

Complex Compliance Support with ArcGIS Online, Enterprise, ArcPy, and FME

Using the Esri Platform to Track, Log, Survey, Schedule, and Report Environmental Compliance



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2019 Esri UC

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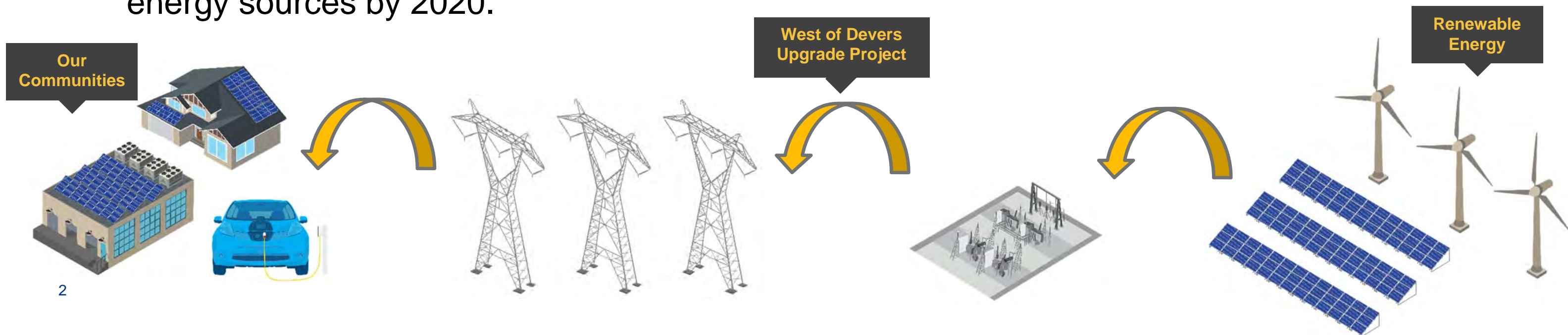
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BACKGROUND

Purpose

- The West of Devers Transmission Line Upgrade Project is needed to facilitate the full deliverability of new electric generation resources being developed in eastern Riverside County.
- As renewable energy generating facilities come on-line in eastern Riverside County, the WOD Project will allow the transfer of this electricity into the Los Angeles area. Currently, development of renewable energy generating facilities is limited due to transmission capacity.
- The Project will facilitate progress towards meeting California's Renewable Portfolio Standard goals requiring utilities to produce 33% of their electricity sales from renewable energy sources by 2020.

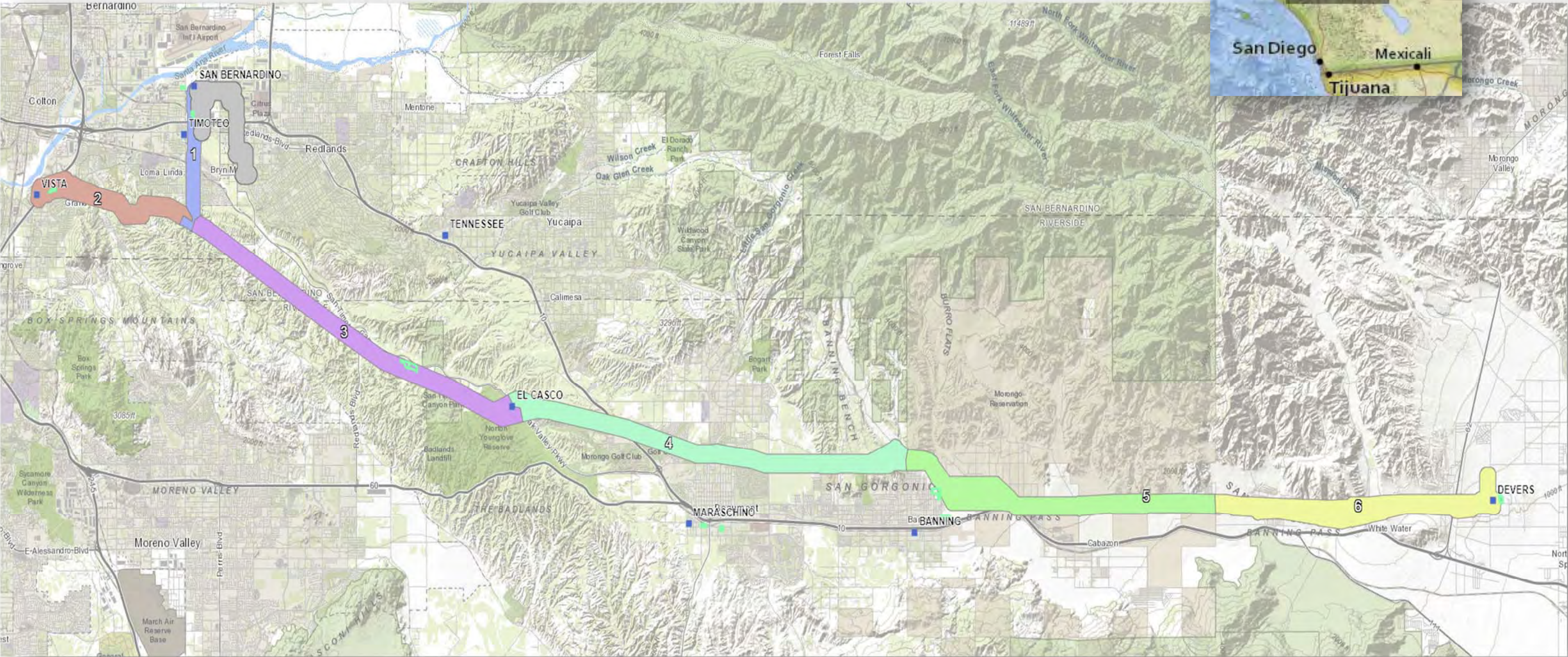


BACKGROUND

Scope

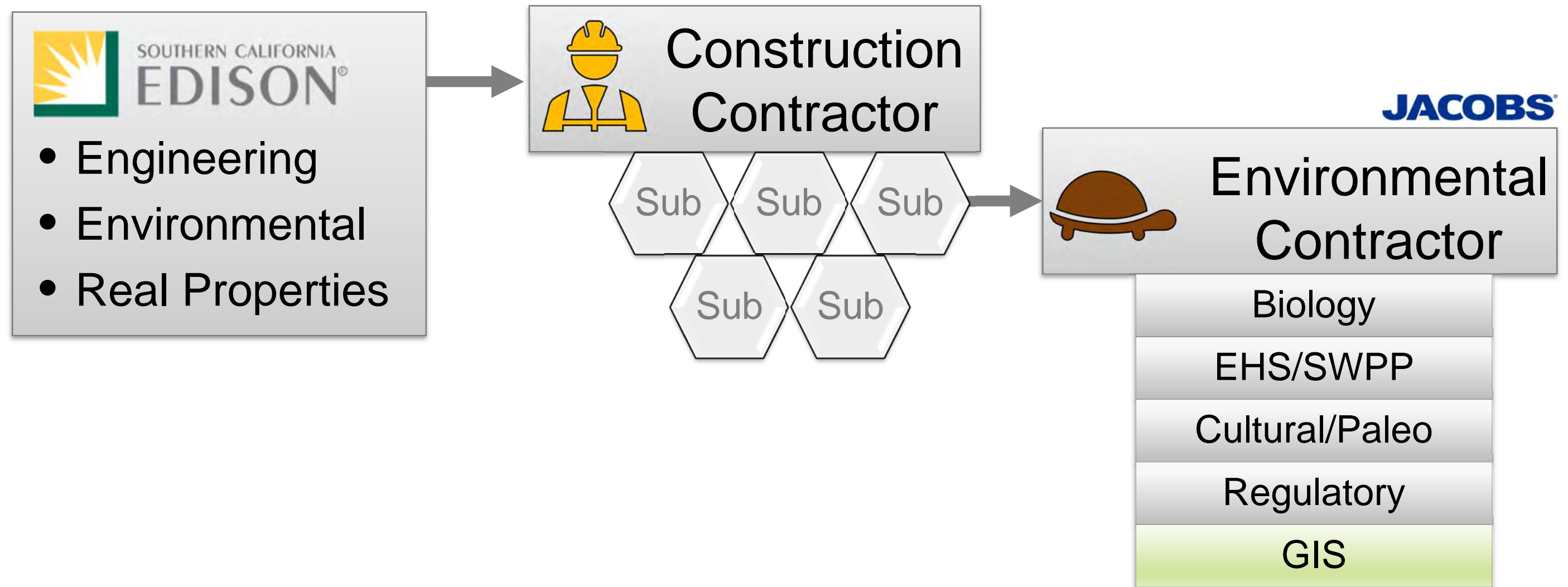
- Tear down and rebuild ~184 circuit miles of existing 220 kV T/L facilities (~ 48 corridor miles)
- Upgrade substation equipment at 5 substations to accommodate increased power transfer on 220 kV lines.
- Removal and relocation of 2 miles of two existing 66 kV subtransmission lines.
- Removal and relocation of 4 miles of existing 12 kV distribution lines.
- Installation of telecommunication lines and equipment for the protection, monitoring, and control of transmission lines and substation equipment.

MAP OF PROJECT AREA



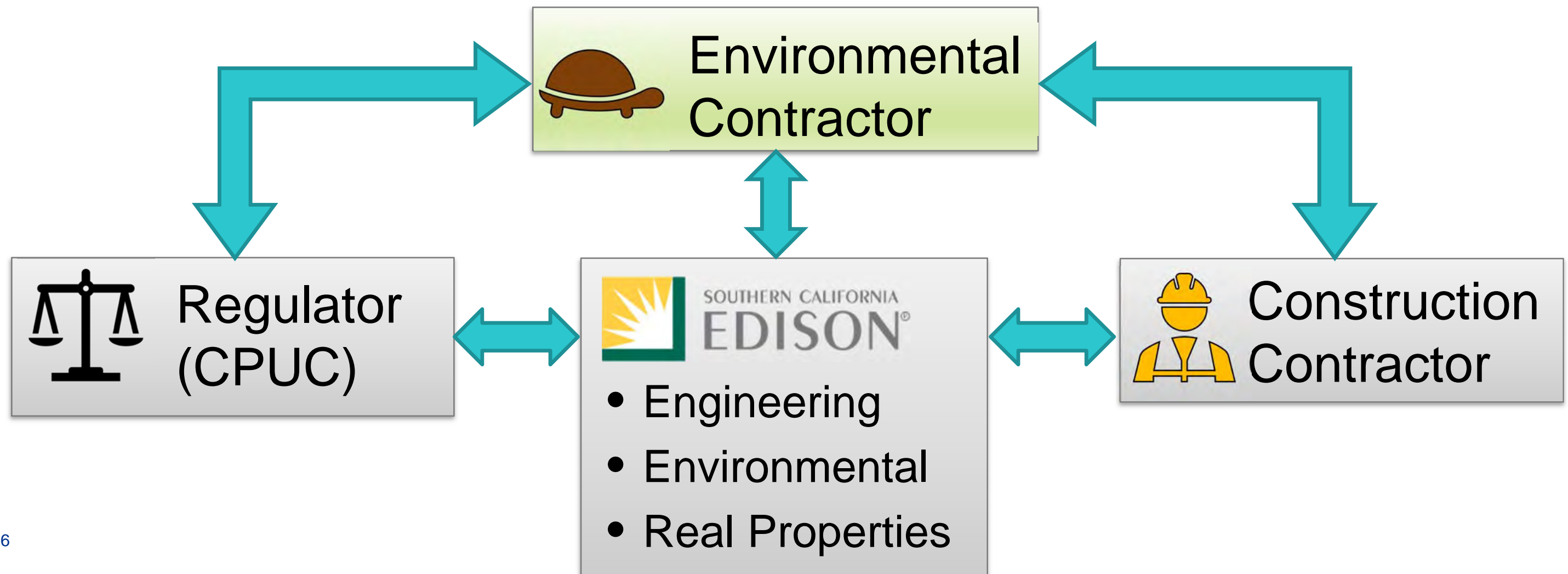
CONTEXT

Engineer Procure Construct (EPC)



CONTEXT: Environmental Contractor

- Ensure environmental compliance
- Perform bio surveys, monitoring, inspections, photo documentation, restoration support, reporting, GIS support for field teams
- GIS: Support field workflows; provide impact analysis, reporting, mapping

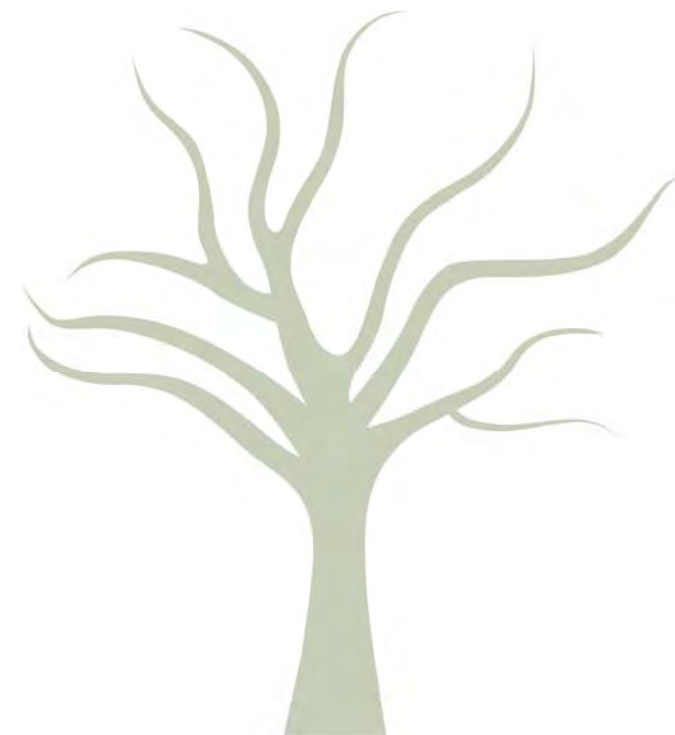


CHALLENGE: Environmental Compliance

Complex regulations, mitigation measures, and oversight

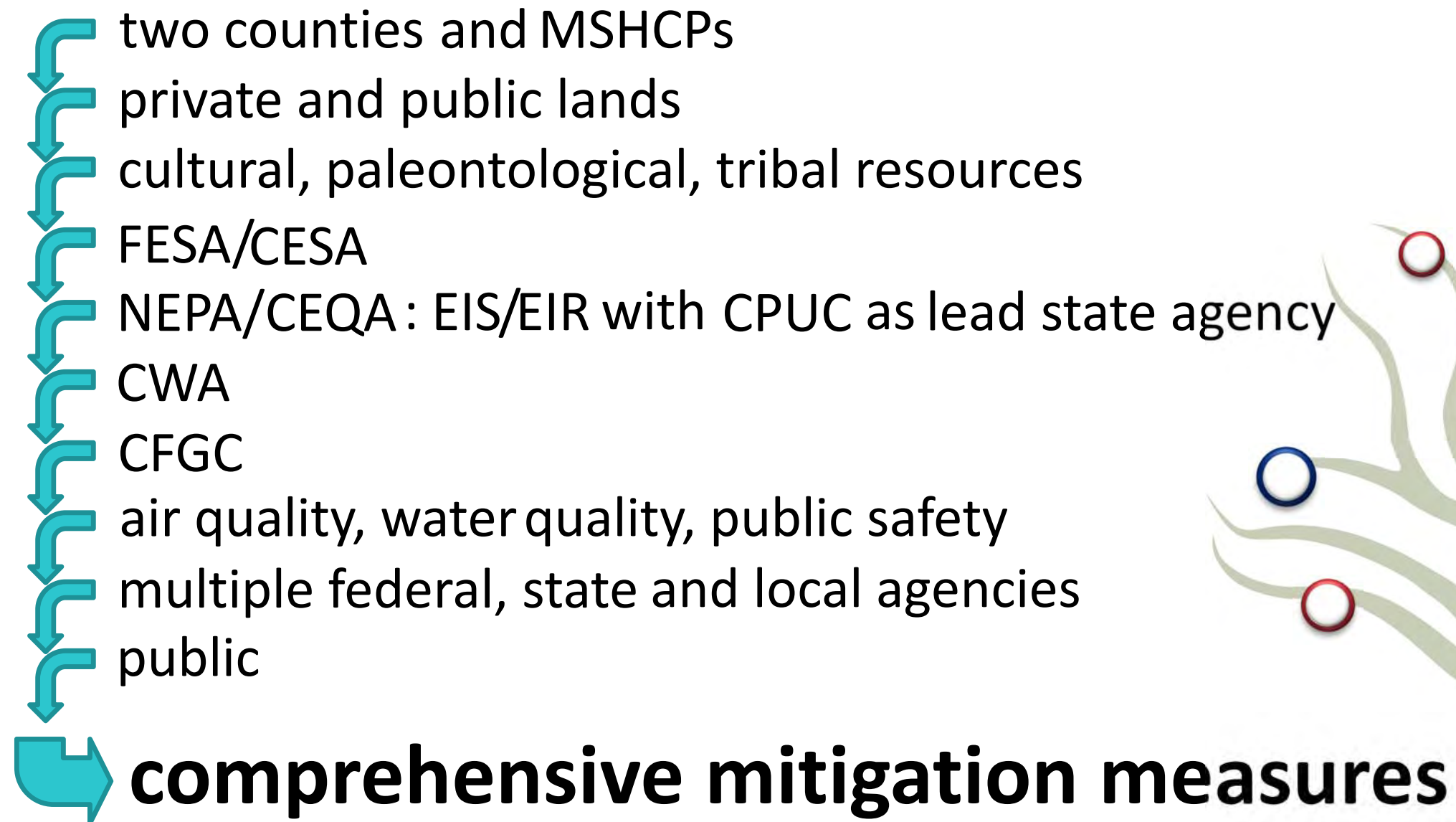
The West of Devers Upgrade Project is very complicated from a regulatory perspective. The alignment spans **two counties** Riverside and San Bernardino, **private and public lands** including lands administered by the Bureau of Land Management, California Department of Parks and Recreation, Riverside Regional Park and Open Space District, and tribal lands. The project was subject to review under **NEPA/CEQA** the National Environmental Policy Act and California Environmental Quality Act, with the California Public Utilities Commission **CPUC** acting as the **lead state agency**. The resulting Environmental Impact Report **EIR** and Environmental Impact Statement **EIS** include **comprehensive mitigation measures**. For biological resources, the permitting was virtually unprecedented. The project traverses two Multiple Species Habitat Conservation Plans **MSHCPs** through which SCE obtained coverage for take of species listed under Section 10 of the Federal Endangered Species Act **FESA** and California Endangered Species Act **CESA**. In parallel, the project was subject to permitting pursuant to Section 7 of the FESA and Section 2081 of the California Fish and

Game Code **CFGCC**. The project was subject to permitting pursuant to the Clean Water Act **CWA** and FGC Section 1602. In addition, the project required regulation to minimize impacts to **cultural, paleontological, tribal resources** as well as other regulations governing **air quality, water quality, public safety** and other areas. The net result is a list of complicated, overlapping, and interconnected project requirements overseen by **multiple federal, state and local agencies** with which SCE must comply.



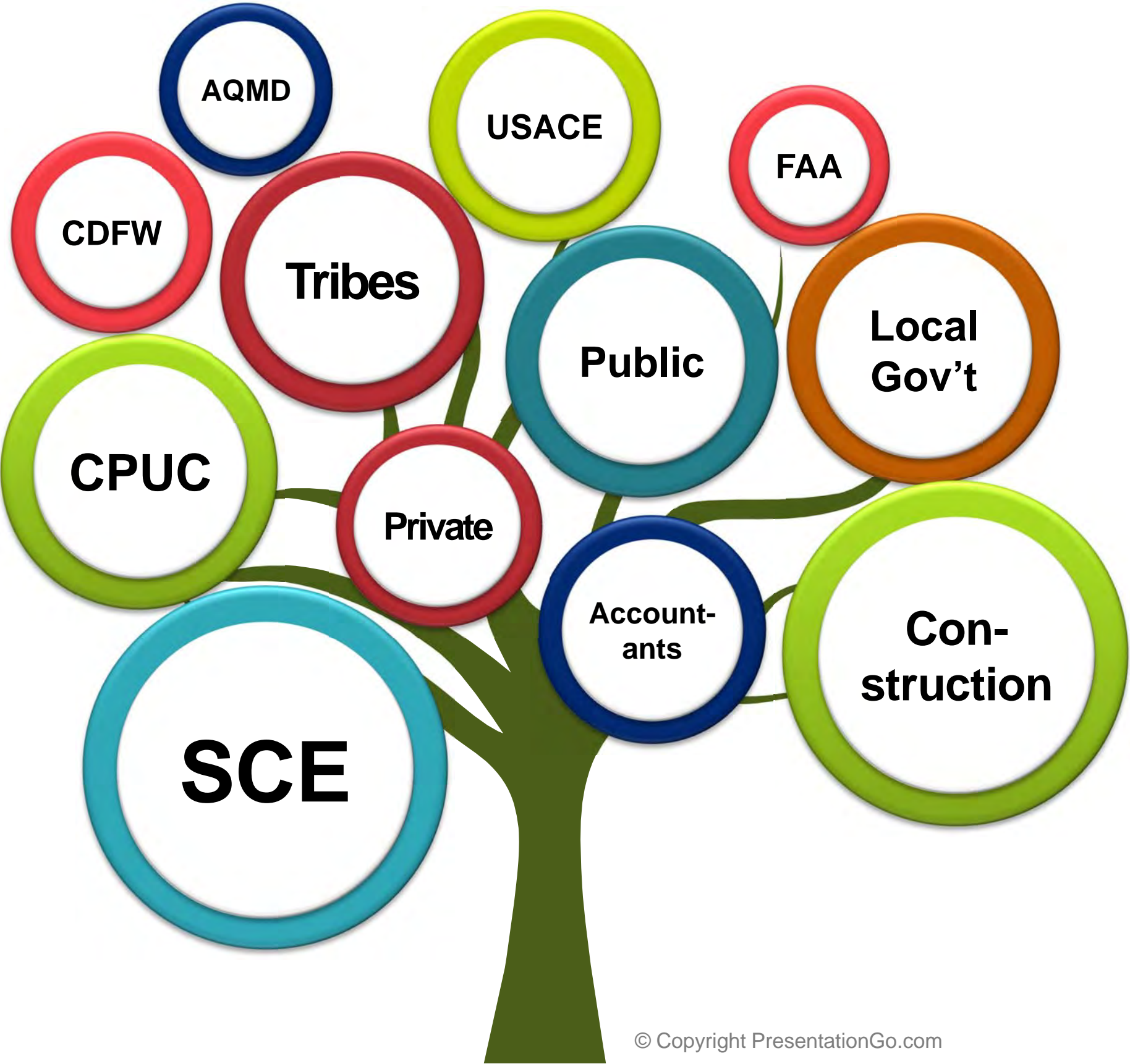
CHALLENGE: Environmental Compliance

Complex regulations, mitigation measures, and oversight



CHALLENGE

Keep everyone 😎.



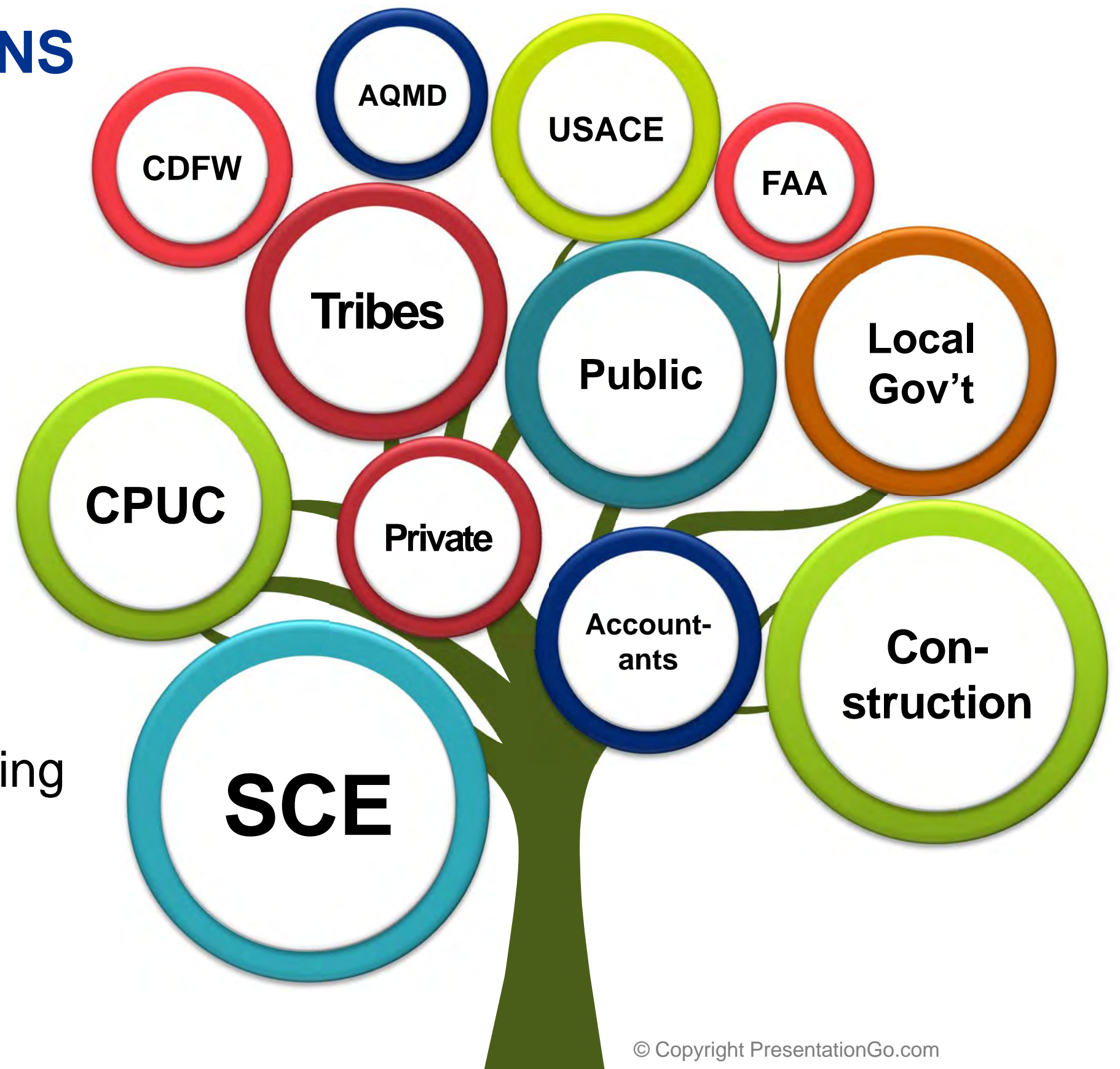
APPROACHING SOLUTIONS

Starting Point:

- Mitigation Measures
- Previous experience & tools
- ✴ ArcGIS Online/Enterprise
- ✴ Mobile Apps
- ✴ FME / Python

Broad Requirements:

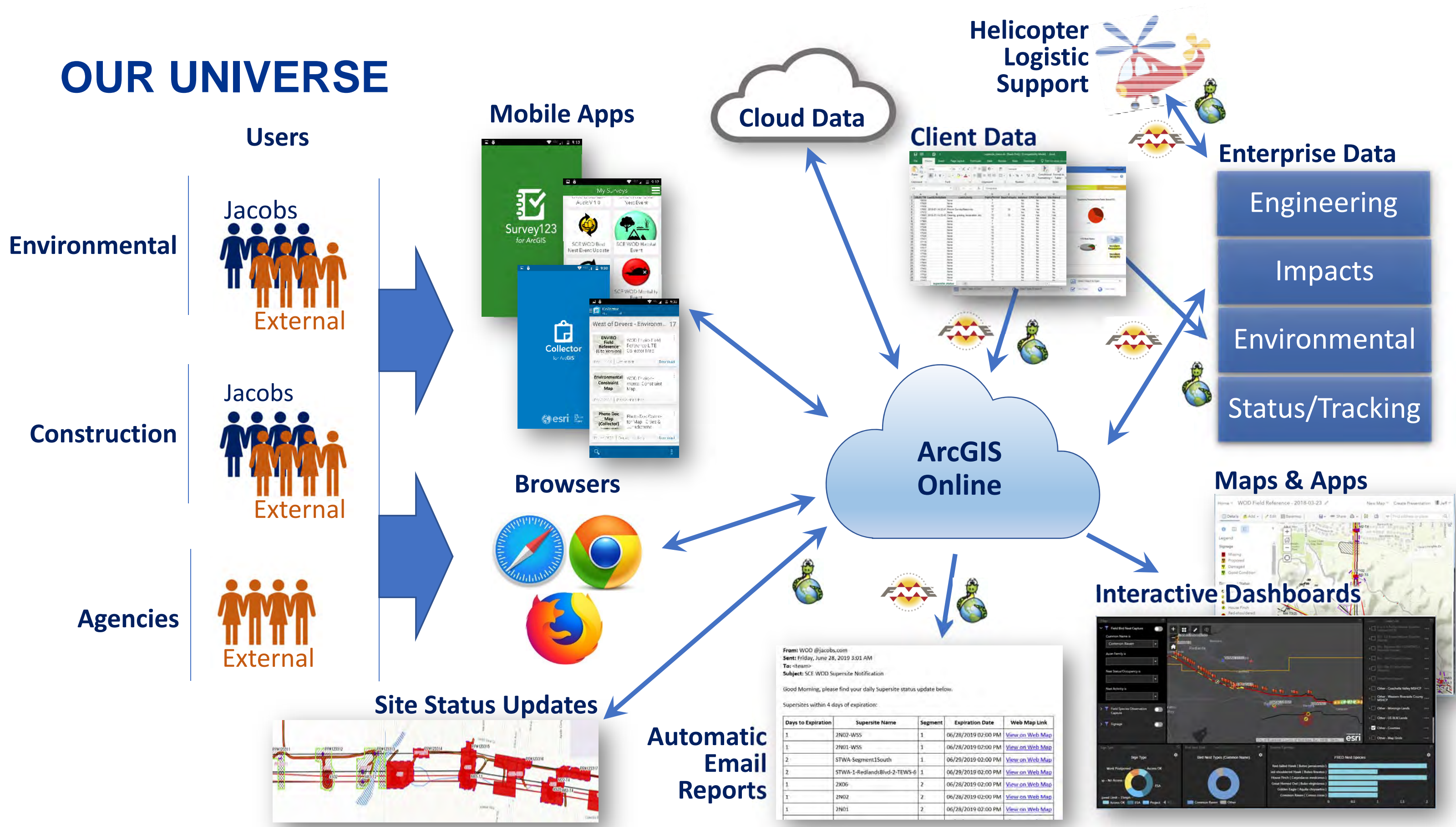
- Quick deployment & prototyping
- Wide deployment at low cost
- Easy to implement



SPECIFIC PROJECT NEEDS

- **Provide meaningful information** to each project role
 - Don't overwhelm individuals with data: plan carefully
- **Near-real-time data dissemination**
 - 50 miles, 900 work sites, 90 users: maximize communication
- **Keep project data current**
 - Dynamic environment; violations risk safety, environment, costs and reputation
- **Integrate data from external systems**
 - System-of-Record resides with SCE
- **Respond quickly and flexibly to change**

OUR UNIVERSE



Environmental

Jacobs
External

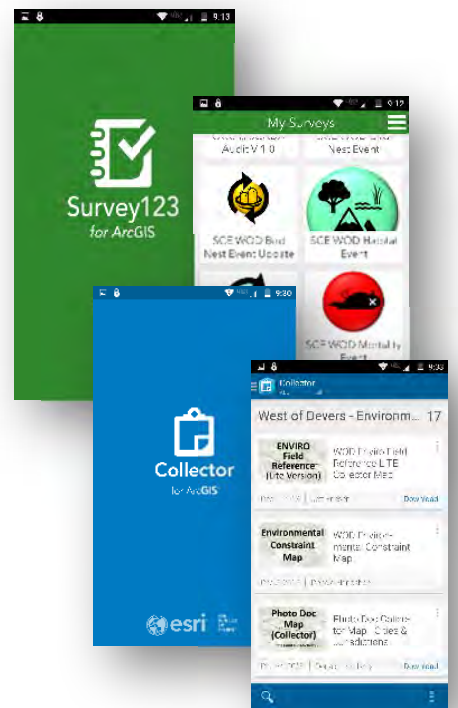
Construction

Jacobs
External

Agencies

External

Mobile Apps

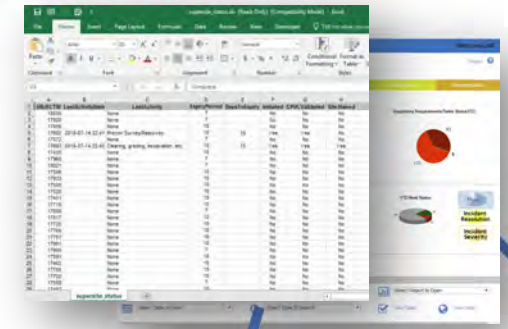


Browsers



Cloud Data

Client Data



Helicopter
Logistic
Support



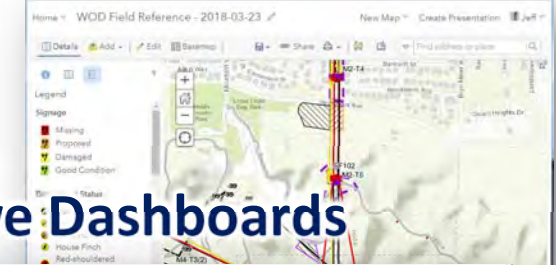
Enterprise Data

Engineering
Impacts
Environmental
Status/Tracking

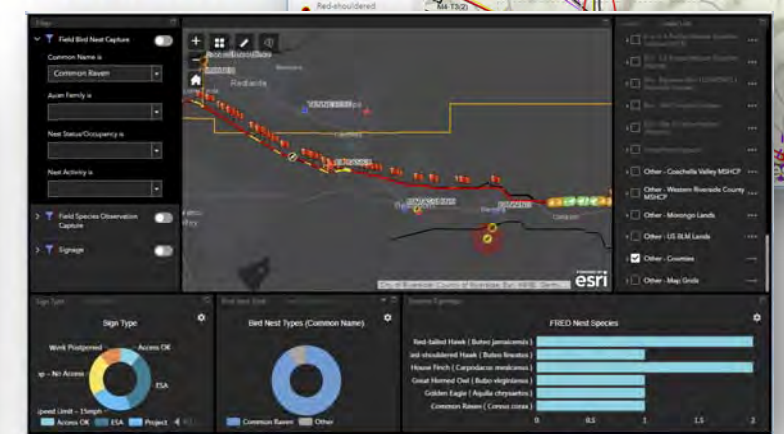


ArcGIS
Online

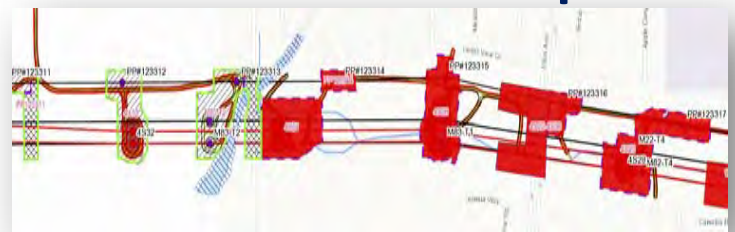
Maps & Apps



Interactive Dashboards



Site Status Updates



Automatic
Email
Reports

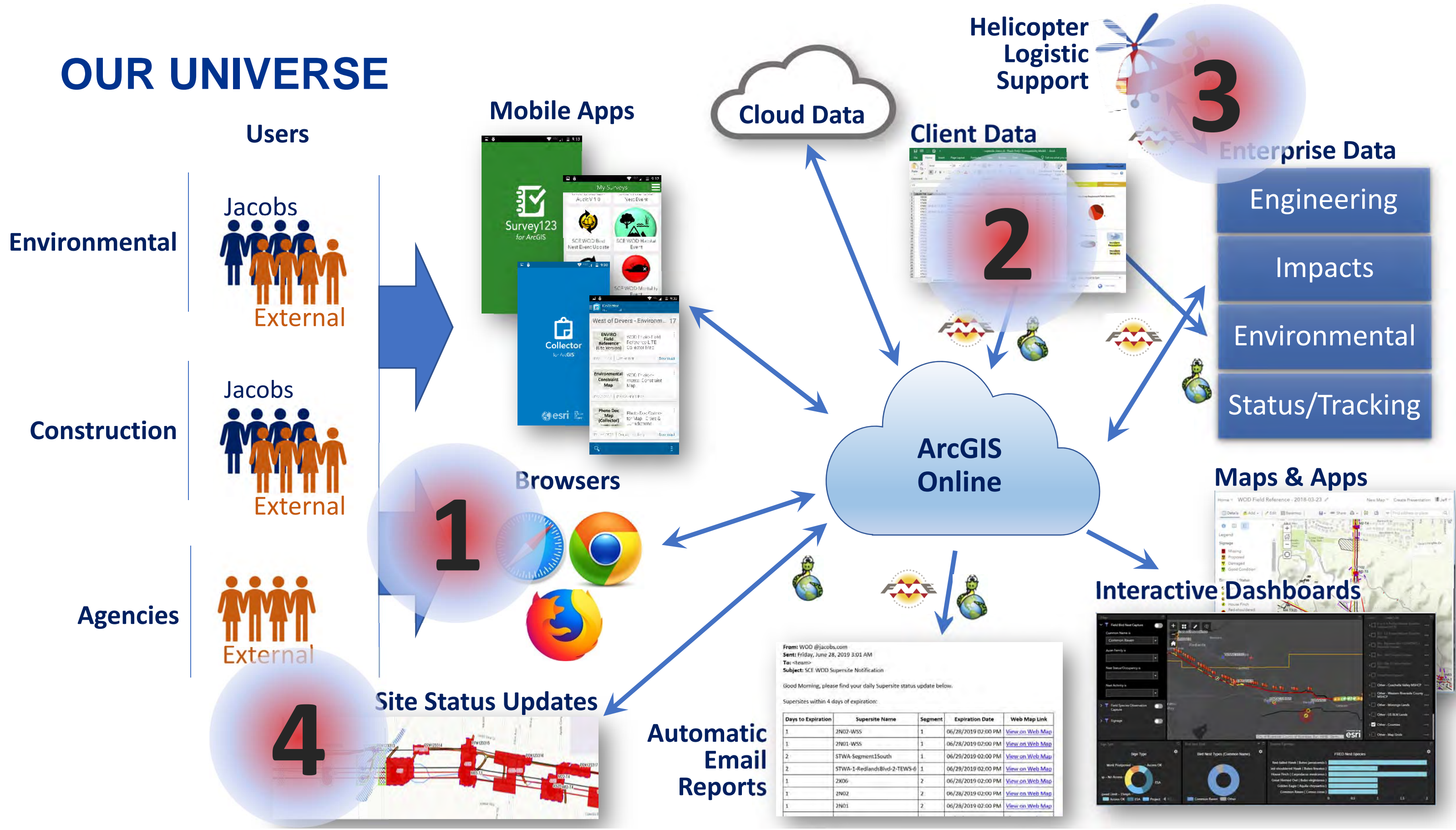
From: WOD@jacobs.com
Sent: Friday, June 28, 2019 3:01 AM
To: <team>
Subject: SCE WOD Supersite Notification

Good Morning, please find your daily Supersite status update below.

Supersites within 4 days of expiration:

Days to Expiration	Supersite Name	Segment	Expiration Date	Web Map Link
1	2N02-WSS	1	06/28/2019 02:00 PM	View on Web Map
1	2N01-WSS	3	06/28/2019 02:00 PM	View on Web Map
2	STWA-Segment1South	1	06/29/2019 02:00 PM	View on Web Map
2	STWA-1-RedlandsBlvd-2-TEWS-6	1	06/29/2019 02:00 PM	View on Web Map
1	2X06	2	06/28/2019 02:00 PM	View on Web Map
1	2N02	2	06/28/2019 02:00 PM	View on Web Map
1	2N01	2	06/28/2019 02:00 PM	View on Web Map

OUR UNIVERSE



1 Web-based Access – App Gallery

West of Devers GIS App Gallery - Environmental

Environmental App Gallery

Environmental

All Environmental Web Apps are accessed via the App gallery to the right. Web Apps work in your computer browser only.

[E-Mail for Questions or Support](#)

Mobile Mapping - Collector Maps

Collector Maps are for field reference and data collection on a mobile device, and are listed below for your reference.

[Apple/iOS Collector Doc](#) | [Android Collector Doc](#)

The Environmental maps below are for use in Collector. [Help Doc](#)

WOD Enviro Field Reference

Project reference and capture map. Content includes collection points, all engineering, biological and environmental layers, including FRED nest, habitat, mortality and species events.

WOD Environmental Constraint Map

Reference map for the agencies and SCE (read-only). Content includes all items mentioned above, except for collection points.


WOD Move Plan

Structure points numbered with Move Plan sequence (1 through 18)

Note: other maps may be visible in Collector, but they support specific workflows and should not be used in Collector


Workflows

- Photo Documentation ([SOP](#))
- Site True-Up
- Pre-Construction Surveys ([SOP](#)) ([Survey123 Doc](#))
- Signage
- Soil Salvage
- Site Status Update




ENVIRO Field Reference

WOD Enviro Field Reference App




Environmental Constraint App

WOD Environmental Constraint App




Move Plan App

WOD Move Plan App




Precon Survey

WOD Pre-Con Survey App




Seasonal Restrictions App

WOD Seasonal Restrictions App




Site Status App

WOD Site Status App




Ops Dashboard

WOD Site Status Operational Dashboard



Soil Salvage

WOD Soil Salvage App



True-Up QA

WOD True-Up QA App

1

Environmental

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WOD Move Plan

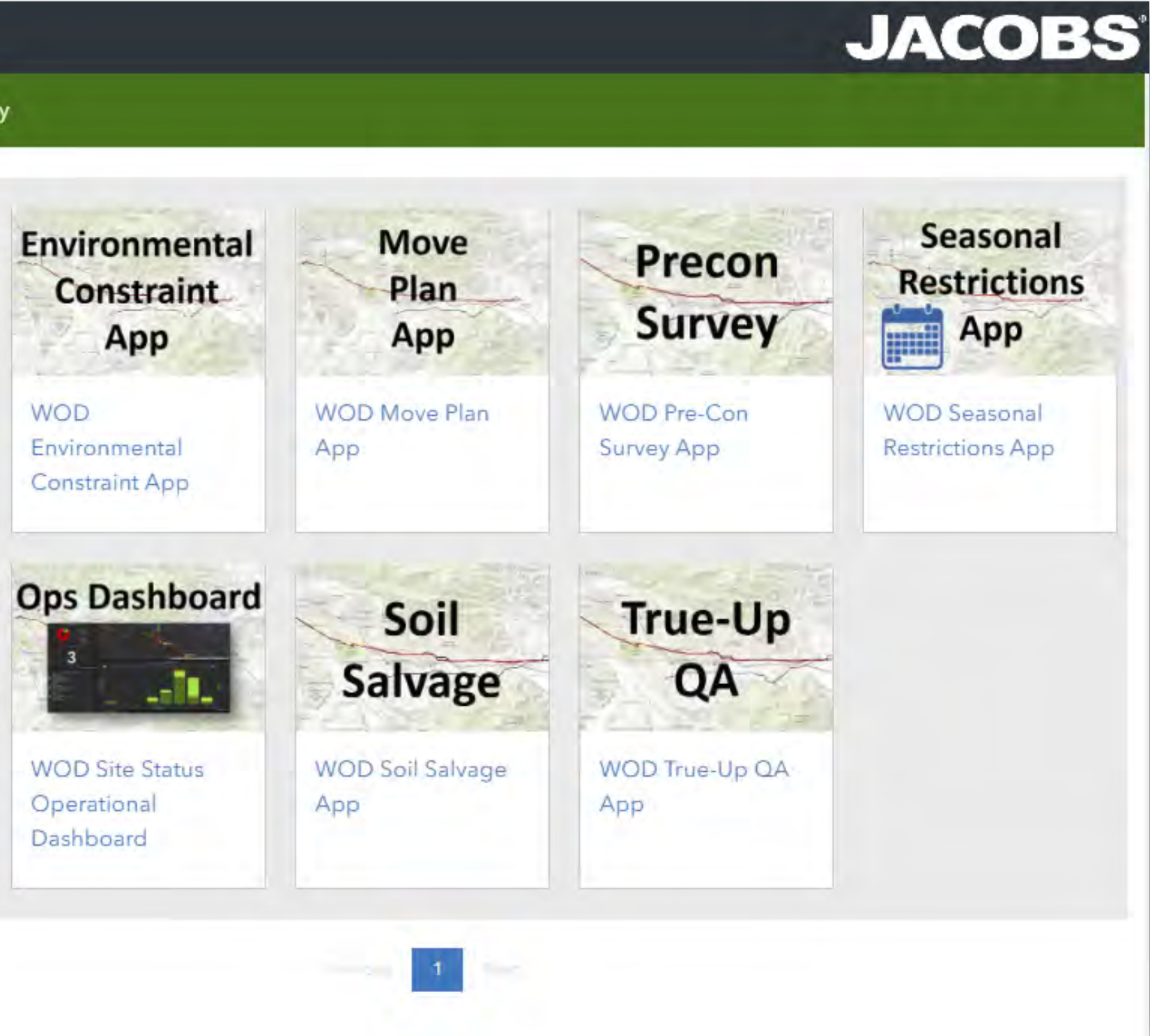
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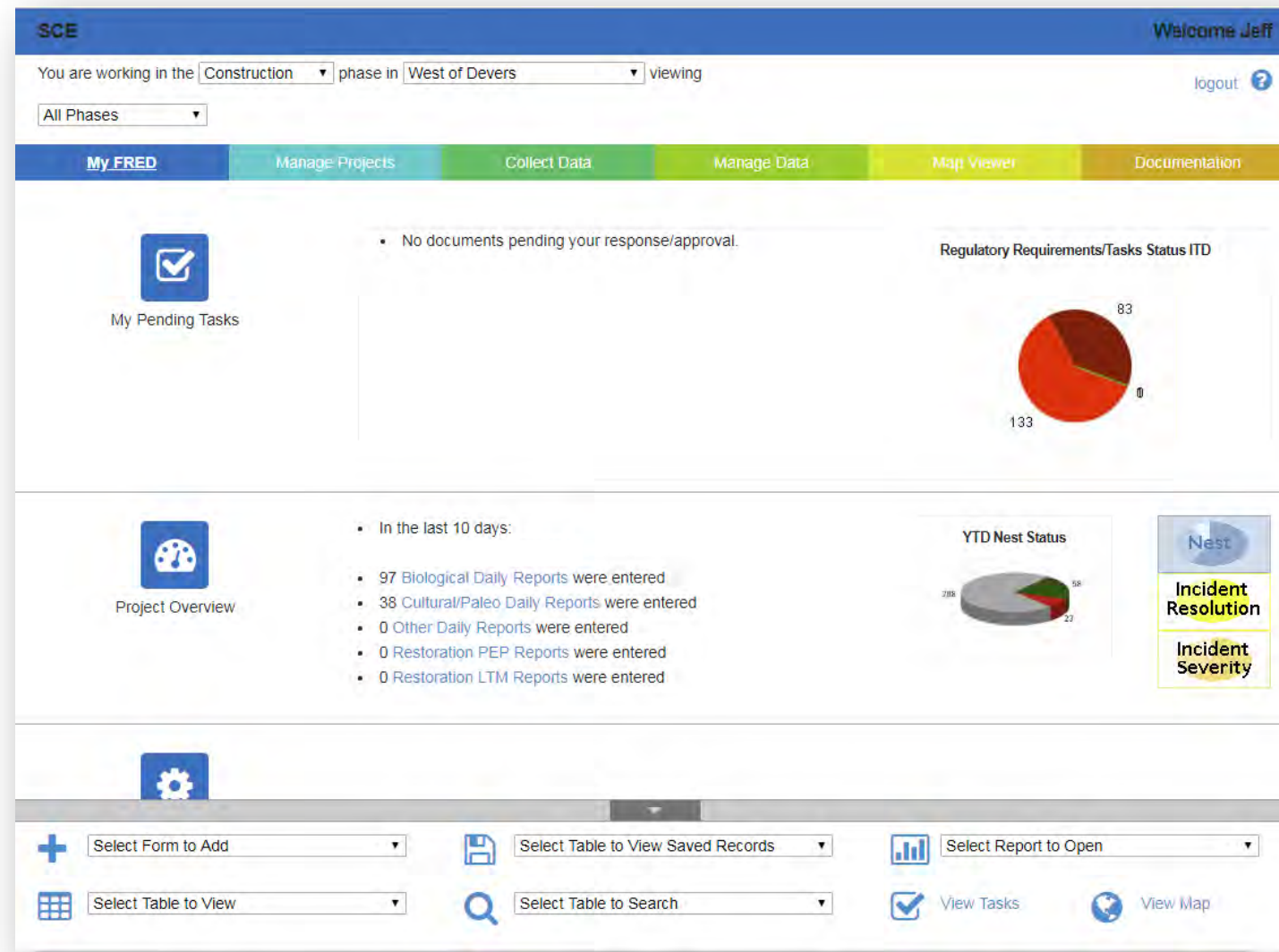
Workflows

Photo Documentation ([SOP](#))

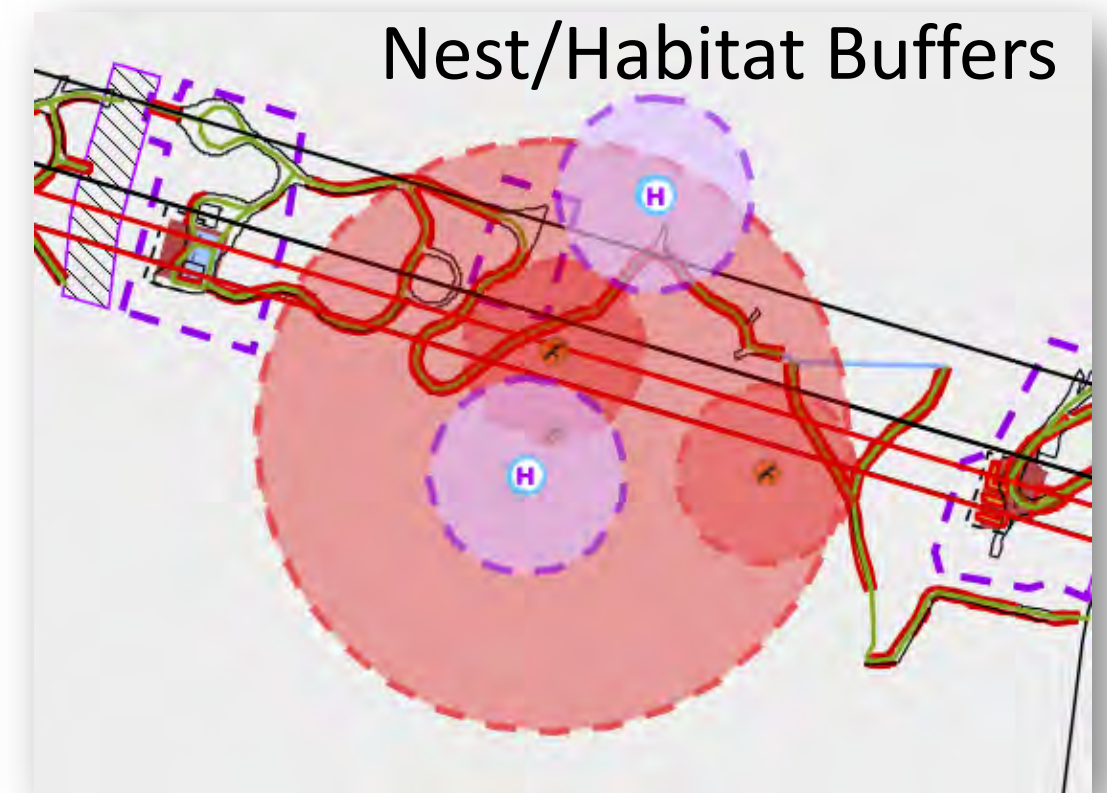
allery



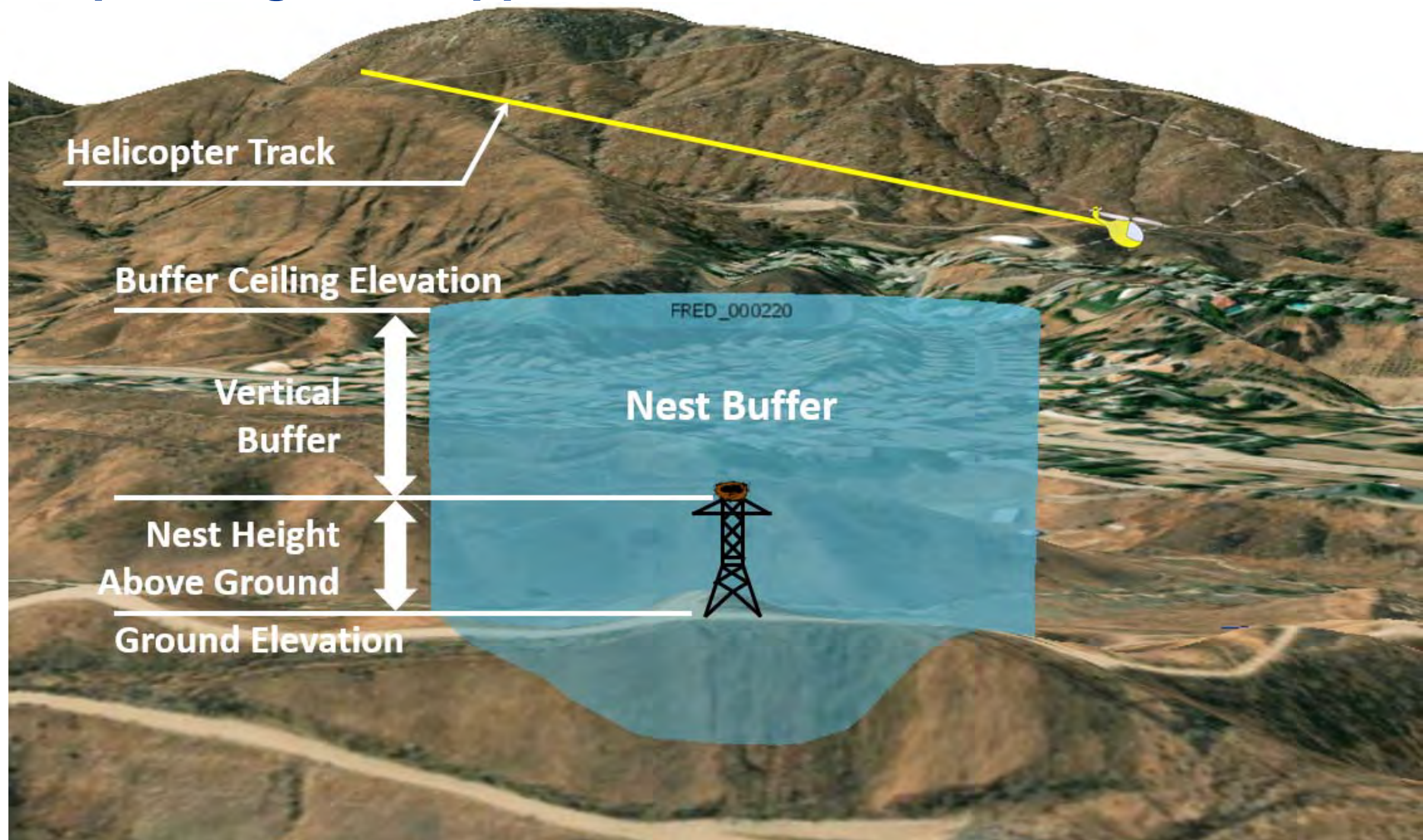
2 Ingest Client Data – Update Layers



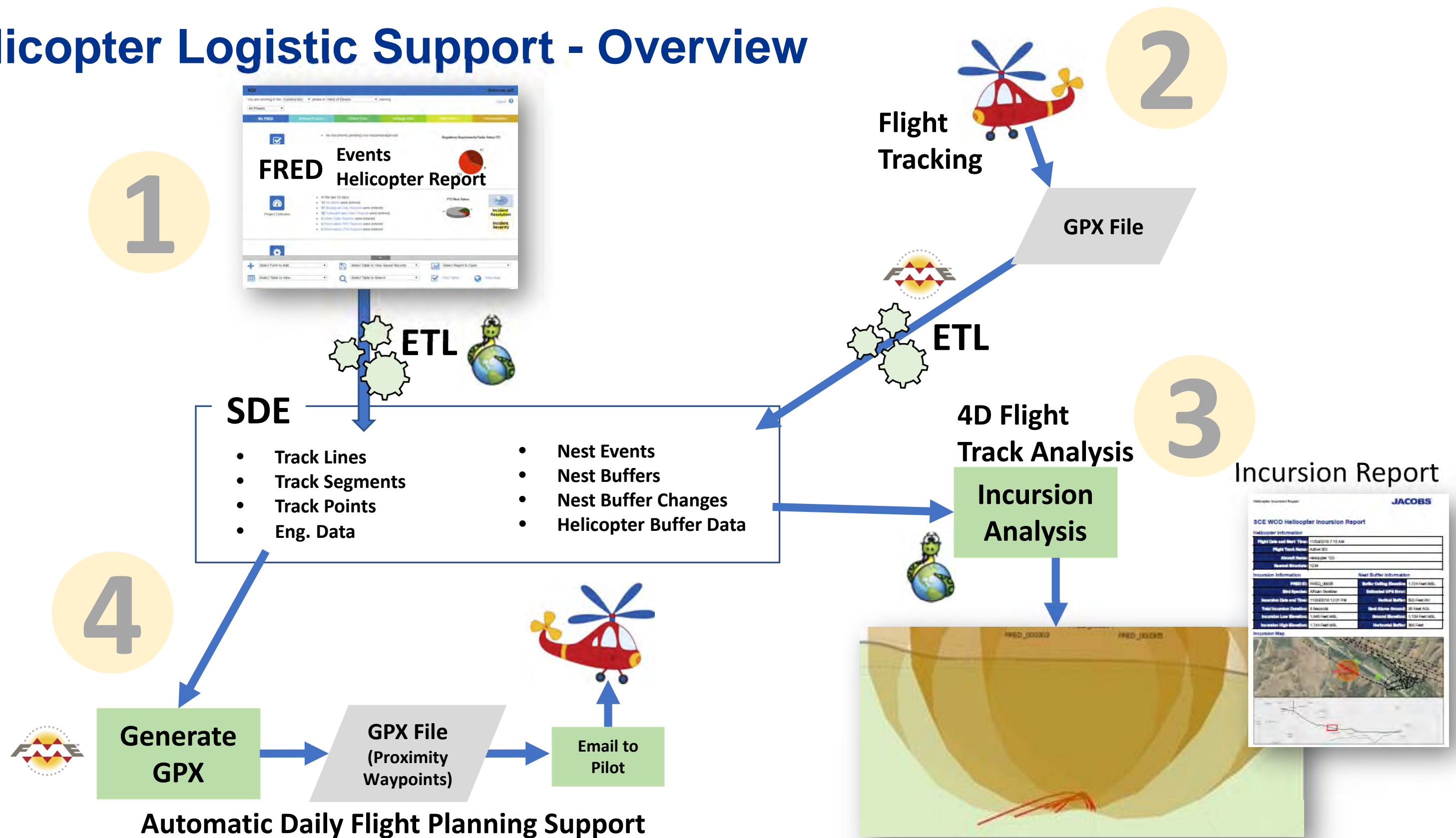
- Python used to retrieve updated nest and species from SCE FRED system-of-record.
- Load XY data into existing FC in Enterprise, generate buffers.
- Exception reporting if failure. VERY robust.



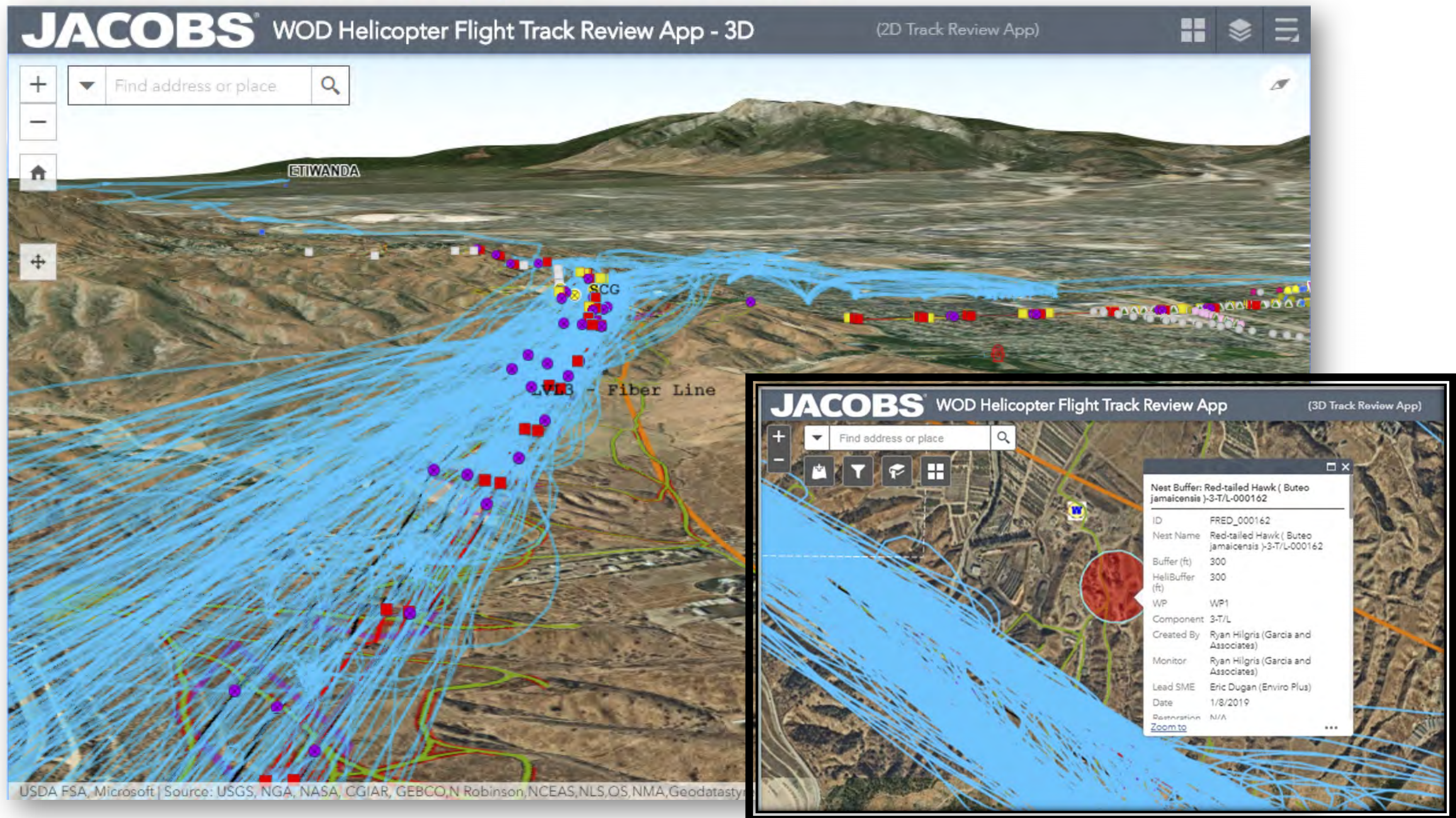
3 Helicopter Logistic Support - Overview



3 Helicopter Logistic Support - Overview

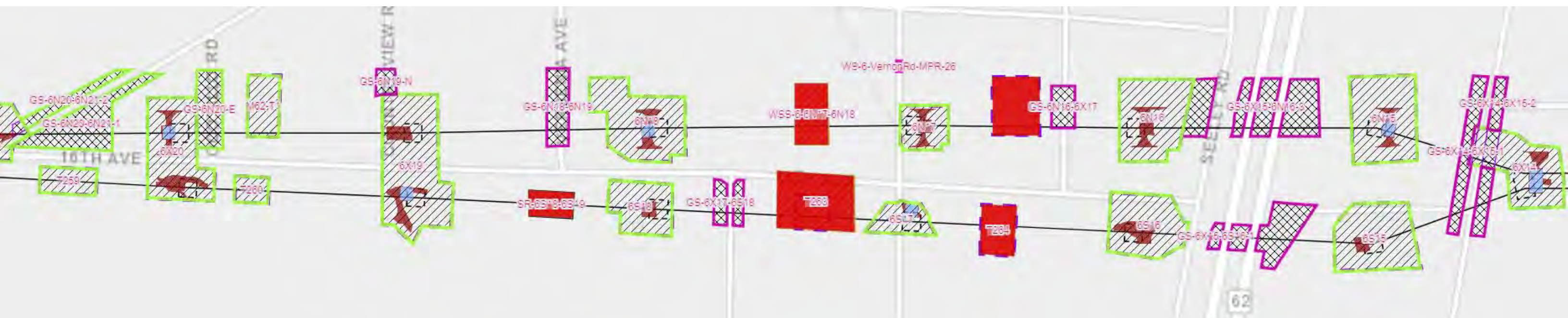


3 Helicopter Logistic Support - Overview



4

- Site Status determines when/where crews can work
- Mitigation measures consider time of day, not just date
- Status is controlled by actions and dates/times at each site
- Site attributes are set in the field through Collector, or in the office
- **Status set by logic: outcome of multiple site attributes**










4 Work Site Status

- 7 possible status values for a supersite; **2 allow entry onto site**



DO NOT ENTER

Supersite Status

	Active	Construction may proceed
	Active -1 Day or Less to Expiry	Construction may proceed – expiry is imminent
	Not Swept	Supersite will be Active once Clearance Sweep is done
	Not Swept -1 Day or Less to Expiry	As “Not Swept” but expiry is imminent
	Awaiting Validation/Activity	Awaiting CPUC field validation
	Awaiting Validation/Activity -1 Day or Less to Expiry	As above but expiry is imminent
	Inactive	Site is not active

Outcomes

What benefits have we realized?

- **Elimination of intensive mapping production and manual QC** through online platform
- **Reduced scheduling effort** through daily automated site status reporting
- **Reduced field capture turnaround time** with mobile data collection apps, and tools are in the hands of **many more users**
- **Faster decision-making, resource allocation, and greater overall project safety** through faster data dissemination
- **Fewer mitigation measure violations** because of near-real-time data
- **Cost savings: 7 FTE GIS staff down to <3**, plus reduced support staff



Thank you!

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July 22, 2019

Automated 4D Analysis of Helicopter Flight Tracks and Bird Nest No-Fly Zones

Session Title: Innovation to Solve Real Utility Problems

Today, 1:00 PM - 2:00 PM Room 26 B

Avoiding Compliance Violations: ArcGIS Online, Python, Collector, and 90 Users

Session Title: How GIS can Improve Compliance and Integrated Workflows

Tomorrow, 1:00 PM - 2:00 PM Room 26B



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