

Practical Applications of Cloud-Based Database Dashboards at a Major Superfund Site

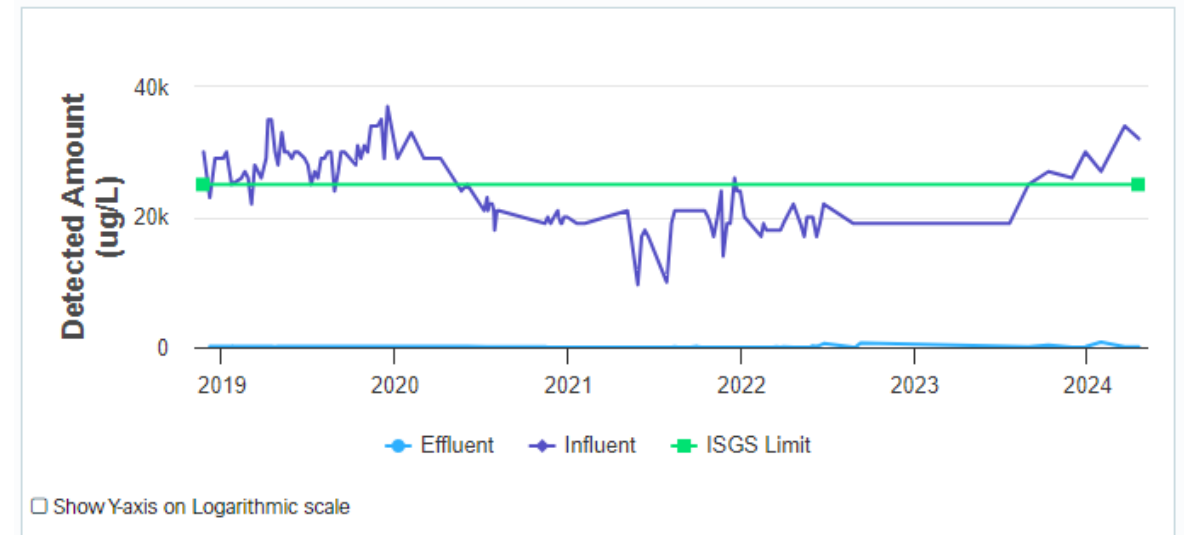
Mark Packard, PG^{MN}, CPG

President/ CEO

de maximis Data Management Solutions, Inc. (ddms)

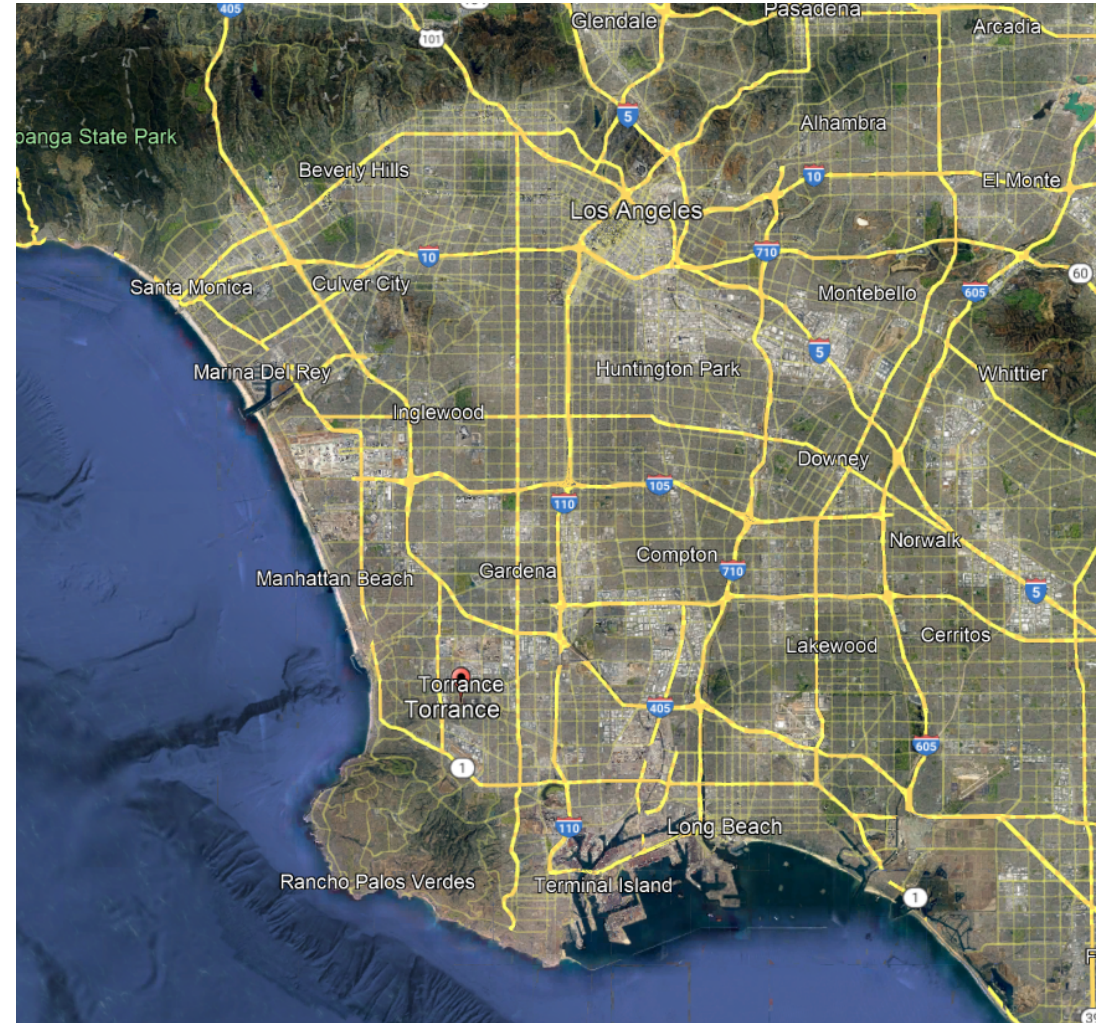
mpackard@ddmsinc.com

June 4, 2024



Site Background

- Site is a former pesticide manufacturing facility outside of LA
- Impacted groundwater and soil with a co-mingled chlorinated solvent groundwater plume.
- DNAPL present



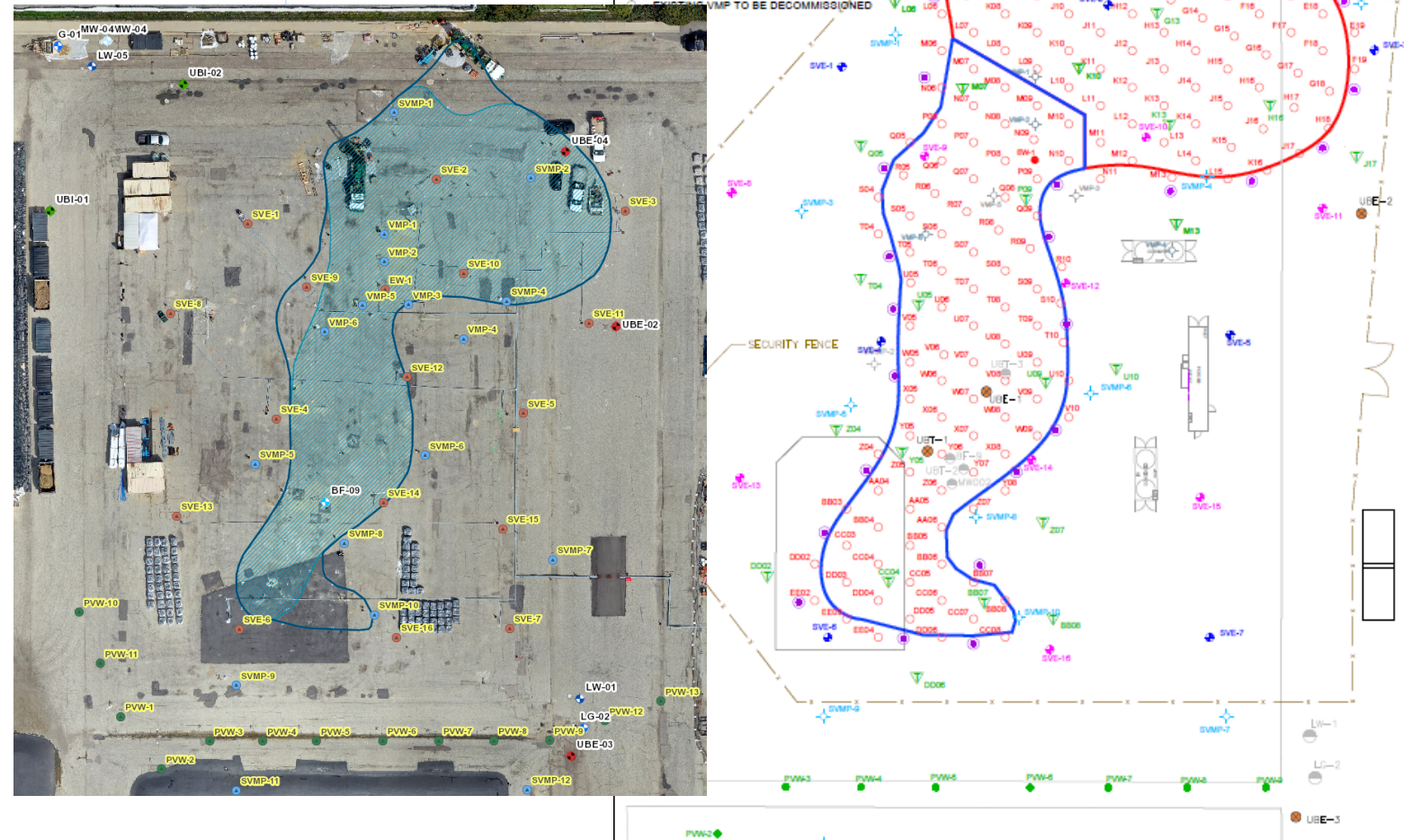
Site Remedy - Groundwater



- Groundwater contains solvents
- Groundwater extraction, treatment and reinjection system (GWTS) installed.
- GWTS has removed 68,000 lbs of site contaminants from the groundwater as of March 2024
- System estimated to meet applicable standards in 50 years (outside of TI Waiver zone)

Site Remedy - DNAPL

- Soil vapor extraction conducted in preparation for Electrical Resistance Heating (ERH) remedy.
- Over 400,000 lbs of VOCs have been extracted during multiple pilot studies



Groundwater Remediation
System-Partial GW O&M

ERH DNAPL Remedy



The Challenge

*Lots of moving parts, **lots of data***

- **Efficient and timely communication** of project status and project compliance to stakeholders and regulators?
- How to communicate many key system statuses and parameters to key personnel?
- How to communicate **real-time system information** to regulators within 24-hrs?
- How can we reduce the number of regular deliverables to reduce project costs?



> Solution = **Project Dashboard**

Dashboard Platform **Selection**

Selection Considerations:

- Support for real-time high frequency data
- Ability to send out data reports & exceedance notifications
- Access from anywhere (cloud-based)
- Secure and granular user permissions
- Support for many users from multiple organizations
- Affordability
- Turnkey application/ minimal training

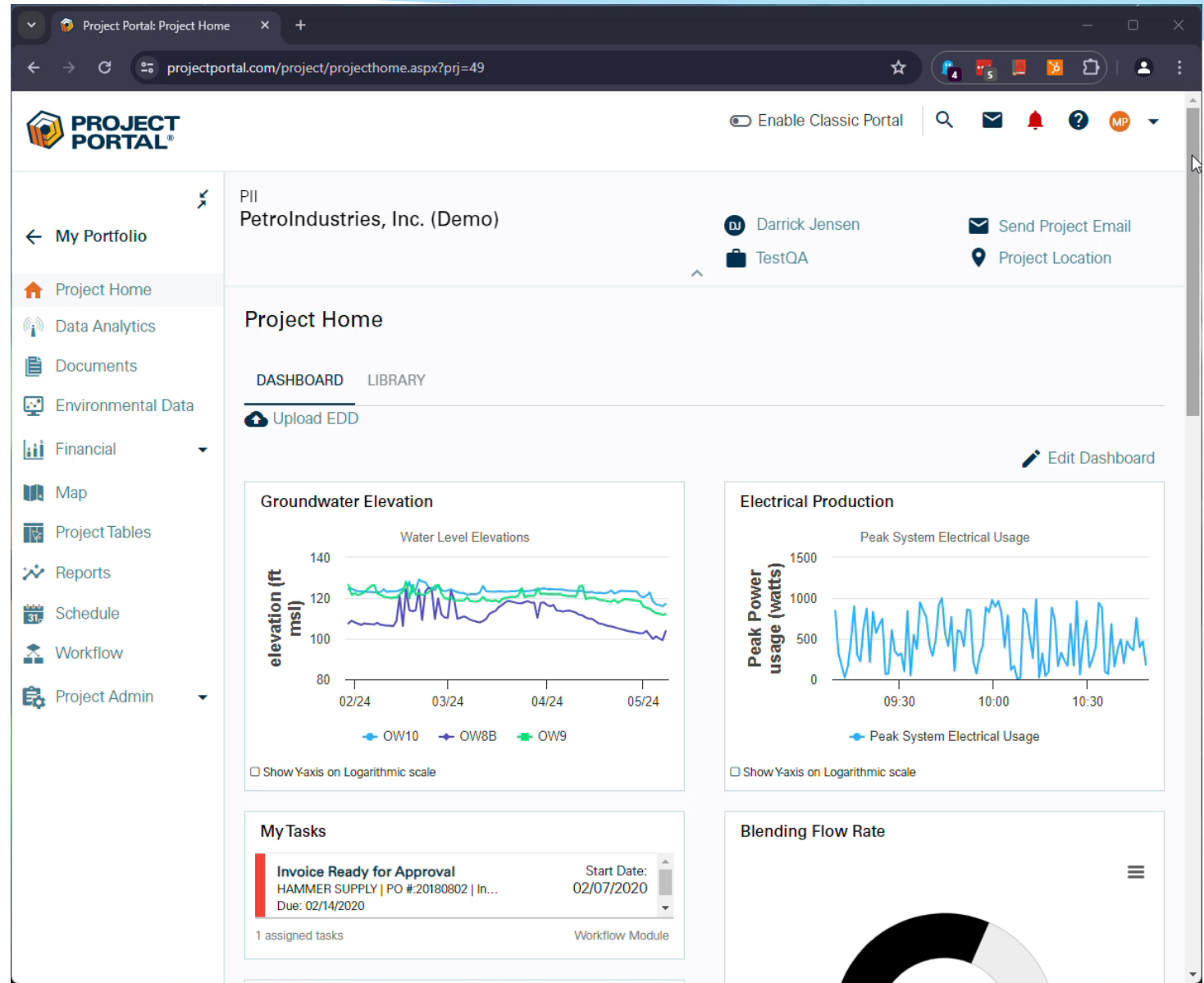
Good Options Include:





Dashboard Capabilities:

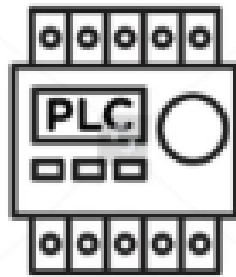
- Custom dashboard per project
- User-specific customization
- Allows for both out-of-the-box and custom widgets
- Widgets fed by both environmental measurement or high frequency data



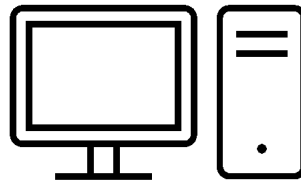
Automated Data ETL Process



Sensors



Programable
Logic
Controller

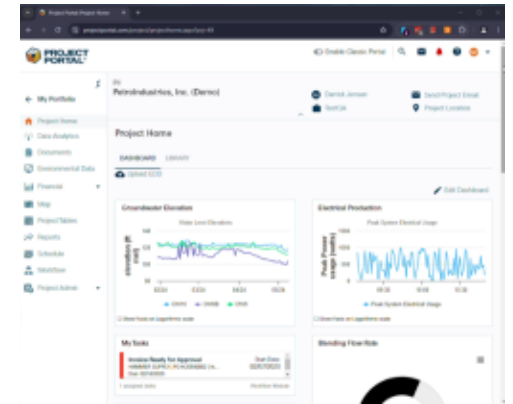


Computer w/
Internet Access



dps™

ddms ETL
middleware

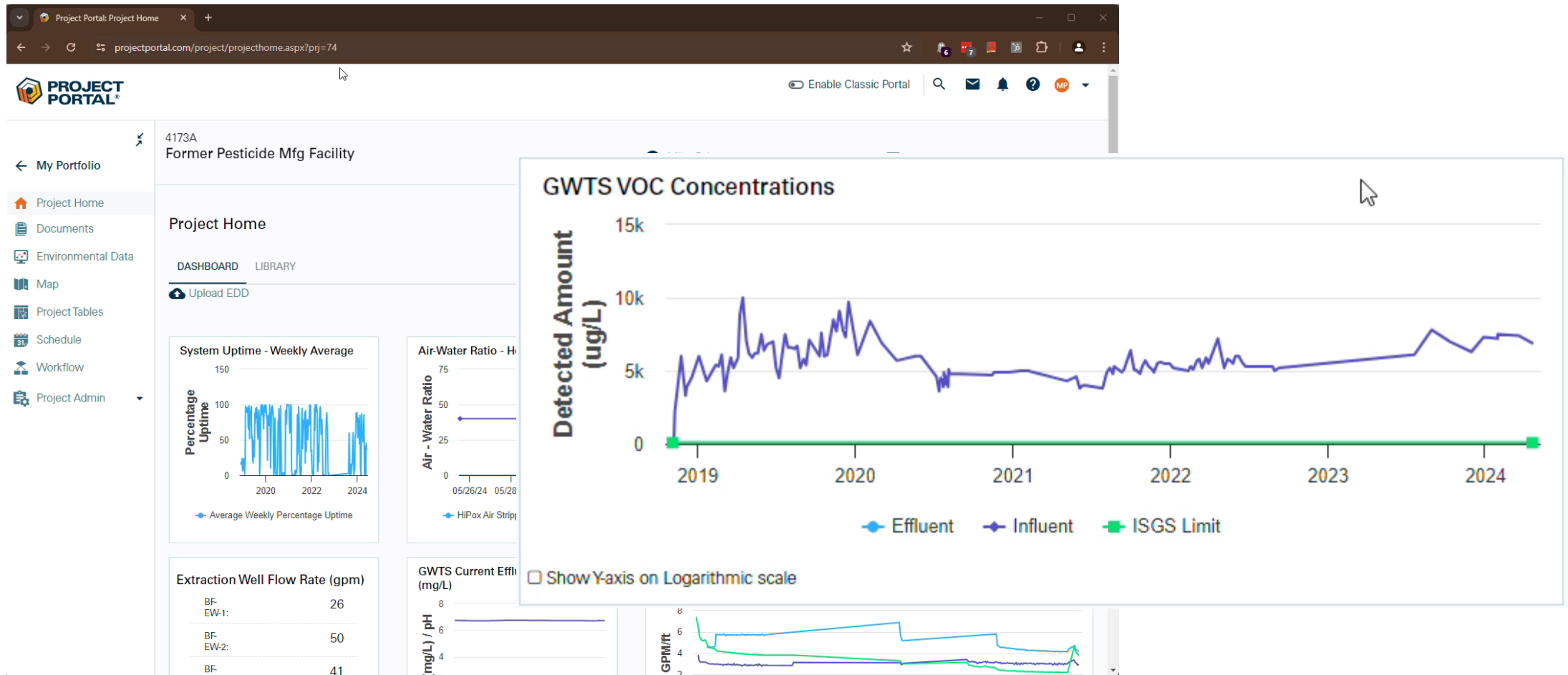


Key **GWTS** Data Points



- **Key System Parameters**
 - System Uptime
 - Air/ Water Ratio
 - Sampling Results
 - Current Effluent pH and DO (mg/L)
 - Ozone Dose (mg/L)
- **Key Well Parameters**
 - Extraction Wells
 - Cumulative Volumes (gals)
 - Flow Rate (GPM)
 - Injection Well
 - Cumulative Volumes (gal)
 - Flow Rate (GPM)
 - Head Pressure (PSI)
 - DTW (ft)
 - Specific Capacity

GWTS Dashboard Solution



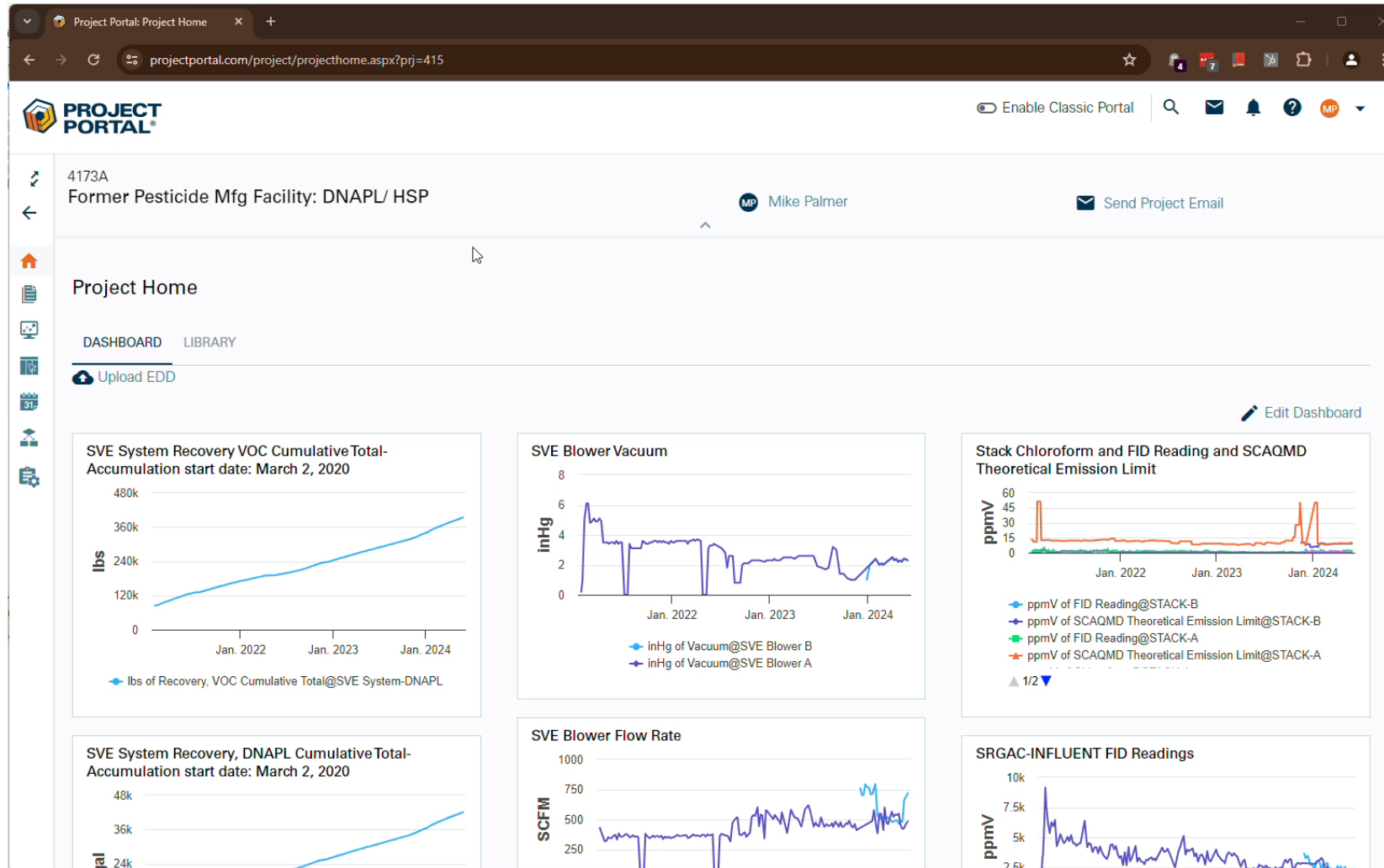
Key **SVE System** Data Points



Soil Vapor Extraction System Parameters

- System Recovery
 - VOC Average Recovery Rate
 - VOC Cumulative Total
 - DNAPL Average Recovery Rate
 - DNAPL Cumulative Total
- Other Parameters
 - Blower Vacuum and Flow Rate
 - FID Readings (UBA, PVS, SRGAC-Influent, Mid-VGAC)
 - Flow Rate (UBA, PVS)
 - Chloroform (MID-VGAC)

SVE System Dashboard Solution



System Push Notifications

 This message was sent with High Importance.

 **PROJECT PORTAL®**

Hello interested parties,

You are receiving this email because there was one or more automatically detected sampling limit exceedances in sample delivery group 440-231554-1. Please review the following exceedances.

Sample ID	Collection Date	Lab Parameter	Result	Units	Final Qualifier	Limit	Laboratory
Effluent-3671-20190125	Jan 25 2019 7:30AM	SS1	15.5	ug/l	U	10	Test America, Irvine, CA
Effluent-3671-20190125	Jan 25 2019 7:30AM	SS2	15.5	ug/l	U	10	Test America, Irvine, CA

Project Portal™ is a secure, cloud-based project collaboration framework that allows team members to share project-critical knowledge, query and analyze project data and centralize project files. Customized for use in the environmental and energy industries, Project Portal offers ready to use Document Management, Contact, Calendar, Environmental Database, Project Table, GIS and Field Data Logger Modules. Project Portal also provides a robust framework for hosting any number of process-specific custom Modules.

Project Portal is a service of de maximis Data Management Solutions, Inc.
60 Plato Boulevard East St. Paul, Minnesota 55107 USA
www.ddmsinc.com | (651) 842-4224



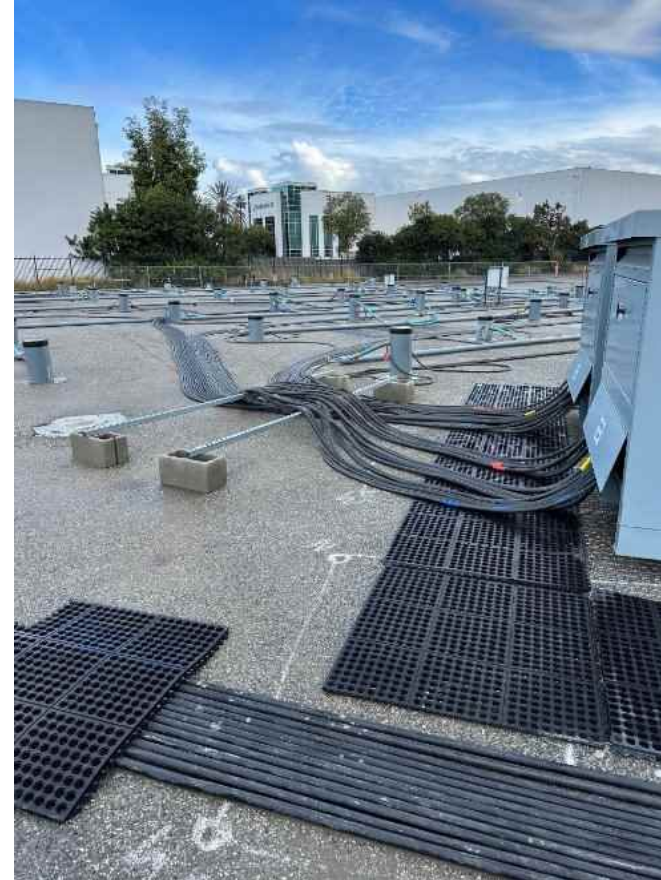
Results and Benefits

- One place to access real-time site performance parameters
- Data collected and stored in common system makes it readily available for future studies/uses
- Creates transparency and builds trust with the Regulator
- ***Provided regulator access to Project Portal resulted in the elimination of need for regulatory reporting***
- Dashboard implementation has been running for several years



Next Steps...

- Incorporate new dashboards for ERH operation and performance (e.g., temperature, KWh)
- Further optimized data upload automation AWS tools



Special Thanks to...

Project Coordinator:



- Mike Palmer, *de maximis, inc.*

Contractors:



JACOB & HEFNER
ASSOCIATES

Regulatory Personnel



- EPA and DTSC



Discussion or Questions



Mark Packard, CPG
President/ CEO

mpackard@ddmsinc.com

www.ddmsinc.com



Connect with me on LinkedIn