



**A TOOL FOR INTEGRATION,
COLLABORATION, AND KNOWLEDGE
SHARING**

A GIANT MINE CASE STUDY

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Giant Mine



- Former Gold Mine 5 km North of Yellowknife, NT, Canada
- The mine was in operation between 1948 and 2004
- Ownership of the mine transferred to the Government of Canada
- Canada's largest Mine Closure liability (> \$4 billion CAPEX to close)
- Potential for 237,000 tons of Arsenic Trioxide stored underground to leach into surrounding major freshwater systems
- Underground workings, 8 open pits, 23 Dams, Surface infrastructure, 7 tailings ponds, 3 affected Indigenous communities
- Many "Construction Work Packages" to close through to 2038.
- Very complex mine closure.

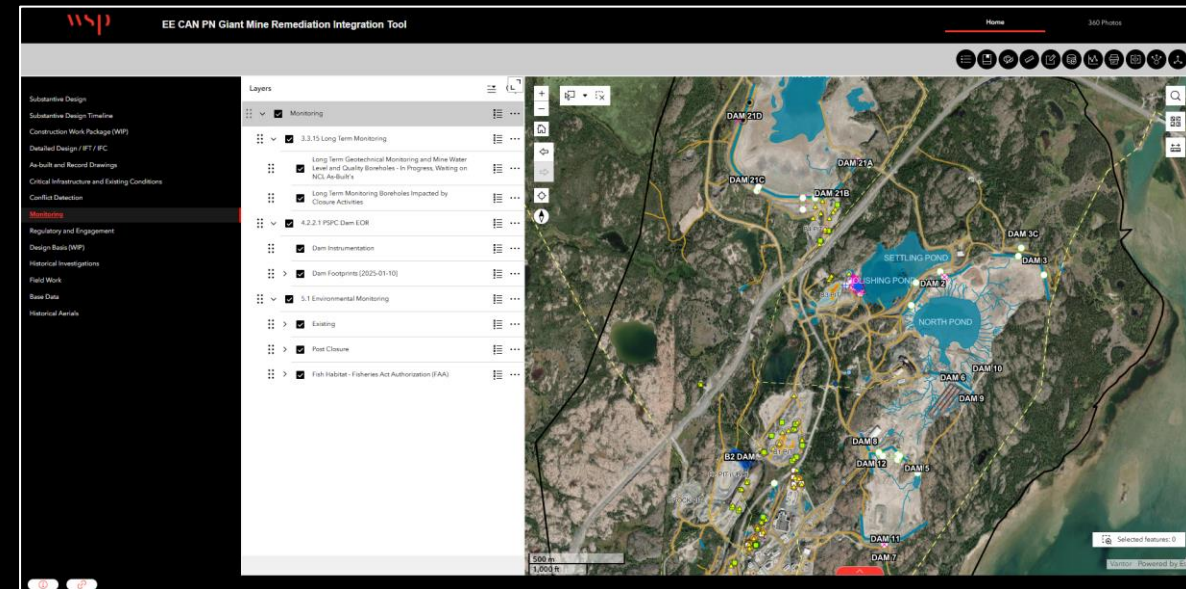
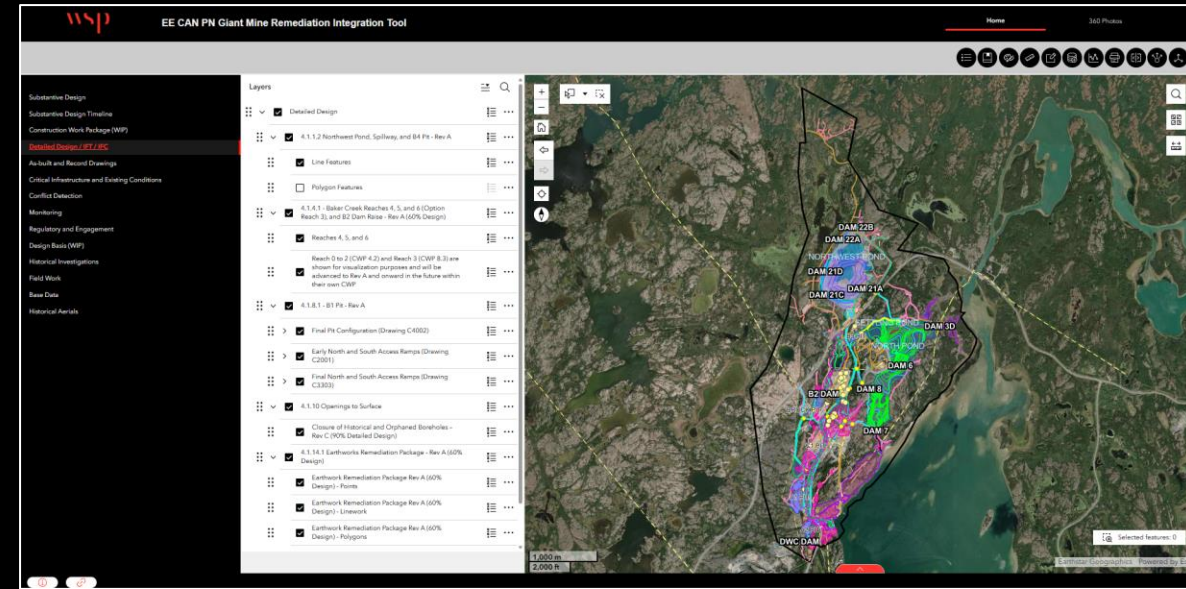


How do we manage the complexity, address potential siloing, and access accumulating data and knowledge over time?



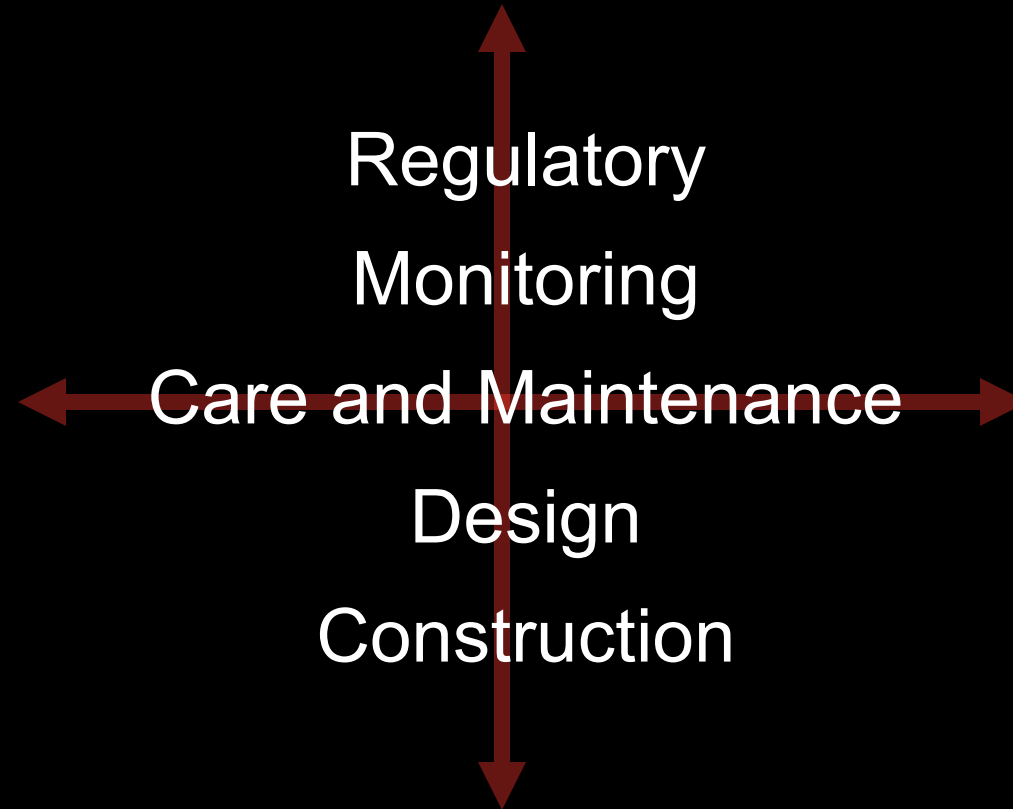
The Integration Tool

- **ESRI GIS platform** – ArcGIS Online (AGOL)
- **Scalability** – National, Region, Site, grid square.
- **Collaboration** – Access for multiple Stakeholders (government, constructor, consultants, NGOs)
- **Planning** – Construction sequence, design integration, critical infrastructure.
- **Communication** – Real time navigation through an area or point and the data and information.
- **Knowledge sharing** – Geospatial locations, associated data/reports, time step
- **Integration** – Anything spatial or tied to a spatial location can be included and accessed.
- **Engagement** – Visually communicate a concept or design. Time step is particularly powerful.
- **Efficiency gains** – Individual access to common data/knowledge, layers are turned on or off, gateway to other data sources.





Pillars





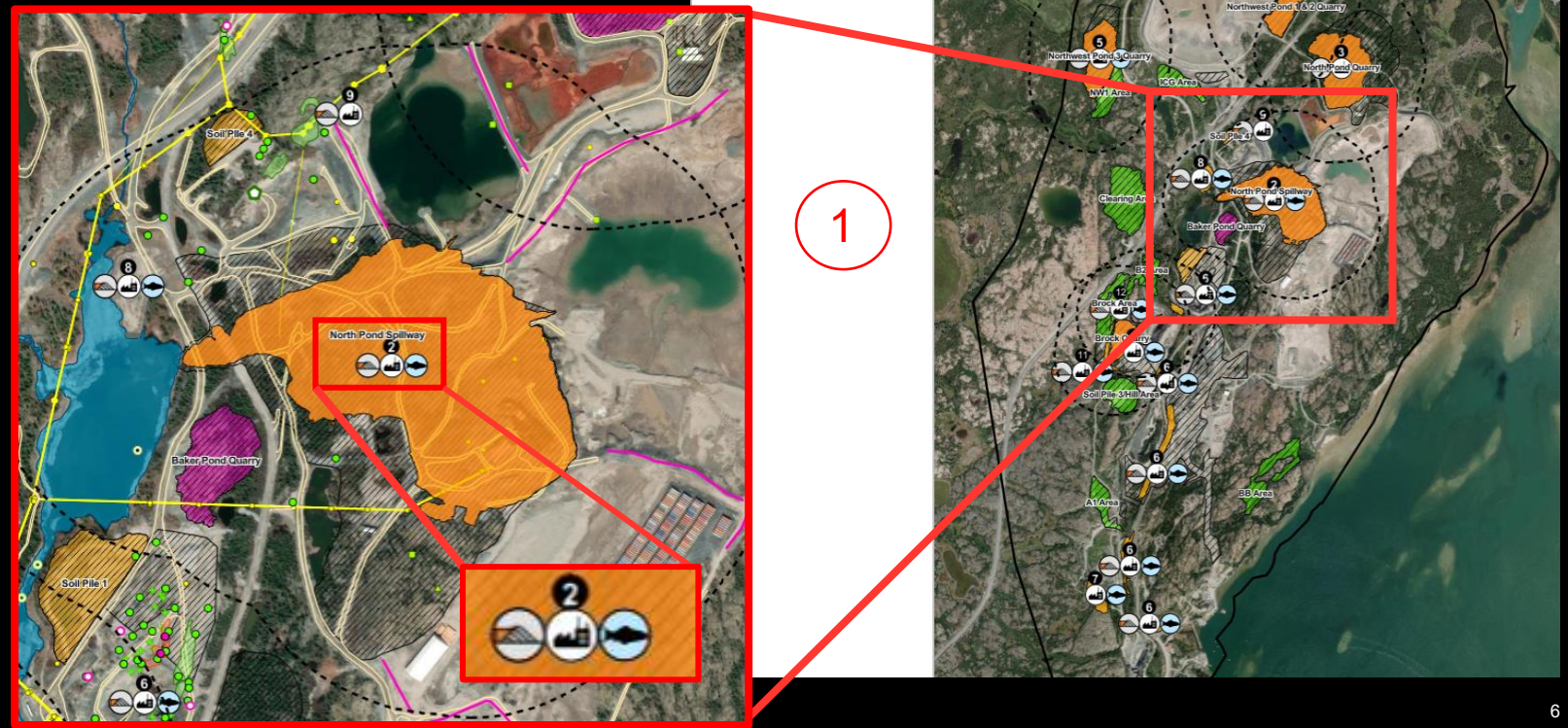
Regulatory

- Regulatory documents associated with an area, linework, or design element can be easily accessed through the tool.

The screenshot shows a software interface with a file list at the top and a table below. A red circle with the number '3' highlights a file in the list. Below the list is a table titled 'Blast Area Points [04-57-REVA]' with the following data:

Classification	Quarry
ORIG_FID	1
Source2	Site Wide Blast Assessment I:\2018\18102211\Mapping\MXD\57000B_BorrowSubstantiveDesign\04-57-2737-R-745-REVA.aprx
PSPC Link	18102211-745-R-Site Wide Blast Assessment
GlobalID	866a3d64.7bb2.4640-92b2.58c187e93727

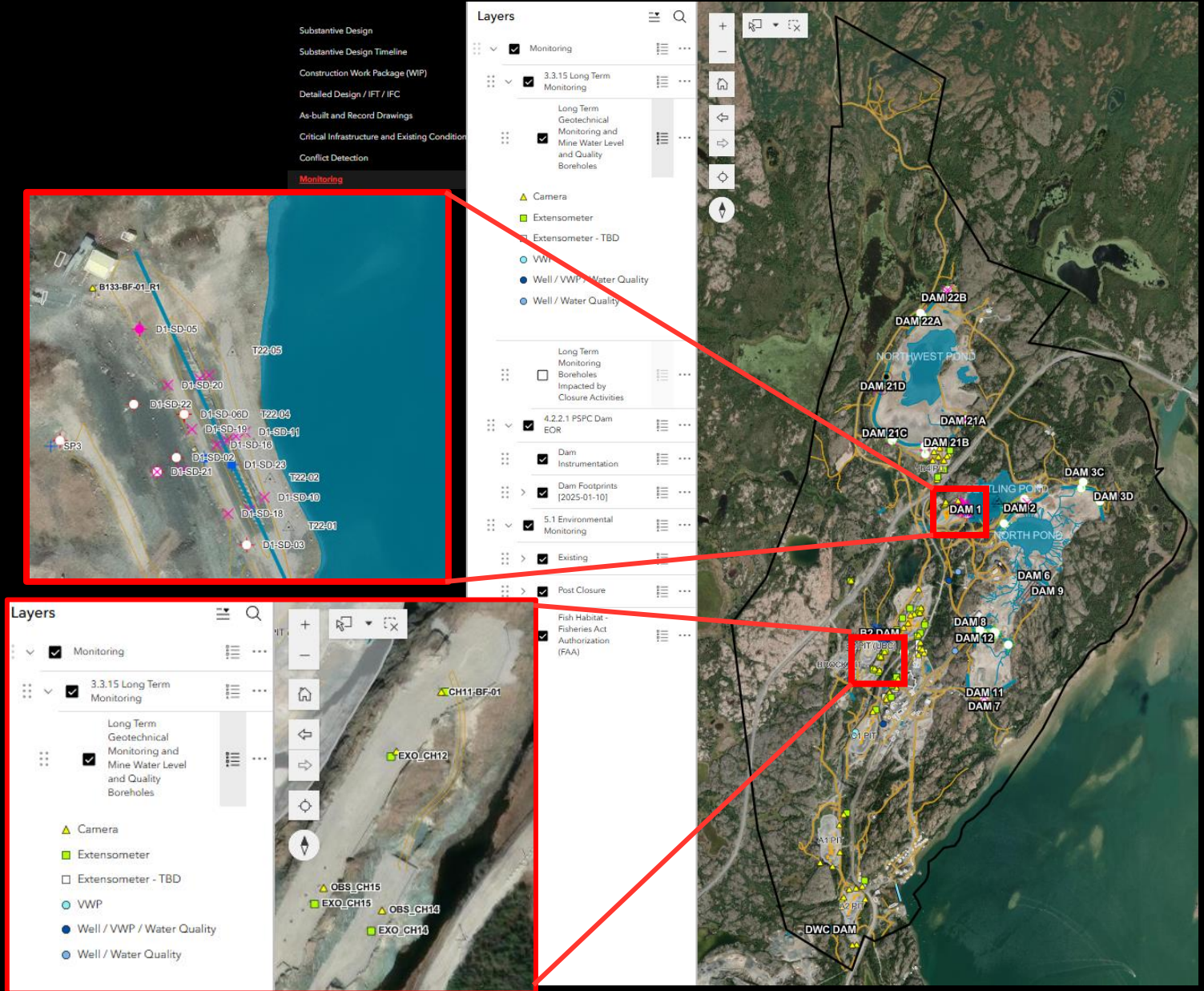
Red arrows point from the 'Source2' and 'PSPC Link' fields in the table to a map area labeled '1'.





Monitoring

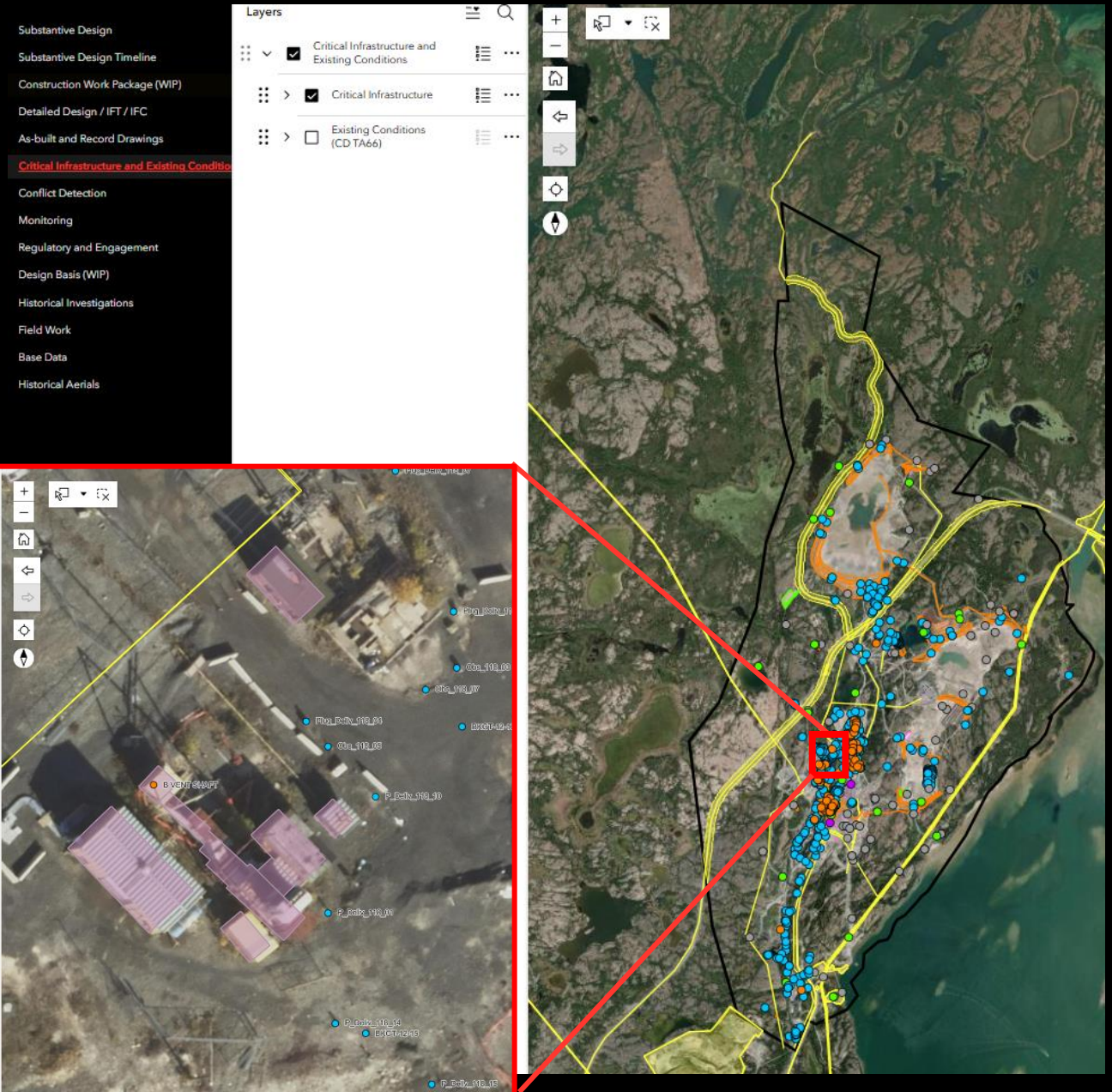
- Multidisciplinary monitoring instruments are present onsite with multiple owners and specific purposes





Care and Maintenance

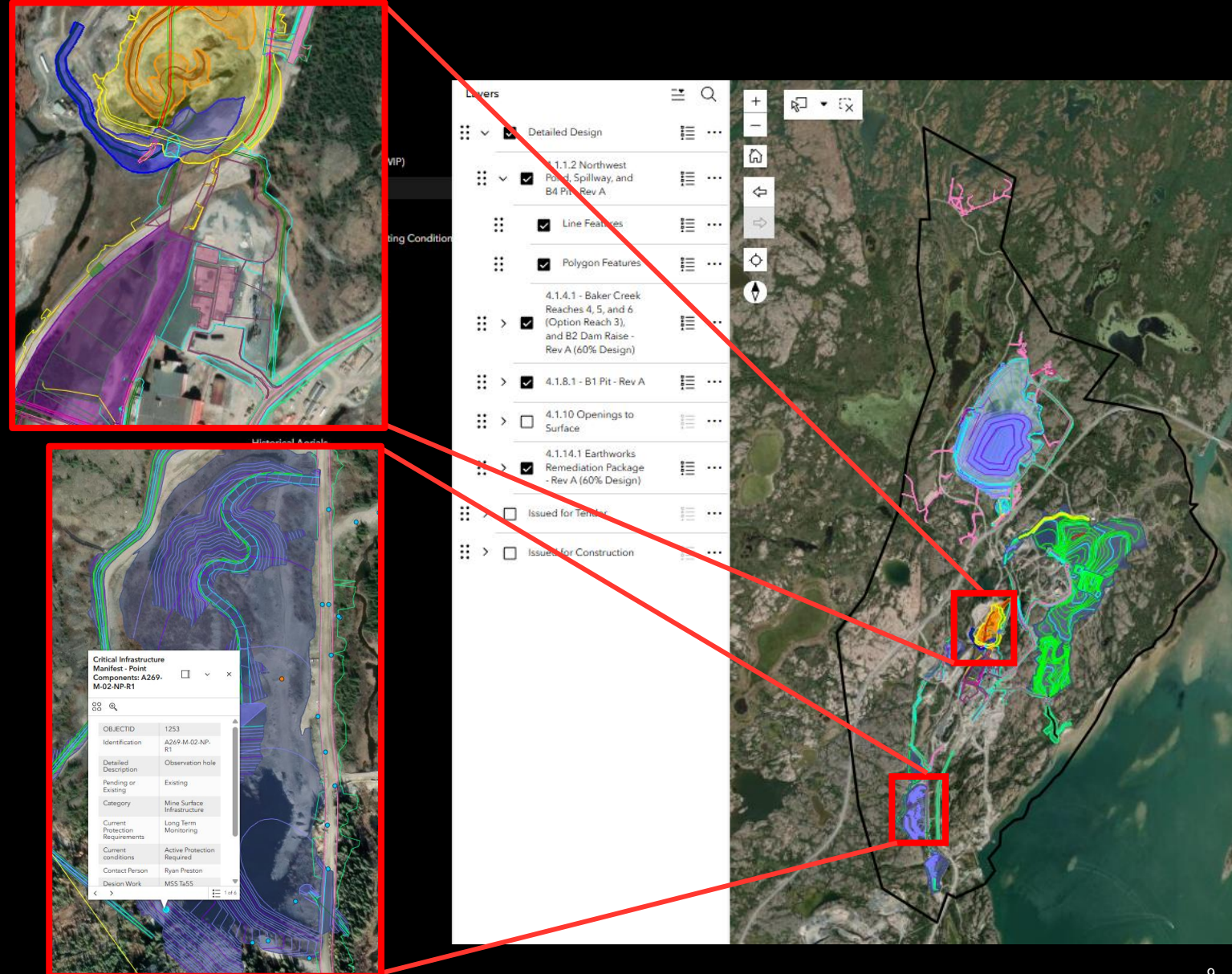
- Visual inventory of critical infrastructure and assets (including Dams)
- Link to database or document describing usage, ownership, shelf-life, data destination, protection requirements





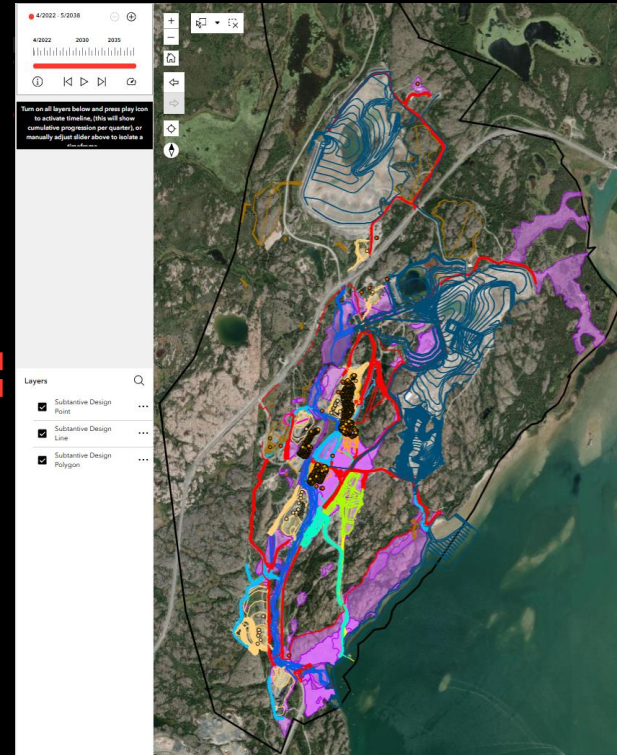
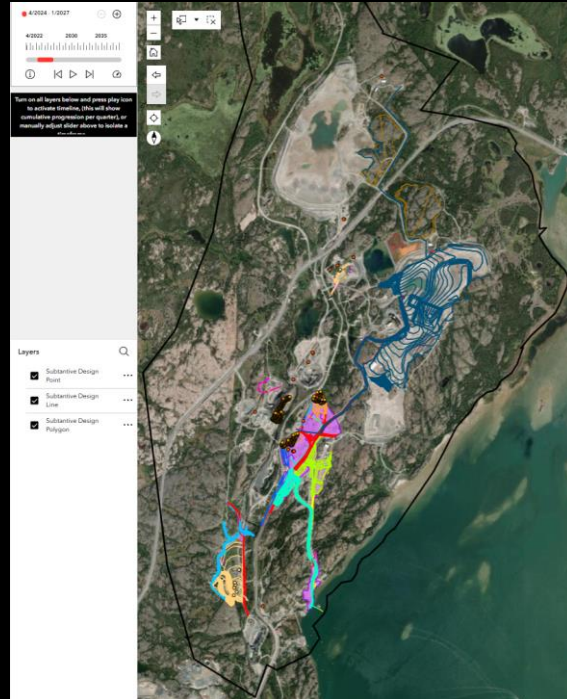
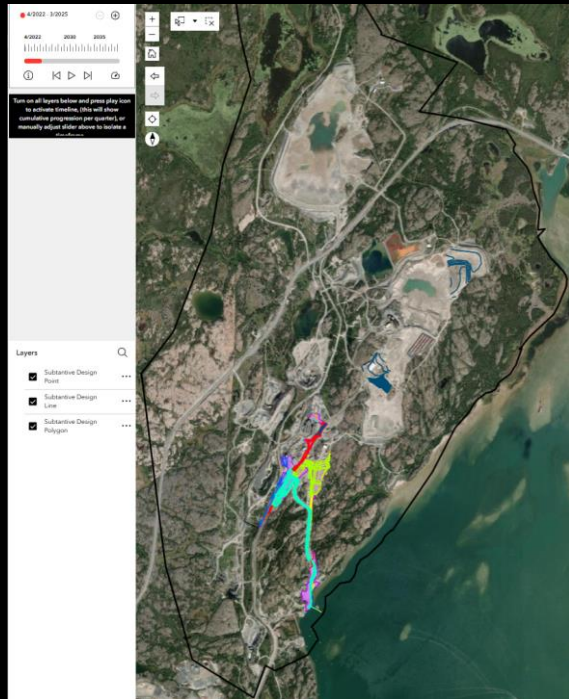
Detailed design

- Quickly identify conflicts between overlapping designs, progressing over time, independently
- Communicate complex areas when determining design battery limits.



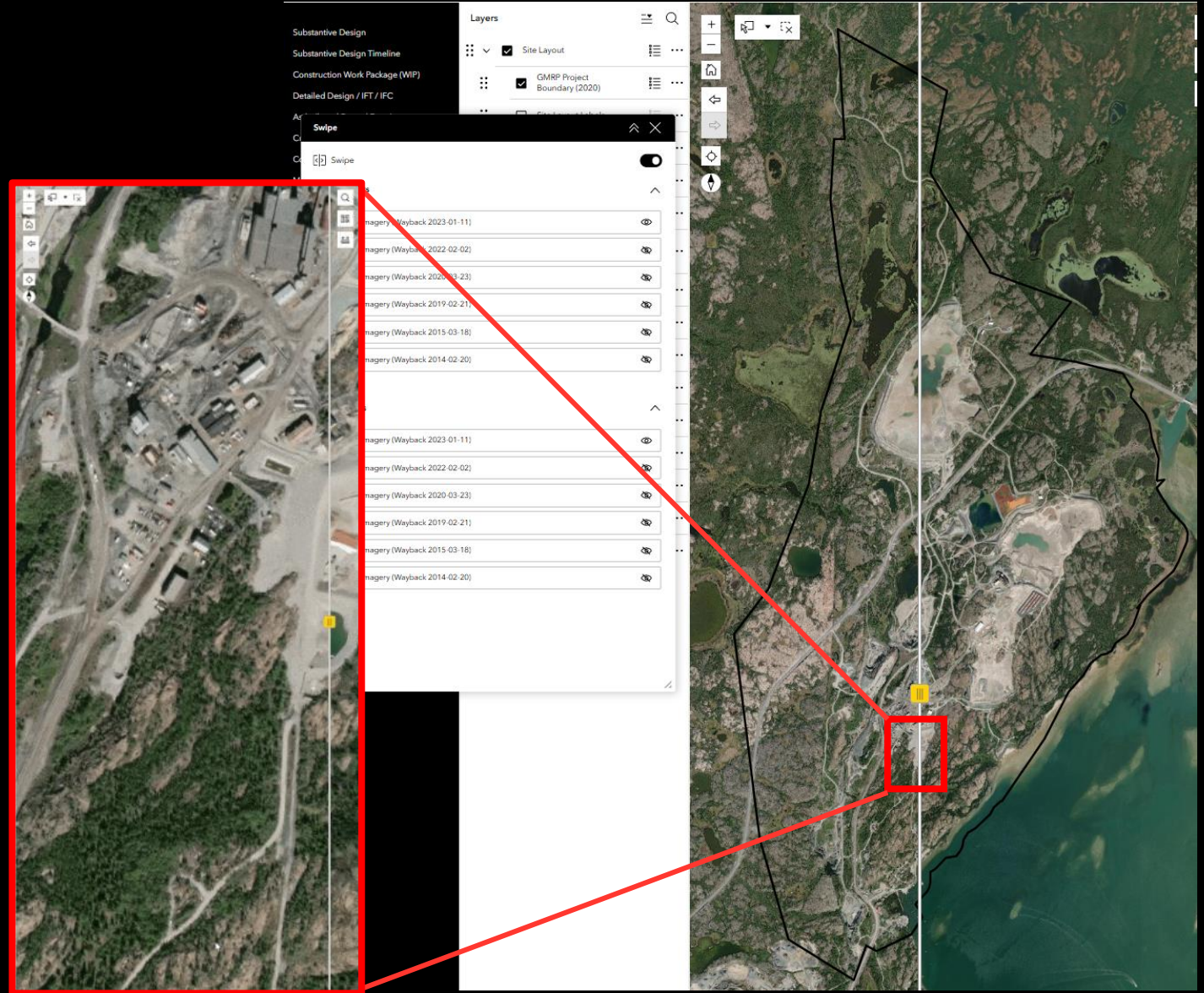


Detailed design – Time Step



Construction

- Visualization of changes at the site to assist with traffic management and hazard identification
- Construction sequence planning over time
- Zoning areas held by different contractors. Muster points, check in areas, traffic patterns



Conclusions to date

- The integration and efficiency gains are immeasurable especially for such a wide-ranging user group.
- There is one source of truth for all users.
- The capital expenditure to establish this is not as much as you would think. The cost comes with complexity, tools, curation, and maintenance. User licences are relatively inexpensive. Easily paid for, by eliminating rework.
- Engagement with stakeholders and rights holders is where this tool could be further leveraged.
- Scalability is a superpower. In the same instance of a tool, one could see all sites of interest (Global, National, Regional, etc) and zoom down to almost any level of granularity.
- The tool is the access point for important data and knowledge in any format. This will only become more useful and powerful with time and continued data/knowledge ingestion.

wsp

**THANK
YOU**

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