SANDHARVESTING
RARE EARTHS
GREAT SACANDAGA ENERGY METALS

SandHarvesting Rare Earths in America

Great Sacandaga Energy Metals, Inc.

SandharvestingRareEarths.com

INTRODUCTION

This is one of the most important mineralogical prospects of the last several decades in America – the discovery of a very rare ultrapotassic igneous rock range in Upstate New York, a remnant of the billion year old Grenville Orogeny!

This endeavor, when all five phases are realized, is the next 100 years of Industry for Upstate New York! It will create tens of thousands of good paying jobs and tens of Trillions of dollars to local and state coffers. Perhaps more importantly, GSEM will establish a critical minerals supply chain in the United States, which will help us become non-reliant on imported elements essential for our national defense, zero carbon emissions and high-tech future!

Great Sacandaga Energy Metals, Inc. (GSEM) and its founder, Arthur Michael Ambrosino, have been the earliest and most vocal proponents of sandharvesting heavy mineral sands here in the United States. Sandharvesting, as opposed to hardrock mining, moves ten times the material at 1/10th of the cost. In fact, though the heavy mineral grades are much lower than in hardrock, it's far cheaper and more cost effective than hardrock mining and far more environmentally friendly. Presently, the United States has only two heavy mineral sandharvesting operations: one in Florida and one in South Georgia, both owned and operated by Chemours, an offshoot of DuPont.

PROJECT DESCRIPTION

GSEM focused its interests on the Great Sacandaga Lake (GSL) and its many issues as a reservoir. To name just one, the 42 square mile GSL is essentially sterile, due to the withdrawal and yearly refilling sequences, for which the reservoir was built. (See historical curve at the USGS Waterdata, Conklingville Dam surface water elevation 01323500). The GSL holds back the annual springtime snowmelt to alleviate Upper Hudson River flooding and controls water releases to keep the salt-front below Poughkeepsie for freshwater withdrawal in the Hudson River.

36 square miles of the GSL is so shallow, the water temperatures exceed 85 degrees in the summertime, during fish breeding cycles where eggs are laid around the shorelines, after which the water level is lowered at a rate of ~1 ½ inches per day leaving the eggs out of the water, only to freeze during the wintertime. If it wasn't for fish stocking, there would be no fish in the sterile GSL. This water withdrawal cycle also makes the GSL unnavigable much of the year, except for the smallest of boats.

GSEM proposes to expand the water holding capacity of the GSL by sandharvesting minerals of economic value to pay for a much larger freshwater impoundment. GSEM was the first to recommend paying for deepening the GSL by sandharvesting during a FERC (Federal Energy Regulatory Commission) public hearing to re-license the hydroelectric power plant at the Conklingville Dam (E.J. West Facility), in 2000.

There are currently five wastewater treatment plants dumping treated wastewater into the GSL, so cooling the water by deepening and expanding the freshwater impoundment by as much as 400 Billion extra gallons of freshwater is a very smart endeavor and asset for New York State.

This proposal can help solve the worldwide freshwater impoundment crisis by sandharvesting minerals of economic value to completely pay for freshwater impoundments.

CONTEXT

Ambrosino wrote a paper for Jeffrey Sachs and Upmanu Lall of Columbia University, about Ghana and Uganda mineral wealth to sandharvest that wealth to build freshwater impoundments. *There are more than 10,000 places worldwide with environmentally sandharvestable minerals, which could solve 90% of the freshwater shortages suffered by more than a billion people.* In this respect, GSEM's Great Sacandaga Lake Deepening Project would be the first of its kind.

Sandharvesting minerals is the only mining technology that is environmentally benign and is proven technology.

Presently there are only two sandharvesting operations in North America, both owned by Chemours, an offshoot of Dupont–one in Florida and one in Georgia. Chemours recently invested $200 million to enhance or expand the Florida Project and to build the new Georgia plant. This proposed sandharvesting project incorporated as Great Sacandaga Energy Metals (GSEM) will be the third.

While hardrock mining is currently the preferred mining worldwide, drilling, blasting and crushing adds ten times the costs as sandharvesting and damages the environment. Sandharvesting is in its infancy here in the United States. There are only three companies with the characterization and engineering capacities to design a Wet Concentrates Plant (WCP) designed specifically for Sacandaga Basin (SB) heavy minerals sands.

In 2018, Ambrosino was invited to comment on the list of Critical Elements/Minerals by the United States Department of the Interior (USDOI) and the United States Geological Society (USGS). The list included those minerals that have to be imported into the United States because they are not mined here. Ambrosino's discovery of the rare UltraPotassic Igneous Rock range shedding into the SB contains over 30 of the 35 minerals designated "Critical" by USDOI & USGS.

Several of the minerals in abundance in the SB are sandharvested by Chemours in Florida and Georgia, including titanites and zircons. Chemours deposits do not contain other minerals that are also crucial to their nationwide businesses, including their Fluorochemical business, peaking their interested in the abundance of Fluorspar in the SB and other minerals. The SB also has abundances in RareEarths and other high tech minerals for batteries, battery storage and as importantly–the only known industrial diamond deposit in North America. GSEM will design the WCP and the eventual Dry Separations Plant around the diamond wealth because the industrial diamond cutting tool industry is expanding exponentially and is also 100% imported. GSEM will focus our marketing on the RareEarths and Critical Minerals which are receiving all the attention in America.

CONTEXT

There are other significantly important reasons to sandharvest heavy minerals, especially considering mineral occurrences. For example, the two most important Rare Earth deposits in the world are Bayan Obo in China and Mountain Pass (MP) in California and both happen to be highly enriched in Light Rare Earths (LREE). The SB Rare Earths, however, are highly enriched in Heavy Rare Earths (HREE). Therefore, the much more valuable Heavy Rare Earth minerals available in the SB are extremely important. The 3rd Phase of the project (not discussed in this early phase outline) will resource the nation by beneficiating the ore minerals to elements. Figure 1 shows the most recent USGS Publication (page 7) of the MP hardrock element distribution. Shown in red are the SB Sandharvestable HREE.

Table 2. Chemical analysis of representative primary phlogopite microshonkinite dike (sample MP14), Mountain Pass, California {1}.

SiO_2	53.9		Ba	8490 2340
Al_2O_3	10.9		Sr	1230 1034
Fe_2O_3*	6.43		Th	167 41
MgO	8.64		U	15.4 11
CaO	6.58		Th/U	10.8 3.72
Na_2O	1.11		Zr	1040 2500
K_2O	7.73		Hf	24.9 66.6
BaO	0.95		Zr/Hf	42 37.5
P_2O_5	1.70		Nb	28 249
TiO_2	1.35		Ta	1.78 14.6
Ln_2O_3	0.26		Nb/Ta	16 17
MnO	0.12		Rare earth elements	
F	0.969		La	476 201
H_2O	0.80		Ce	1050 505
CO_2	0.04		Pr {7}	110 68
Σ {3}	101.		Nd	470 280
mg {4}	0.77		Sm	71.0 66
K_2O/Na_2O	7.0		Eu	13.4 12
AlkSI {5}	1.00		Gd	35.5 68
			Tb	3.32 12.04
Cr	453 440		Yb	2.28 52
Ni	343 114		Lu	0.293 8.2
Rb	368 314		Y	45 462
Cs	3.78 6.14		$(La/Yb)_{cn}$	140 3.87
Rb/Cs	97 51.14			

{1} Major and minor element oxides (SiO_2 – CO_2) and F, weight percent (g/100 g); minor and trace elements (Cr – Y), μg/g (ppm). Oxides, elements, and ratios whose values are notably elevated are highlighted in bold.
{2} $Ln_2O_3 = La_2O_3+Ce_2O_3+Pr_2O_3+Nd_2O_3+Sm_2O_3$.
{3} Includes SrO and –O=F.
{4} *mg* = MgO/(MgO+FeO), molar; with weight percent $Fe_2O_3/(Fe_2O_3+FeO)$ set to 0.2.
{5} Alkali saturation index: AlkSI = $(Na_2O+K_2O+BaO)/Al_2O_3$, molar; metaluminous, AlkSI < 1.0; peralkaline, AlkSI > 1.0.
{6} Lanthanides determined by INAA (Table 4); Y by EDXRF.

Note that UltraPotassic Igneous rocks, like MP's hardrock or the SB's shed or eroded heavy mineral sands contain large concentrations of incompatible elements, such as Potassium (K), Strontium (Sr), Rubidium (Rb), Cesium (Cs), Rare Earth Elements (REE), Nickel (Ni), Zirconium, (Zr), Hafnium (Hf), Thorium (Th), Uranium (U), Niobium (Nb) and Tantalum (Ta).

Figure 1. https://pubs.usgs.gov/of/2005/1219/

Another thing that ultrapotassic igneous rock complexes are known for are Kimberlites and Lamproites. Take a look at the paper by Bailey and Lupulescu from the NYS Geological Department of the State Museum, "Kimberlitic Rocks of Central New York". https://www.researchgate.net/publication/265683591_Kimberlitic_Rocks_of_Central_New_York

Another new player in the Rare Earth sector, Medallion Resources, has just announced that it will try to exploit rare-earths in the Murray Basin of Australia by Sandharvesting.

SANDHARVESTING Sacandaga Basin

VS

HARDROCK MINING at Mountain Pass

Compare the Costs of Operations, per metric ton, with the publicly traded MP operation in California, the only large scale operation in North America, to the proposed GSEM 1st and 2nd phase sandharvesting operation.

https://d18rn0p25nwr6d.cloudfront.net/CIK-0001801368/76b9b761-7a83-4bd9-8078-3808f148227b.pdf

Note that MP expresses its rare-earth production costs in Rare Earth Oxides (REO) and GSEM prefers to use Rare Earth Pure Metals (REE). Roughly, every 15,000 metric tons of GSEM's production per year REE is equivalent to MP's 20,000 metric tons of REO per year. This also means that a small 1,000 metric ton per hour plant GSEM intends to start with will produce about half of MP's production in metric tons. Much larger sandharvesting operations are envisioned in the SB.

- **GSEM will process 1,000mt/hr with 55 employees.** MP needs 150 employees (300 employees to produce twice the production, something less than 40,000 metric tons per year of REO).
- **MP claims their production costs are $1,475 per metric ton of REO produced** (think, Drilling, Blasting, Crushing and Flotation) which Mother Nature has already done for us in the SB.
- **GSEM can produce a metric ton of REE for $105 to $120 per metric ton,** less than 10% of MP's costs of production, even if we scaled up to a 2,000 metric ton per hour system, equal to MP's output!

As important as the difference in production costs associated in a comparison between GSEM and MP, the environmental impact of sandharvesting is extremely low compared to Hardrock mining!

NECESSARY ELEMENTS

For years GSEM has cultivated relationships with DuPont–now Chemours, management, chemists and third party individuals, such as Minerals Technology of Florida (currently completing upgrades to the Florida Plant and building the new Georgia Plant). A relationship with Outotec–now Metso Outotec, has helped GSEM develop an accurate picture of the costs associated with industrial scale sandharvesting.

GSEM is targeting industrial diamonds, another of the nonconductor nonmagnetic fraction mineral of the SB heavy mineral sands. GSEM can easily separate due to the hydrophobicity in our two laboratory scale plants. Surprisingly, neither Metso Outotec (MO) nor Minerals Technologies (MT) have experience in industrial diamond recoveries. GSEM is the only sandharvester with this knowledge. The issue is to separate the industrial diamonds, by species, in the Wet Concentrates Plant (WCP). Since the industrial diamonds come out easily along with the heavy minerals in the WCP, GSEM is planning that work to be done dry at the Dry Separations Plant (DSP), as there are some very interesting options that have been developed in kimberlites of Africa for diamond specific recoveries.

ELEMENTS	DESCRIPTIONS	ESTIMATES	NOTES
The first essential component is to run complete characterizations, specifically on SB overburden to understand the textural characteristics of the sediments.	For example, how efficient will the electrostatic separation of the Zircon and the Rutile heavy mineral sands, both in the nonconductor nonmagnetic fraction, be from one another?	This process is likely to cost $125,000 to $150,000 for 5 metric ton samples.	If not, more than one sample is necessary for the Flowsheet process.
Next, GSEM will want to run the preliminary layout and Flowsheet engineering (pumps, piping, etc.).		Likely to cost another $50,000	
After these tests are completed and the resource is defined	Design a 1,000 to 1,200 metric ton per hour Wet Concentrates Plant (WCP), specific to SB heavy minerals sands.	Engineering costs between $3,000,000 and $4,000,000	
The WCP		Costs between $45,000,000 and $50,000,000	Depending on whether the characterizations allow additional capabilities for industrial diamonds
The dredge	1,200 metric ton per hour dredge, capable of dredging up to 40 feet deep	Cost $12,000,000 to $15,000,000,	
Dredge mining costs		$0.70 to $1.00 per metric ton (WCP)	
Staffing for a 24 hour per day/7 days a week operation (typical sandharvesting operation)	55 permanent employees: plant operators, field service teams, maintenance mechanics, process technicians, lab technicians, management and a metallurgist. Average cost of wages – $50-$60 per hour X 104,000 man hours	$8,000,000 per year	
Temporary corporate office, permanent corporate office property	~100 acres of contiguous DSP properties at the Tryon Technology Park (essential for city blocks worth of drying facilities and conveyor belt facilities) and initial 6-10 years of WCP sandharvesting property apart from the DSP	$7,000,000	Four initial 6-10 years WCP properties have been sampled and sent off to ALS Chemex for initial geochemistry analysis.
The DSP		Cost between $35,000,000 and $40,000,000	All of these estimates are inclusive, including realtor fees, trucking if necessary and infrastructure
Maintenance costs	5-10% of Capex	$4-$6,000,000 per year	

Depreciation on a $60,000,000 WCP is unknown, though there is a new 26CFR depletion rate schedule for minerals plants.
Power consumption costs are unknown and could be subsidized at the Tryon Technology Park.

ASSOCIATED COSTS

A geochemical analysis of five metric tons is necessary to confirm the initial characterization of SB mineral sands. If the analysis has to be run again it could cost additional time and money as GSEM won't likely move forward with building the WCP until confirmation is obtained. However, land and property purchases, which have inherent value could be purchased now or locked in with purchase agreements. Also, as outlined above, neither (MO) nor (MT) have submitted any formal proposals, merely phone conversations or email communications.

Public participation is critically important and costly, especially to get permitted to mine Ambrosino's mineral rights in the GSL lakebed. A Communications team will continue to develop media, market, community and government relations; all based at a corporate headquarters, equipped with showrooms.

OPERATING COSTS

GSEM put together a 1st Phase (WCP) pro forma table in the Business Plan. However, that version does not illustrate the full impact of the industrial diamond mineral wealth in the SB. GSEM's intension is to capture at least 100 metric tons of the domestic industrial diamond market each year over the next few years. In year one, while GSEM is building the system, we expect no revenue. In year two, GSEM expects to capture a very modest 100 metric tons of the industrial diamond market, along with the other industrial minerals wealth. By the third year, GSEM expects to capture 200 metric tons of the industrial diamond market wealth.

By the fourth year, GSEM expects to capture 300 metric tons of the industrial diamond market wealth. These estimates are very conservative given that 90% of the worldwide market is consumed by the United States. The worldwide market in industrial diamonds, which is currently ~3,300 metric tons per year, is growing exponentially. The industrial diamond mineral wealth is extraordinary in the SB and operating the WCP 24/7, including DSP operations, GSEM estimates we will accumulate tens of thousands of metric tons of industrial diamonds in the first 4-5 years.

YEAR	PRODUCTION	*REVENUE
Two without industrial diamonds	Industrial mineral wealth (RareEarths, Barite, Fluorspar, Magnetite, Zircon, etc.)	$ 75,000,000
Two with industrial diamonds 100 metric tons	Industrial mineral wealth AND industrial diamonds	$140,000,000
Three with industrial diamonds 200 metric tons	Industrial mineral wealth AND industrial diamonds	$205,000,000
Four with industrial diamonds 300 metric tons	Industrial mineral wealth AND industrial diamonds	$270,000,000

*While 100% market is a firm capability, GSEM can envision fluctuation at 50% as represented in the attached spreadsheet proposal.

New York State is eager to help GSEM develop SB resources. For example, a diamond tool company would gain support from New York State. There are more than 30 industrial diamond tool companies in the United States, such as Milwaukee, Dremel, Rigid, DeWalt, Skill, and Rockwell.

POTENTIAL CHALLENGES

As engineers, GSEM is familiar with challenges: “Show me the problems and let me find the remedies to fix them”. To date, GSEM has not found any fundamental problems with environmentally sandharvesting SB minerals wealth. There is, however, some Regulatory resistance that can be remedied once funding is secured. The search for funding has been a particular challenge. The project is so complex and the returns so enormous, it requires a visionary investor.

GSEM has never approached any financial institution for financing, but has deliberately introduced the enormous mineral wealth potential throughout New York State’s Regulatory Bureaucracies. The permitting process is likely to take about three years or more to develop Ambrosino’s New York State Issued Mineral Rights in the Great Sacandaga Lake (GSL) Lakebed. That’s why GSEM will start the sandharvesting business outside of the Adirondack State Park. In fact, GSEM has quietly been studying the rest of the SB and Mohawk Basin (MB) minerals wealth in Fulton County for years. When the time comes GSEM has been promised by NYS that they will get behind GSEM with support and goodwill.

GSEM is completely confident that we have identified several other preferred properties for the initial WCP that are for sale, which will yield up to ten years of revenues. All the while GSEM will be seeking permits to sandharvest Ambrosino’s mineable Great Sacandaga Lake (GSL) mineral rights and we can do it without disturbing Shoreline Property Owners (SPOs) quiet enjoyment. GSEM has identified all of the SPOs around the mineable GSL and carried on dialogues with them for years now. Though GSEM has only received ~75 pro-deepening SPOs written endorsements, the public participation effort is of paramount importance and we have never yet received any negative responses.

In 3-5 years when GSEM gets mining permits to deepen the GSL, as an inducement, the corporation has set aside $20 billion for SPOs around the mineable GSL and for the rest of the SPOs, backlot owners and communities outside of the mineable GSL lakebed. SPOs around the mineable GSL will receive about $200,000 per year or about $5,000,000 apiece over 25 years. The rest of the SPOs, backlot owners and communities will receive $125,000 per year over the life of the deepening. All of this totaling up to $20 billion over 25 years. This inducement is significant, but along with a very serious public participation effort, is a small price to pay for cooperation, considering that just the mineable GSL lakebed has mineral wealth worth over $8.5 trillion! To put that into perspective, multiply $8.5 trillion by at least 20 to understand the mineable mineral wealth of Fulton County’s mineral wealth. Truly the next 100+ years of industry for Upstate New York!

In the Tryon Technology Park there are only two Regulatory Permits necessary for the DSP site. Both are local approvals, which can be approved by the Fulton County Industrial Development Agency in 30-60 days. All of the State Regulatory approvals are already in place and wouldn’t be a problem anyway, because all of the WCP and DSP facilities are gravimetric, electrostatic or electromagnetic and environmentally benign.

The only thing that could go wrong is Delay in Getting Started!

A UNIQUE OPPORTUNITY

Some very recent corroborating work has been done by SUNY's, NYS Geological Department, at the NYS Museum in Albany, largely because of GSEM's work on SB mineral sands. This work has verified findings from Ambrosino's Master work at SUNY Albany and his Ph.D. coursework and prefeasibility study at Columbia University in NYC. In the beginning, NYS couldn't believe what Ambrosino was finding in the SB and denied Mineral Rights until Ambrosino was able to perfect them in 2007. Since obtaining the mineral rights, however, NYS has raised the mineral royalty fee from ½% to 2%, which is 10's of Billions for NYS, per year!

GSEM's work is essentially the only geological investigations of the SB, since Miller in 1911 and Brigham in 1929, NYS Museum Bulletins 153 and 280 respectively!

Miller's and Brigham's work in these Bulletins has intrinsic value, but in each case the work was off by as much as ~60 years of scientific understanding because the investigators were operating on preconceived notions that surface geology was dominated by erosional circumstances. It wasn't until the 1970s that plate tectonics became the new paradigm and that made their understandings of SB overburden almost completely useless. The same thing occurred with GSEM's early work, given the complications of the mantling of the last glacial epoch sediments atop the predominant geologic provenances of the real SB overburden. Both Ambrosino's Masters work and Ph.D. work were precursors to finally figuring out what the mineral wealth of the SB really is and why it is there. Ambrosino has not published any relevant results except to espouse the relevance of the SB mineral wealth, without revealing details.

Clearly, the lack of understanding about the SB will cost potential competitors huge delays in contemplating further exploitation of the mineral resources. Others won't have had the working relationships GSEM has enjoyed with NYS Regulators for decades now. Others couldn't possibly have the relationships with the locals and policymakers that GSEM enjoys and understands. GSEM has deliberately and strategically informed those that matter only with as much information as they can absorb. Finally it takes an enormous investment and high costs of operations to have a significant market presence.

START-UP FUNDING
1st & 2nd PHASE COSTS

Overburden characterizations	$400,000
Engineering	$4,000,000
Startup Properties	$7,000,000
WCP and Dredge	$65,000,000
DSP	$40,000,000
Operations	$11,250,000
Total	**$127,250,000**

5-YEAR PROFIT PROJECTIONS

INVESTMENT FLOWS	COST
Properties (7)	$7,000,000.00
Dredger	$15,000,000.00
Trucks (5)	$250,000.00
Equip + Vehicles	$1,000,000.00
Wet Plant	$50,000,000.00
Dry Plant	$40,000,000.00
Working Capital	$14,000,000.00
TOTAL	**$127,250,000.00**

OPERATING COSTS	YEAR 1	YEAR 2 +
Office Salaries	$1,000,000.00	$1,000,000.00
Marketing	$250,000.00	$250,000.00
Legal	$1,000,000.00	$1,000,000.00
Consulting	$250,000.00	$250,000.00
Wages & Salaries		$5,500,000.00
Insurance		$1,000,000.00
Engineering		$200,000.00
TOTAL	**$2,500,000.00**	**$9,200,000.00**

	YEAR 0	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5
Revenue - Minerals	0.00	0.00	75,000,000.00	75,000,000.00	75,000,000.00	75,000,000.00
Revenue - Diamonds	0.00	0.00	65,000,000.00	97,500,000.00	146,250,000.00	219,375,000.00
Operating Costs	0.00	2,500,000.00	9,200,000.00	9,200,000.00	9,200,000.00	9,200,000.00
Operating Profit	0.00	-2,500,000.00	130,800,000.00	163,300,000.00	212,050,000.00	285,175,000.00
Depreciation	0.00	0.00	10,625,000.00	10,625,000.00	10,625,000.00	10,625,000.00
EBIT	0.00	-2,500,000.00	120,175,000.00	152,675,000.00	201,425,000.00	274,550,000.00
Taxes	0.00	0.00	34,349,000.00	42,749,000.00	56,399,000.00	76,874,000.00
NET PROFIT	**0.00**	**-2,500,000.00**	**85,826,000.00**	**109,926,000.00**	**145,026,000.00**	**197,676,000.00**
Operating Cash Flows	0.00	-2,500,000.00	96,451,000.00	120,551,000.00	155,651,000.00	208,301,000.00
Investment Cash Flows	-127,250,000.00	0.00	0.00	0.00	0.00	0.00
Financing Cash Flows	0.00	0.00	0.00	0.00	0.00	0.00
FREE CASH FLOW	**-127,250,000.00**	**-2,500,000.00**	**96,451,000.00**	**120,551,000.00**	**155,651,000.00**	**208,301,000.00**

IRR	53%

INVESTMENT PROPOSAL	EQUITY PERCENT
Payout 45% of Free Cash Flow on an Annual Basis	45.00%

Investors Free Cash Flow	-127,250,000.000	0.00	43,402,950.00	54,247,950.00	70,42,950.00	93,735,450.00

INVESTOR IRR	21%	**PATBACK PER'D**	3.42 Years

GSEM would realize this by giving the investor 45% of equity and payout all of the excess cash flows not required.
Terms for investor buyout options are negotiable.

SANDHARVESTING RARE EARTHS
GREAT SACANDAGA ENERGY METALS

PROJECT HIGHLIGHTS

The project will generate **100 YEARS** of industry.

GSEM will establish a critical minerals **SUPPLY CHAIN IN THE UNITED STATES**.

Sandharvesting, as opposed to hardrock mining, moves **10 TIMES THE MATERIAL AT 1/10TH OF THE COST.**

We will demonstrate that fresh water impoundments can be completely paid for by sandharvesting minerals of economic importance.

SANDHARVESTING IS ENVIRONMENTALLY BENIGN.

The ultrapotassic igneous rocks in the Sacandaga Basin shed industrial diamonds.

PROJECT FUNDING AT A GLANCE

Start-up Funding

$127,250,000

Free Cash Flow

Year 2 $96,451,000

ARTHUR MICHAEL AMBROSINO

Great Sacandaga Energy Metals, Inc. Founder
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EDUCATION

- Professional Mining Engineering, Columbia University, 2001
- MS Geology, State University of New York at Albany, 1997-2001
- Geographic Information Systems (GIS) Certification
- Empire State Development Corporation, GIS Internship
- BS Geology, State University of New York at Albany, 1994-1997

EXPERIENCE

Discovered the next 100 years of Industry for Upstate New York **1970-2021**

Began studying water well tailings as an independent contractor in the 1970s, befriending water well drillers and studying microscopically hundreds of Fulton County water wells tailings. What I've discovered is a very rare range of UltraPotassic Igneous rocks along the billion year old Grenville Orogeny that have been shedding Rare Earths and Critical Minerals into the Sacandaga Basin (SB) for at least 450 Million Years. Sediment Loads down to bedrock in the SB and the current state of the sandharvesting industry, suggest that it will take at least 100 years to extract all of the mineral wealth of the mineable SB.

Built two laboratory scale Concentrates Plants **2010-2018**

No other living Heavy Minerals scientist better understands SB heavy minerals wealth.

Owner/Manager, Independent Leather Manufacturing Corporation, Gloversville, New York **1988-1996**

Led executive operations, product development, environmental compliance, sorting, tanning and dyeing; a resourceful and dynamic leader of a 125 employee, union shop tannery World Renowned Deerskin Scientist, Conducted NYS Department of Economic Development Grant funded study of Secondary Materials Recovery-Enzymatic Digestion of Proteinaceous Solid Tannery Wastes.

Energy Auditor, Cornell University, Gloversville, New York **1987-1988**

Served as Energy Auditor in a collaboration between the NYS Department of Energy and Cornell University to train 57 Statewide Energy Auditors using the Exxon Overcharge Dollars, through Cornell Cooperative Extension.

Owner/Researcher, Ilbiet Technologies, Inc., Gloversville, New York **1981-1987**

Engaged in research and development specializing in leather technology and wastewater treatment. Intimately involved with and developed the current State-of-the-Art, wastewater treatment scheme, called Multiple-Pipe. This system separated and isolated incompatible wastestreams, those of acid tanning and dyeing and highly alkaline unhairing and beaming streams, for successful and odor-free treatment of leather tanning wastes.

Assistant Plant Manager, Nelson and Sons, San Antonio, Texas **1979-1980**

Independent Contractor, Gloversville, New York **1969-1979**

Built and designed twenty-two Residential and three Commercial Structures.
Owned the first approved housing development under the NYS Adirondack Park Agency, Project No. 7114, called Echo Hill, incorporated as Windhaven Country Estates.

ADDITIONAL INFORMATION AND SKILL SETS

Curiosity and problem solving are the hallmarks of my career choices. Inquisitiveness has to be backed by solid science and characterization of the mineral reserves in the SB for successful exploitation. For more than half my life, I have accumulated vast understandings and a passion for SB mineral exploration. I not only appreciate SB mineral complexities, I know where the minerals are in the highest grades. This gives me at least a 5-6 year head start advantage.

White Collar Boxing Competitor, USA Boxing: Amateur Referee & Judge **1980-2021**

Still actively training as a very serious athlete