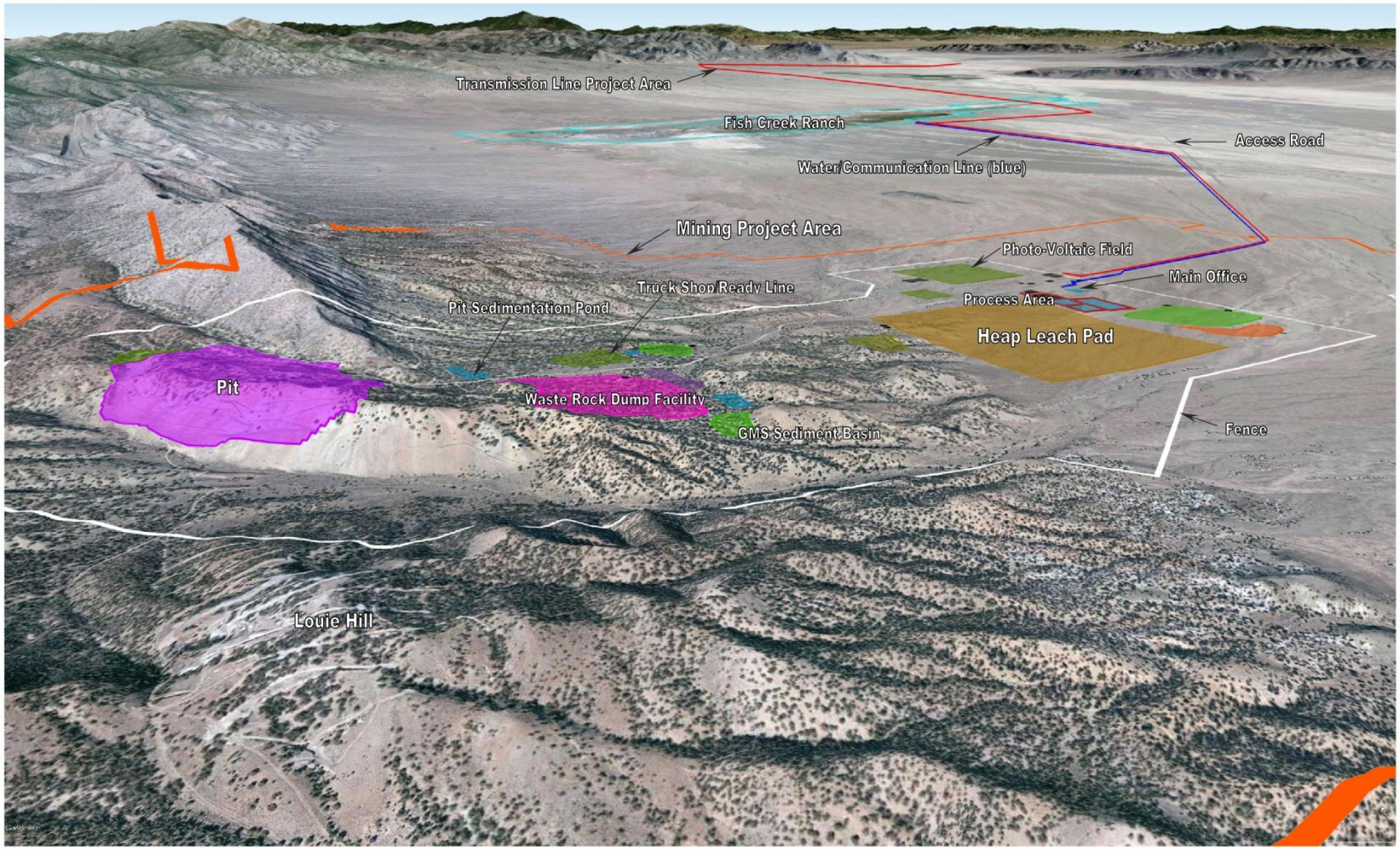
WELCOME

Public Scoping Meeting

May 14, 2013 – Eureka, Nevada



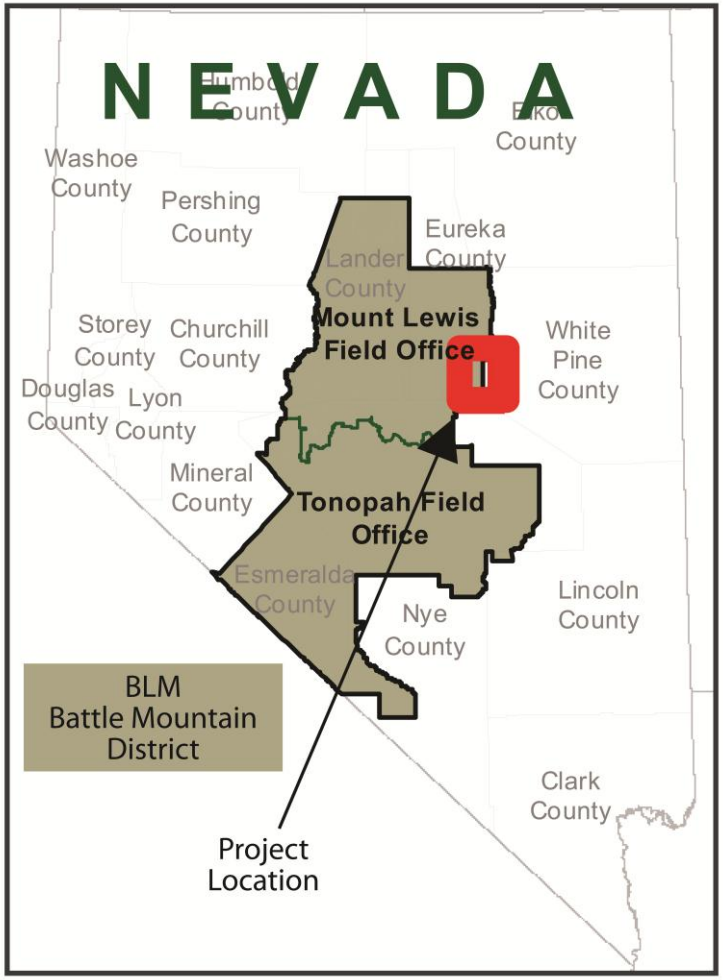
GIBELLINI MINE PROJECT

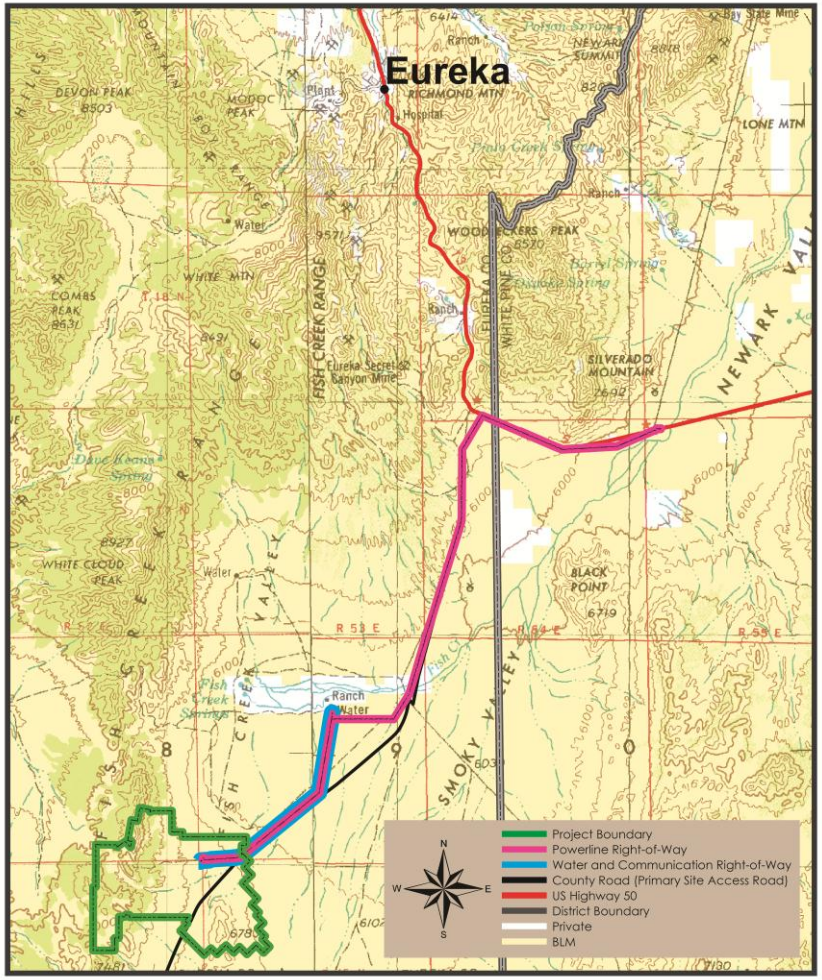
ENVIRONMENTAL IMPACT STATEMENT (EIS)

HDR

AMERICAN VANADIUM

Project Location

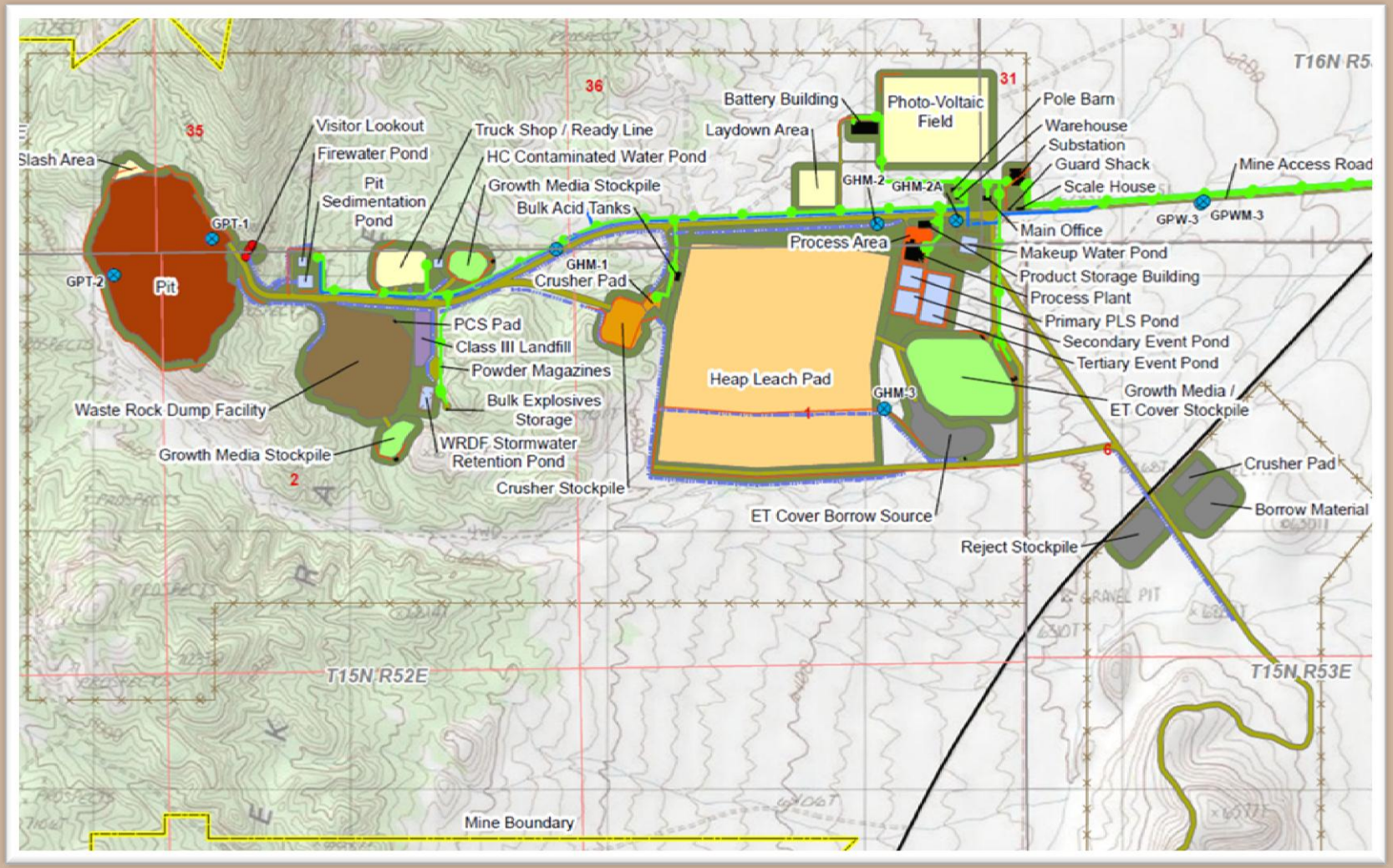




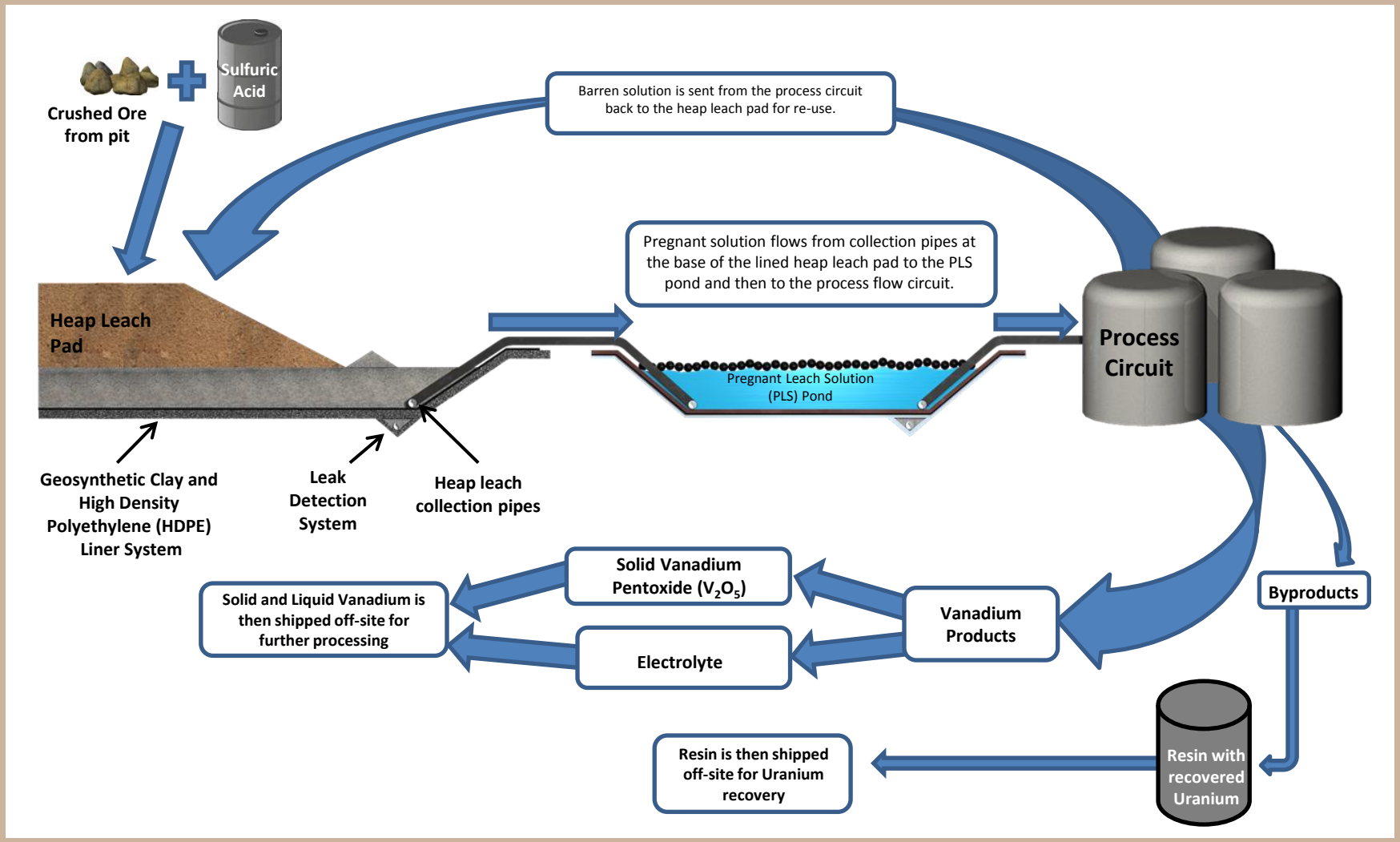
Project Overview

- The proposed project is located on land managed by the Bureau of Land Management (BLM), Battle Mountain District, Mount Lewis Field Office.
- The project proposes to construct and operate an open pit mining operation to extract and recover vanadium over a seven-year mine life.
- Components of the project include a power line, water pipeline, pit, waste rock dump facility (WRDF), mine office and facilities, crushing facilities and stockpile, heap leach pad, process facility, photo-voltaic field (solar energy), various process and make up water ponds, borrow areas, and mine and access roads.
- Approximately 3.5 million tons of ore and waste rock will be mined annually.
- Construction workforce will be approximately 160, with an operational workforce of 120.

Project Layout



Process Operation

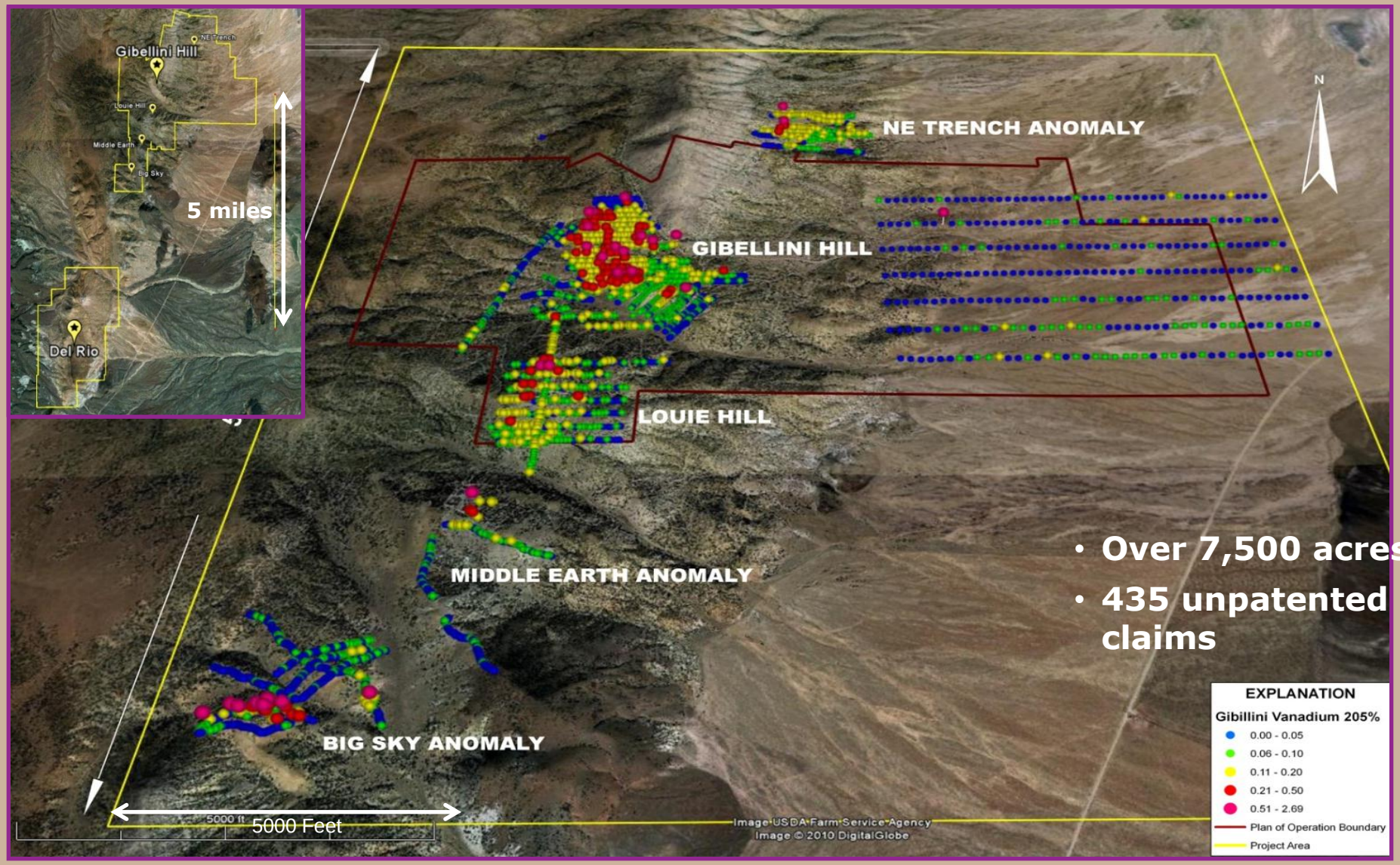


Mine Plan ore reserves

AMEC Feasibility Study Summary

Class	Tons (1,000 lbs)	V_2O_5 (%)	Cut-off Grade (V_2O_5 %)	V_2O_5 Contained (pounds)
RESOURCE **Total Measured & Indicated** (inclusive of Reserves)	**23,050**	**0.285**	**0.066 – 0.077**	**131,369,000**
Total Inferred	**14,226**	**0.172**	**0.066 - 0.088**	**48,960,000**
RESERVE **Proven and Probable**	**19,969**	**0.302**	**0.131 – 0.153**	**120,510,000**

RESOURCE EXPANSION



- Over 7,500 acres
- 435 unpatented claims

Gibellini Power and Water Requirements

Power

- Power requirements –1.6 MW average load (provided by Mt. Wheeler)
- New 69kV to Strawberry intersection at Hwy 50 (Midway and American Vanadium). 69 kV line east to Midway Pan Project and west to Gibellini Project along Hwy 50.
- New 24.9kV distribution line from Project back to Fish Creek Ranch

Water

- 667 acre feet per year (afy) 420 gpm required for the project. Diversion rate is 1.1 cfs. (less than ½ output of 1 pivot). 805 AFY leased to offset infiltration.
- Water supply is Fish Creek Springs. Flow in Fish Creek Springs measured in 1966, 2011, and 2012 range from 5.4 to 9.8 cfs with a minimum annual flow of 3,900 afy. This indicates a consistent supply over 46 years.
- Place of use would be transferred to the Project site. Fish Creek Ranch would remove an appropriate area of land from irrigation to offset the 805 afy, resulting in no impact to downstream groundwater or surface water users.
- Water line ROW would parallel power line between project site and Fish Creek Ranch.

Material transportation

Large Quantity Deliveries to the Site-

- Sulfuric Acid- 8 to 9 trucks per day, 7 days per week (288 tons/day)
- Diesel- 1 to 2 trucks per week (10,500 gallons/week)

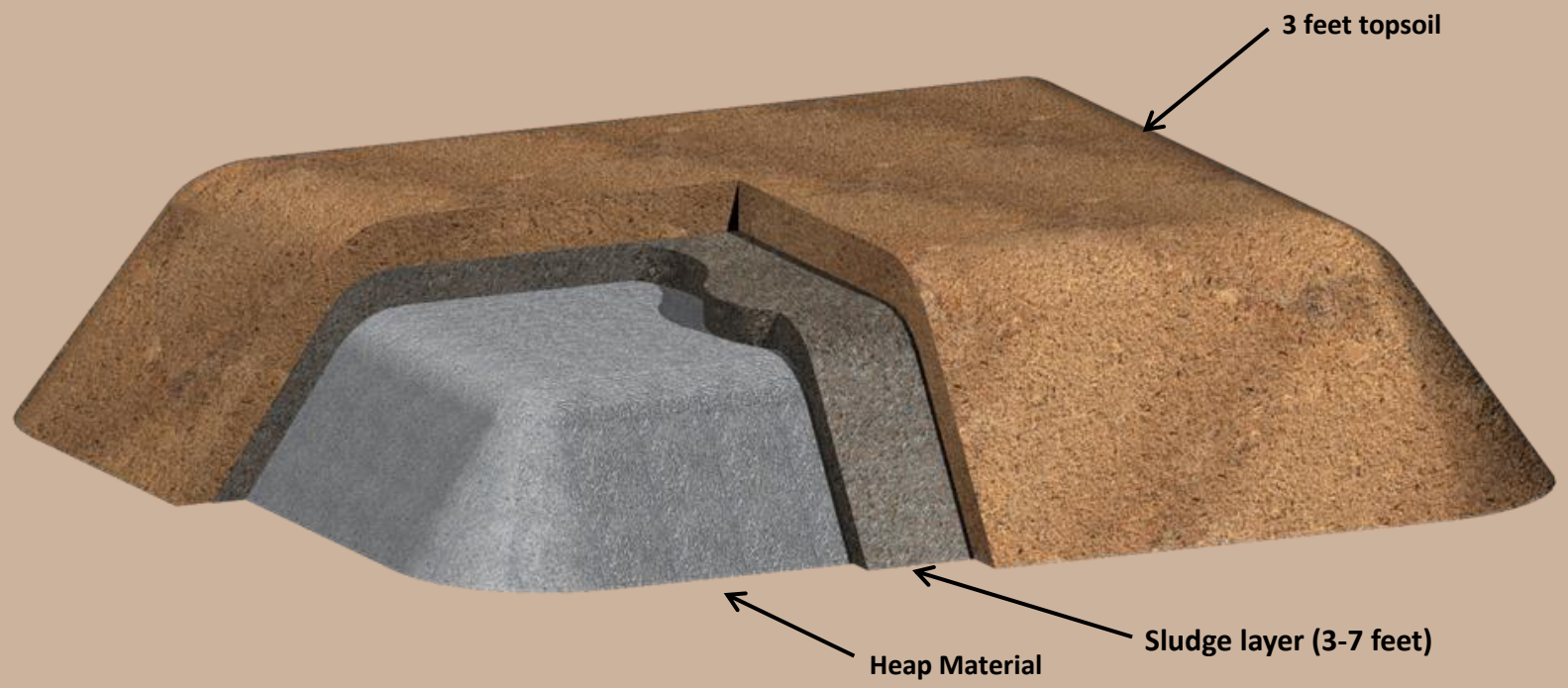
Shipments from the Site-

- Vanadium Electrolyte-Up to 15 trucks per day (60,000 gallons/day)
- Solid Vanadium Pentoxide- 1 truck per day average (29 tons/day)
- Uranium-loaded resin for off-site recycling-1 truck per week average

Uranium Removal from Product Stream

- Uranium removal system to be licensed by Nevada Department of Health Radiation Control Program. License requirements will include:
  - Area monitoring
  - Worker protection
  - Decommissioning requirements
- Process similar to that used at water treatment plants and other mines.
- Limited quantities of uranium in loaded resin on site at any one time.
- Material is transported in solid form with minimal spill risk and is subject to DOT regulations
- Shipment of loaded resins is anticipated to occur once per week.

Heap Closure: Neutralization Alternative



Phase I: Rinsing and Neutralization

- 2,500 gallons per minute (gpm) for 2.3 years
- Liquid neutralization with lime
- Sludge thickening and filtration
- Sludge disposal on heap leach pad

Phase II: Inventory Reduction Phase

- Reduce flow from 2,500 gpm to < 10 gpm
- 2 Years
- Standard evaporators

Phase III: Passive Evaporation

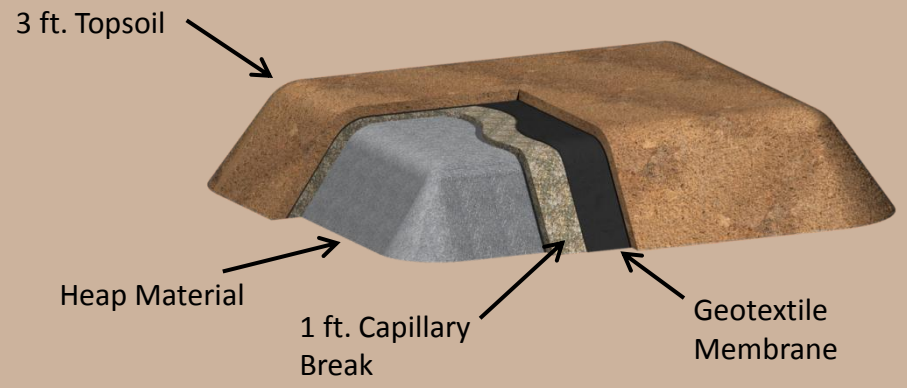
- Passive Evaporation of Remaining Solution Inventory
- Reclamation of Evaporation Cell surface when flow of fluids approaches zero gpm

Heap Closure: No Neutralization Alternatives

No HDPE Liner

Heap material would be constructed at a 3:1 slope and would be covered by:

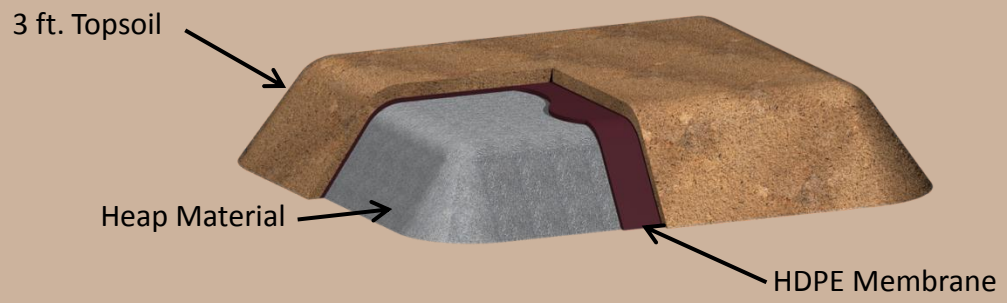
- 1 foot of coarse rock capillary break
- Thin layer of filter material (Geotextile membrane)
- 3 feet of topsoil



Complete HDPE Liner

Heap material would be constructed at a 3:1 slope and would be covered by:

- HDPE membrane
- 3 feet of topsoil



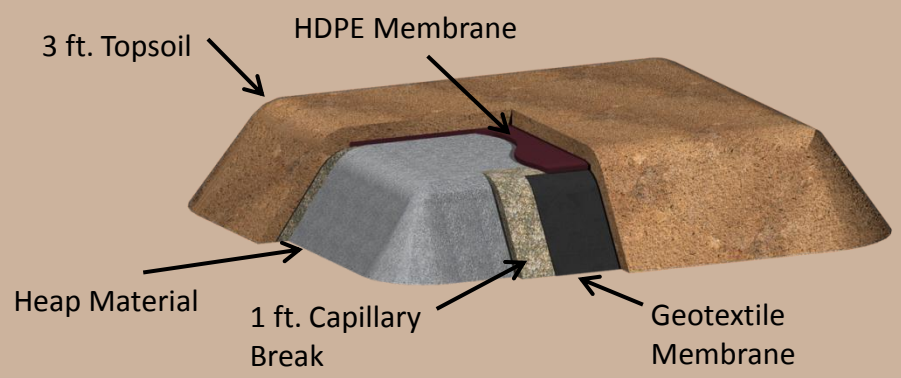
Hybrid HDPE Liner

Heap material would be constructed at a 3:1 slope.
The **top** of the heap material would be covered by:

- HDPE membrane
- 3 feet of topsoil

The **sides** of the heap material would be covered by:

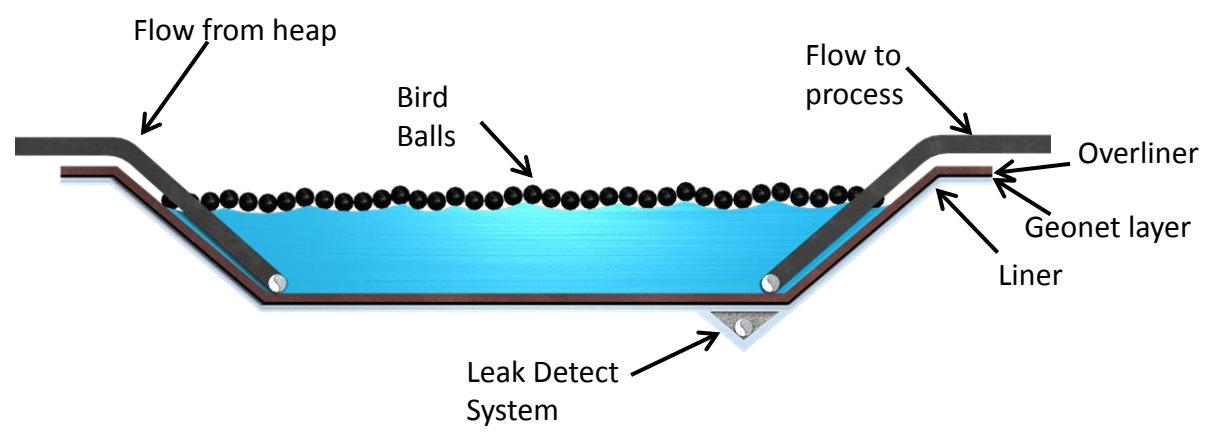
- 1 foot of coarse rock capillary break
- Thin layer of filter material (geotextile membrane)
- 3 feet of topsoil



Fluid Management

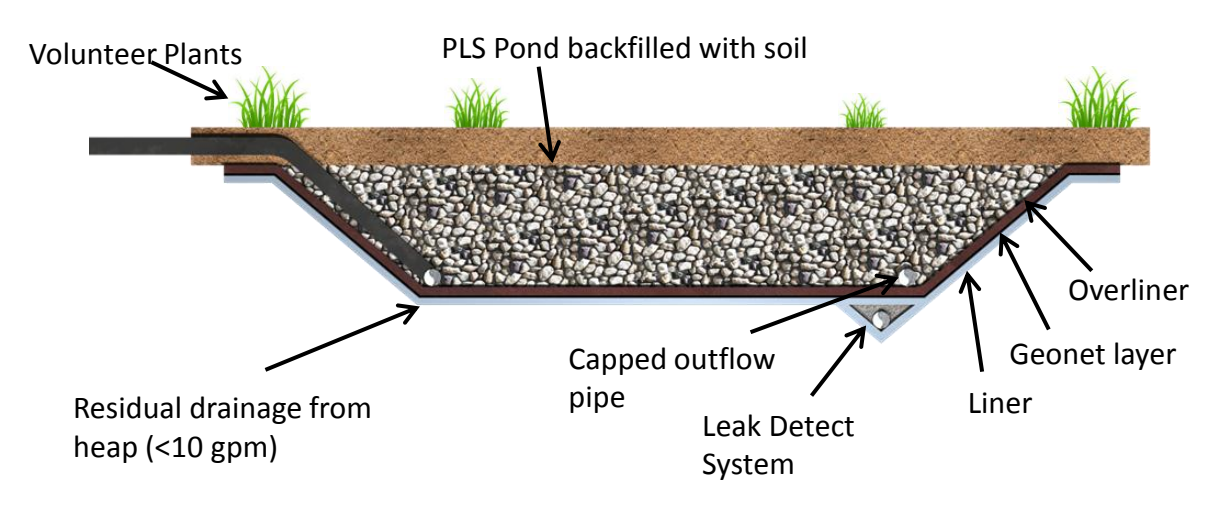
Operational Phase of PLS Pond:

- Pond double-lined with HDPE with an intermediate geonet layer
- Leak detect systems
- Bird balls for wildlife protection

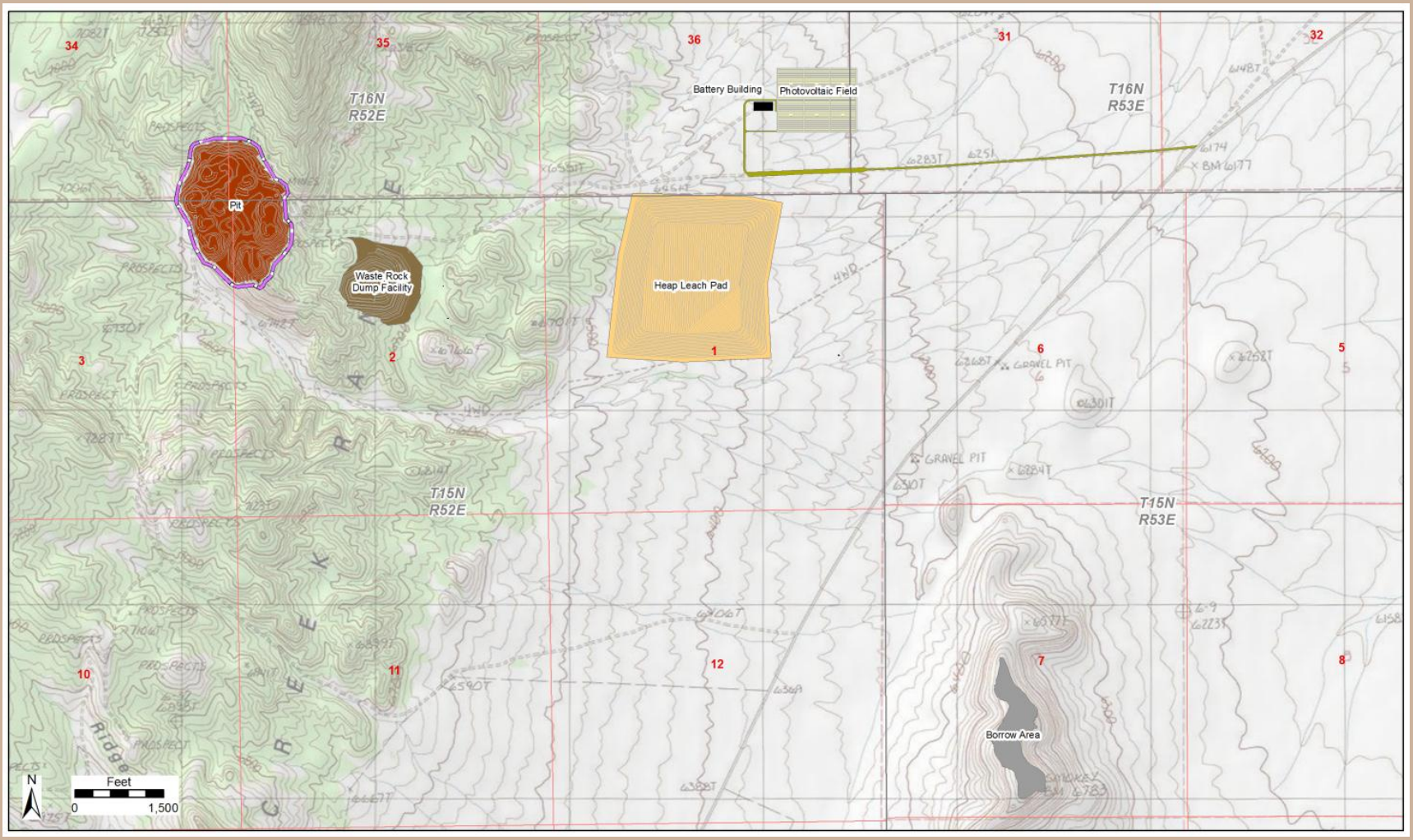


Closure of PLS Pond:

- Pond backfilled with soil
- Pond will function as an evaporation cell



Project Post Closure



NEPA Process Timeline

Estimated Timeline for the
GIBELLINI MINE PROJECT

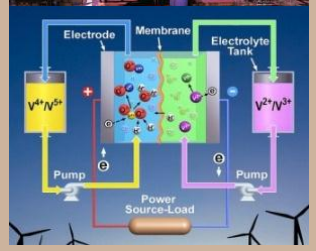
2nd Quarter 2013	Proponent Submits Plan of Operations
	Federal Register: Notice of Intent to Prepare Environmental Impact Statement (EIS)
	Public Scoping Period & Scoping Meetings
	Compile & Review Existing Data
	Prepare Project Description & Identify Project Alternatives
	Describe Affected Environment Analyze Impacts Identify Mitigation
	Prepare Draft EIS
1st Quarter 2014	***Federal Register***: Notice of Availability of Draft EIS
	45-Day Public Review & Comment Period with Public Meetings
	Respond to Public Comments & Prepare Final EIS
	Proponent Submits Plan of Operations
3rd Quarter 2014	***Federal Register***: Notice of Availability of Final EIS
	30-Day Availability Period
	Issue Record of Decision

Key Points for Public Participation

Environmental Studies

- Water Resources
- Wetlands/Riparian
- Vegetation Resources
- Wildlife Resources
- Special Status Species
- Air Quality (including Climate Change)
- Cultural Resources
- Native American Concerns
- Land Use and Access
- Soils
- Social and Economics
- Geology, Minerals and Paleontology
- Noise Analysis
- Visual Resources
- Hazardous Materials
- Environmental Justice
- Range Resources
- Recreation/Wilderness
- Transportation/Traffic
- Cumulative Effects
- Mitigation Measures

Vanadium: The Critical Element



Steel

- Rebar & structured beams required to meet building codes
- Required for high speed tools and surgical steels

Aerospace and defense industry

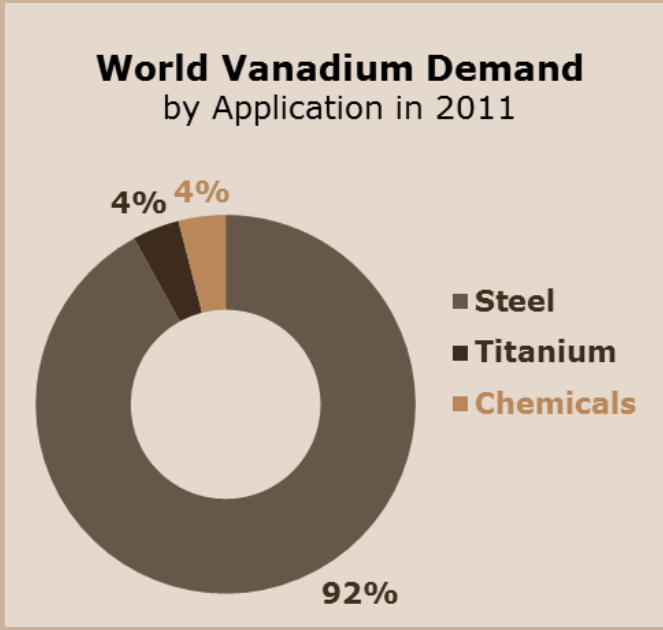
- Titanium vanadium alloys required for aircraft, missiles, personnel transports, etc.

Chemicals & Pollution Control

- Required in production of synthetic rubber, polyester, fiberglass, sulfuric acid, etc.
- Critical component of catalytic converters to remove sulfur dioxide and other pollutants

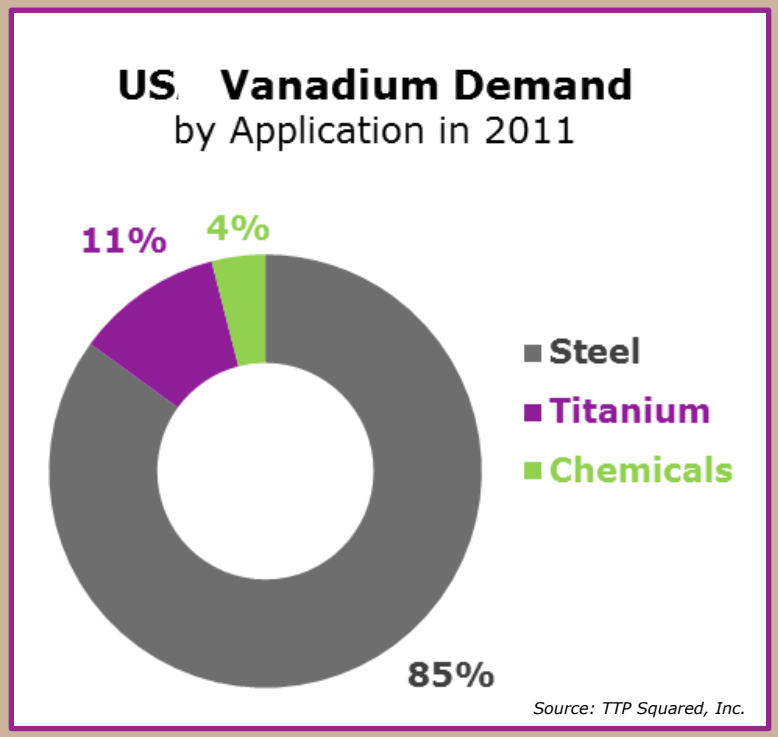
Energy Storage

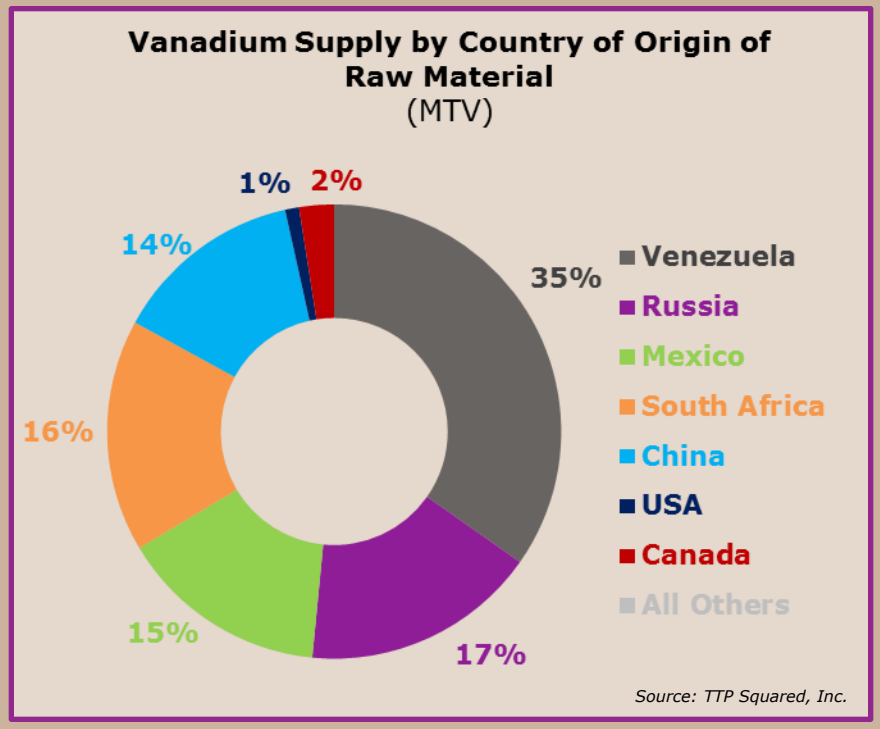
- The grid scale Vanadium Flow Battery
- Lithium Vanadium Batteries for electric vehicles



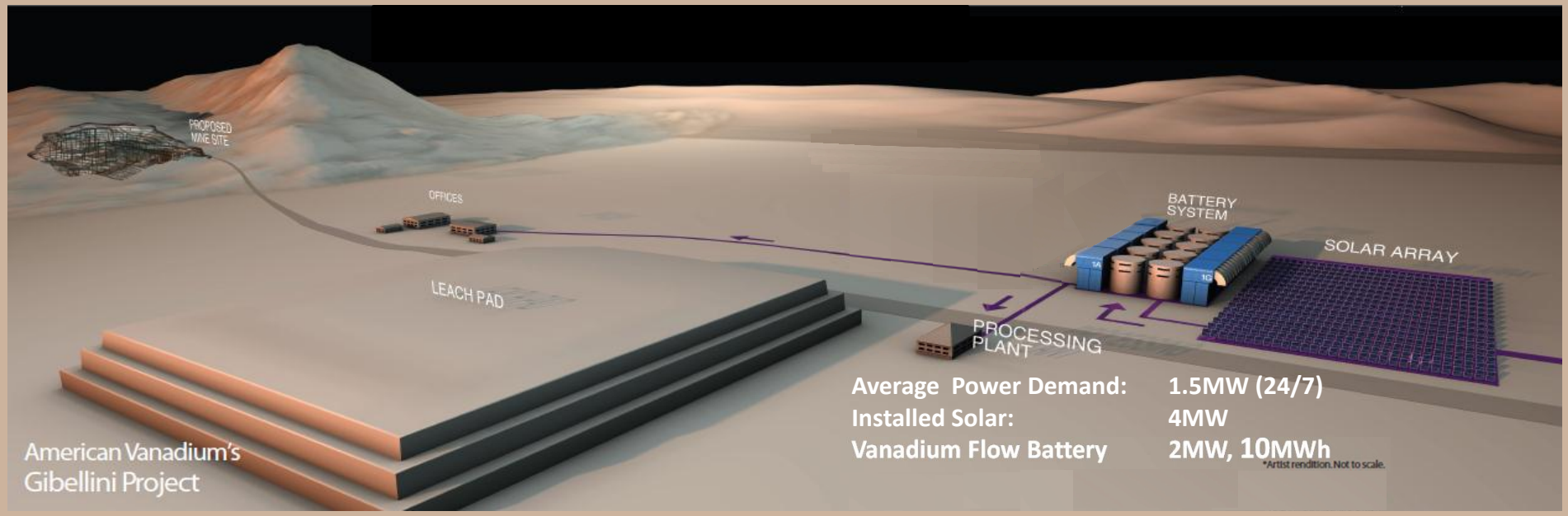
Vanadium Supply in the US

- US imports 100% of its vanadium
- Over 80% comes from countries with geopolitical risk
- US imports 100% for titanium alloys





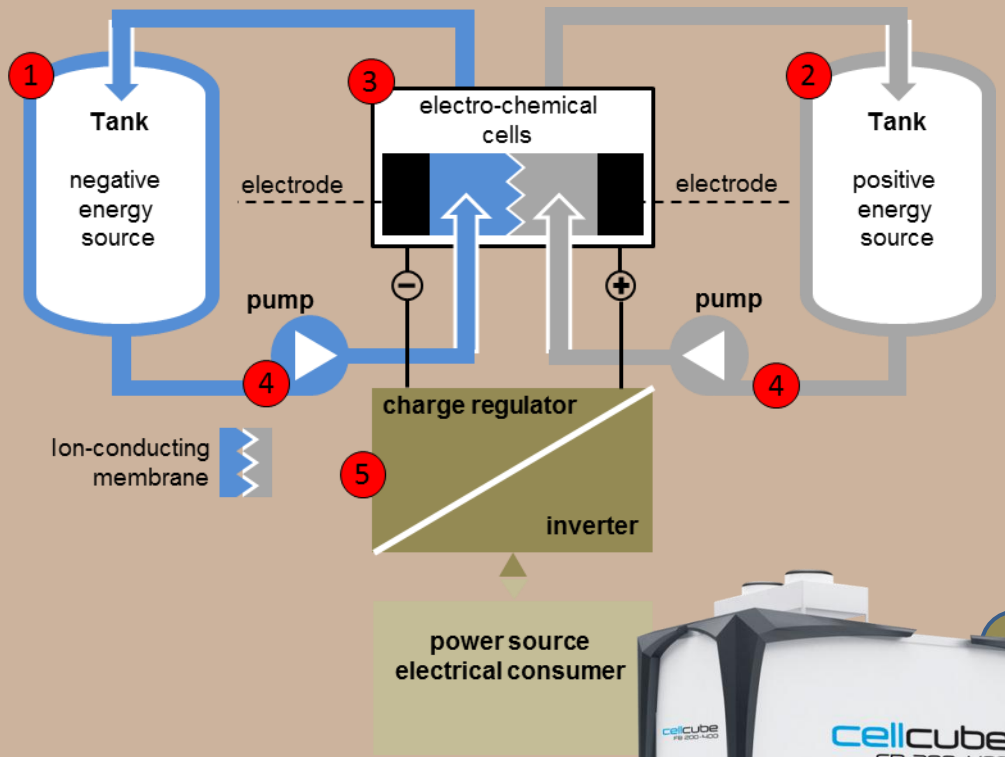
Proposed Gibellini Microgrid – "From Mine to Megawatts"

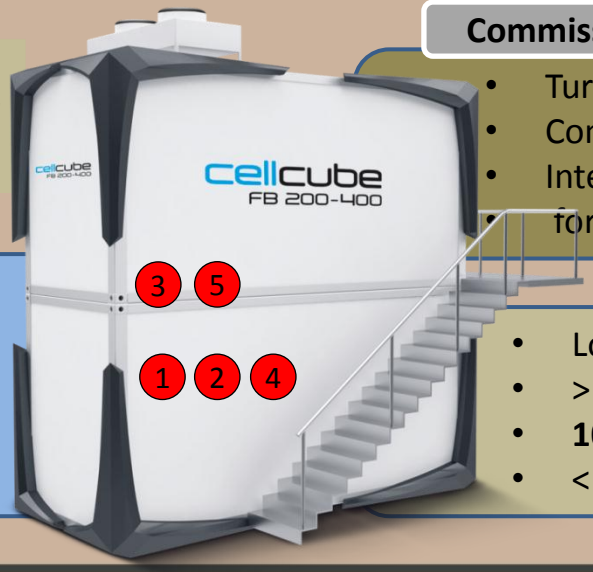


September 2011 (AMEC)	
Internal Rate of Return (IRR)	**43%**
Net Present Value	**$170 million (7% discount)**
Payback	**2.4 years**
Average Grade	0.302% V_2O_5
Strip Ratio (waste : ore)	0.22 to 1
Average V_2O_5 recovery	65.9%
Average Annual Production	11.4 million lbs V_2O_5
Operating Cost	$4.10 / lb V_2O_5
Capital Cost	$95.5 million
Average V_2O_5 Selling Price	$10.95 / lb*
V_2O_5 Selling Price Range	$7.68 - $13.63 / lb*

Eureka County, Nevada
100% controlled
Only advanced vanadium project in US
Permitting & detailed engineering underway
2 MW Vanadium Flow Battery-Post closure generation
Open pit, heap leach operation

World's Only Commercially Available VFB





Commissioning

- Turn – key solution
- Commissioning within **7 days**
- Integrated in standard CTU –> Ocean freight
- for **all climate conditions** and global use

Main Components

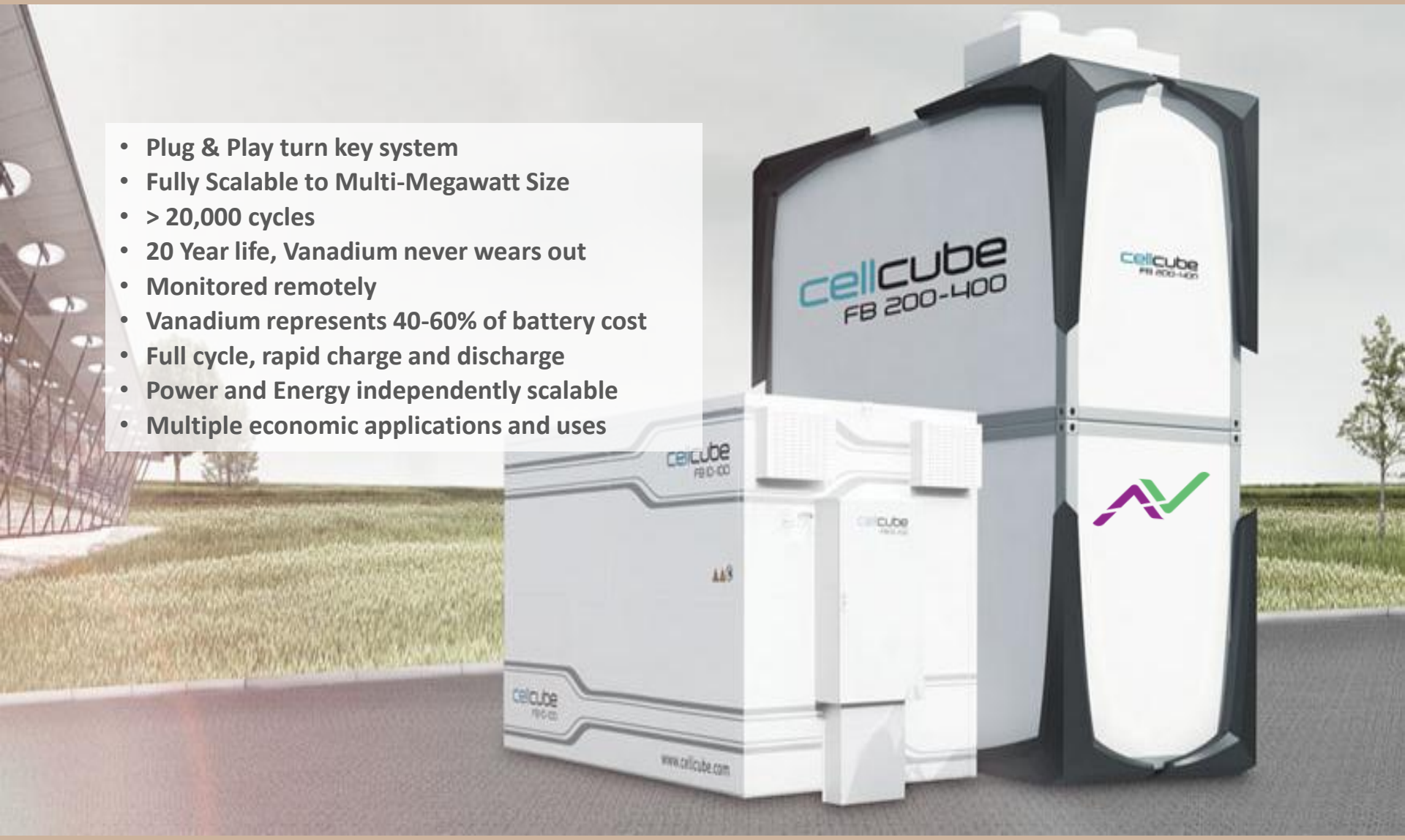
1 Negative storage tank
2 Positive storage tank
3 80 Stacks (energy conversion)
4 Fluid pumps
5 Charge regulators (Dc-links)

Outstanding Features

- Low noise
- > 2**0.000 cycles** (20 years lifetime)
- **100% discharge-able**
- < 1% self-discharge / year (cold-standby)

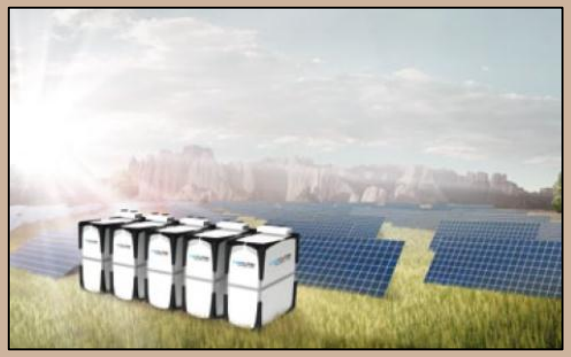
Only Complete Energy Storage System

- Plug & Play turn key system
- Fully Scalable to Multi-Megawatt Size
- > 20,000 cycles
- 20 Year life, Vanadium never wears out
- Monitored remotely
- Vanadium represents 40-60% of battery cost
- Full cycle, rapid charge and discharge
- Power and Energy independently scalable
- Multiple economic applications and uses



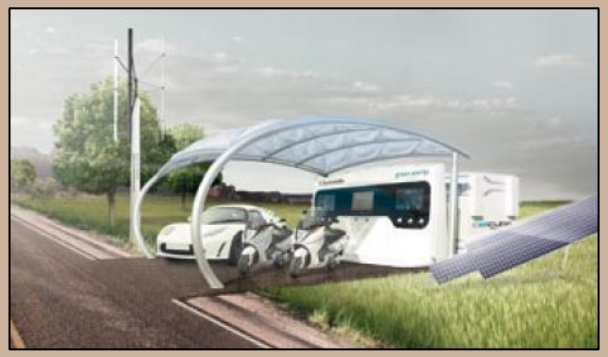
Economic Applications

Power solution



Off-grid solution

E-mobility solution



Back-up solution

IT/Communication solution

Industrial solution

How to Provide Comments

Submit written comments ***by May 29, 2013***:

Mail: Bureau of Land Management
Mount Lewis Field Office
Attention Gloria Tibbetts, NVN-088878
50 Bastian Road
Battle Mountain, NV 89820

Email: *BLM_NV_BMDO_GibelliniProject@blm.gov*

Fax: (775) 635-4035

For more information, please contact

Gloria Tibbetts, BLM Project Manager

Email: gtibbetts@blm.gov

Phone: (775) 635-4060