisbee (FMI) Active; Superior (BHP) Active
Clifton (FMI) Active; Douglas (FMI) Complete
Ajo (FMI) Complete; Miami (FMI) Pending

Voluntary Remediation Program

The goal of VRP is to encourage the voluntary cleanup of environmental contamination for beneficial reuse in cooperation with ADEQ.



Pillars of Beneficial Reuse



General Overview – How to Enter the VRP

- **Review VRP FAQs** found at: <https://azdeq.gov/VRP/FAQ>
- **Review Application Instructions** (*PDF on website*)
- **Submit a completed Application** (*fillable PDF downloadable from website*)
- **Submit any pertinent existing documentation**, such as a Phase I/II, with Application (*as PDFs*)
- **VRP Staff review Application** and request additional information, if necessary and issue **Acceptance Letter** (*99% of sites are accepted*)

VRP works with the Volunteer to satisfy all regulatory requirements and helps the Volunteer to achieve a **No Further Action** Determination (or a similar closure type).

“help us help you” –Scott Green

General Overview - How the VRP Works

Important regulatory requirements can be found at:

- **Arizona Revised Statutes (A.R.S.) §§ 49-171 through 49-188**
- **Arizona Administrative Code (A.A.C.) R18-7-501 through 507**
 - VRP houses the DEUR Program (ARS §§ 49-152 through 49-159)
 - VRP relies heavily on Best Environmental Practice and the “Soil Rule”

The Voluntary Remediation Program provides an opportunity for property owners, prospective purchasers, and other interested parties to investigate and remediate contaminated sites in cooperation with ADEQ.

What sites are not eligible?

- Any site with a permit
 - have to be released from permit for acceptance*
- Any site receiving reimbursement from UST fund
 - waiving right to reimbursement allows acceptance*
- Any site with an enforcement action
 - need to be released from the action for acceptance*
- Any site listed on WQARF Registry
 - if a site is located within a WQARF boundary it can be accepted if the contaminants are different than the WQARF site contaminants*



Typical Voluntary Sites and Contaminants

- Dry cleaners (VOCs)
- Municipal/Government entities (various)
- Plating shops and other industrial/manufacturing (metals, PCBs, VOCs)
- Mining sites; both active and closed (metals, radionuclides)
- Former agricultural land (pesticides and herbicides)
- Pipelines, bulk terminals, gas stations, USTs/ASTs (petroleum)
- Former landfills/unregulated dumpsites (various)
- Former firing ranges (lead, PAHs)
- Aqueous Fire Fighting Foam releases (PFOS, PFOA)



Program Expectations

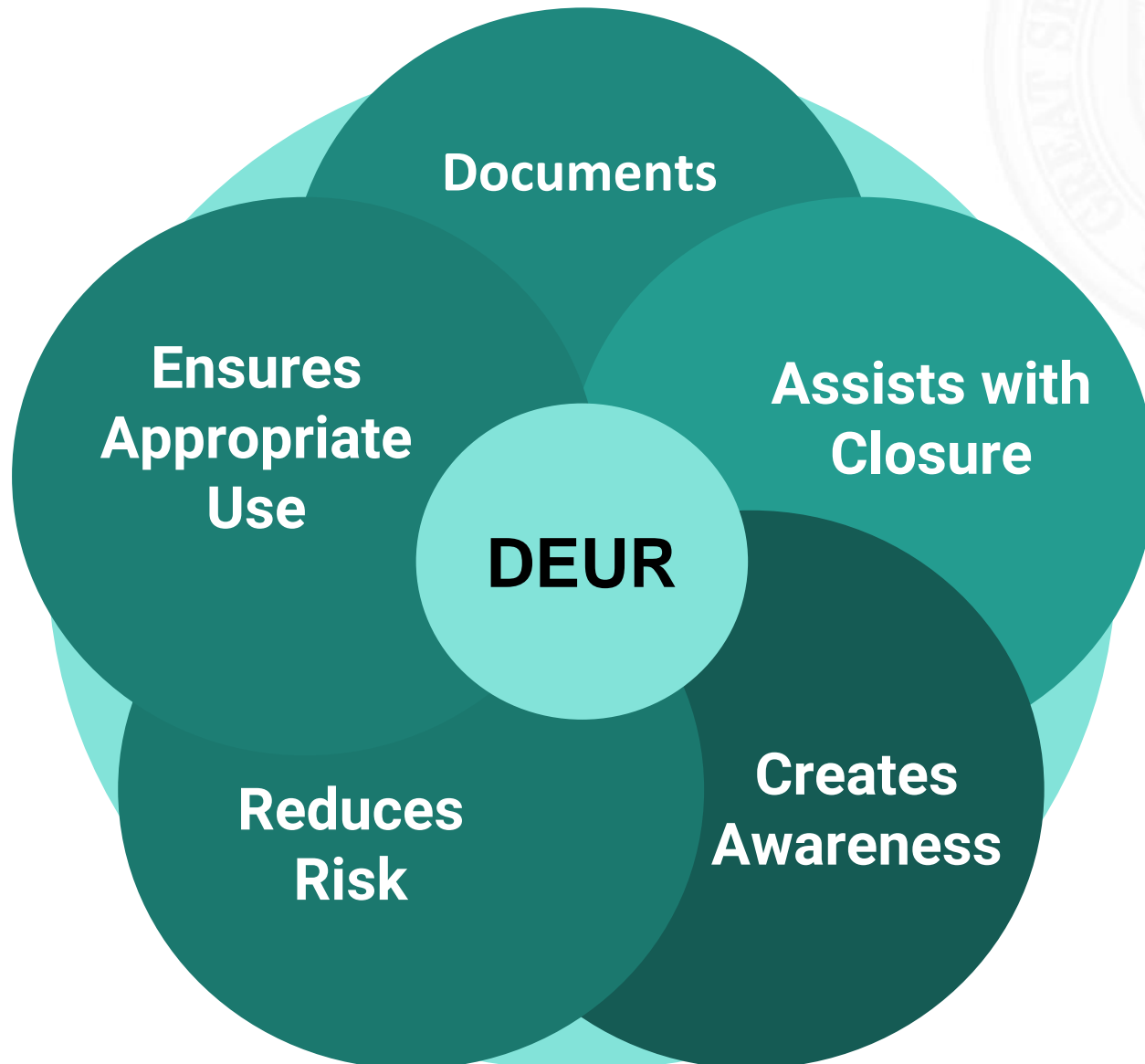
- Determine full lateral and vertical extent of contamination per soil rule
- If there are ongoing or residual impacts, source control should be initial focus followed by remedy implementation
- Provide meaningful and easily visualized data evaluations with reports (HUHY)
- Provide a schedule for progress and completion
- Remediation should be permanent
- Keep open communication with the VRP Project Manager

Think of VRP as your ally in the cleanup process - we are here to help you find an appropriate solution to your environmental issue



Declaration of Environmental Use Restriction (DEUR)

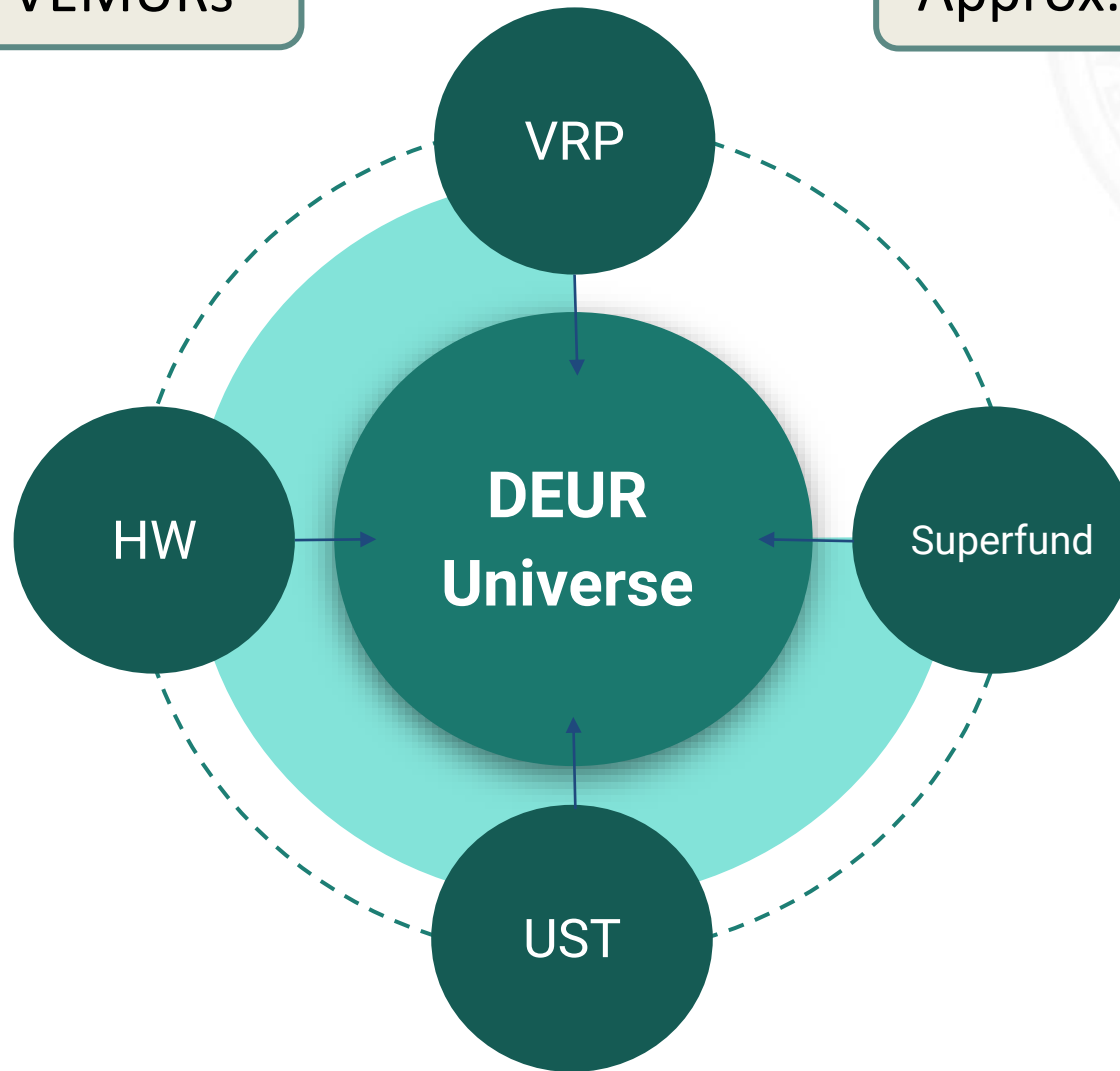
What is a DEUR?



Applicability of DEURs

Over 100 VEMURs

Approx. 100 DEURs



Institutional Control

- Legal or administrative tool or action taken to reduce the potential for exposure to contaminants.
- Restricts property to non-residential use.
- Can prohibit well installations, excavations or other soil disturbances on the property.
- Can apply other restrictions as needed depending on site conditions.

Engineering Control

- A remediation method (fence, berm, SVE, or cap) that prevents or minimizes exposure to contaminants.
- Includes technologies that reduce mobility or migration of contaminants, such as a liner.

What are the Requirements?

	One-Time Fee	Reporting	Financial Assurance	Engineering Control Plan
Institutional Control	✓	✓	✗	✗
Engineering Control	✓	✓	✓	✓

Institutional Control Petroleum Release	Institutional Control All Other Properties	Engineering Control Without Groundwater Monitoring	Engineering Control with Groundwater Monitoring and WQARF and APP Mine Sites
\$6,660 (w/o release fee) \$7,430 (w/ release fee)	\$9,960 (w/o release fee) \$10,730 (w/ release fee)	\$23,930 (w/o release fee) \$25,250 (w/ release fee)	Varies/ Site-specific (\$7,925 - \$123,645)

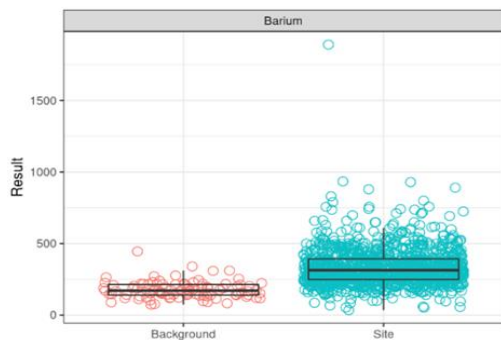
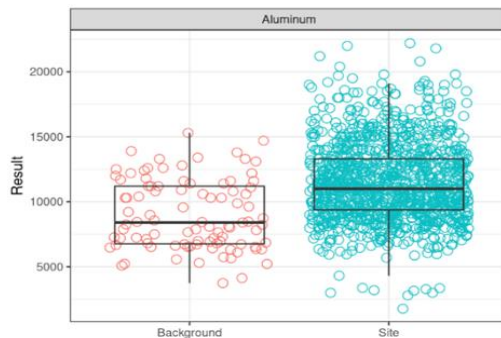
Introducing Gilbert's Tool box for background comparison



Background Comparison Tool

Load Background Comparison Data (CSV) Download PDF Report

Boxplots



Background Comparison Tool

Load Background Comparison Data (CSV) Download PDF Report

The Gilbert Toolbox for Background Comparisons

The Gilbert Toolbox is a suite of four statistical tests that are commonly used to test whether soil concentrations at a potentially contaminated site are similar to background soil concentrations for a given chemical. They provide more information than can be obtained from running only a t-test, and they do not suffer from the same underlying normality assumptions as a t-test.

Four tests are included in the suite. The first two are tests of central tendency and include the parametric t-test, and the non-parametric Gehan test, which is a Wilcoxon Rank Sum test adjusted to accommodate left censored data (non-detects). In effect, the t-test is used to compare the means of the site and background datasets, and the Gehan test is used to compare medians (really, the sum of the ranks, but this is often interpreted as comparing medians). The Gehan test is a ranking procedure that accommodates non-detects, whereas $\frac{1}{2}$ the detection limits is usually substituted for non-detects when using the parametric t-test. The Gehan test is non-parametric version of the t-test that uses rank of the concentrations. It is generally more robust to outliers. The two-sample t-test was used in the original report via ProUCL.

The other two tests are used to compare effects in the upper tail of the site and background distributions. The basic idea is that sometimes contamination only shows up in some samples, in which case it is only the upper tail of the distribution of site contamination that is affected. Both upper tail tests are non-parametric hypothesis tests. The quantile test compares the number of values above the 75th percentile that come from the site and background data sets (the quantile can be changed). The slippage test compares the extreme tails of the site and background distributions. These statistical tests have low power for small datasets (such as this dataset, potentially).

The toolbox provides a robust way of comparing both the means of two datasets and their upper tail values. Typically, the four tests are treated as a "family" of tests; if any of the four tests show statistical significance, the null hypothesis (i.e. no difference between site and background concentrations) is rejected. However, in everyday use, if only one of the four tests shows a significant result, boxplots (or some other form of visual comparison of the data distributions) are often consulted as well. It can also be appropriate for a significance value lower than 0.05 to be used to protect against familywise Type I error rates. It would require further investigation to calculate a reasonable familywise significance level for each test given the dataset, but a reasonable target might be a significance level of around 0.03.

Import Data File For Background Comparisons

- Only CSV (comma-separated value) format files are supported.
- First row of the data file must be column names.

The following named columns needs to be included in the data file:

1. **Site** named column that distinguishes the contaminated sites and the background sites; background site names must contain "background"
2. **Analyte** named column that provides the analytes names; background comparisons will be calculated for each unique analyte name)
3. **Detect** column that identifies detects and non-detects; detects must be identified as "Y", "true" or "D"
4. **Result** column that contains the result in consistent units

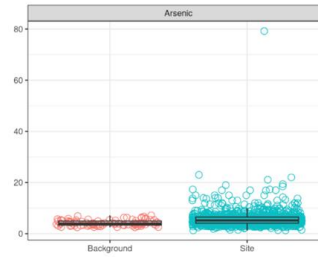
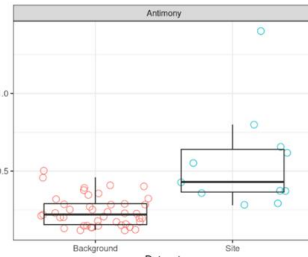
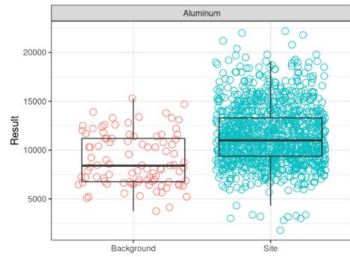
VRP Strategic Project



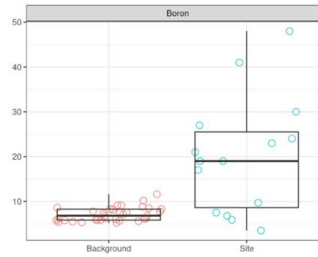
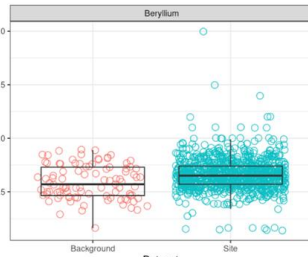
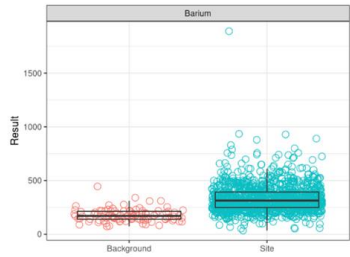
Background Comparison Tool

[Load Background Comparison Data \(CSV\)](#) [Download PDF Report](#)

Boxplots



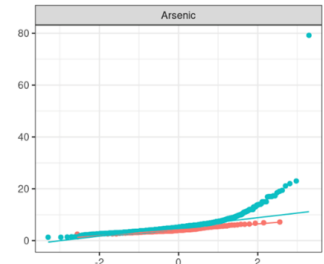
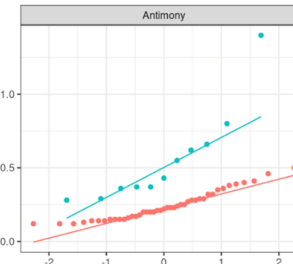
Detected Δ N O Y



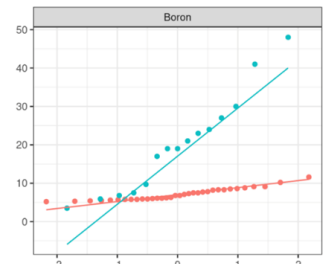
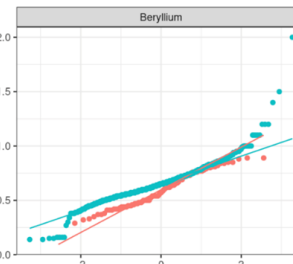
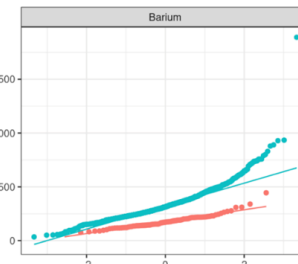
Detected Δ N O Y

one toolbox

four tools



Background Site



Background Site

Examples of Volunteer Successes



Voluntary Remediation Program

BEFORE



Shredder
Fluff

Voluntary Remediation Program

AFTER



Voluntary Remediation Program

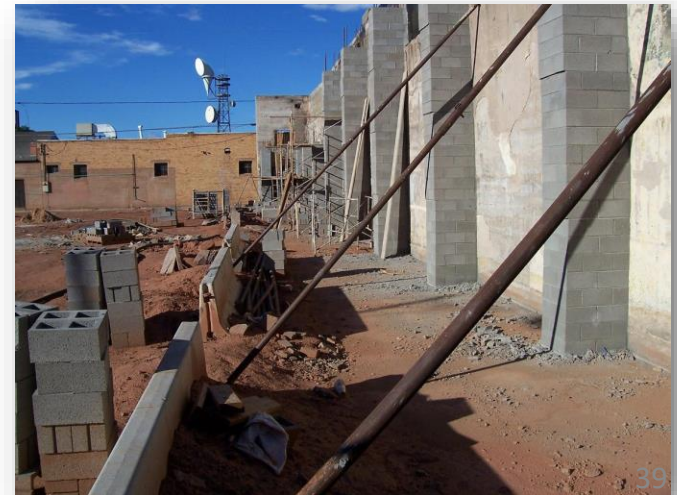
**BEFORE
VRP**



Voluntary Remediation Program



**DURING
VRP**



Voluntary Remediation Program

AFTER VRP



Voluntary Remediation Program

BEFORE VRP



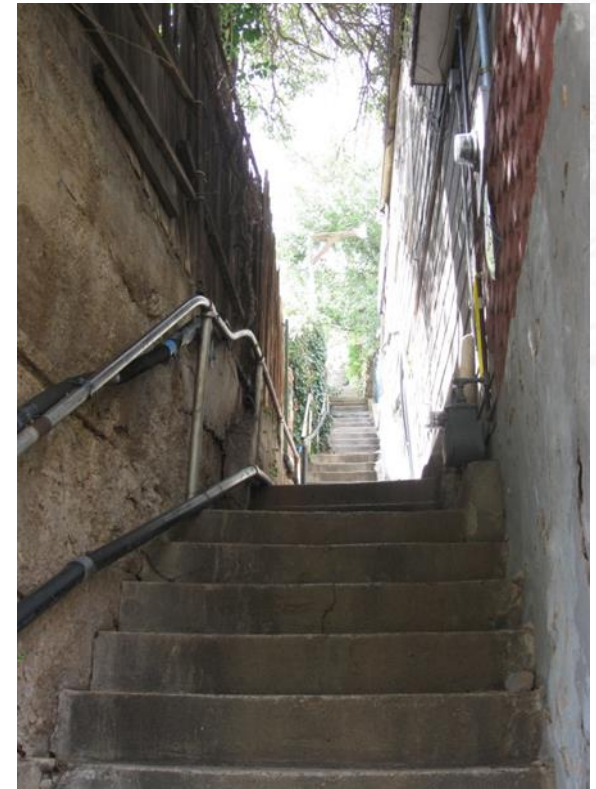
- This VRP site was formerly part of a Federal Superfund Site
- A portion (120 acres) of SIBW was delisted to allow revitalization through a Federal Brownfield grant and remediation through the VRP
- Area consisted of former sand and gravel excavation pits, salvage yards, historic landfills, heavy industrial uses, vacant land, and dilapidated buildings

Voluntary Remediation Program

- Upon completion of remediation, an Institutional Control DEUR was recorded and an NFA issued; the DEUR restricted land use to non-residential and allowed redevelopment of the property.
- The property is now major entertainment district within the Phoenix metro area with over 100 shops and restaurants



Voluntary Remediation Program



- Focus was windblown smelter emissions
- Assessed over 4,000 properties over 10 square miles
- Remediated over 1,500 properties in very difficult terrain
- Removed over 100,000 cubic yards of impacted soil
- Project characterization and remediation took approximately 8 years

Voluntary Remediation Program

“Bucket Brigade”



Voluntary Remediation Program

BEFORE



Boulder Creek



Voluntary Remediation Program



East Washington Fluff Registry



- Located at the SW Corner of Buckeye Rd. and 5th St. in Phoenix
- Site was operated as an automobile salvage facility from the early 1960s to the late 1990s, at which time it was abandoned.
- Site activities resulted in the generation of automobile shredder fluff (a mixed hazardous waste)

VRP & DEUR Examples

- Late 1990s-early 2000s - Early Response Action under WQARF resulted in excavation of contaminated materials and temporary engineering controls to mitigate exposure to remaining contamination
- 2007 - Engineering Control DEUR recorded to restrict land use to non-residential
- New property owner raised the elevation of the property by 7 feet in most areas. State-of-the-art engineering was utilized to construct new buildings on the property.
- Property is now a growing business park

Tempe Marketplace (aka McClintock Rio Salado Parkway Brownfield Redevelopment Area)



- Site was a 120 acre Brownfield, consisting of former sand and gravel excavation pits, salvage yards, historic landfills, heavy industrial uses, vacant land, and decaying buildings
- PCB contamination of soils in the SE portion of the site
- 2009 - site characterization and remediation with oversight from Voluntary Remediation Program (ADEQ)

VRP & DEUR Examples



BEFORE

AFTER



ASSISTANCE WITH APPLICATIONS AVAILABLE and ENCOURAGED

Contact Information

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