

# Starting Soon: Long-term Contaminant Management Using Institutional Controls

- ▶ ITRC's Long-term Contaminant Management Using Institutional Controls (IC-1, 2016) at <http://institutionalcontrols.itrcweb.org/>
- ▶ Download PowerPoint file
  - Clu-in training page <https://clu-in.org/conf/itrc/lcmuic/>  
Under "Download Training Materials"

Use "Join Audio" option in lower left of Zoom webinar to listen to webinar  
Problems joining audio? Please call in manually

Dial In 301 715 8592  
Webinar ID: 890 6168 3855#

# Welcome – Thanks for joining this ITRC Training Class

## Long-term Contaminant Management Using Institutional Controls



Long-term Contaminant Management  
Using Institutional Controls (IC-1, 2016) at  
<http://institutionalcontrols.itrcweb.org/>

Sponsored by: Interstate Technology and Regulatory Council ([www.itrcweb.org](http://www.itrcweb.org))  
Hosted by: US EPA Clean Up Information Network ([www.cluin.org](http://www.cluin.org))

# Housekeeping

- ▶ Course time is 2¼ hours
- ▶ This event is being recorded
- ▶ Trainers control slides
  - **Want to control your own slides?** You can download presentation file on Clu-in training page
- ▶ Questions and feedback
  - **Throughout training:** type in the “Q & A” box
  - **At end of class:** Feedback form available from last slide
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# ITRC ([www.itrcweb.org](http://www.itrcweb.org)) – Shaping the Future of Regulatory Acceptance



## ▶ Host organization



## ▶ Network

- State regulators
  - All 50 states, PR, DC
- Federal partners



DOE



DOD



EPA

- ITRC Industry Affiliates Program



- Academia
- Community stakeholders

## ▶ Follow ITRC



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## ▶ Available from [www.itrcweb.org](http://www.itrcweb.org)

- Technical and regulatory guidance documents
- Online and classroom training schedule
- More...

# Meet the ITRC Trainers



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# Institutional Controls (ICs) – Important Role in State and Federal Remediation Programs

- ▶ Mid-1990s ICs use grew through use of Risk-based Corrective Action
- ▶ ICs typically used after a site receives “No Further Action” status from regulatory program
- ▶ ICs fueled redevelopment of Brownfield properties
- ▶ ITRC’s 2008 document [Overview of Land Use Control \(LUC\) Management Systems](#) describes types of ICs in detail



# Terminology is Important

- ▶ **Engineering Controls (physical)**
  - Examples – Vapor barriers, physical or hydraulic containment, asphalt/concrete, vapor mitigation systems
- ▶ **Institutional Controls (social)**
  - Paper descriptions of legal restrictions
  - Protect the integrity of the EC or minimizes potential for human exposure to contamination
- ▶ **Land Use Controls are ECs+ICs**



# Foundation for Guidance – Nationwide Survey

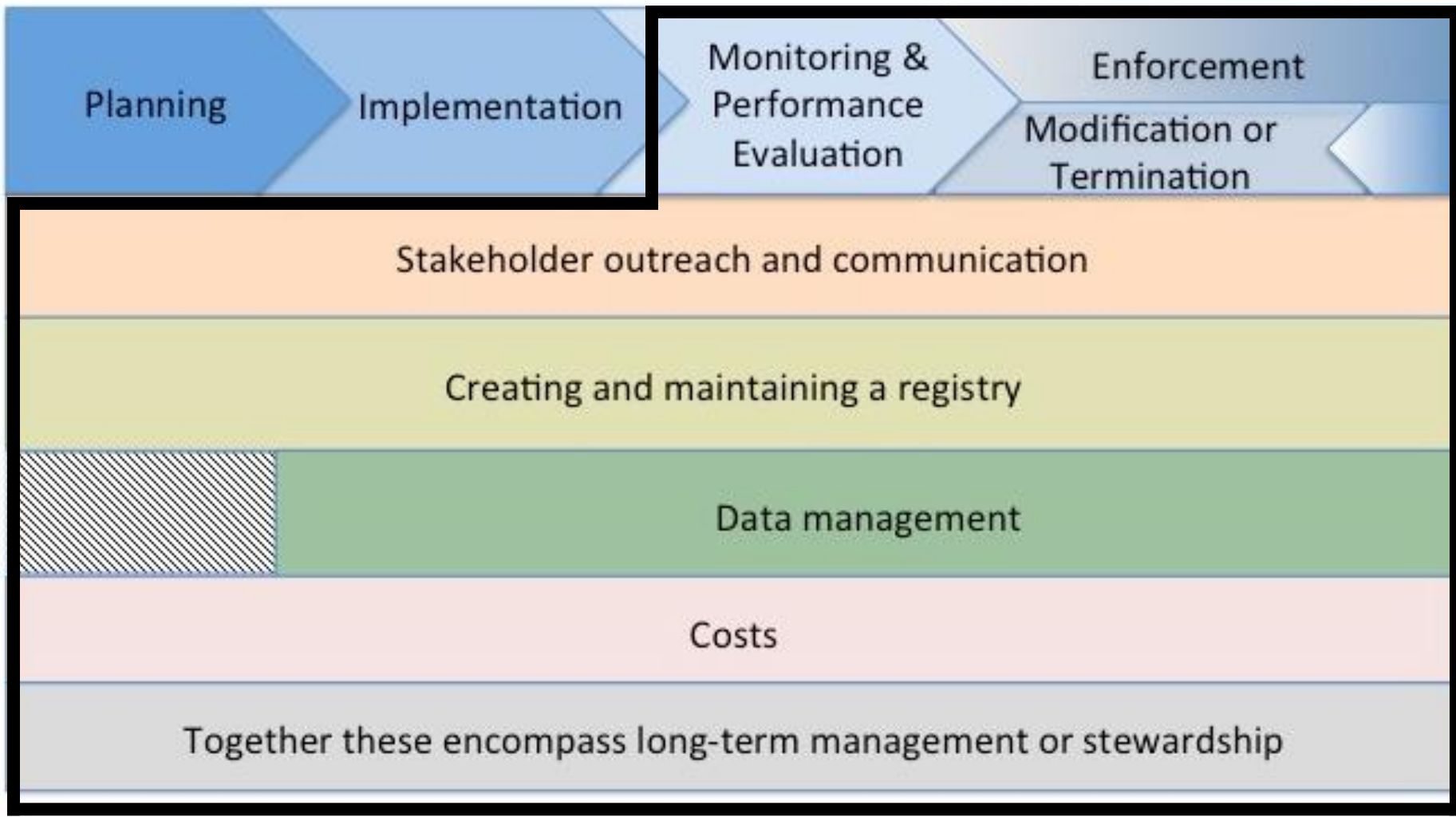
- ▶ ITRC captured information in a comprehensive survey of all states including:
  - Number of institutional controls in place and types used
  - Identified elements of successful long-term mgmt.
  - If IC failures were discovered and how
- ▶ ITRC also gathered and closely examined case studies of successes and failures

## **INSTITUTIONAL CONTROLS SURVEY OBJECTIVES**

*ITRC's Institutional Controls (ICs) team is developing a guidance describing a model IC Program, based on successes, which will allow State agencies responsible for ICs to choose successful elements that improve their own Institutional Control Management Program. This survey is being used to understand strengths and weaknesses of existing State Institutional Control Management Programs and will form the basis of this guidance.*



# Focus of ITRC Guidance Document



# After Attending this ITRC Training

- ▶ Use the Guidance to:
  - Improve IC reliability and prevent IC failures
  - Improve existing or develop new IC management programs
  - Identify pros and cons about differing IC mgmt. approaches
- ▶ Use downloadable tool to:
  - Establish Long-term Stewardship (LTS) site plan
  - Effectively populate an IC registry or data management system

**Long-Term Contaminant Management Using Institutional Controls** HOME

**Welcome**  
Long-Term Contaminant Management Using Institutional Controls

This guidance focuses on long-term contaminant management using institutional controls (ICs). ICs are a form of land use controls (LUCs) that provide protection from exposure to contaminants on a site. While ICs consist of administrative or legal restrictions on a site, LUCs can also use physical measures, which are called engineering controls (ECs). In contrast to ECs, ICs are primarily government controls, proprietary controls, enforcement or permit mechanisms, and informational devices.

The guidance presented here builds on ITRC's 2008 document *Overview of Land Use Control (LUC) Management Systems* and can be used to develop and improve long-term management programs for ICs. This guidance assists those who are responsible for stewardship of ICs by describing critical elements and best practices for an IC management program. Much of this guidance is based on the successes and lessons learned from established state and federal agency programs. ITRC surveyed state programs to better understand the types of IC management programs that are in place across the United States, what makes these programs effective, and what common issues affect the durability of ICs.

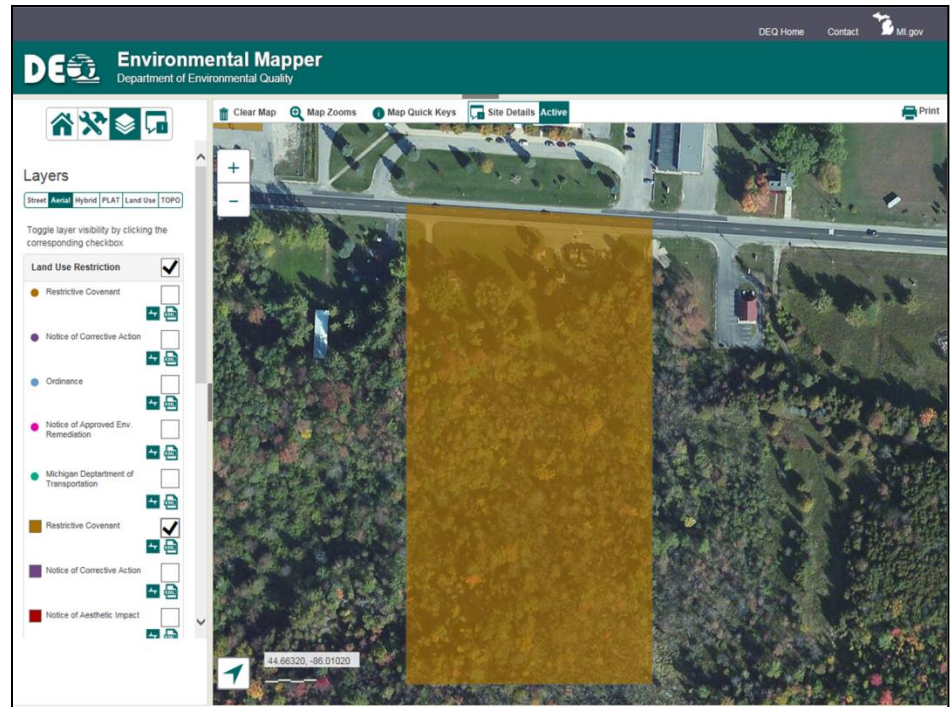
<http://institutionalcontrols.itrcweb.org/>

# Failure of Institutional Control – Inadequate Communication/Monitoring

## Michigan Example

### Background:

- ▶ IC recorded in 1997 on 1 parcel – LUST release
  - Land use (commercial) & GW restriction
- ▶ 2015 - prospective purchaser identified property previously split
  - 1 parcel became residential.
  - DW well installed in 2001



*Above – Restricted area depicted from MI Environmental Mapper program. IC available for download.*

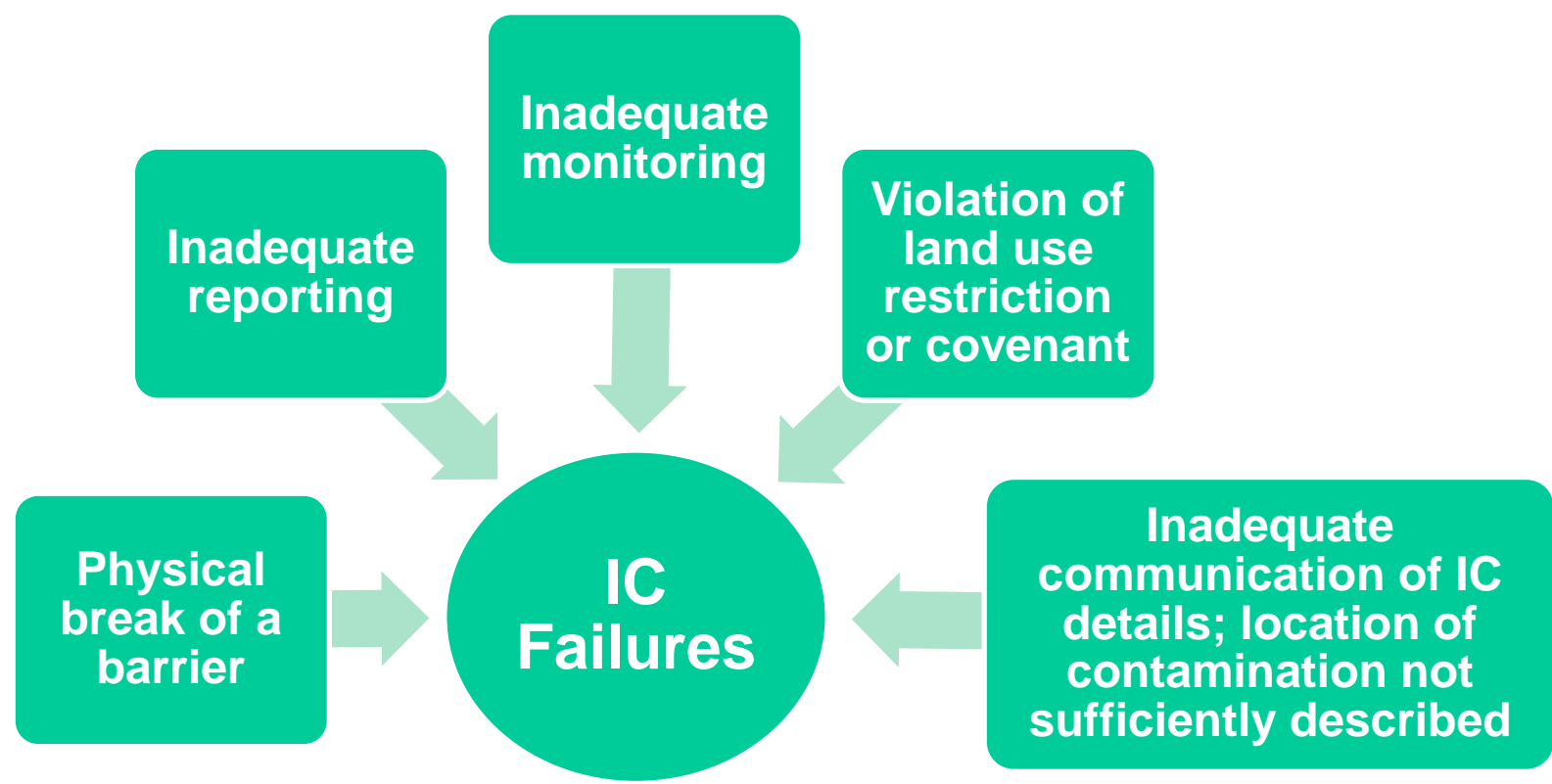
# Failure of Institutional Control - Inadequate Communication/Monitoring

## Michigan Example

- ▶ New residence & DW well found to be side-gradient of contaminated GW plume.
- ▶ Violations did not result in long-term exposure
- ▶ Regulatory agency has instituted an outreach program to communicate resources to well-permitting agency.
- ▶ LTS principals would have prevented this failure.



# Why Do Institutional Controls Fail?



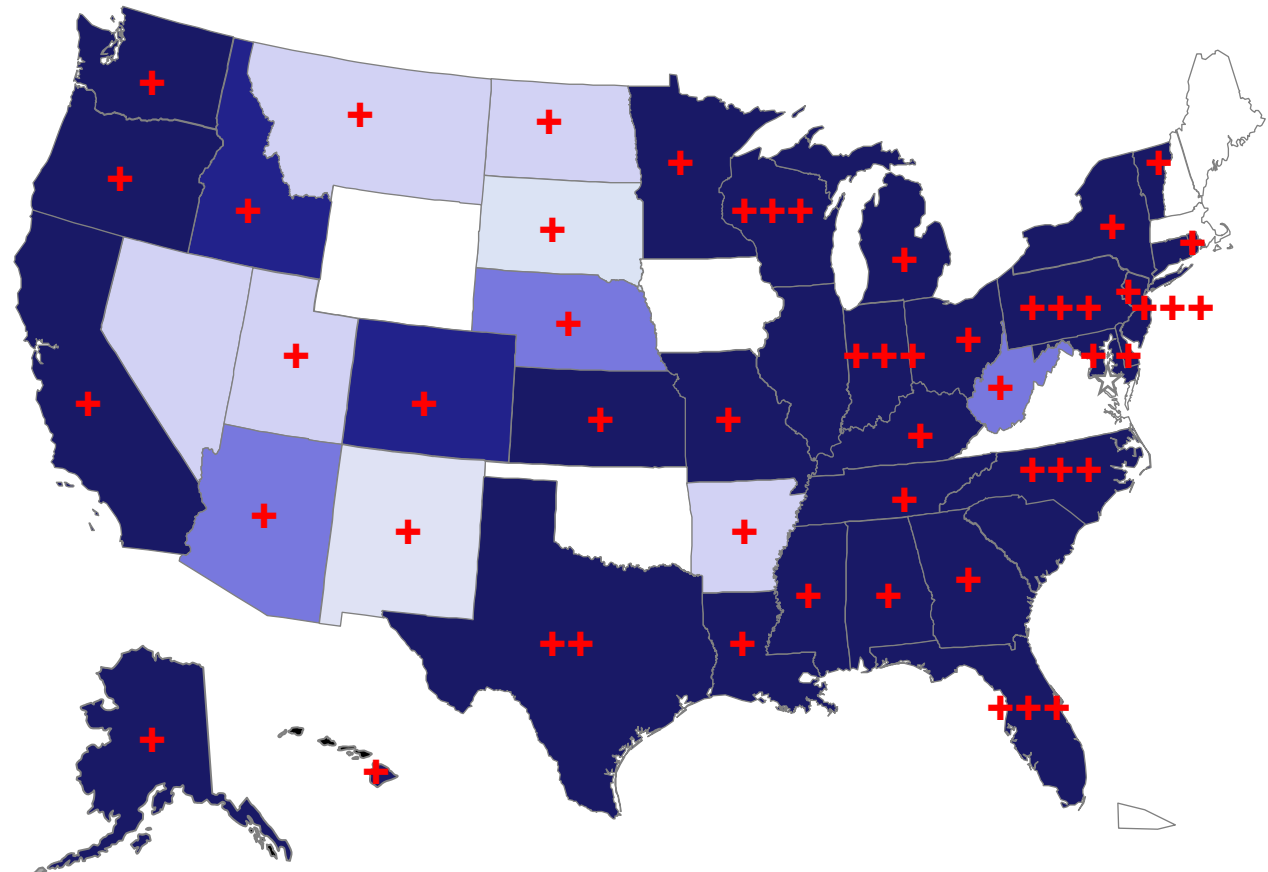
Poll Results

Based on ITRC team's state survey in August 2015

# Is IC Failure Really a Significant Issue?



60% of states have 200 or more ICs  
 64% of states have no standard procedure for selecting, using, and implementing ICs across different state programs.



- ICs in place**
- No response
  - 1-5
  - 6-25
  - 26-50
  - 51-100
  - 101-150
  - 151 - 200
  - > 200
- ICs added per year**
- + 0-50
  - ++ 51-100
  - +++ 100+

Based on ITRC team's state survey in August 2015

# ITRC Institutional Controls Guidance Supports Long Term Solutions

## Based on the ITRC Guidance Document:

- ▶ **Practice good stewardship** to ensure ICs continue to prevent exposure to contamination that has been left in place
- ▶ **Effective communication and recordkeeping**
  - Get everyone on the same page with roles and responsibilities
  - Ensure communications and commitments over time (people come and go the stewardship process has to account for people changes)
  - Document ICs and make them easily accessible

# Downloadable ITRC Tool Creates Long-term Stewardship Plan for ICs

- ▶ Steps by step process to guide user inputs
- ▶ Creates site record
  - Regulatory authority
  - Details of IC
  - Responsibilities
  - Schedule for monitoring and performance
  - And more.....
  - Generates editable Long-term Stewardship (LTS) Plan

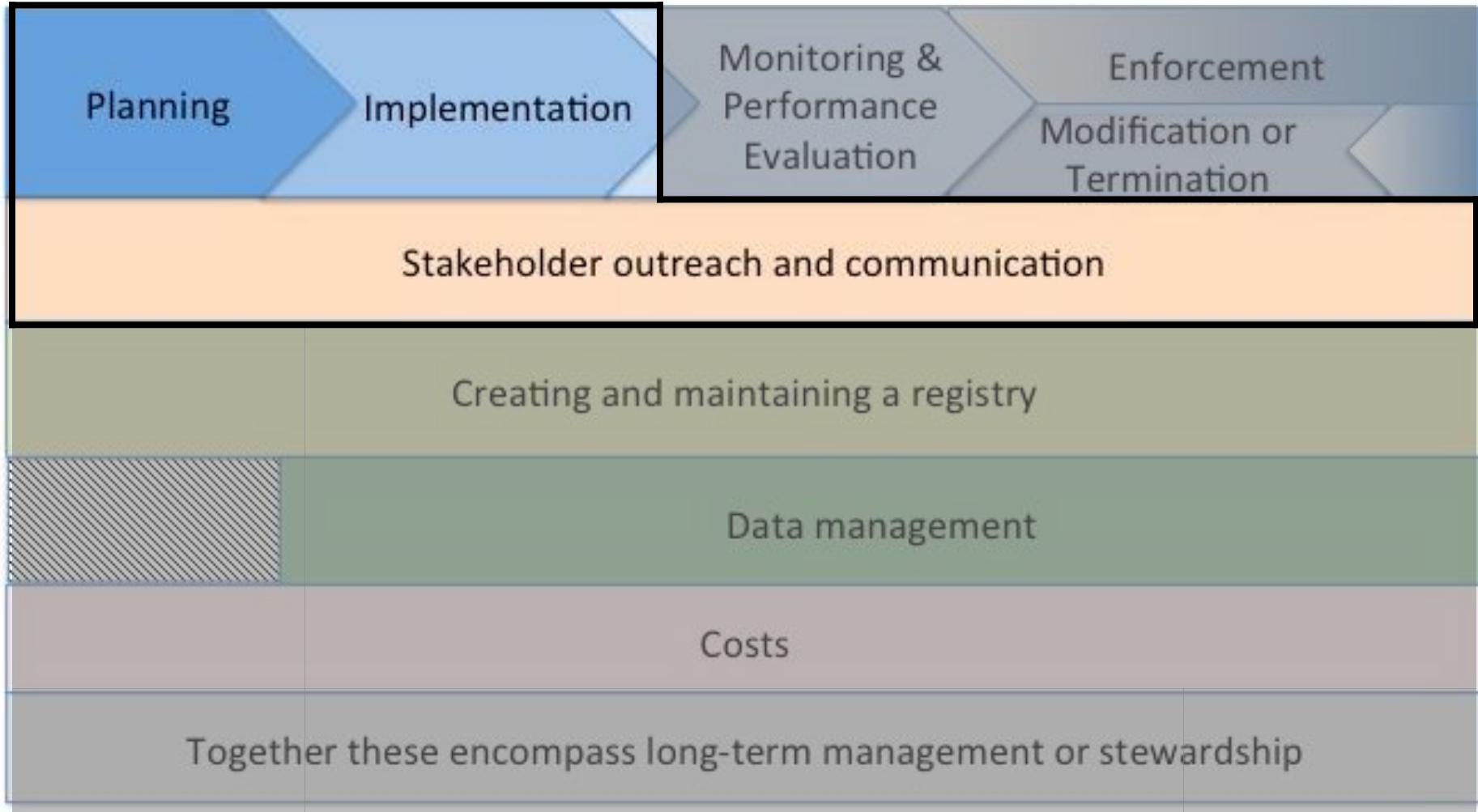
## Institutional Control Long-term Stewardship Plan for [1]

### **I. Introduction (excerpt):**

This LTS is designed to assist obligated parties with the continual compliance and integrity of Institutional Controls (IC). ICs are used to minimize the potential for human exposure to contaminants and to protect the integrity of a cleanup remedy by controlling how the property is used. This document is designed to clarify the constraints of the IC in effect at [1], [91], [89], [90], as dictated by [2] provided in Appendix A, and to provide a comprehensive guide for implementing, monitoring, and maintaining the ICs in a manner that remains protective of human health and the environment as long as contamination remains in place at the site....



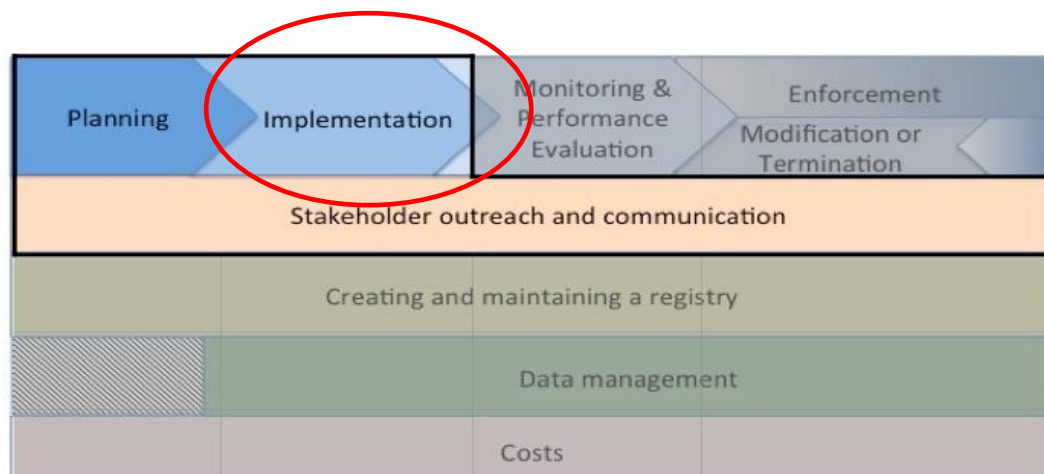
# Essential Elements to Consider When Managing ICs





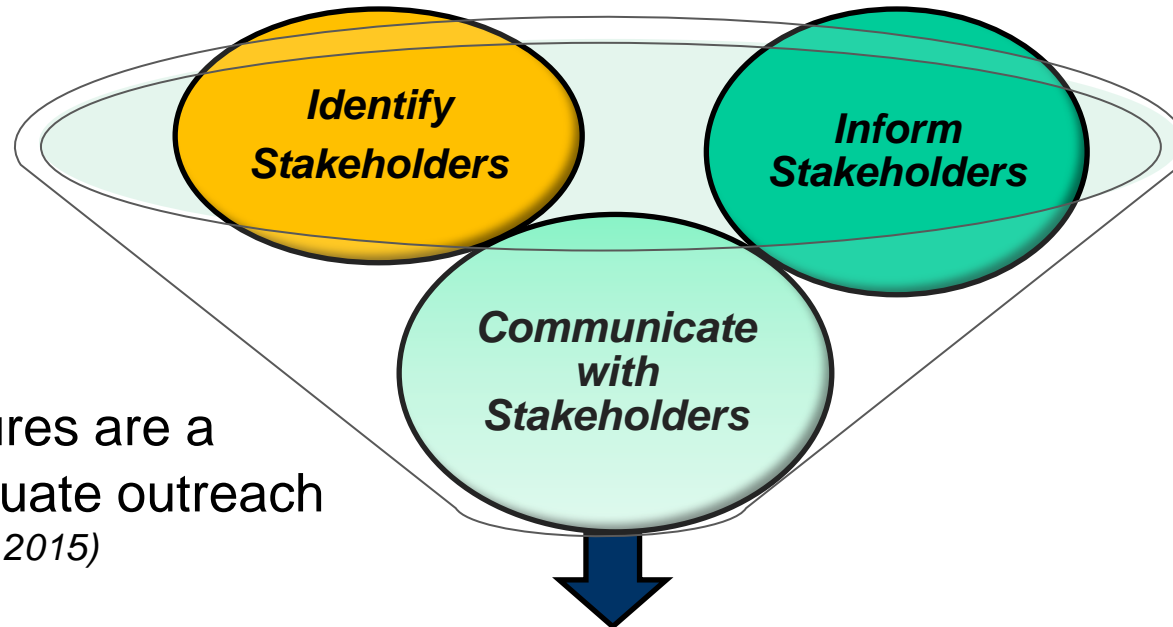
# Implementation

- ▶ Formalize the IC
- ▶ Develop a long-term stewardship plan



# Ingredients for Successful Outreach

## Critical Components Throughout Full IC Life Cycle



**41%** of IC failures are a result of inadequate outreach  
(ITRC Survey, August 2015)

***Successful Outreach!***

**Outreach Success = IC Success**

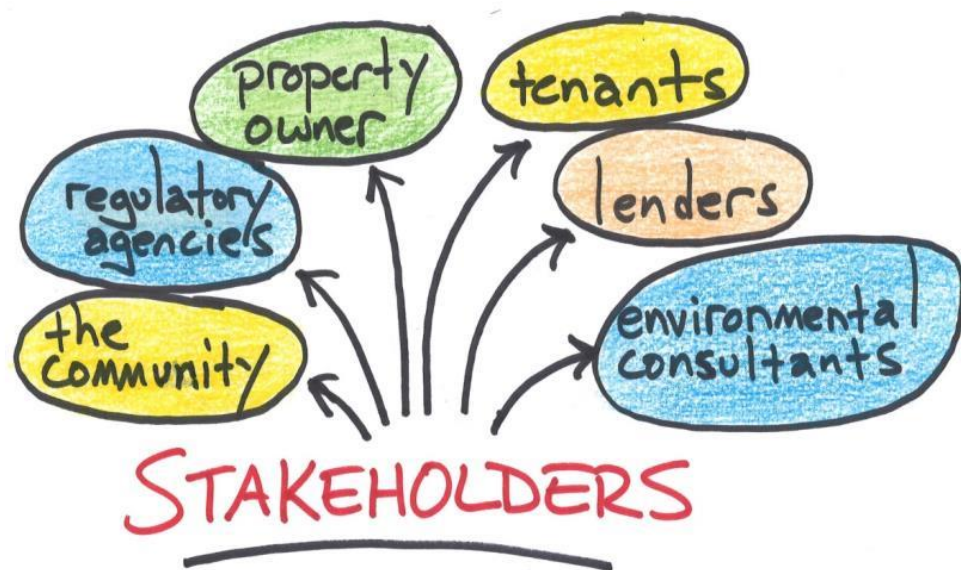
**Outreach Failure = IC Failure**

# Who are Stakeholders?

## ► Stakeholders (Table 5 of our ITRC Guidance)

Affected or interested parties including:

- Subject property owner
- Future property owner
- Adjacent property owner
- The community
- Regulatory agencies
- Tenants
- Financial institutions
- Environmental consultants
- And many others...



# Where Do Stakeholders Fit In?

## Concerns

- *Health*
- *Liability*
- *Devaluation*
- *Blight*
- *Perception*

## Responsibilities

- *Record Keeping*
- *Do's and Don'ts*
- *Financial Assurance*
- *Inform Tenants*



# Where Do Stakeholders Fit In?

## Concerns

- *Health*
- *Liability*
- *Devaluation*
- *Blight*
- *Perception*

## Responsibilities

- *Record Keeping*
- *Do's and Don'ts*
- *Financial Assurance*
- *Inform Tenants*



**Remember;**

Stakeholders are often a wide range of individuals and groups and so are their concerns, responsibilities and information needs.

# Multiple Communication Methods



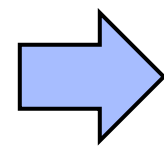
## Direct Outreach (Push)

Simple signage to sophisticated notification



## Passive Outreach (Pull)

Accessible and searchable information



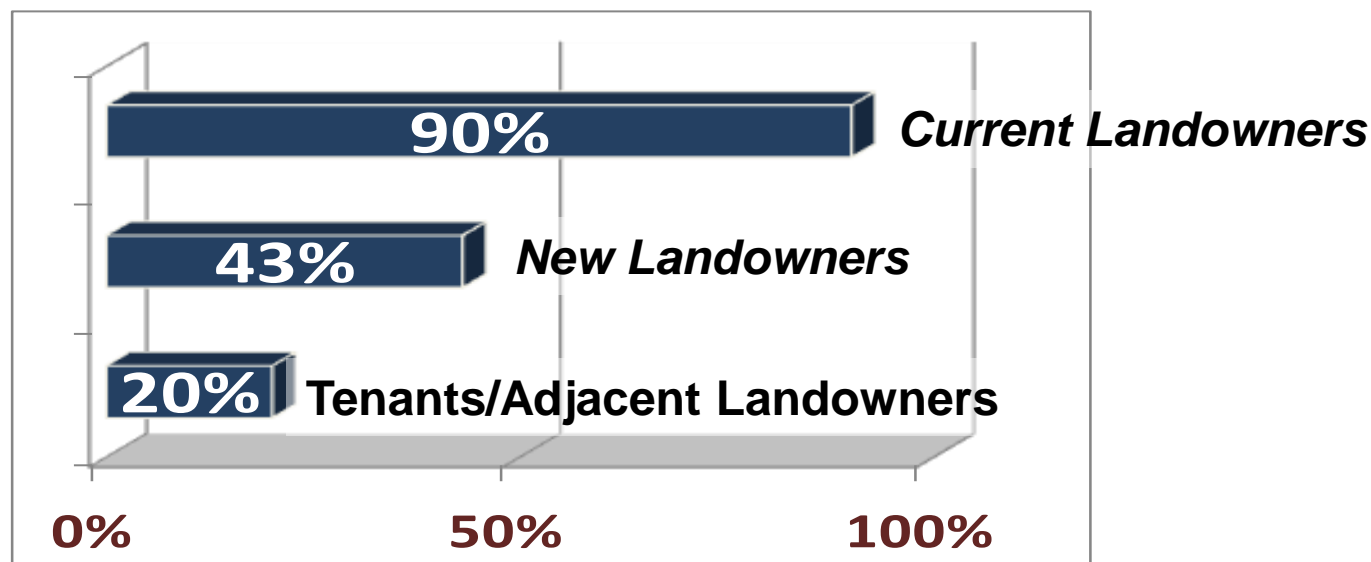
**Missouri Hazardous Substance Site Locator**

Site/Facility	<a href="#">Joe's Cleaners</a>
Address	6088 Arsenal St.
City	St. Louis
Zip	63139-2623
Status	Active



# Stakeholder Outreach Needs Improvement

## Current Status of Outreach *(ITRC Survey, August 2015)*

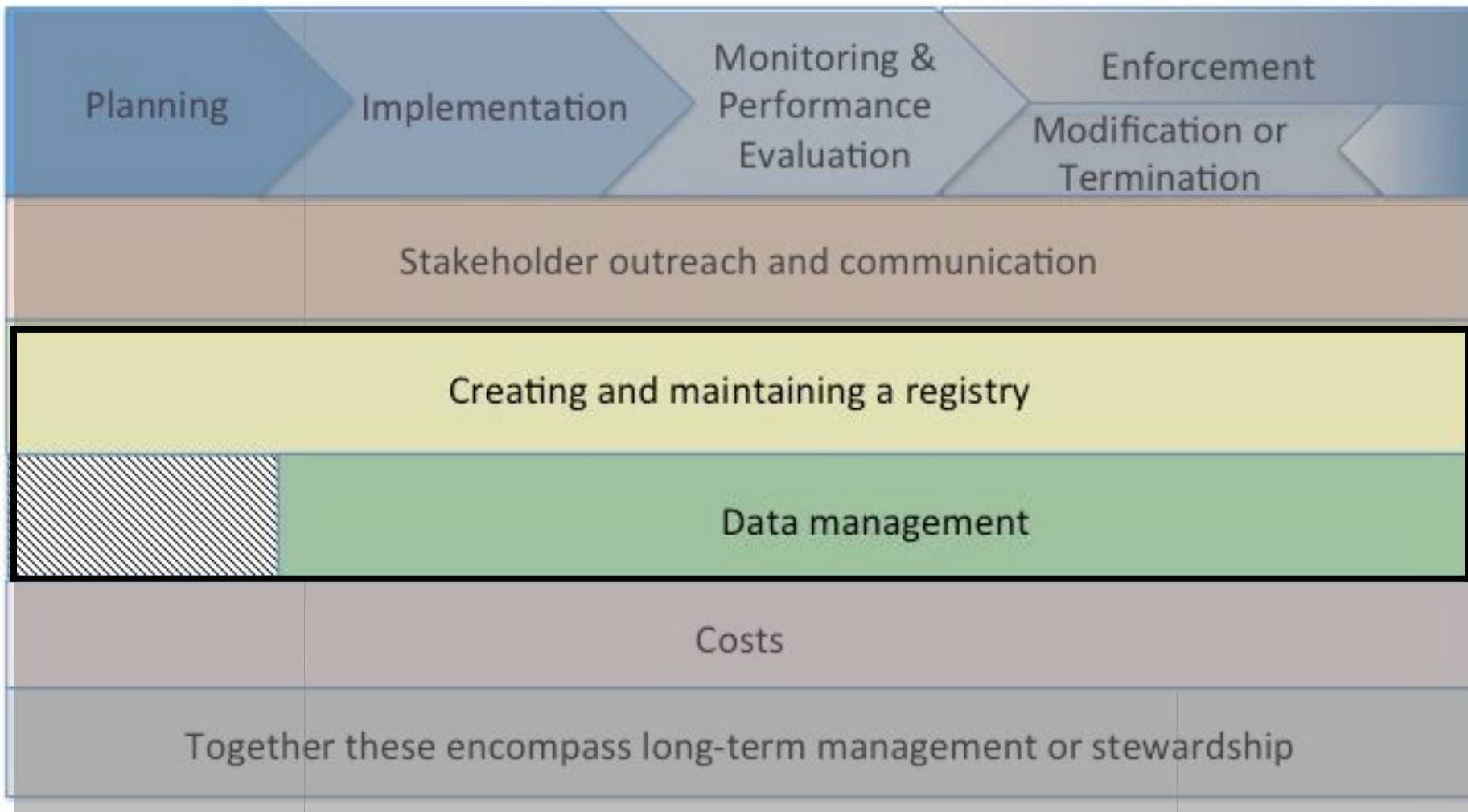


### ► Use Best Practices to Improve Outreach!

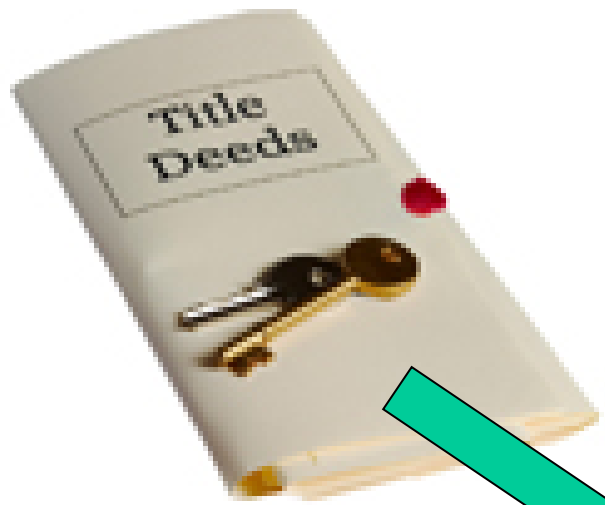


- Determine Stakeholders & Information Needs
- Make IC's Easy to Find and Understand
- Use our ITRC Long-Term Stewardship Plan

# Essential Elements to Consider When Managing ICs



# Registry



- RAP130001

Record 1 of 1

Deed Notice Filed:    Engineering Control Present:

Deed Notice Terminated:     Financial Assurance Exemption

Entire Site Restricted:  Engineering Control Implemented Date:

Usage:  Engineer Control Lifted Date:

Engineering Control Description

Area	Engineering Control Description	Thickness	Units
Barrier Protection Layer	Imperm. Cover	2.5	Feet
Geosynthetic Composite	Permeable Cover	1	inches
HDPE Membrane	Permeable Cover	40	millimeters

Comments: Please note that the original Deed Notice was recorded 11/13/2002 in Deed Book 5344 (pgs 554-632) with Instrument Number 115174 (Union Co.). It was re-recorded 4/15/2003 to add Attachment 1 and reference to Attachment 1 in the Table of Contents.

Block	Lot	County	Munici
143	1	20 - Union	02 - Clark Twp

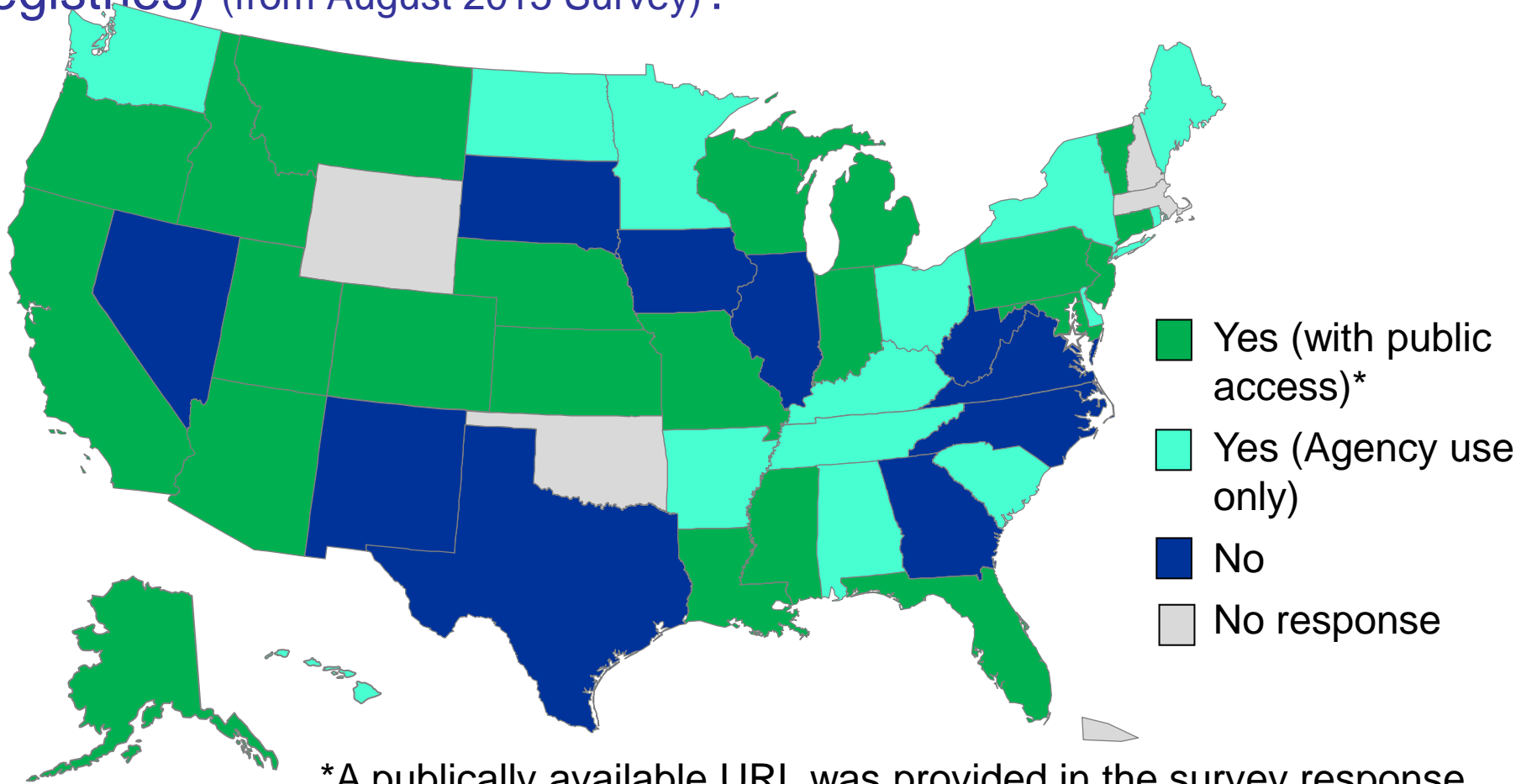
Options      Contaminants...      OK      Cancel

# Poll Question

- ▶ Have any of you experienced or witnessed a problem or violation of an IC due to lack of awareness where a registry could have made a difference?
  - Yes
  - No
  - Not certain

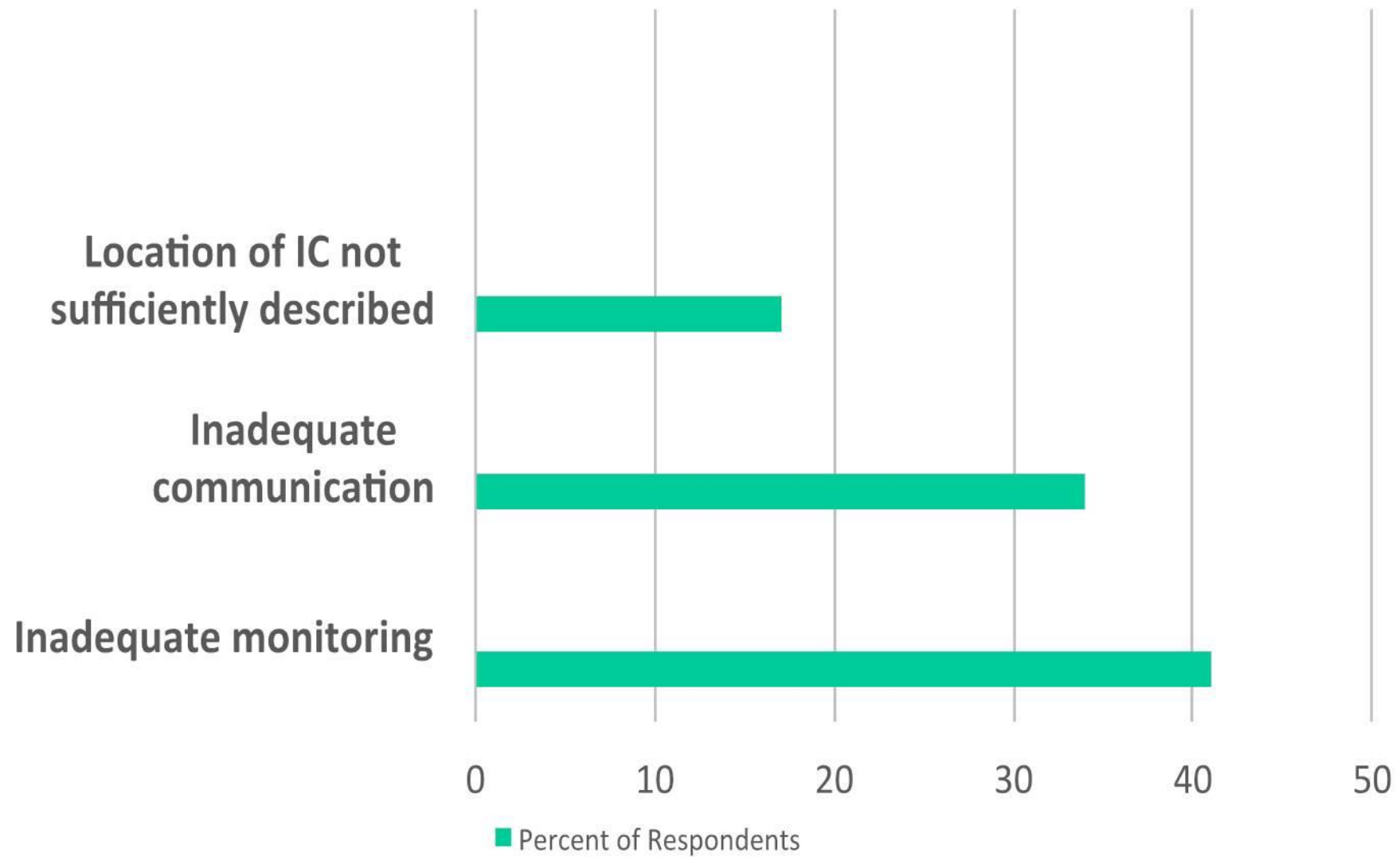
# ITRC State Agency Survey

Q23: Does your State agency employ an institutional control data management system? (e.g., searchable databases, IC registries) (from August 2015 Survey)?




\*A publically available URL was provided in the survey response

# Causes of IC Failures – From Survey



# Agency Use of a Registry

- 
- Manage / describe IC
  - Outreach to stakeholders
  - Track enforcement
  - Schedule IC obligations
  - Document compliance

- 
- Tracking reporting obligations
  - Documenting points of contact for LTS

# Missouri – Site Management and Reporting System (SMARs), App E-3



Long Term Stewardship

Location:  All

Summary | Contaminants | Media | Objectives | Choose Instruments | Instrument Details | Contacts/Affiliates | Activities/Monitoring | Reports

Site/Facility Name:   
 Operable Unit Name:   
 AUL Area:   
 Address:  City: Springfield County: Greene

Contacts	Role
City of Springfield Planning & Dev	IC Implementation
Hazardous Waste Program	IC Monitoring
Olivia Hough	IC Implementation

Instrument Types
- Restrictive Covenant
Use Restrictions
No Disturbance of Soil
No Drilling or Use of Groundwater
Non-Residential Use

Contaminants	Media Impacted
Benzo(b)fluoranthene	Soil
Benzo(a)pyrene	Water
Dibenzo(a,h)anthracene	
Benzene	
Lead	
Arsenic	
Cadmium	

Record: 1 of 1 No Filter Search



# Public Use of a Registry

Property  
owners

Buyers,  
Developers

Due  
Diligence



Construction and  
utility workers

Adjacent Land Owners

# Public Page (see App. "Examples of State, Federal and Commercial Registries")

## Missouri Department of Natural Resources


[Application Home](#)
[Select County](#)
[Select City](#)
[Select Zip Code](#)
[Zoom to Address](#)
[Full Extent](#)


Latitude: 41.926611328125006 Longitude: -89.5977596843262


### LAYERS


Hazardous Waste Program


#### Cleanup Sites


 **Active** - Sites undergoing investigation or remediation

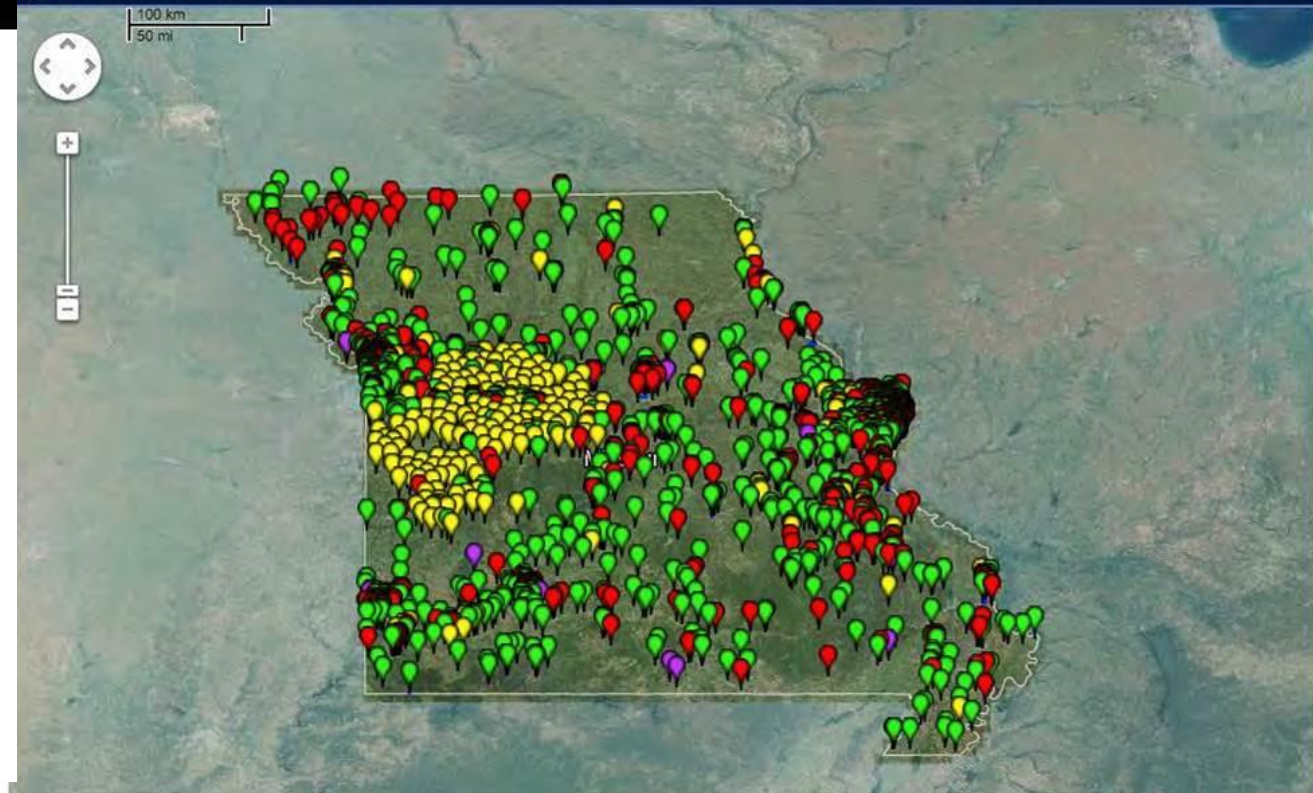
 **Long-Term Stewardship** - Sites with activity and use limitations

 **Environmental Notice** - Sites where an environmental advisory may be warranted

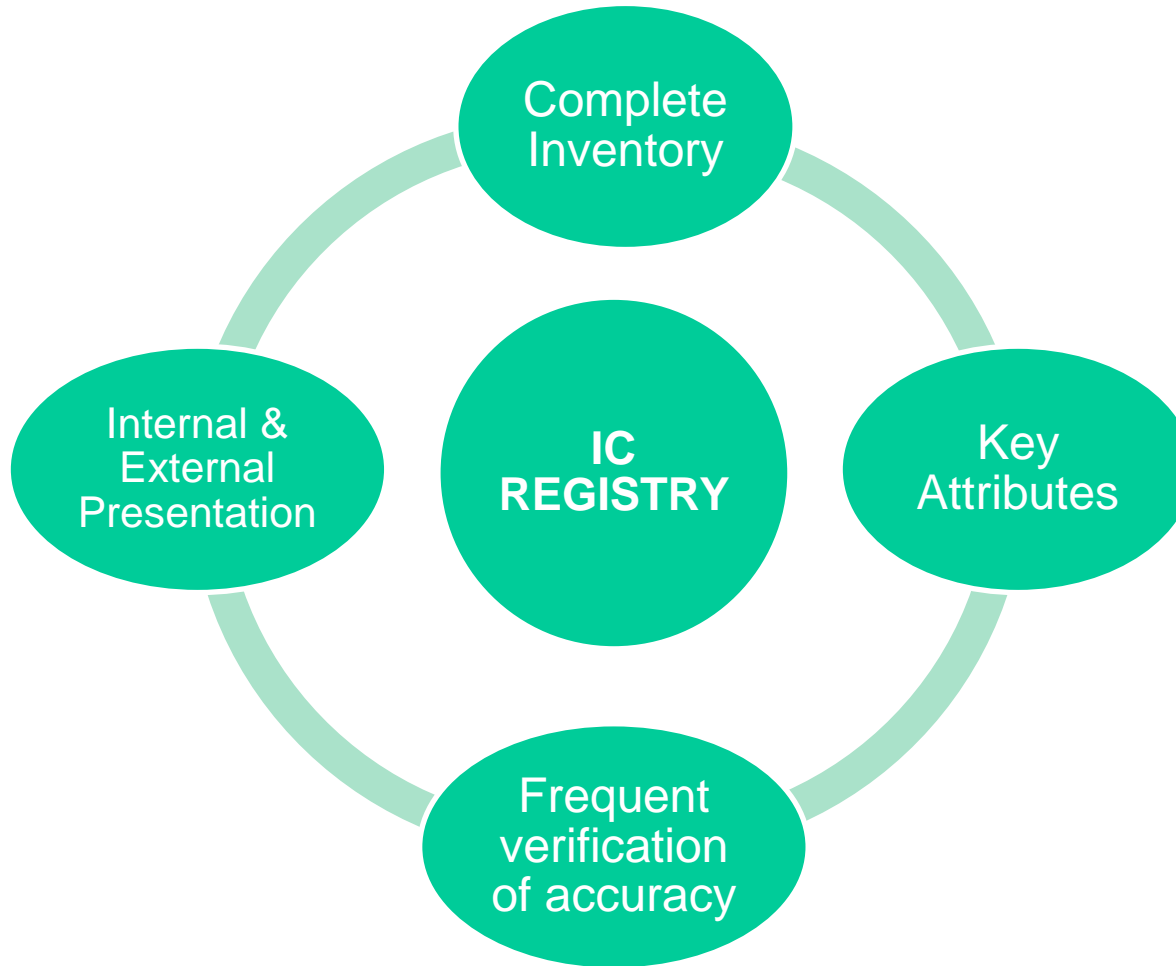
 **Completed** - Sites suitable for unrestricted use

 **Activity & Use Limitation Area** - Area subject to activity and use limitations

 **Site Area** - Approximate area that comprises the site or permitted facility



# Development of a Registry



# Maintenance of a Registry

- ▶ Maintaining, updating, and error correcting IC management system are crucial components for their success




# IC Registry Example


## Missouri Department of Natural Resources

Latitude: 37.20790103212433 Longitude: -93.29352787312467


### LAYERS

Hazardous Waste Program Cleanup Sites


 **Active** - Sites undergoing investigation or remediation


 **Long-Term**

**Stewardship** - Sites with activity and use limitations


 **Environmental**

**Notice** - Sites where an environmental advisory may be warranted

 **Completed** - Sites suitable for unrestricted use

 **Activity & Use**

**Limitation Area** - Area subject to activity and use limitations

 **Site Area** -

Approximate area that comprises the site or permitted facility



Site/Facility

Address

City

Zip

Status

Activity & Use Limitations - Inspection & Maintenance of Engineered Controls

[Click here for more information](#)

South Pier

317 South Avenue

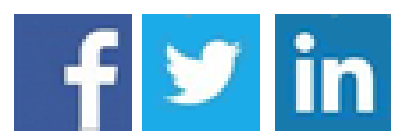
Springfield

65806-2123

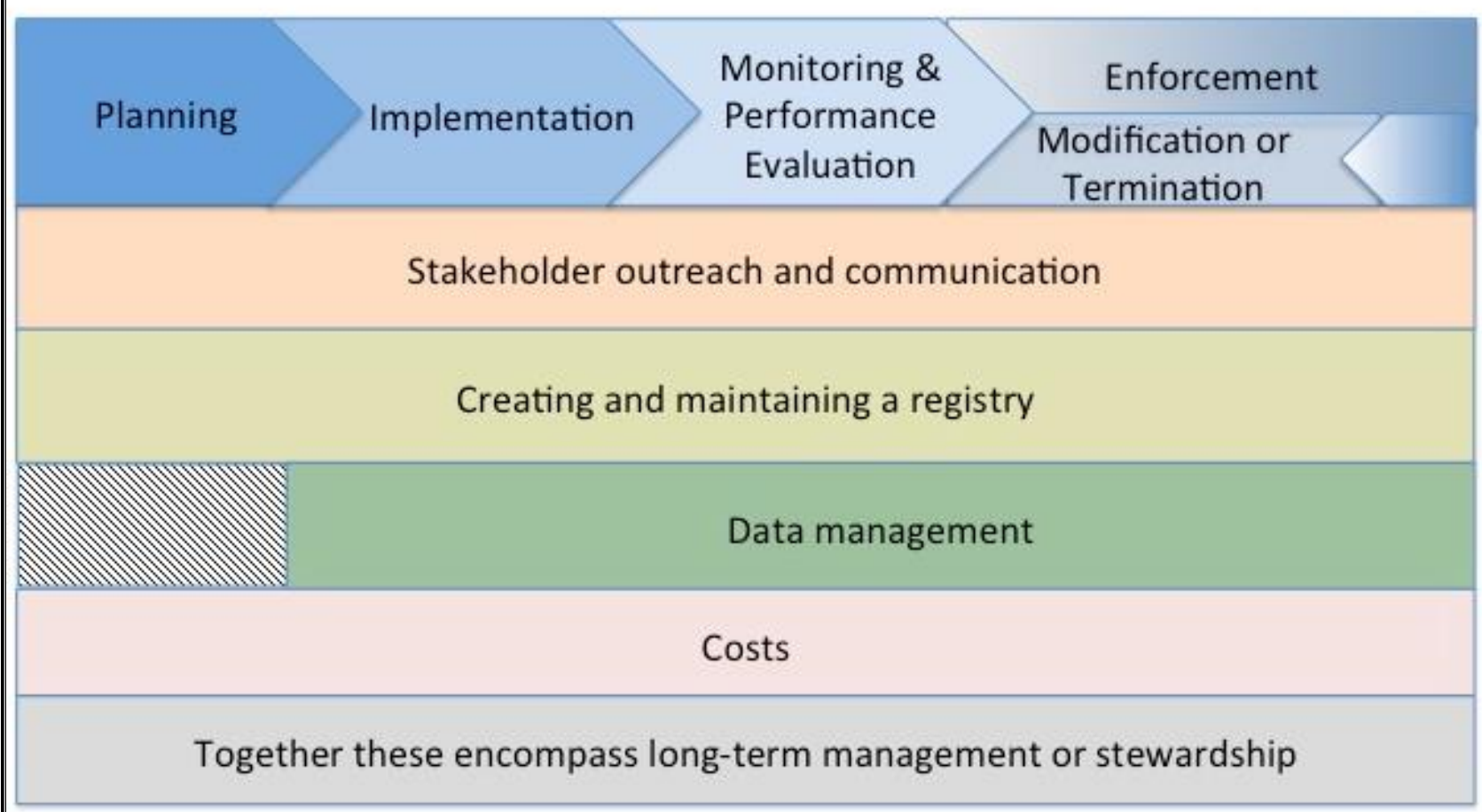
Long-Term Stewardship

# Q & A

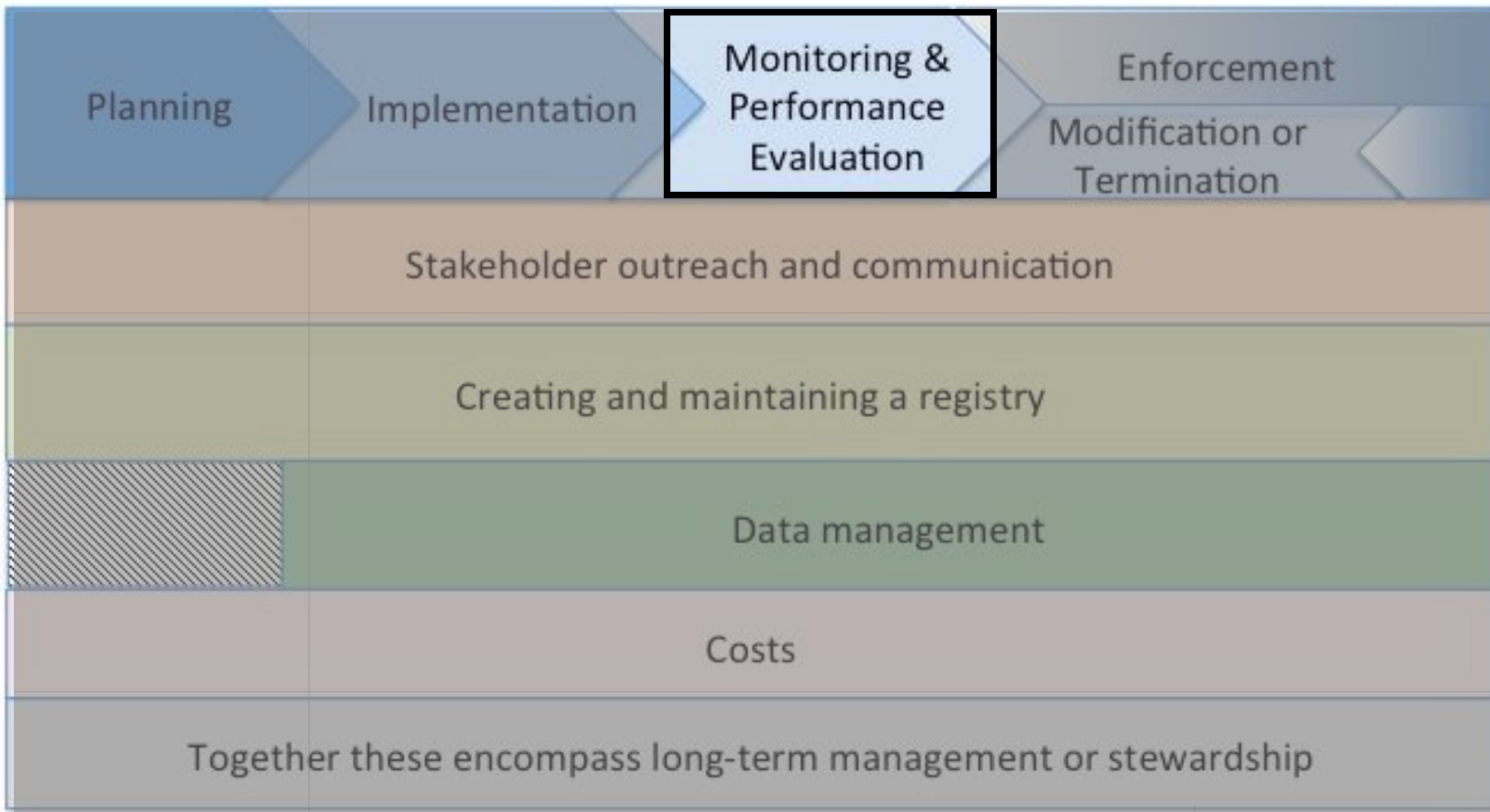
Follow ITRC



The IC Life Cycle consists of five integrated elements



# Essential Elements to Consider When Managing ICs



# IC Monitoring and Performance Evaluation

## ▶ IC Monitoring Matters!

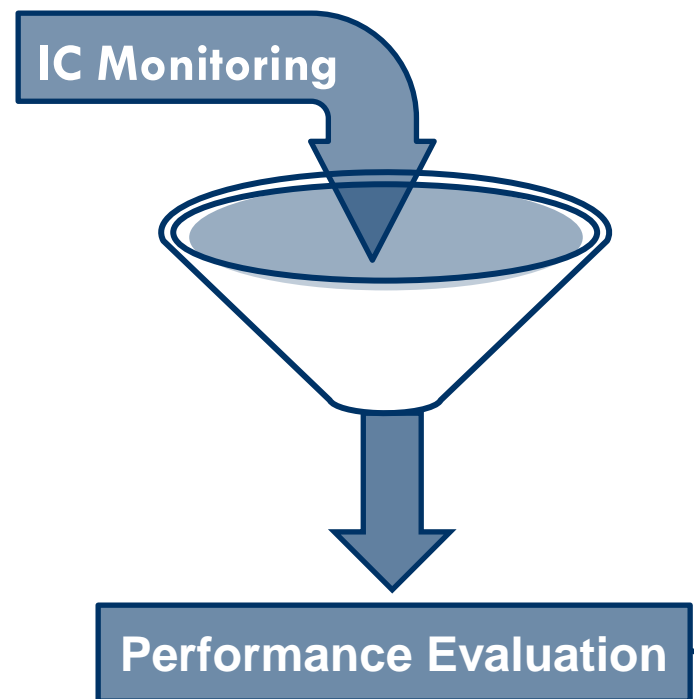


You will learn common methods  
and best practices for IC  
monitoring and evaluating  
performance of ICs



# IC Monitoring and Performance Evaluation

- ▶ **IC Monitoring** refers to the collection of data and information
- ▶ **Performance Evaluation** refers to the process of reaching findings and conclusions



# What is IC Monitoring?

- ▶ ***IC Monitoring*** refers to the collection of data and information
  - About the use or activities at property at which an IC exists.
  - To learn whether the use or activity might violate the IC Requirements.



This is not conventional environmental monitoring – IC monitoring is different!

- ▶ **Common IC requirements**

- No groundwater use
- No (or limited) excavation
- No residential use
- No schools or daycare
- No new structures without vapor intrusion protections



# IC Monitoring Approaches: Six Approaches for IC Monitoring

- ▶ State Agency Inspections/Record Reviews
- ▶ “Obligated Party” Inspections & Certification
- ▶ Excavation Monitoring via One Call
- ▶ Land Activity Monitoring
- ▶ Local Government Coordination
- ▶ IC Permit Program

*How do they work?*

*What are states doing?*

*Advantages and dis-advantages?*

EPA Advanced Monitoring for ICs  
<https://www.epa.gov/enforcement/use-advanced-monitoring-technologies-and-approaches-support-long-term-stewardship>

# Monitoring Poll Question

- ▶ Which of the following do you utilize for monitoring ICs?
- State Agency Inspections/Record Reviews
  - “Obligated Party” Inspections & Certification
  - Excavation Monitoring via One Call
  - Land Activity Monitoring
  - Local Government Coordination
  - IC Permit

# IC Monitoring Approach #1: State Agency Inspections and Record Reviews

## Environmental Covenant Inspection Staff Form

<b>Property Name</b> Summitville Mine Site			<b>Covenant Date</b> 4/8/2002
<b>Covenant Property Address</b> See legal description			<b>HMWMD ID</b> COD983778432
<b>City</b> Del Norte	<b>State</b> CO	<b>Zip</b> 81132	<b>Covenant ID</b> HMCOV00003
<b>County</b> Rio Grande			<b>Last Modification</b> 4/8/2002
<b>LegalDesc:</b> See Covenant			<b>HMWMD Contact</b> SF - Mark Rudolph
<b>Major Contaminants</b> heavy metals, iron, copper, zinc, manganese, cyani			<b>Restrictions1:</b> No construction of any building
<b>Media WS</b> <input type="checkbox"/>	<b>Media Air</b> <input type="checkbox"/>	<b>Media Other</b> <input type="checkbox"/>	<b>Restrictions2:</b> No disturbance of ground surface, including digging, drilling, grading, excavation or mining
<b>Media WG</b> <input type="checkbox"/>	<b>Media Soil</b> <input type="checkbox"/>	<b>Self Reporting</b> <input type="checkbox"/>	<b>Restrictions3:</b> No action that disturbs vegetation
<b>Owner/Corp</b> Aztec Minerals Group	<b>Contact Address</b> 824 Sun Ridge Lane		<b>Restrictions4:</b> No actions that interferes with any portion of the superfund remedial action
<b>Contact and Phone #</b> Brad Morse 000-000-0000			<b>Restrictions5:</b>
<b>Chagrin Falls, OH 44022</b>			

<b>Inspection Compliance Data</b>			<b>CDPHE Staff</b> Mark Rudolph
<b>Inspection Frequency</b> Annual	<b>Inspection Due by</b> 12/31/2017	<b>Completed on</b>	<b>InspectionType</b>
<b>Problems Noted</b>			<b>In Compliance?</b> <input type="checkbox"/>
<b>Notes</b>			<b>Followup Required?</b> <input type="checkbox"/>
			<b>Resolution Date</b>


- ▶ Inspection schedule set and managed by agency.
- ▶ Standard form created.
- ▶ Agency staff visits site.
- ▶ Inspection date and findings recorded in state internal database.
- ▶ Copies of inspection reports saved.



29 states use this method

# IC Monitoring Approach #2: Obligated Party Inspection or Certification



 <p>Kansas Department of Health and Environment Environmental Use Control Program Bureau of Environmental Remediation 1000 SW Jackson St., Suite 410 Topeka, KS 66612-1367 Telephone: (785) 296-1660</p>		<b>ENVIRONMENTAL USE CONTROL OWNER INSPECTION FORM</b>		
<b>SECTION I: PROPERTY INFORMATION ON FILE</b>				
PROJECT NAME:		PROJECT CODE:		
EUCA NUMBER: <b>-EUC-</b>	PROPERTY OWNER(S) ON FILE:	OWNER PHONE NUMBER:		
PROJECT ADDRESS:				
CITY:	COUNTY:	SEC, TWP, RANGE OR LAT/LONG:		
EUCA CATEGORY DESIGNATION:	INSPECTION FREQUENCY:	PROPERTY ZONING ON FILE:		
PROGRAM : (Circle all that apply)				
Voluntary Cleanup    State Cooperative <b>EUC</b> Brownfields    State Water Plan    Underground Storage Tanks Other: (Please specify)				
PROTECTIVE STRUCTURE ON-PROPERTY?    Yes <input type="checkbox"/> or No <input type="checkbox"/>				
<b>SECTION II: VERIFICATION OF RESTRICTIONS</b>				
ANSWER THE QUESTIONS ACCORDINGLY BY MARKING "YES", "NO", OR "N/A".  IF THE PROPERTY IS OUT OF COMPLIANCE, PLEASE EXPLAIN IN THE REMARKS SECTION PROVIDED BELOW. ATTACH ADDITIONAL SHEETS IF NEEDED.  *N/A* INDICATES THIS RESTRICTION DOES NOT APPLY TO THE PROPERTY.	1. Has the protective structure(s) retained its functional integrity?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
	2. Is the protective structure(s) free of erosion, cracks or other evidence of degradation?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
	3. Have water wells been drilled, constructed, or used on the property for <b>unauthorized</b> purposes?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
4. Has <b>unauthorized</b> construction or excavation occurred?		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
5. Is vegetation present and kept in acceptable condition?		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
6. Are all permanent survey markers, benchmarks, and monitoring stations in place as designed?		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
7. Are local ordinances included in the EUCA being enforced?		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
8. Are site security measures in place and in working condition?		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
9. Site security measures include: (mark all that apply)		Signs <input type="checkbox"/> Fences <input type="checkbox"/> Gates <input type="checkbox"/> Security Guard <input type="checkbox"/>		
10. Is the property used for non-residential purposes only?		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
11. Is the property being used for <b>unauthorized</b> agricultural activities as defined in the EUCA?		Yes <input type="checkbox"/>	No <input type="checkbox"/>	N/A <input type="checkbox"/>
12. Land use type: (mark all that apply)		Residential <input type="checkbox"/> Recreational <input type="checkbox"/> Agricultural <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Vacant <input type="checkbox"/>		
13. Surrounding land use type: (mark all that apply)		Residential <input type="checkbox"/> Recreational <input type="checkbox"/> Agricultural <input type="checkbox"/> Commercial <input type="checkbox"/> Industrial <input type="checkbox"/> Vacant <input type="checkbox"/>		

- ▶ Requirement ordinarily set within Environmental Covenant.
- ▶ Some states create standard forms.
- ▶ Agency sends annual reminder letters.
- ▶ Agency tracks receipt of certifications.
- ▶ Non-receipt can trigger agency inspection.
- ▶ Ownership changes captured.

**Source:** Kansas Department of Health and Environment  
([http://www.kdheks.gov/remedial/euc/download/eucapp\\_form.pdf](http://www.kdheks.gov/remedial/euc/download/eucapp_form.pdf))

# IC Monitoring Approach #3: Excavation Monitoring via One Call

- ▶ Connection to 811 provides Agency with notices of excavation.
- ▶ E-mail/text advisories can warn excavator.
- ▶ 3<sup>rd</sup> Party intermediaries ordinarily relied on.

One Call Center

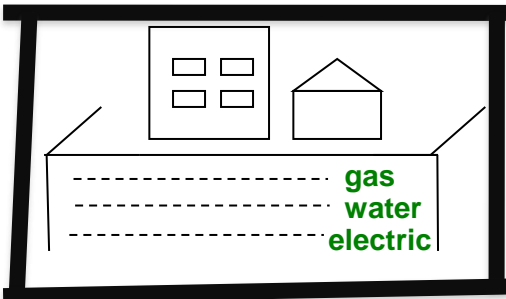


Join

Notify

Call

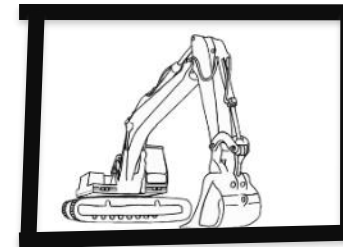
“Underground Facility Owner”



Mark



Excavator



9 states use this  
method

# IC Monitoring Excavation Monitor



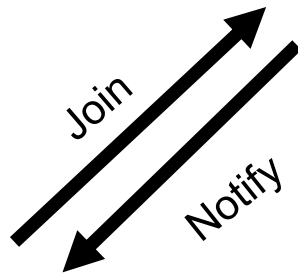
Primary Contact: Wendy March  
Phone: 302 395 2600 ext.302 395 2601  
email: Wendy.March@state.de.us

**RE:Dig Clean Safety and Land Use Advisory Ticket: 170100372**

Ticket Priority: STANDARD  
Work Address: 33371 MARINA BAY CIRCLE, MILLSBORO  
Near Intersection: ATLANTIC DRIVE  
Work Description: LOCATE/MARK: MARK AND FLAG THE ENTIRE PROPERTY . Work Type: INST WTR & SWR SVC  
Work Date: 01/13/17  
Work Done For: SCHELL  
Location Details:

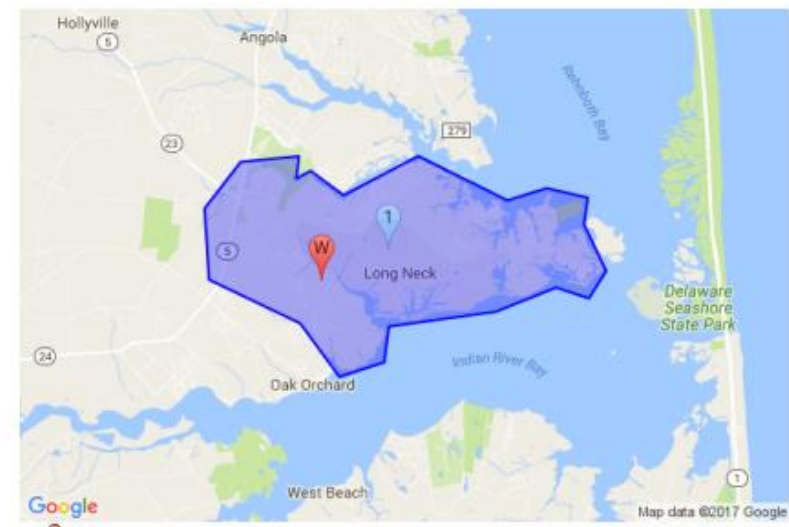
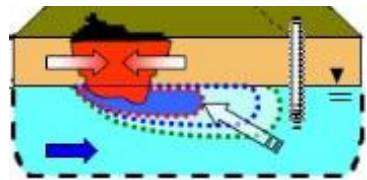
**Dig Clean Safety and Land Use Advisory**

Please be advised that the work location may be at or near sites where hazardous substances including petroleum are likely present in the soil or groundwater. Sites are shown on the map below relative to the extent of the planned excavation. Known contaminants of concern are also listed with a hyperlink to health and safety information (if available), and whether soil or groundwater is impacted. DNREC has prepared a generic Contaminated Material Management Plan <http://shortlinks.terradex.com/DREC-CMMP> to properly handle contaminated soil and groundwater. If further guidance is needed please contact DNREC with the contact information listed on this form. DNREC does not provide excavation field marks, and does not attend site meetings unless a request is made to the listed DNREC Primary Contact.



3<sup>rd</sup> Party

“Cleanup Site”



W (red) and line indicate your work area as provided to Miss Utility Delaware. Numbered and shaded polygons (blue) are the areas of the site(s) of concern. Note, on occasion the area is outside of the map view.

**SITES WITH ENVIRONMENTAL RESTRICTIONS SHOWN ON MAP:**

Site 1: LONGNECK MERCURY STUDY (DE-1388)  
Chemicals: Mercury [View ATSDR 7439-97-6 View Agency for Toxic Substances & Disease Info](#)

**ALTERNATIVES TO VIEW INFORMATION:**

View on the Web: <http://www.digclean.com>, enter under Option 2: 434404  
Call: 650-209-4229, when prompted enter 434404  
Send Text Message: Message: 434404 To: 650-209-4229



# IC Monitoring Approach #4: Land Use & Activity Monitoring

- ▶ Connection to electronic feed of land activity info.
- ▶ e-Alerts sent to agency.
- ▶ 3<sup>rd</sup> Party intermediaries are ordinarily relied on.

**1 TARGET.** Draw areas-of-concern and specify land activity data sources.

**2 MONITOR.** Monitor and screen for new land activities.

**3 ALERT and MANAGE.** Stakeholder alerts and advisories help prevent at-risk activities.

**Land Activity Data Sources**

- Permits
- Ownership
- Development
- Sensitive Use
- Water Well
- ...more sources



9 states use this method

Source: Terradex, Inc.

# IC Monitoring Approach #5: Coordination with Local Government

## Minimum “Coordination”

- State agency informs local government (LG) as to location of ICs

## “Eyes and Ears” Approach

- LG informs agency as to permits impacting IC

**OR**

## Local Government Lead

- LG enacts ordinance that operates as an IC



6 states use this  
method

# Example "Eyes and Ears": Denver, CO Coordination with Local Government

- Sta  
anc  
site  
to I
- Del  
ove  
per  
dat  
polygons

PERMIT	PERMITTYPE	PERMITSTATUS	STATUSDATE	ADDRESS	DATEENTERED	STATCODE1	CLASSOFWORK	X_COORD	Y_COORD
BUILDING	COMMERCIAL CONSTRUCTION	PERMIT FINALED	1/5/2017 7:18:1	200 N QUEBEC ST DENVER CO 80230	5/4/2012 0:00:00		NEW NON-BUILDING STRUCTURE	3167900	1687695
BUILDING	COMMERCIAL CONSTRUCTION	PERMIT FINALED	1/5/2017 7:12:0	200 N QUEBEC ST DENVER CO 80230	1/6/2012 0:00:00		NEW NON-BUILDING STRUCTURE	3167991	1688019
BUILDING	COMMERCIAL CONSTRUCTION	PERMIT FINALED	1/5/2017 7:16:2	200 N QUEBEC ST 800-113 DENVER CO 80230	3/8/2013 0:00:00		ALTERATION/TENANT FINISH	3167991	1688019
BUILDING	COMMERCIAL CONSTRUCTION	PERMIT FINALED	1/5/2017 7:20:0	200 N QUEBEC ST DENVER CO	7/1/2013 0:00:00		NEW NON-BUILDING STRUCTURE	3167909	1687879
BUILDING	COMMERCIAL CONSTRUCTION	PERMIT FINALED	1/5/2017 7:09:0	200 N QUEBEC ST 111 DENVER CO 80230	10/29/2014 0:00:00		NEW NON-BUILDING STRUCTURE	3167858	1687899
BUILDING	COMMERCIAL CONSTRUCTION	IN PROGRESS	12/27/2016 0:00:0	200 N QUEBEC ST DENVER CO 80230	12/22/2016 0:00:00	022 - ADDITION, ALTERATION, AND CONVERSION S-COMMERCIAL	ALTERATION/TENANT FINISH	3167991	1688019
BUILDING	DEMOLITION	PERMIT FINALED	11/11/2016 12:00:0	2140 S ALBION ST DENVER CO 80222	9/28/2016 0:00:00		6 - WRECK	3157818	1672266
BUILDING	SEWER USE AND DRAINAGE	ISSUED	12/2/2016 12:50:0	5800 E JEWELL AVE DENVER CO 80224	11/30/2016 0:00:00			3163414	1673515



# Example “Local Lead”: Jasper County, MO IC Ordinance

## JASPER COUNTY, HEALTH DEPT.

### ENVIRONMENTAL CONTAMINATION ORDINANCE



### ENVIRONMENTAL CONTAMINATION ORDINANCE

The Jasper County Environmental Contamination Ordinance went into effect July 1, 2006.

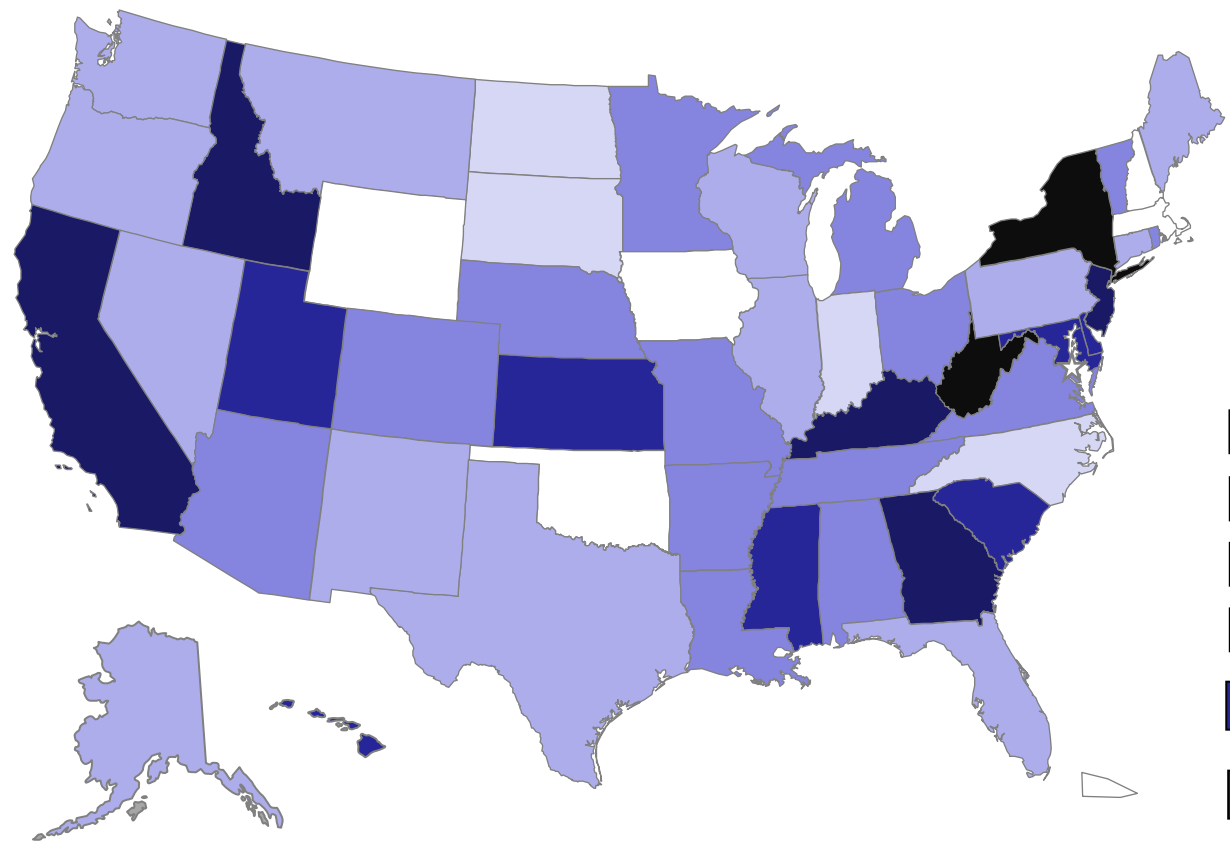
The Ordinance requires soil testing for regulated contaminants on Superfund designated properties associated with new construction of a dwelling, dwelling unit child occupied facility or recreational area. Superfund designated areas are outlined on the mine/smelter map. Health Department staff will conduct the soil testing

The ordinance also requires that all existing wells be tested for heavy metals when the property is transferred or sold. The test must be conducted by a DNR certified well tested. The Health Department will provide contact information for certified testers.






# Survey Results – Monitoring Mix

- ▶ State mix of single or combined monitoring approaches:
  - Based on the 2015 ITRC Survey Results.

*Many states combine approaches*

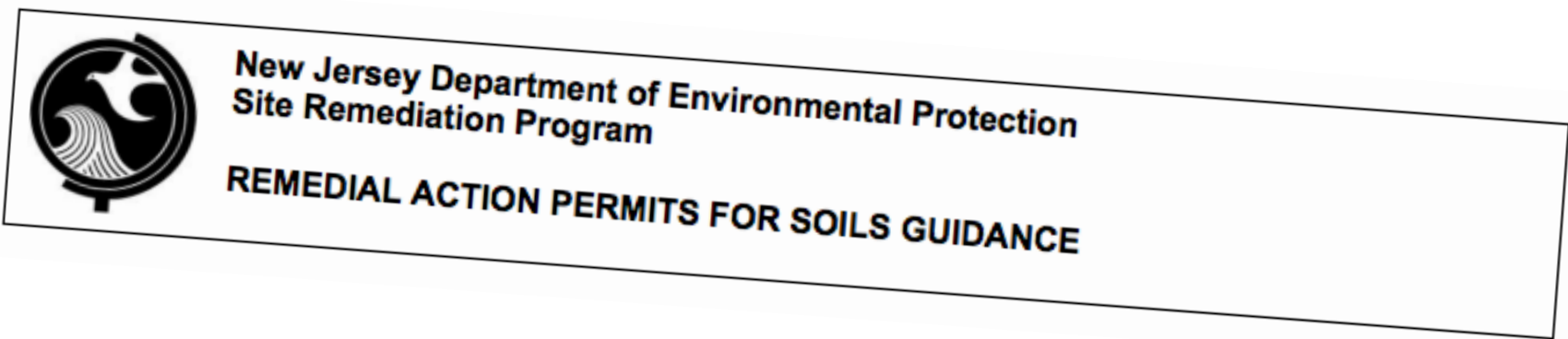
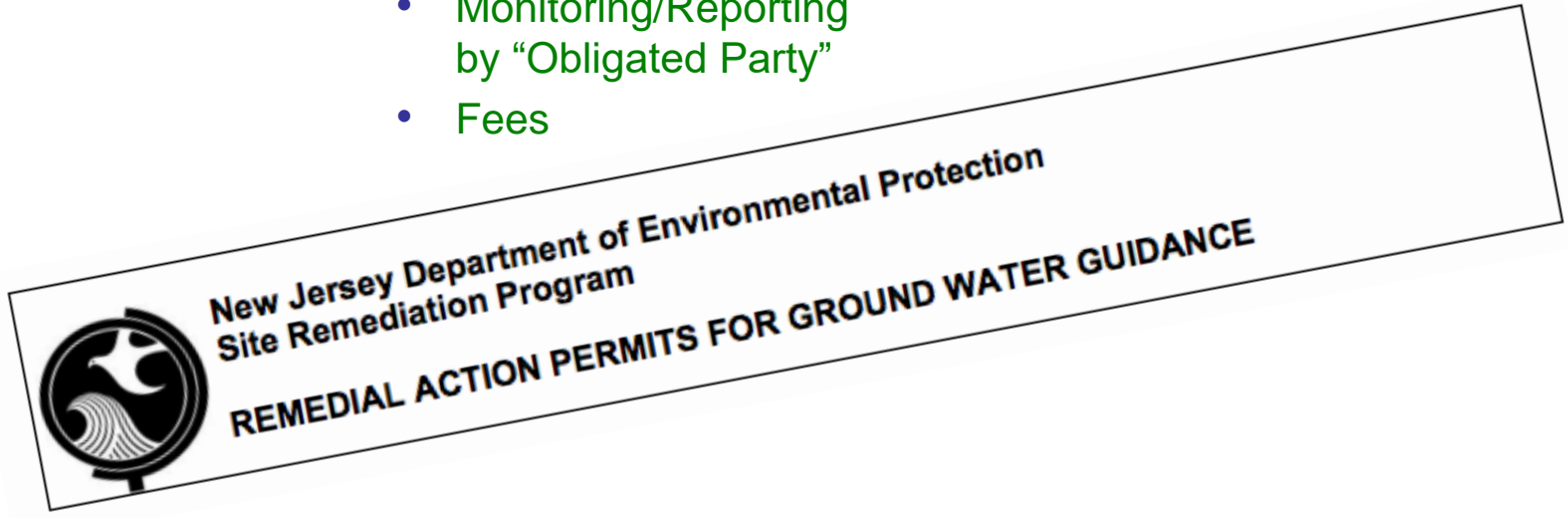


**Monitoring Approaches**

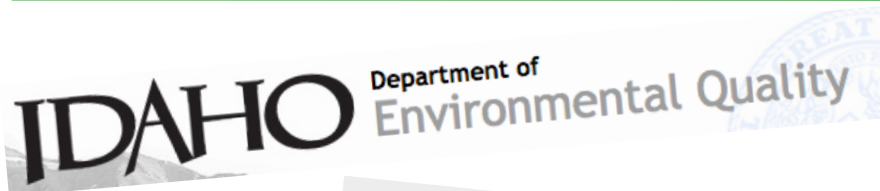
-  No Response
-  No Monitoring
-  1 Approach
-  2 Approach Combo
-  3 Approach Combo
-  4 Approach Combo
-  5 Approach Combo

# IC Monitoring Approach #6: IC Permit (NJ Example)

- ▶ When GW/Soil IC is Required
- ▶ Remedial Action Permit Required
  - Monitoring/Reporting by “Obligated Party”
  - Fees
- ▶ Financial Assurance Required if EC Exists.



# IC Monitoring Approach Mix: State Examples



	PA	CO	ID	CA
Landowner Certifications	✓	✓	✓	✓
State Agency Inspections	✓	✓	✓	✓
Excavation Monitoring via One Call			✓	✓
Land Use and Activity Monitoring			✓	✓
Coordination with LG		✓		✓

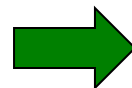
# Assessment of IC Monitoring Approaches

<b>State Agency Inspections/Record Reviews</b>	<ul style="list-style-type: none"> <li>• Periodic “snapshot”</li> <li>• Comprehensive</li> <li>• Agency staff/resources required</li> </ul>
<b>Owner Certifications</b>	<ul style="list-style-type: none"> <li>• Periodic “snapshot”</li> <li>• Greater reliance on landowner</li> <li>• Agency must still administer</li> </ul>
<b>Excavation Monitoring via One Call</b>	<ul style="list-style-type: none"> <li>• Daily frequency</li> <li>• Comprehensive coverage of digging</li> <li>• 3<sup>rd</sup> party services</li> </ul>
<b>Land Activity Monitoring</b>	<ul style="list-style-type: none"> <li>• Daily frequency</li> <li>• Tailored coverage of land use/activity</li> <li>• 3<sup>rd</sup> party services</li> </ul>
<b>Coordination with Local Governments</b>	<ul style="list-style-type: none"> <li>• Various approaches.</li> <li>• Can leverage the existing practice of local govt.</li> <li>• Requires non-conventional coordination</li> </ul>
<b>IC Permit</b>	<ul style="list-style-type: none"> <li>• Similar to owner certification</li> <li>• But formalizes the approach and includes ongoing fee</li> </ul>



# Best Practices: Design a Balanced Approach for IC Monitoring

- ▶ State agency inspections/Record Reviews
- ▶ “Obligated Party” inspections & certification
- ▶ IC permit program
- ▶ Excavation monitoring via One Call
- ▶ Land activity monitoring
- ▶ LG coordination



IC Monitoring Triage Matrix		Potential for Harm		
		Low (1)	Moderate (3)	High (5)
Potential for Breach	Low (1)	2	4	6
	Moderate (2)	3	5	7
	High (3)	4	6	8



Best Approach

# Performance Evaluation – Reaching Findings and Conclusions



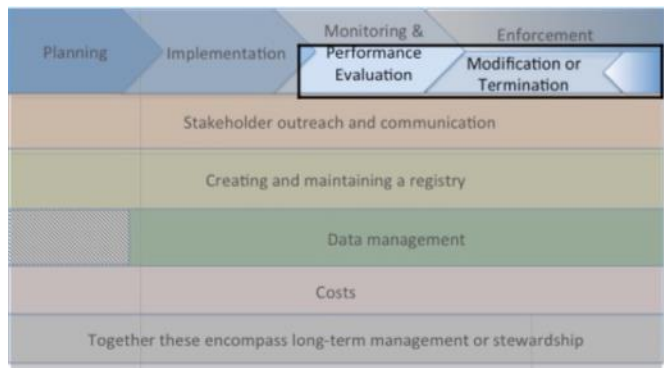
ICs are protective & effective

- IC compliance issues
- Administrative
  - Minor
  - Major

Changes in IC monitoring protocol needed

Termination of IC

Enforcement



# Best Practices for IC Monitoring & Performance Evaluation (cont.)

- ▶ Develop policy or guidance that addresses how the State will pursue IC monitoring (see Best Practices for IC monitoring and performance Evaluations)

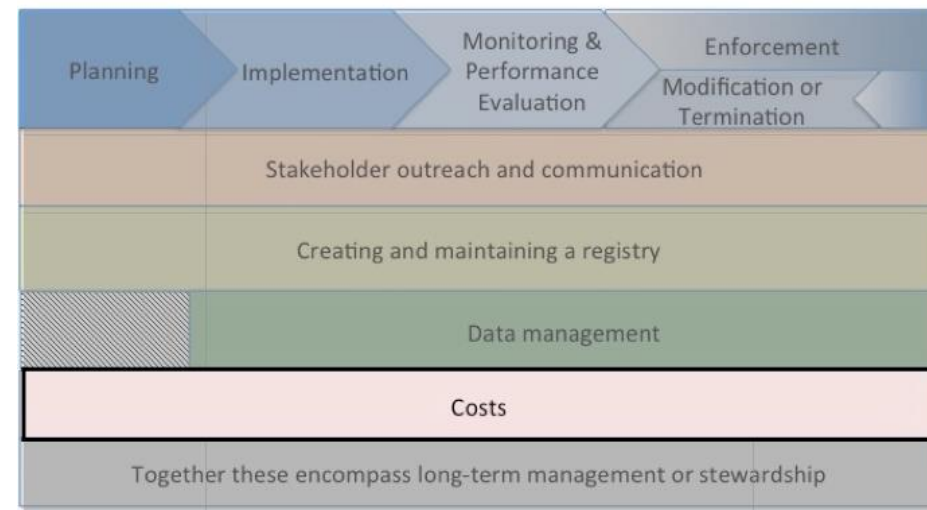
## **Guidance:**

IC Monitoring and  
Compliance Assurance  
2017

# Cost of an IC Program

- ▶ Cost elements cover the IC life cycle\*
  - Planning
  - Community engagement
  - Information management
  - Monitoring and performance evaluation
  - Enforcement

\*See ASTSWMO, State Conceptual Framework to Estimate Associated Cost (August 2012) (avail. at <http://astswmo.org/state-conceptual-framework-to-estimate-associated-cost/>)



# State IC Upfront Fees: Missouri Example

**Title 10—DEPARTMENT OF  
NATURAL RESOURCES  
Division 25—Hazardous Waste  
Management Commission  
Chapter 15—Hazardous Substance  
Environmental Remediation (Voluntary  
Cleanup Program)**

3. Monitoring fee. For sites which require engineering and/or institutional controls (e.g., capping, deed restrictions), the person shall submit a fee to cover the department's long-term monitoring costs. The department's voluntary cleanup project manager shall establish a site-specific monitoring fee, ranging from five thousand dollars to fifteen thousand dollars (\$5,000–\$15,000). The amount of the monitoring fee shall be dependent upon the complexity of the site and the type of engineering and/or institutional controls.

# State IC Ongoing Fees: California Example

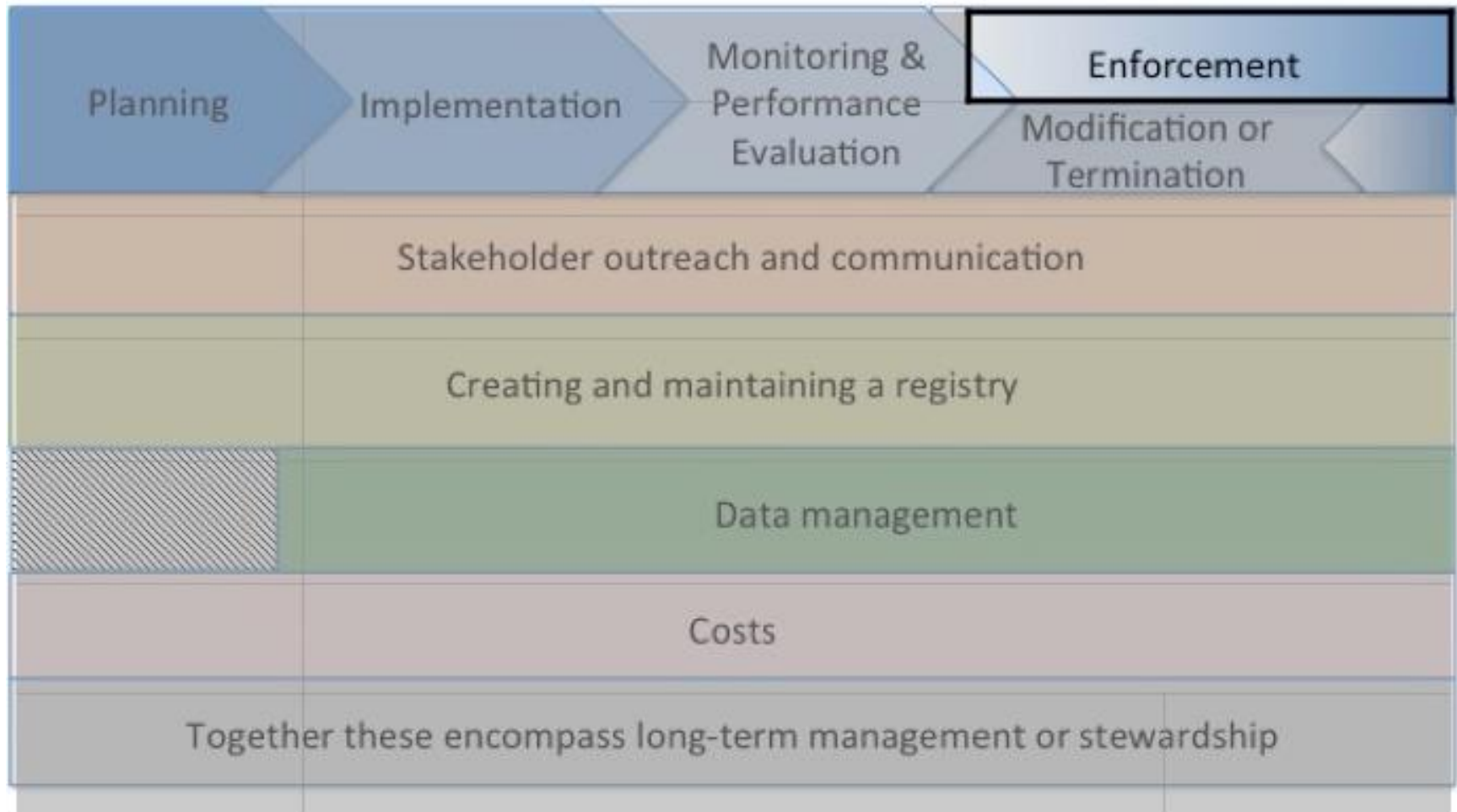
## LAND USE COVENANT AND AGREEMENT

### ENVIRONMENTAL RESTRICTIONS

County of Del Norte, Assessor Parcel Number: 115-180-19  
Hooshnam Site  
DTSC Site Code 201250

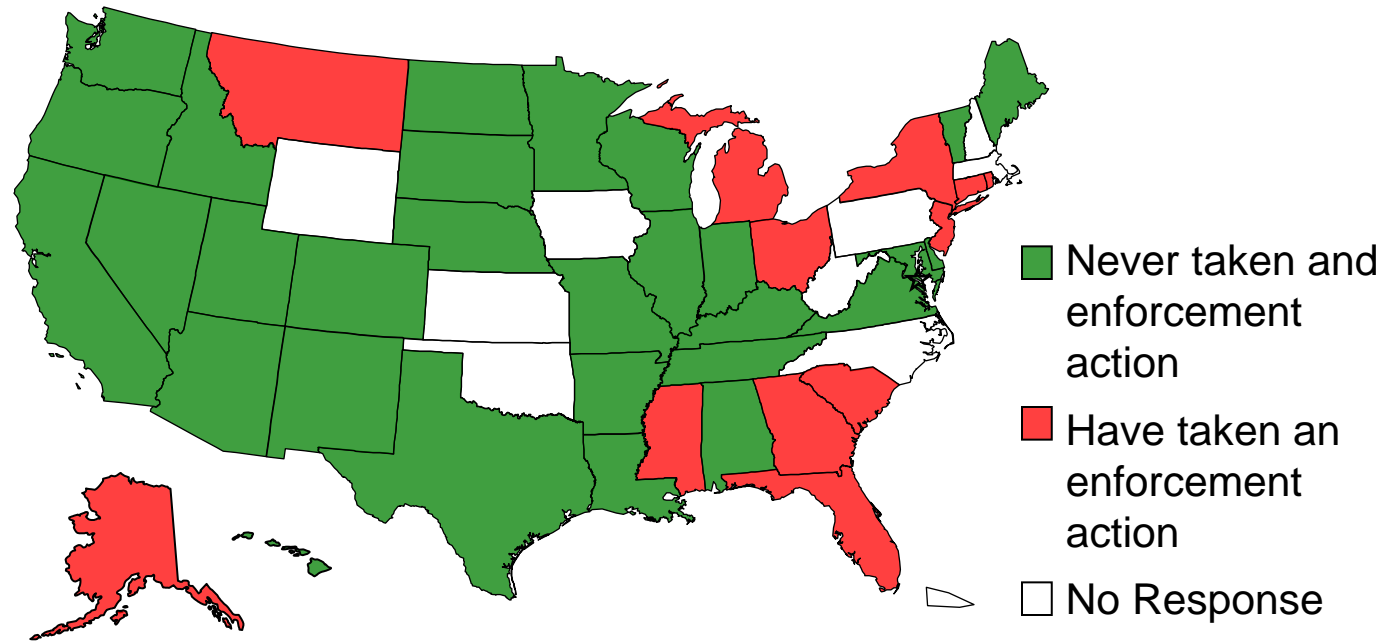
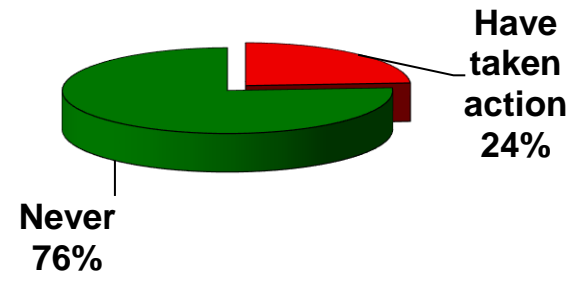
3.5. Costs of Administering the Covenant to be paid by Owner: The Department has already incurred and will in the future incur costs associated with the administration of this Covenant. Therefore, the Covenantor hereby covenants for the Covenantor and for all subsequent Owners that, pursuant to California Code of Regulations, title 22, section 67391.1(h); the Owner agrees to pay the Department's costs in administering the Covenant.

# Enforcement of ICs – The Need



# Survey – Has your state ever taken an enforcement against an RP?

▶ 76% of participating survey respondents indicated their State agency has never taken an enforcement against a RP regarding an IC.





# Enforcement Poll Question

- ▶ Does the state you represent (or where you have implemented an IC) have an enforcement process in hand if an IC violation is identified, regardless if you have taken an enforcement action?
  - Yes
  - No
  - Don't know

# ITRC's Common Challenges to Enforcement of ICs

- ▶ Failure to evaluate enforceability during planning
- ▶ No IC monitoring = No enforcement
- ▶ Who's the RP and who's enforcing?
- ▶ Absence of authority at state or local level
- ▶ Absence of a common legal framework
- ▶ Uniqueness of native lands and federal facilities
- ▶ Uniform Environmental Covenants Act is not the answer to enforcement
  - Allows for “civil action for injunctive or other equitable relief for violations”
  - Does not provide an effective framework to promote compliance or deter violation

# Enforcement of ICs Requires Legal Authority

- ▶ Specific legal authority
  - Statutes, regulations, ordinances, etc.
- ▶ Common law authority
  - Case law on trespass, nuisance, etc.
- ▶ IC instruments
  - Enabling language in the IC
- ▶ Enforcement instruments
  - Consent orders, decrees, etc.



# Basic Model for IC Enforcement

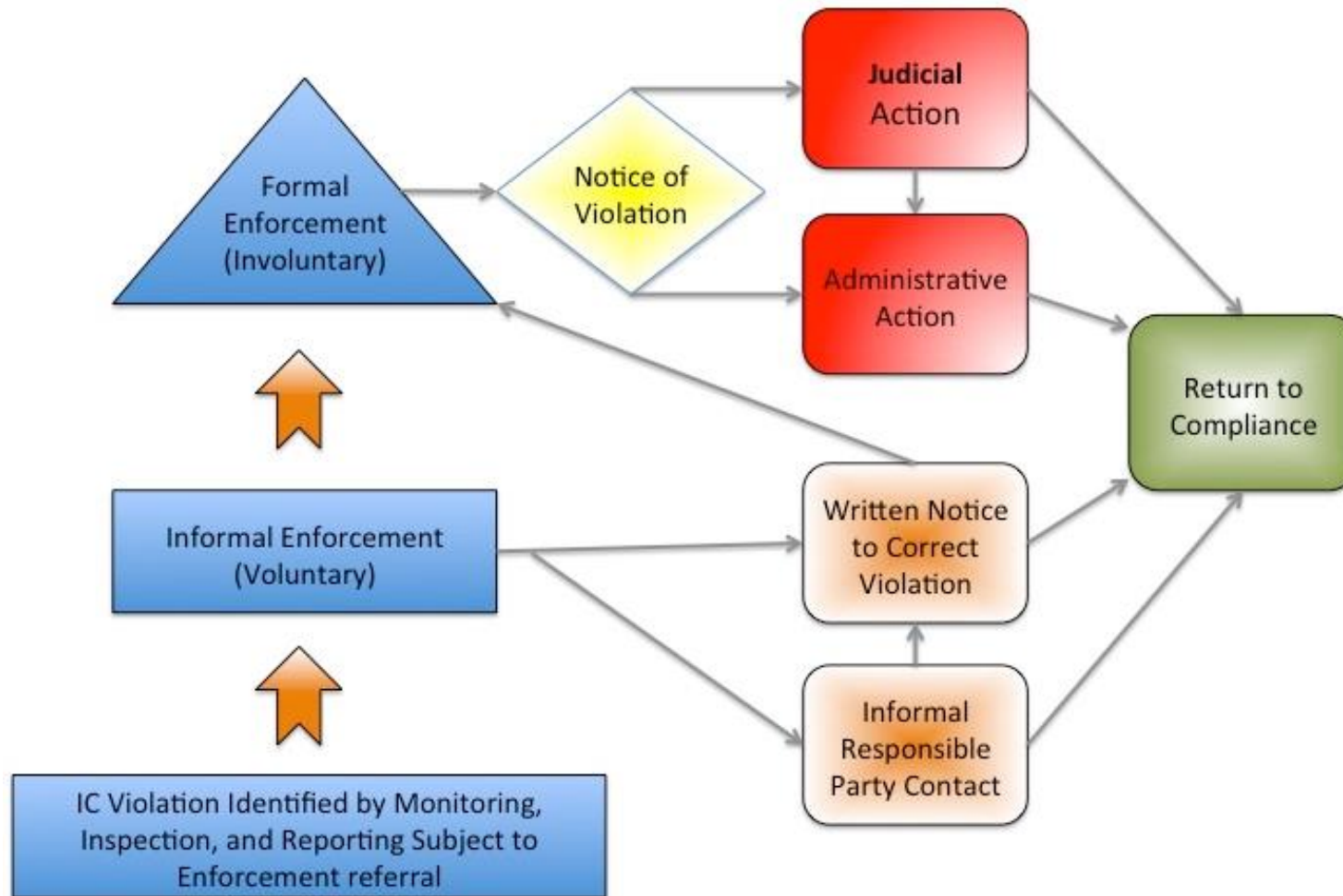


Figure 6. Basic model for enforcement process. See Section “Purpose of a Compliance and Enforcement Program” in ITRC Guidance for more information.

# IC Guidance Document Provides Options for Enforcement When...

- ▶ Violation is identified through monitoring, inspection, reporting or an IC performance evaluation:
  - Requirements **not observed/followed**
  - Requirements **partially implemented or fail to fully meet standards**
  - Requirements **not adequately maintained or monitored**
  - Failure to have **required certification**
  - Failure to **meet reporting requirements**

See Section “Compliance and Enforcement Options ” in ITRC Guidance for more information.

# ITRC's IC Guidance Document - Toolbox for Informal Enforcement



See Section “Compliance and Enforcement Options – Voluntary Compliance” in ITRC Guidance Document for more details.

# ITRC's IC Guidance Document - Briefcase for Formal Enforcement

- ▶ Notice of Violation
- ▶ Administrative Orders
- ▶ Judicial Orders
- ▶ Criminal Complaints  
(*in the most serious cases*)

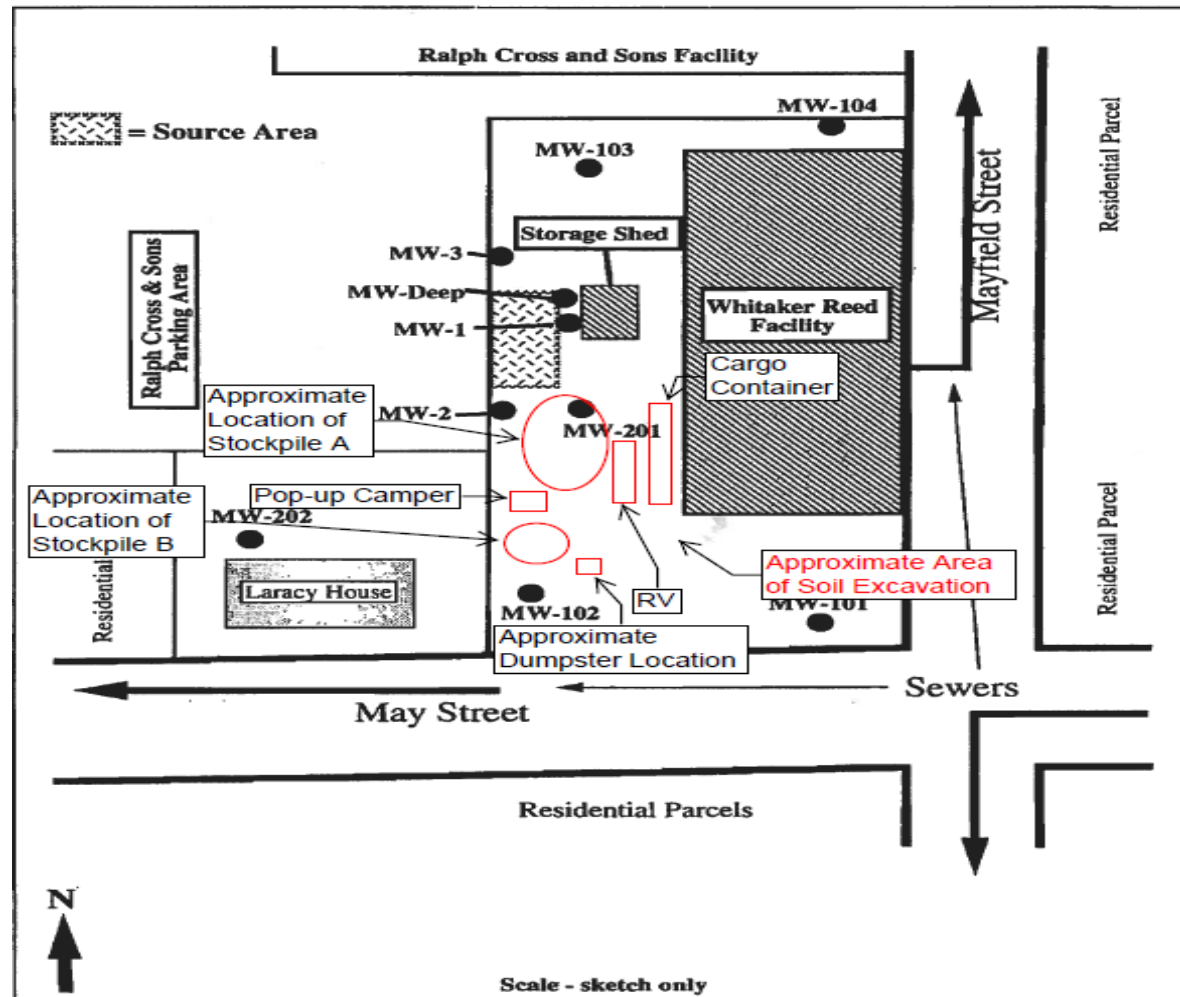


See Section “Compliance and Enforcement Options – Involuntary Compliance” in ITRC Guidance Document for more details.

# Enforcement Case Study – Formal Enforcement with Penalties



- ▶ 1919-1980s
  - Manufacturing
- ▶ 1989-1990
  - Contamination identified
- ▶ 1995
  - Activity and Use Limitation recorded
- ▶ 2012
  - Agency audit



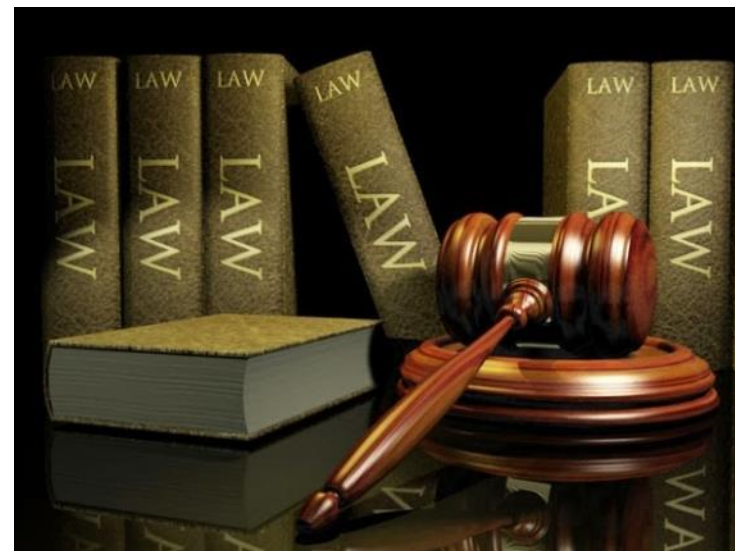


# Enforcement Case Study – Violations and Resolution

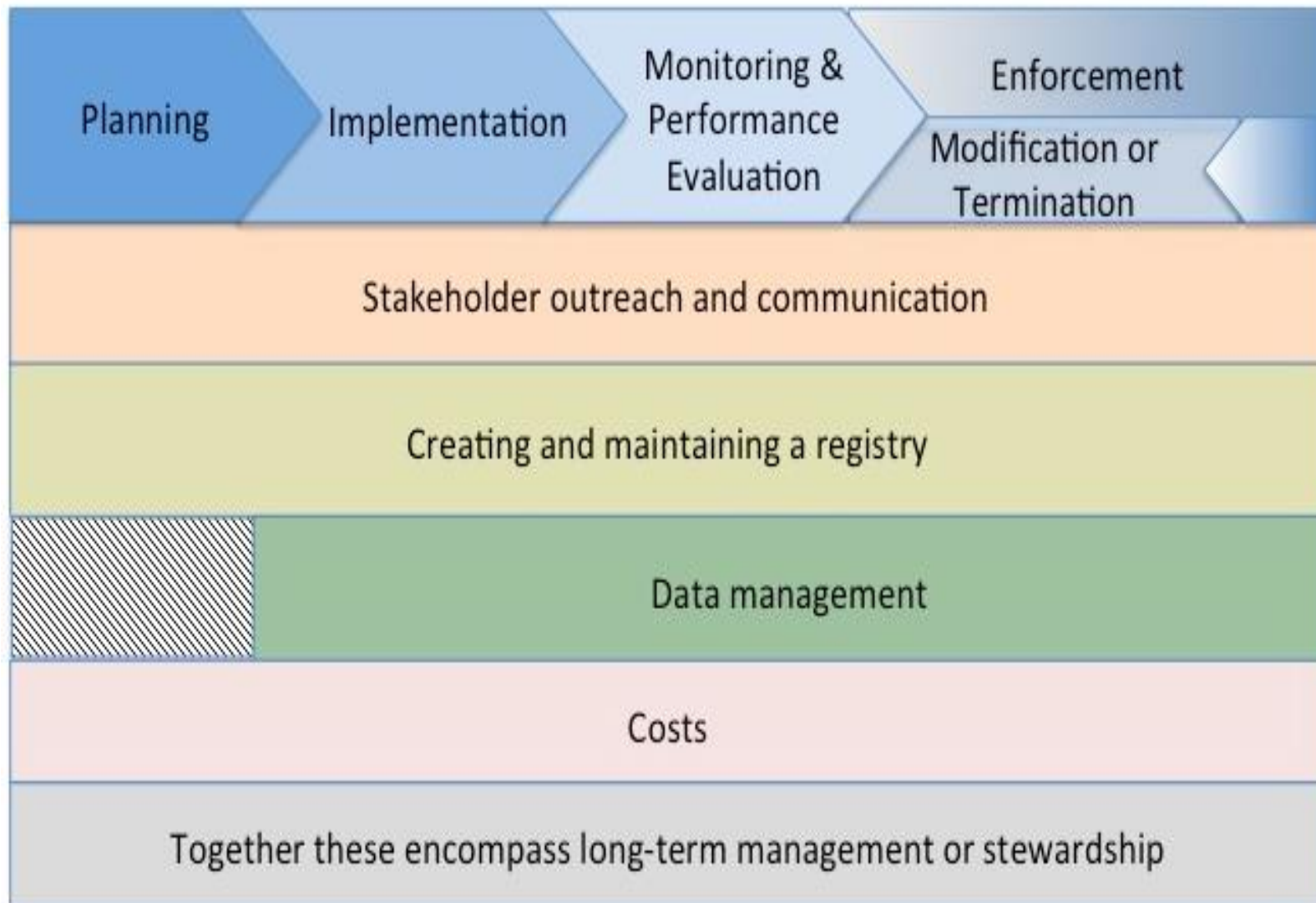
- ▶ Violations of 1995 Activity and Use Limitation (AUL) identified by MassDEP:
  - No health and safety plan
  - No soil management plan
  - AUL did not reference tenant's lease
- ▶ MassDEP assessed \$5,692 penalty
- ▶ Parties negotiated an agreement
  - Property owner paid \$4,000 of penalty
  - Property owner agreed to record amended AUL

# Enforcement Case Study Takeaway – MA. Authority and Framework

- ▶ MassDEP's administrative authority for ICs stems from statutory authority.
- ▶ Failure to comply with terms of Activity and Use Limitation (AUL) is failure to comply with Mass Contingency Plan.
- ▶ Law provides for administrative penalties up to \$25,000 per day for failure to comply with the terms of AUL.



# Long Term Stewardship (LTS) Plan



# Why Do We Need Long-term Stewardship of an IC?



# Long Term Stewardship Plan

- ▶ Created AFTER IC is in Place
- ▶ LTS Plan Objectives
  - Ties everything together
  - Assigns responsibilities
  - Goal is long-term integrity of IC
- ▶ Who writes LTS Plan?
  - Most often the obligated party (OP)
- ▶ Who keeps LTS Plan?
  - Regulators
  - Property owners
  - Permitting agencies

Only 52% of the responding states require some sort of LTS plan

# Information Required for Successful LTS Plan

---

## Existing documents have what you need

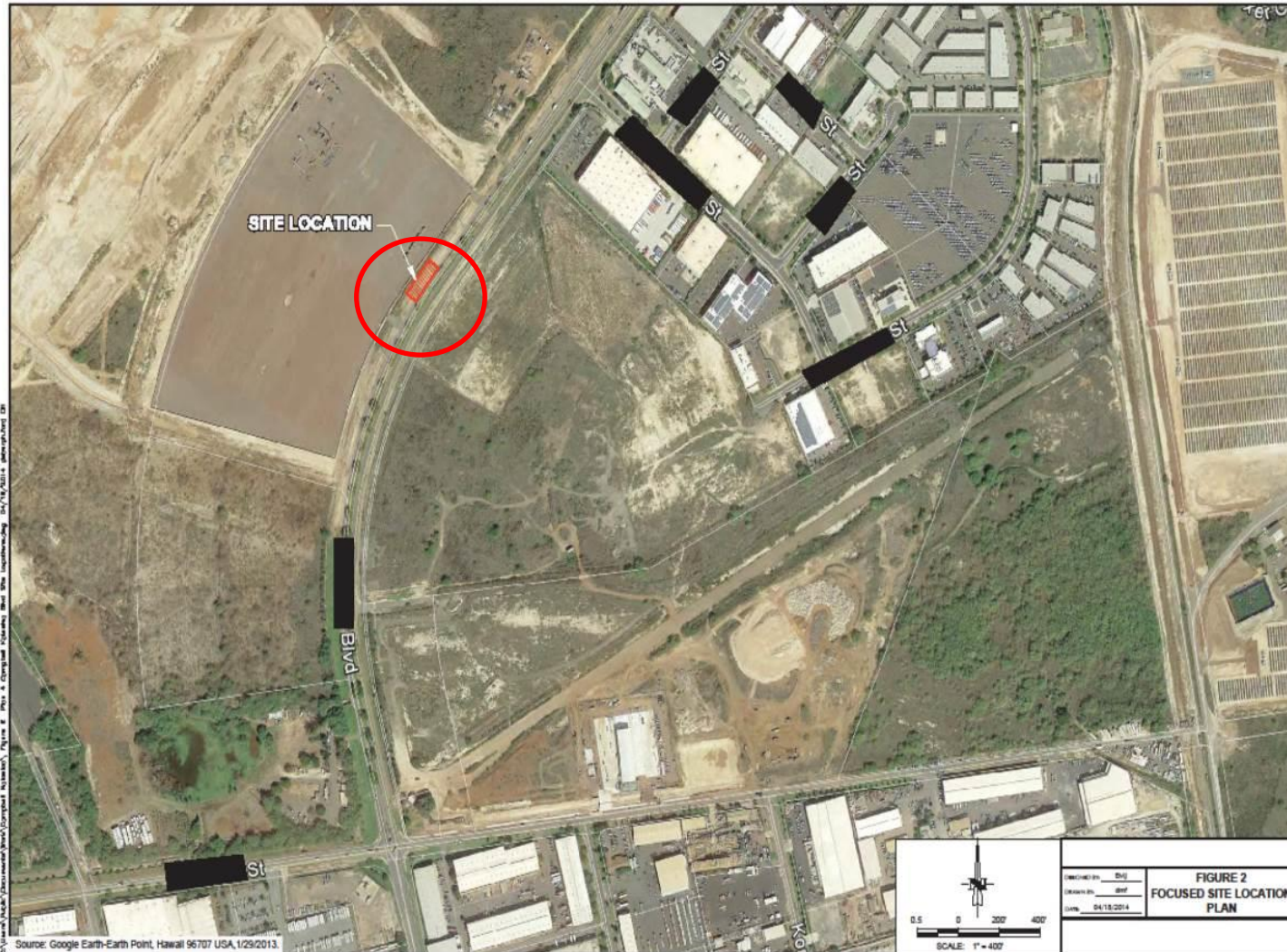
### ▶ IC instrument

- Environmental Covenant
- Letter of Completion
- Government letter

### ▶ Site closure and decision documents

- Record of Decision
- Remedial Action Completion Report
- Response Action Memorandum
- Remediation Verification Report
- Earlier investigation or characterization reports
- Other?

# LTS Plan – Sample Site “Easement”



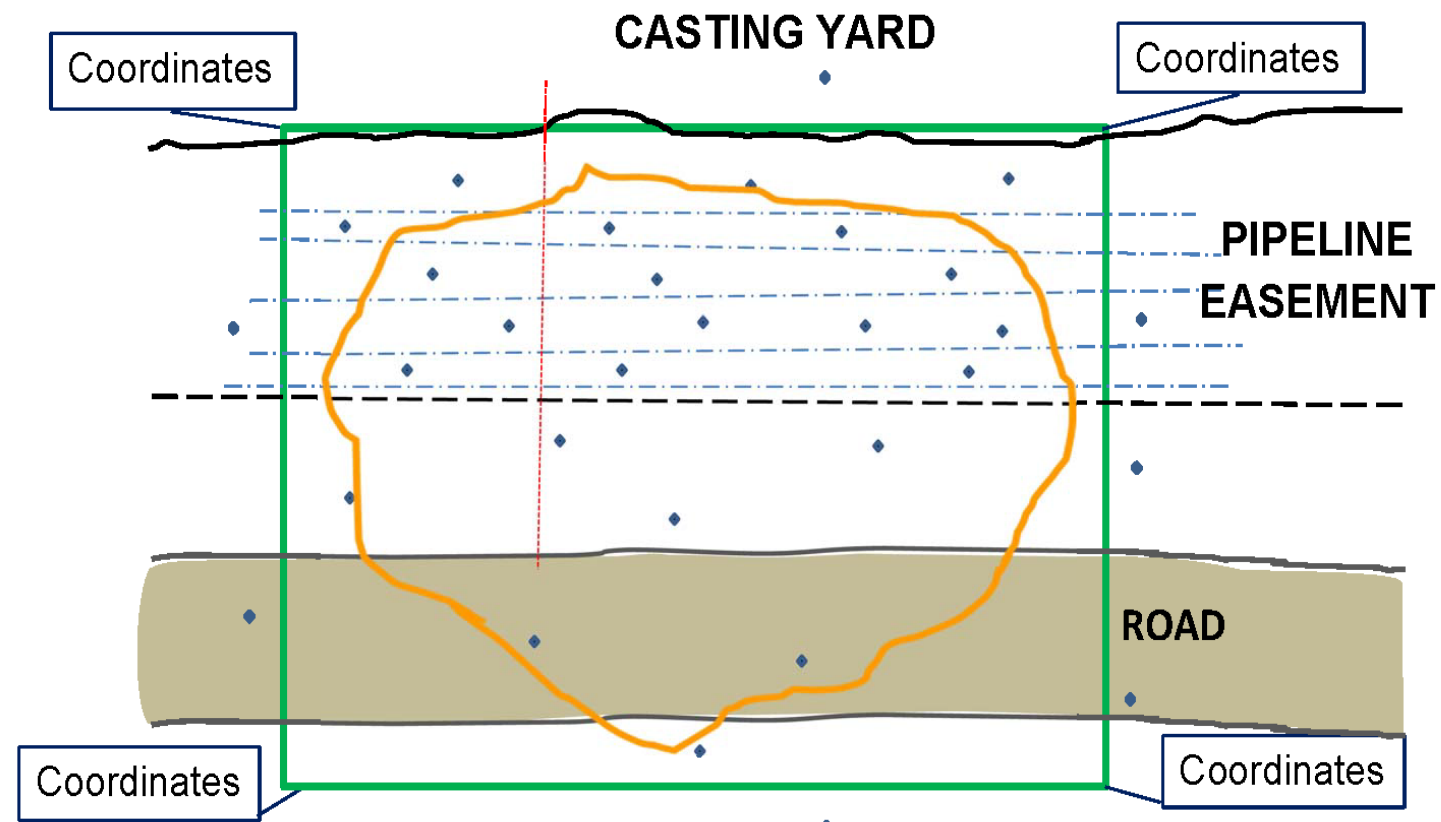
# LTS Plan – Use Historical Site Information

---

- ▶ Figures with scale, legend, and directional arrow
  - Site location
  - Site plan
  - Contaminant maps
  - Conceptual site model
- ▶ Tables and text
  - Site background
  - Historical sample results



# “Easement” LTS Plan Figures: Contaminant Map



**LEGEND**

Pipeline	---	Road	■
IC Boundary	—	Light Tie-In	- - -
Property Boundary	- - -	Soil Contamination	—
Sample Point	•		



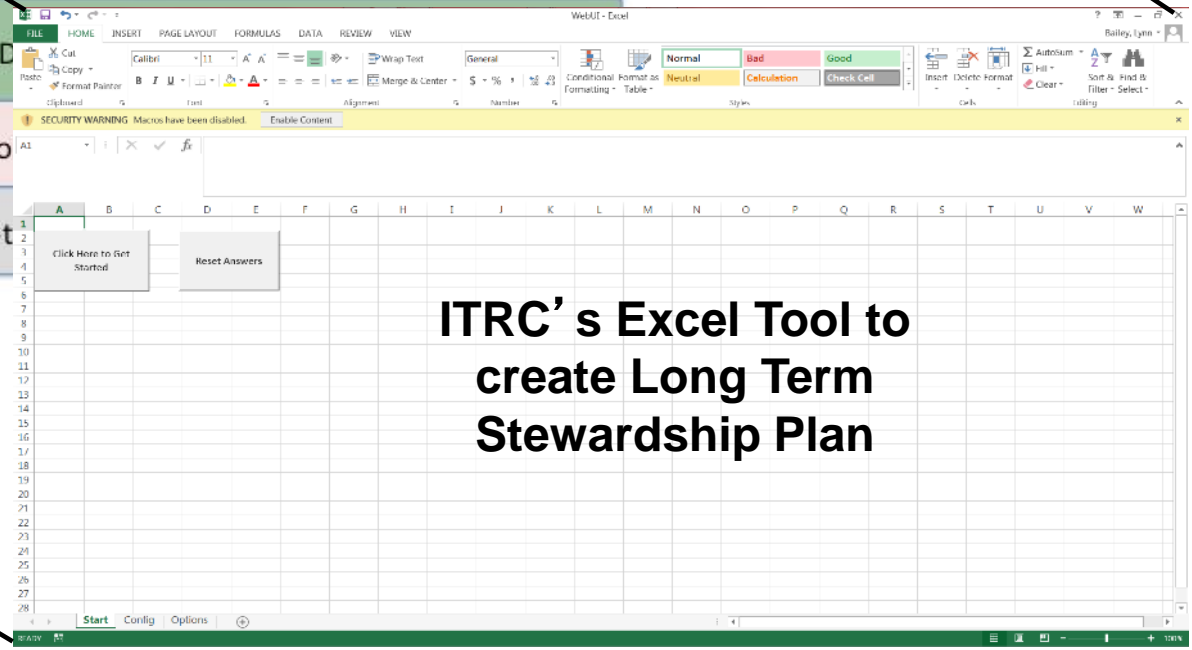
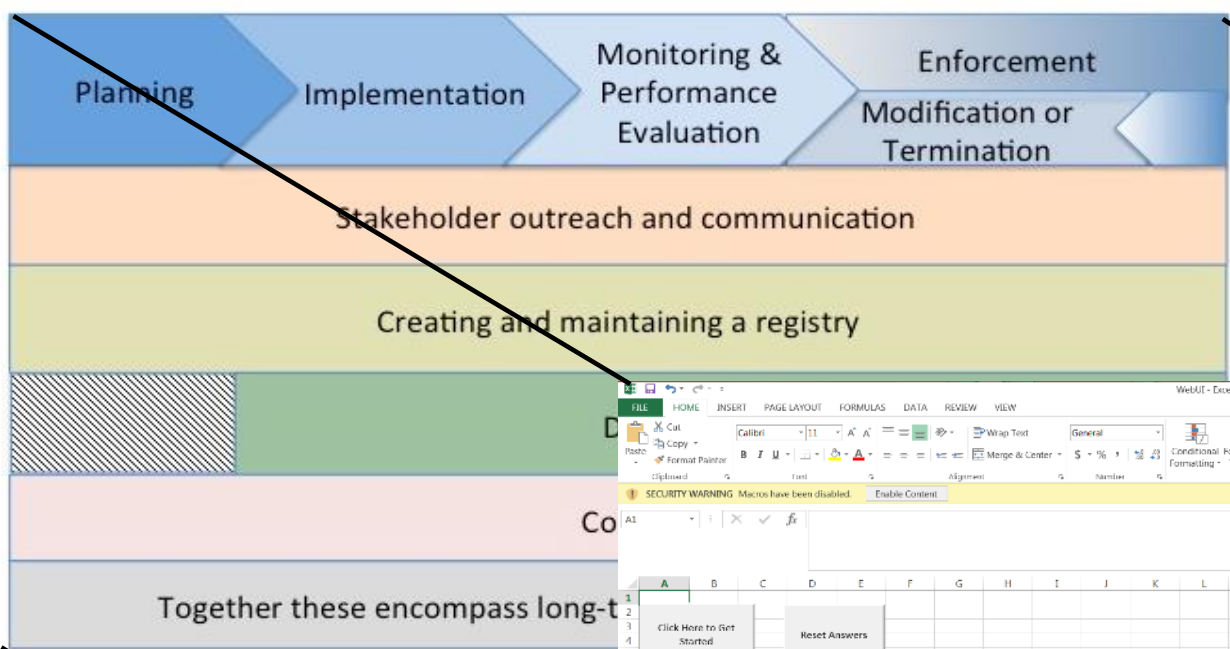
# Key Stakeholders and Their Roles

- ▶ Current property owner
- ▶ Future property owner
- ▶ Pipeline owner 1
- ▶ Pipeline owner 2
- ▶ Casting yard tenant
- ▶ Future pipeline/utility workers

See Table 5 in the team document

<http://institutionalcontrols.itrcweb.org/stakeholder-perspectives/#>

# Tool: Long Term Stewardship Plan



**ITRC's Excel Tool to create Long Term Stewardship Plan**

# LTS - Let's Begin!

The screenshot shows a Windows desktop with an orange background. On the left, there are icons for Recycle Bin, Mozilla Firefox, Google Earth, TEMP, and HeerlocalD... In the center, a File Explorer window is open to the path: ITRC > LUCs > Template > Dec2016 > Dec11 > IC\_Tool. The window displays a yellow folder icon labeled 'IC\_Tool' (Type: File folder) and a PDF document icon labeled 'Read Me First'. A green arrow points from the 'IC\_Tool' folder in the window to a desktop icon labeled 'IC\_Tool'. Two red arrows point from the 'IC\_Tool' folder and the 'Read Me First' PDF to numbered instructions in white boxes at the bottom of the screen.

IC\_Tool  
IC\_Tool Type: File folder

Read Me First

2. Drag Folder to Desktop

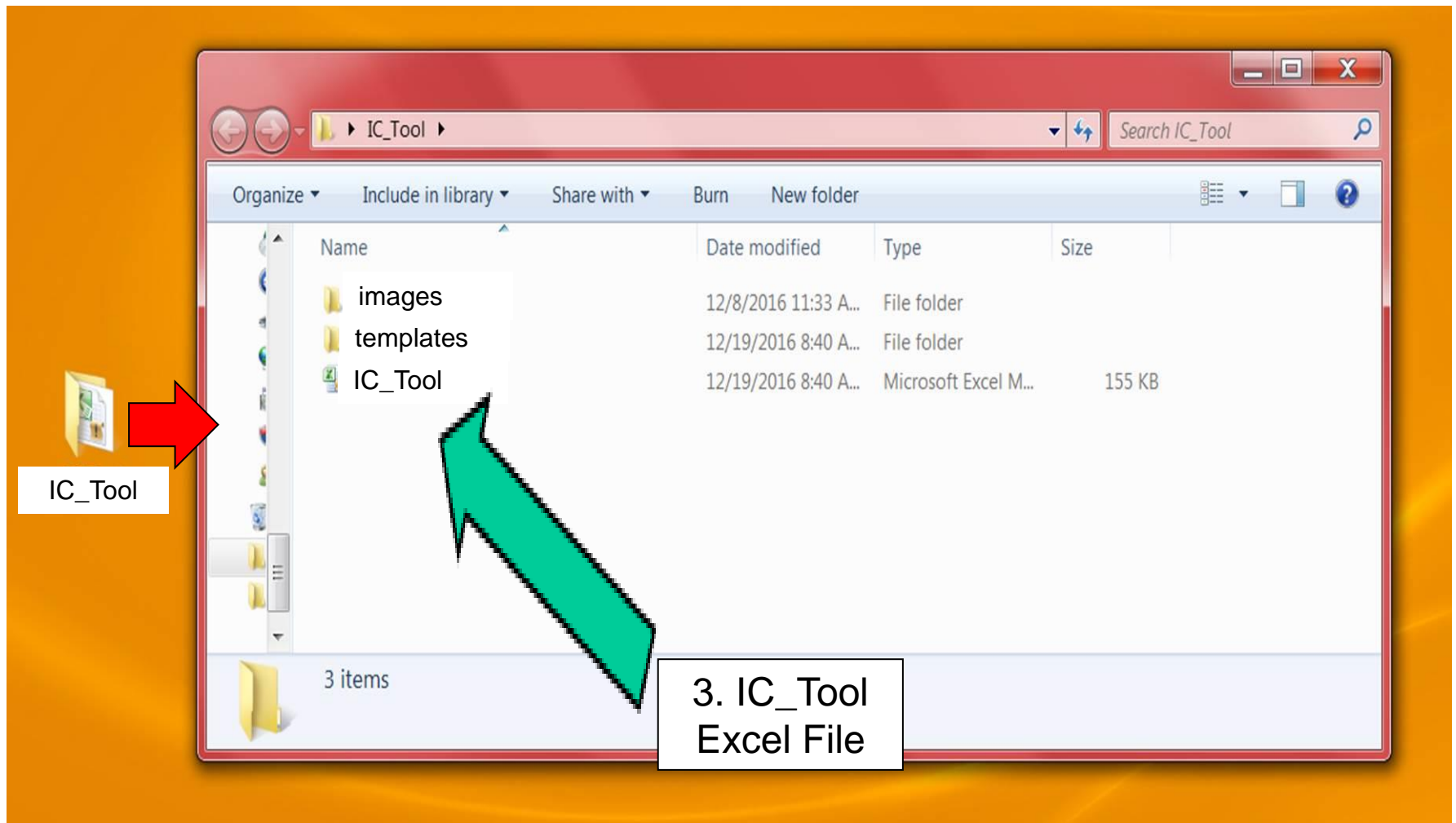
1. Read Me First

CPU usage 20%

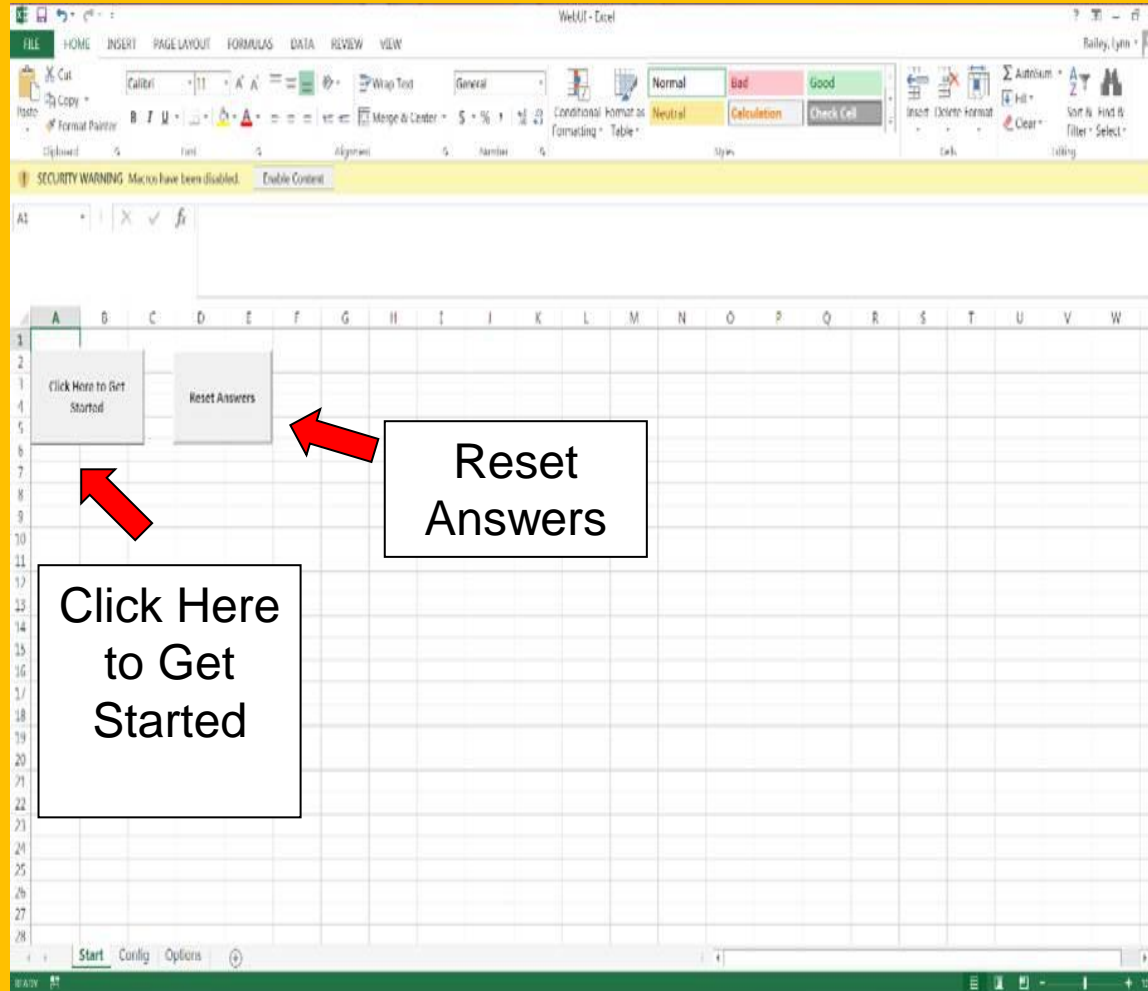
Random access memory (RAM) 46%

20%

# LTS - Let's Begin!



# LTS Tool – Start Creating Your LTS Plan



# LTS Tool – Start Creating Your LTS Plan

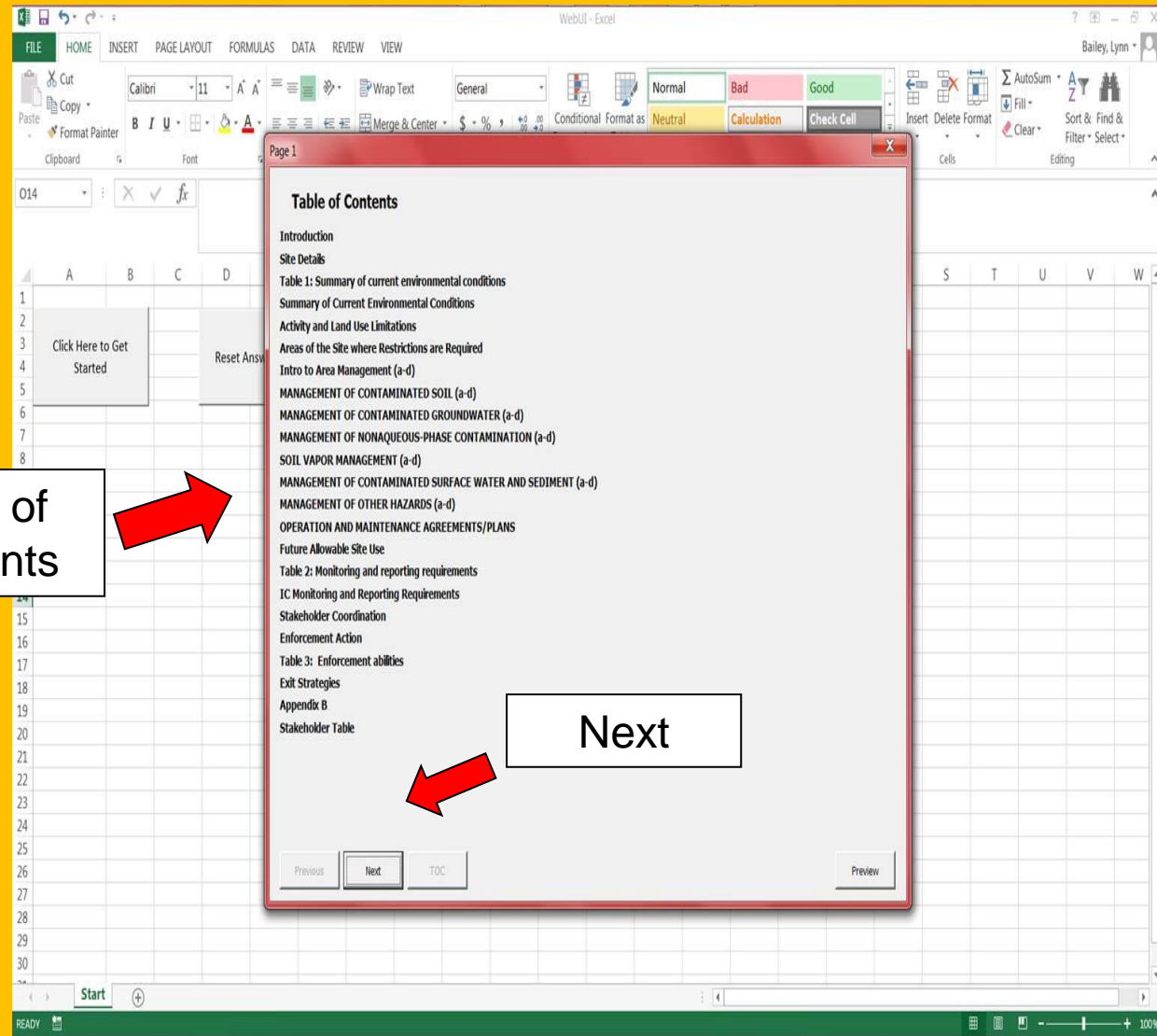


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# LTS Tool – Questions and Answers

Page 2

Please answer all questions completely. When filling in text boxes, write as if you are writing a report...you ARE! As you answer the questions on the form, a document based on your answers will be generated in the background. If you don't understand terminology used in the questions, please refer to the Interstate Technology and Regulatory Council guidance, "Long-Term Contaminant Management Using Institutional Controls". The information you need to answer these questions is available in your site closure documents (Records of Decision, NFA letters, etc.). All required fields (marked with a red asterisk) must be completed before proceeding to the next page.

When you have answered all questions, click "Create Report" and wait for your draft Long-term Stewardship Plan to generate. Please revise the text, as needed and submit the document to your local regulator for approval to ensure this meets with your state's laws.

\* User Name: Lynn Bailey

\* Date LTS Plan is Generated (Month Day#, Year): 12/19/2016

\* Facility / Site Name: Easement

\* Who is the Regulatory Agency overseeing the IC? Health Dept. Health, Hazard Evaluation and Emergency Response Office

Next

Previous Next TOC Preview

Dept.

Previous

Preview

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# LTS Tool – Preview Your LTS Plan

## I. Introduction

This LTS Plan is designed to assist obligated parties with the long-term management of institutional controls (IC). ICs are used to minimize the potential for ecological or human exposure to contaminants and to protect the integrity of a cleanup remedy. This document is designed to clarify the constraints of the ICs in effect at **Easement, 919 Ala Moana Blvd., Honolulu, HI 96814, (Tax Map Key: 123456789, Coordinates: 27 N, -157 W, Metes and Bounds: Metes and Bounds and Additional Location Information)**, as required by **No Further Action with Institutional Controls Determination at Easement** provided in Appendix A. This document also provides a comprehensive guide for implementing, monitoring, and maintaining the ICs as long as contamination remains in place at the site. **Hawaii Dept. of Health, Hazard Evaluation and Emergency Response Office** is the regulatory agency responsible for monitoring and enforcing the ICs at this site; however, it is the sole responsibility of **Current Property Owner** to ensure daily compliance with the ICs. Federal and/or state regulations that govern the ICs include **Hawaii Revised Statutes, Chapter 128D and Hawaii Administrative Rules, Chapter 11, Section 451. Applicable or Relevant and Appropriate Requirements include: ARAR X. This site is listed in a registry called Hawaii Registry. [mylink.com](http://mylink.com)** The identifying registry information for the site is **Site Registry Name.**

**\$72,000 is required for this site. one or more irrevocable letters of credit payable to or at the direction**

# LTS Tool – Options for Complex or Simple Sites



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## Areas of the Site where Restrictions are Required

\* Upload a figure depicting specific areas of the site where ICs are required, media/environmental concerns covered by the IC in each area, and all required engineering controls (EC).

If you wish to call Area A by a specific name, enter the name here.

Do you have a second area to document?  Yes  No

Do you have a third area to document?  Yes  No

Do you have a fourth area to document?  Yes ..  No ...

# LTS Tool – Options for Complex or Simple Sites

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## INTRO TO AREA MANAGEMENT (Area A)

Select the media that require restrictions (click all that apply)

- soil
- groundwater
- nonaqueous-phase contamination/gross contamination
- vapor hazards

Is there open access to this area of the site?

Yes  No

Are signs present?

Yes  No

# LTS Tool – Monitoring Questions

Activity or EC that Must be Monitored	Frequency of Inspection and/or Monitoring	Method of Inspection and/or Monitoring	Entity Conducting IC Monitoring	Reporting Requirement
Regulatory Compliance with all aspects of IC	Once every 5 years	Records review	Mr. Smith	Checklist
Cap Integrity	Annually	Site Visit	Future Property Owner	Photolog
Property transfer	Once every 5 years	Review Tax Records	IC Manager	Report
Operations and maintenance of systems	Monthly	Site Visit	AAA Consulting Firm	laboratory analytical results
Groundwater use	Annually	Review Well Permits	County Planning Office	other (specify)

# LTS Plan Creation!

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### Stakeholder Table

Name of Agency or Individual	Role	Address	Phone	Email	
Large Land Holdings, LLC	Owner	123 My Street, Mytown, H	555-111-1111	LLHL@property.net	+ -

Create Report

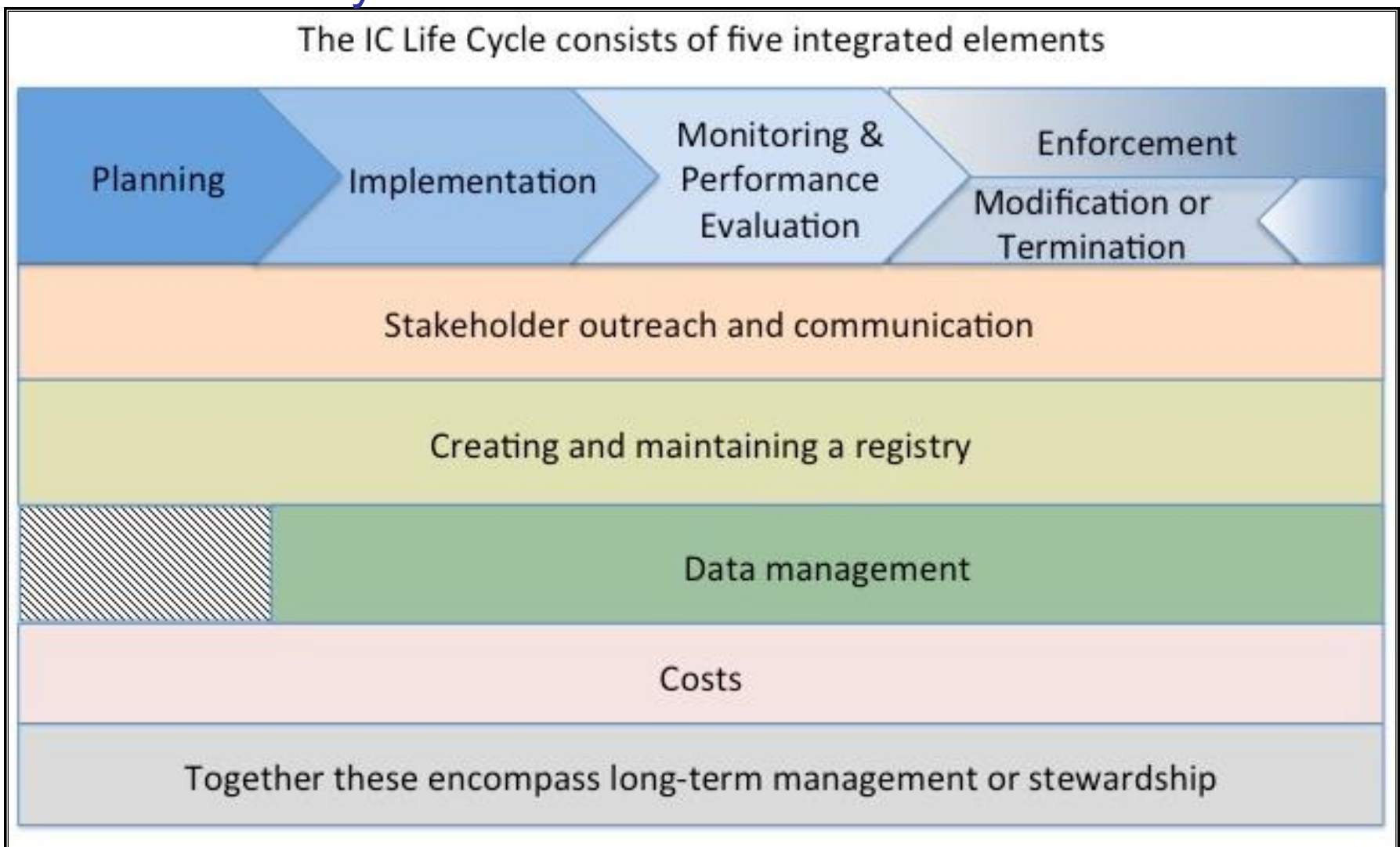
Previous Next TOC Create Report

For your very own LTS Plan Tool, download at:  
[http://www.itrcweb.org/Documents/team\\_ic/IC\\_Tool.zip](http://www.itrcweb.org/Documents/team_ic/IC_Tool.zip)

# A Long-term Management Plan for ICs is Critical – ITRC Guidance Provides Solution



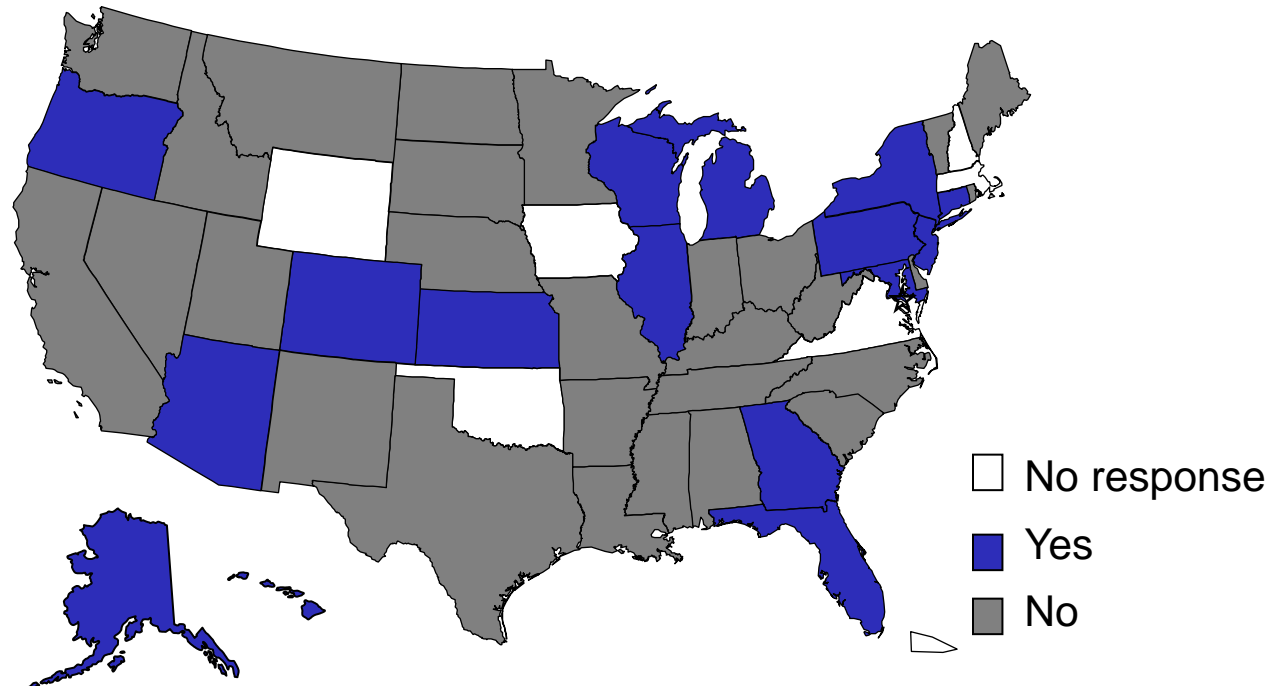
Failure of any element can result in failure of the IC



# How Are ICs Managed for the Long-term on Your Sites?

## Overarching Need – Long-term IC Management Procedures

- ▶ 64% of states responding have no standard procedure for selecting, using, and implementing Institutional Controls across different state programs.



- ▶ Institutional Controls vary greatly across the states and within state programs.

# Are You Confident in the Long Term Integrity of ICs?

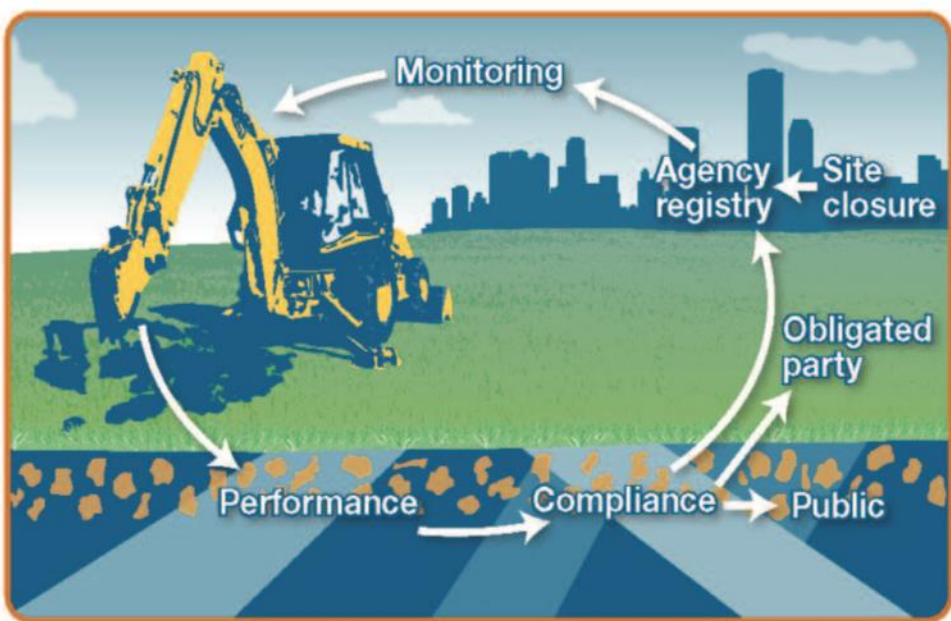
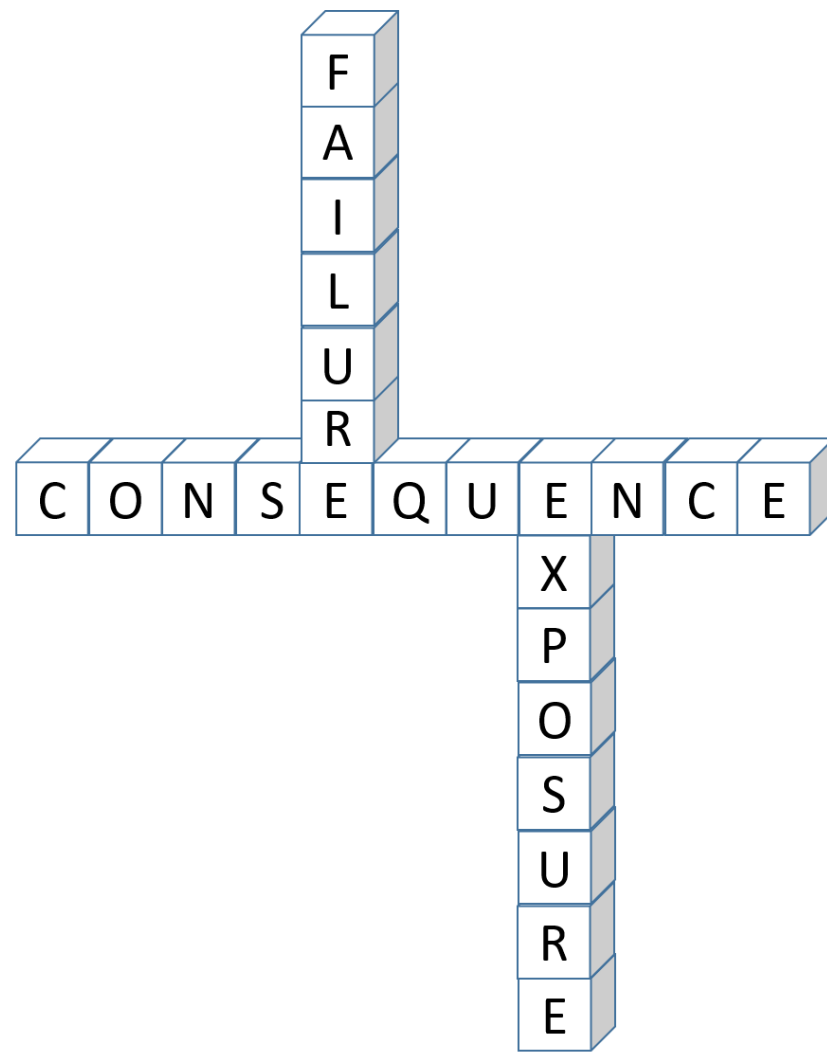
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- ▶ If you are not actively managing or monitoring your ICs, how do you know they continue to be protective?
- ▶ If you don't have a plan or need to improve on your current plan...this ITRC guidance is for you!
- ▶ The ITRC guidance can serve as a credible, consensus-based tool to support your discussions.



# Reduce Risk – Manage ICs

Reduce your risk of IC failure  
 Use ITRC’s Guidance:  
 “Long-term Contaminant  
 Management Using Institutional  
 Controls”



# We Can Help You Ensure Your Institutional Control Success



**The tools in the Guidance Document can  
Help maintain the integrity of ICs &  
Avoid accidental violations**

# Thank You

Follow ITRC



Poll Questions

- ▶ 2nd question and answer break
- ▶ Links to additional resources
  - <https://clu-in.org/conf/itrc/lcmuic/resource.cfm>
- ▶ Feedback form – *please complete*
  - <https://clu-in.org/conf/itrc/lcmuic/feedback.cfm>

**EPA United States Environmental Protection Agency Technology Innovation Program**

U.S. EPA Technical Support Project Engineering Forum  
*Green Remediation: Opening the Door to Field Use Session C (Green Remediation Tools and Examples)*  
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