Energy Fuels Resources (USA) Inc., which is a wholly-owned subsidiary of the parent company Energy Fuels, Inc.

AACE Class 4 Pre-Feasibility Study

(Not a Pre-Feasibility Study intended to be compliant with NI-43-101 or S-K 1300) ("Mill PFS")

Date of Issue: April 23rd, 2024

Internal Document Number: 6817220046-0000-BA00-STY-0002

Revision: A

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Project Number: 6817220046

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1.0 EXECUTIVE SUMMARY

The Mill AACE Class 4 Pre-Feasibility Study (Not a Pre-Feasibility Study intended to be compliant with NI-43-101 or S-K 1300) ("The Mill PFS" or "PFS") describes a project to design and build a rare earth processing facility at Energy Fuels Resources' White Mesa Mill site in Blanding, Utah. Energy Fuels currently processes Uranium, Vanadium and Rare Earths at this facility and is the only operational conventional Uranium mill in the U.S. at this time. This Mill PFS addresses the design of a new facility to process Rare Earth bearing Uranium Ore at the White Mesa Mill and recover rare earth oxides prior to uranium recovery with the existing facility. This Mill PFS provides an engineering evaluation of the proposed hydrometallurgical process for Energy Fuels Resources (EFR). WSP undertook the Mill PFS from December 2022 through May 2023. WSP (including Wood Canada Ltd. as a subcontractor) and Energy Fuels optimized the project scope and design over the course of the project. This report was prepared to summarize the results from the review meeting in Salt Lake City, Utah on May 15-17th 2023. The project scope includes a standalone Rare Earth (RE) oxide processing facility to treat 30,000 metric tonnes of Rare Earth-bearing Uranium ore per year, producing a high purity separated NdPr oxide product. The estimated output of the process facility is approximately 3,000 metric tonnes of NdPr oxide product per year.

1.1 Capital Cost Summary

The AACE International (Association for the Advancement of Cost Engineering) Class 4 capital cost estimate (CAPEX) from Q2 2023 is summarized below. The CAPEX cost estimate is described in additional detail in Section 6: Capital Cost Estimate. The CAPEX estimate has an intended accuracy of -30/+40%. The costs described in this report are in Q2 2023 USD dollars.

Table 1-1: Mill PFS Cost Summary

Cost Type	Total Amount $ (USD)	Percent of DFC	Percent of TIC
Direct Field Costs (DFC) Total	$ 198,300,000	100%	57%
Indirect Field Costs Total	$ 50,100,000	25%	14%
Other Indirect Costs Total	$ 30,300,000	15%	9%
Provisions Total	$ 69,700,000	35%	20%
Grand Total	**$ 348,400,000**	**176%**	**100%**

1.2 Operating Cost Summary

The operating cost estimate (OPEX) from Q2 2023 is summarized below. Additional operating cost detail and definitions can be found in Section 7: Operating Cost Estimate. The estimated operating costs have a target accuracy of order of magnitude of ±25%. The costs described in this report are in Q2 2023 USD dollars.

Table 1-2: Mill PFS Cost Summary

Area	Annual cost $	Source
Reagents	$ 68,000,000	Reagent Consumption Table
Liquid natural gas	$ 5,000,000	Stream Table
Water	$ 50,000	Stream Table
Total labor	$ 5,000,000	Labor Estimate
Maintenance materials	$ 4,000,000	Estimate
General and administrative	$ 1,000,000	Estimate
Power	$ 800,000	2200 HP installed ~80% used
Sustaining capital	$ 1,000,000	Estimate
Subtotal	**$ 85,000,000**	
Contingency	$ 8,500,000	Estimate
Total operating cost	**$ 93,500,000**	
Anticipated Production Rate	6,900,000	lb/ year NdPr Oxide
Total operating cost	**$ 29.88**	**$/ kg NdPr Oxide**
Total operating cost	**$ 13.55**	**$/ lb NdPr Oxide**

1.3 Process Facilities

The hydrometallurgical processing facilities evaluated within this study are separated into 3 main areas:

- Crack/TSP/Leach/Ra removal/Reagents – “Crack and Leach” or “C&L”
  - Area 1A: Cracking
  - Area 1B: TSP washing
  - Area 1C: Grinding (Optional future system)
  - Area 2: HCl Leaching and Leach CCD
  - Area 7: Reagent mixing
- Solvent Extraction – “SX”
  - Area 3 / 4: SX circuit
- Precipitation and Calcination – “P&C”
  - Area 5: Precipitation
  - Area 6: Calcination

These process areas are described in further detail in Section 3: Process Design. The supporting systems for the main processing areas are described below.

The following supporting infrastructure will be new or expanded:

- An additional administration office to support the new facilities
- Control Room
- Utilities
- Water treatment system
- Ventilation, dust collection and scrubber systems
- Natural gas storage and distribution
- Electrical substation and power distribution system
- Fire suppression system
- Fire, potable, and process water supply system
- Laboratory
- Compressed air system
- Reagent storage warehouse
- Boiler and steam distribution system

The following infrastructure will be reused without modifications:

- Uranium processing facilities
- Existing administration offices and laboratories
- Maintenance shop and maintenance warehouse
- Truck scale and truck wash
- Tailings Management

2.0 INTRODUCTION

2.1 Study Scope and Purpose

This Mill PFS was undertaken to develop a preliminary design to process rare earth bearing uranium ore. The scope of the Mill PFS included:

- Prefeasibility level design, process flow diagrams, and major equipment list
- Basis of design
- Mass balance
- Site layout and general arrangement of equipment
- AACE Class 4 capital cost estimate to -30% / +40% accuracy (in Q2 2023 dollars)
- Operating cost estimate to +/- 25% accuracy (in Q2 2023 dollars)
- Risks and opportunities identified with mitigations to be addressed during a subsequent Feasibility Study

The purpose of the Mill PFS is to advance the processing facility design, costing and provide a path forward into the Feasibility Study. The Mill PFS also serves as a decision gate for Energy Fuels Resources, primarily through a financial analysis based on the estimated capital and operating costs. The financial analysis is being prepared by Energy Fuels, independent from this study or report.

2.2 Project Overview

Energy Fuels Resources, Inc. (EFR) is developing a standalone Rare Earth (RE) oxide processing facility at the White Mesa Mill (the Mill), located near Blanding, Utah. Phase 2 of this facility is intended to process 30k metric tonnes per annum ("mtpa") of RE-bearing Uranium ore feeds (Monazite sands) containing approximately 15k mtpa of total RE oxides (TREO).

EFR has a long history of producing Uranium from alternate feed sources. RE-bearing uranium ores are similar in uranium grade to the current feed stock of Uranium-bearing ore and the ore contains Rare Earths (RE) that will be recovered prior to Uranium recovery.

The primary separated product of interest is neodymium/praseodymium Oxide (NdPr). EFR has completed extensive pilot studies of RE SX processes to produce NdPr oxide with purities greater than 99%. Minor separated products of interest are dysprosium (Dy) and terbium (Tb) oxides, as a staged expansion. Future potential byproduct streams, subject to market conditions, include mixed lanthanum/cerium (La/Ce), mixed samarium/europium/gadolinium (SEG) and mixed heavy rare earths (Ho+).

Phase 1 of the project involves minor changes to the current facilities to provide small scale RE process capability. Phase 1 is anticipated to operate within currently licensed activities (executed by EFR and not included in this study). The scope of facilities within Phase 2 of the project enables large scale RE production, which may require permit application to the State of Utah and other governing authorities.

The first process area is called crack and leach. The main solids output of this area goes to the current process for uranium recovery and the leach solution contains mixed REs. The liquid goes to the next process area called solvent extraction, which separates the mixed REs into several solution streams. The third process area is called precipitation and calcination, where the final purified RE product is made.

2.3 Property Location and Description

EFR is the United States' largest uranium producer and has a long history of processing and recovering uranium from conventional mines, in-situ recovery operations, and alternate feed sources. The Mill, 100% owned by EFR White Mesa LLC (an EFR affiliate) and operated by EFR, is located near the city of Blanding in southeastern Utah. The Mill was constructed in 1980 and features a nameplate capacity of 720,000 tons of uranium ore per year and is licensed to produce 8 million lbs of U_3O_8 yellowcake per year. The Mill represents the only licensed and operating conventional uranium mill in the United States.

2.4 Report Conventions

This report relies primarily on the process design drawings, engineering calculations, and associated capital and operating cost estimates described in subsequent sections.

2.4.1 Area Breakdown Structure

Area numbering conventions were used to designate specific processes occurring in specific area of the plant. Table 2-1 details the numeric representation corresponding to specific area and process.

Table 2-1: Process Area Numeric Convention

Area Number	Process Description
100	Cracking and TSP Wash
200	HCl Leach, Leach CCD, and Solids Separation
300 & 400	Solvent Extraction Circuit
500	Oxalate Precipitation
600	NdPr Calcining and Packaging
700	Reagent Preparation
800	Utilities Infrastructure and Fire Suppression Equipment

2.4.2 Project-Specific Abbreviations

Table 2-2: Project-Specific Abbreviations

AACE	AACE International (Association for the Advancement of Cost Engineering)
BaCl2	Barium Chloride
C&L	Crack and Leach
CAPEX	Capital Cost Estimate
DFC	Direct Field Costs
Dy	Dysprosium
EFR	Energy Fuels Resources (USA), Inc.
EPCM	Engineering, Procurement and Construction Management
FRP	Fiberglass reinforced plastic
FS	Feasibility Study
HCl	Hydrochloric Acid
Ho+	Mixed Heavy Rare Earths
La/ Ce	Mixed Lanthanum/Cerium
MCC	Motor Control Center
MEL	Mechanical Equipment List
MTOs	Material Take Offs
NaOH	Sodium Hydroxide (Caustic)
NdPr	Neodymium/Praseodymium Oxide
OPEX	Operating Cost Estimate
P&C	Precipitation and Calcination
PEMB	Pre-Engineered Metal Building
PFS	Pre-Feasibility Study
PLS	Purified Leach Solution
Ra	Radium
RE	Rare Earth
SEG	Mixed Samarium/Europium/Gadolinium
Sm+	Mixed SEG and heavy rare earths
SX	Solvent Extraction
Tb	Terbium
TIC	Total Installed Cost
TSP	Tri-Sodium Phosphate
WSP	WSP USA Environment & Infrastructure Inc. (WSP)

3.0 PROCESS DESIGN

3.1 Process Circuit Descriptions

WSP relied upon Energy Fuels' lab testing data and process design for the process flowsheet development.

Implementation of Phase 2 will be in two stages. Phase 2A shall be designed and built to produce NdPr. Subsequently, Phase 2B will enable separation, precipitation, and calcination of Dy and Tb (not included in this study although allowance is made in the site plans). Ancillary facilities for Phase 2 and potential future expansion plans are outlined.

The Crack and Leach ("C&L"), solvent extraction ("SX") and Precipitation and Calcination ("P&C"), areas each have several circuits as described below.

3.1.1 Areas 100 and 200 – Crack and Leach and Area 700 - Reagents

The Crack and Leach area is comprised of the following circuits: Cracking, TSP wash, HCl Leach and Leach CCD. Reagent makeup and dosing systems in the area are located near points of use.

Cracking:

Rare earth bearing Uranium ore ("REU ore") contains RE phosphate minerals. The purpose of the cracking circuit is to transform the phosphate minerals to a hydroxide form and remove the phosphate.

Feed to the cracking circuit is prepared by mixing dry monazite and caustic soda ("NaOH") with water and recycled solution to make a slurry. The slurry is then pumped to a series of cracking tanks and then flows by gravity from tank to tank. The cracking tanks are heated using steam coils. Solid/liquid separation of the slurry produces caustic-bearing solution that is recycled.

TSP Wash:

Solids report to the TSP wash circuit. Its purpose is to dissolve TSP crystals from the RE and Uranium bearing hydroxide solids. Hot TSP wash water is added to the final thickener stage, producing a progressively increasing concentration of TSP overflow solution from each stage of thickening. The TSP-rich overflow from the first thickener reports to tailings. The solids flow counter-currently to the wash water from first to final thickener via underflow pumps, with minimal TSP entrainment in the final thickener underflow.

HCl Leach:

The washed RE and uranium bearing solids are fed to the first hydrochloric acid (HCl) leach tank and mixed with concentrated HCl. The HCl leach circuit dissolves the RE solids to produce a RE-laden leach solution. Leach conditions are carefully controlled to solubilize the RE hydroxides, while leaving uranium and impurities in the solid phase. Leach slurry flows by gravity from tank to tank and discharges to the radium (Ra) removal mix tank where barium-radium sulfate is precipitated, joining the undissolved U-bearing solids.

Leach CCD:

The resulting slurry is washed and dewatered in a CCD circuit where the RE-bearing wash solution flows counter-currently to the U-bearing solids from each stage of thickening. The U-bearing solids from the final thickener underflow are treated in the existing Uranium recovery circuit, while the RE-rich purified leach solution (PLS) reports to solvent extraction.

3.1.2 Area 300 & 400 – Solvent Extraction

The purpose of the Solvent Extraction (SX) area is to separate the REs into commercially saleable product-bearing streams. The SX performs partial RE separation as the PLS feed (SX Feed) stream cascades throughout the Solvent Extraction process. Sm and heavier REs are preferentially extracted from the PLS, while NdPr, lighter REs remain in partially unloaded PLS, Nd and Pr are then extracted from the partially unloaded PLS, while La and Ce REs remain as raffinate.

The primary equipment type used for SX is called a mixer-settler. The mixer section provides conditions for dissolved metals to transfer between an aqueous and an organic phase in an emulsion. The settler section provides residence time for the emulsion to separate, where the higher density aqueous phase settles and the lighter organic phase rises to the top. Typically, the aqueous and organic phases pass counter-currently through multiple mixer-settler stages in each step of a SX circuit.

Each SX circuit is composed of four major steps: extraction, scrub, strip and saponification. In the extraction step, the target REs are loaded from the aqueous phase (PLS) to an organic phase. The organic phase is comprised of an extractant reagent and an organic diluent. The organic phase passes through all the subsequent steps and recirculates back to the extraction step. After the targeted REs are extracted from the PLS by the organic, it leaves the SX circuit as raffinate.

The extraction step provides a bulk separation, meaning that a small amount of the REs that should be rejected to raffinate are co-extracted into the loaded organic. In the scrubbing step, the loaded organic is contacted with an aqueous scrub solution to purify the loaded organic. The loaded scrub solution is recycled to the extraction step, to recover any target REs that were unintentionally scrubbed out of the loaded organic.

The purified loaded organic advances to the stripping step, where the target REs are transferred from the purified organic phase into an aqueous strip solution. The loaded strip solution contains a high concentration of partially separated REs.

3.1.3 Areas 500 & 600 – Precipitation and Calcining

The SX circuit produces a stream of loaded strip solution containing Nd and Pr, separated from the other REs. The purpose of the precipitation circuit is to produce purified NdPr oxalate precipitate, as an intermediate solid product.

Oxalic acid is added to the Nd/Pr loaded strip solution in a set of reaction tanks, forming RE oxalate precipitate. The slurry discharges to a thickener, with the barren thickener overflow solution reporting to tailings. The solids collect in the thickener underflow and are pumped to a belt filter. On the belt filter, the solids are washed with water to remove entrained impurities and the wash water reports to the thickener. The washed solids are dewatered to minimize moisture content.

The RE oxalate solids are calcined at high temperature in a rotary kiln. This chemically transforms the Nd/Pr to its final oxide product form. The product is allowed to cool in a surge bin, then packaged in bulk sacks for shipment.

3.1.4 Tie-ins with Existing Process Plant

Uranium recovery from the washed crack and leach solids will be performed in the existing process plant.

For Phase 2A, there are several waste streams from the RE process steps that will report to the existing tailings management facility:

- TSP wash water
- La/Ce bearing raffinate
- Precipitation wash water

Tailings management for the site remains unchanged. EFR has determined they have adequate space and systems for all tailings streams generated by REU ore (monazite) processing.

To the extent practicable, existing reagent offloading and make down systems will be utilized to provide reagent feed sources for monazite processing.

Utility supplies such as water, steam, natural gas and electricity will tie into existing site distribution systems and capacities will be increased as required.

3.1.5 Further Expansion Potential

For the Crack & Leach (C&L) area, results from EFR testwork on feed sources up to July 2023 shows that the chemical reaction breaks down the product sufficiently that feed size reduction is unnecessary. However, size reduction equipment may be needed for other feed sources. The layout and power supply designs for Phase 2 allow for potential addition of a future rare earth bearing uranium ore grinding circuit.

3.2 Reagents

3.2.1 Reagent Safety

Nearly all of the reagents to be used for Phase 2 are already on-site at the Mill. Reagents include:

- Caustic (NaOH) crystal
- Hydrochloric acid (HCl - 36% solution)
- Flocculants
- Barium chloride (BaCl2)
- Ammonium sulfate
- Ammonia
- Oxalic acid
- Organic extractant and diluent for solvent extraction

4.0 PRE-FEASIBILITY ENGINEERING SUMMARY

4.1 Site Preparation and Development

Site development consists of site preparation for the new facility, identification for avoidance of existing buried services and new services to the new facility.

Available space exists in the southwest area of the current facility, west of the current EFR administrative building, with the southern boundary of the electric power lines. Site location will be finalized using preliminary equipment layout drawings.

A clear separation is planned for the new facilities from the Uranium and Vanadium dryers and product handling areas. This mitigates risk of product contamination.

The plan is for the SX facility to have a setback of 50 feet from other buildings/ facilities for compliance to fire protection standards and best practices.

Energy Fuel anticipates no contaminated media requiring a special treatment or disposal will be encountered for the scope of this project’s excavation. However, soil and other media testing will need to be completed prior to construction activities to verify this assumption.

4.1.1 Administration building

Normal facilities for habitability including but not limited to, laboratories, offices, break rooms, restrooms, and laundry rooms shall be provided.

4.2 Utilities

Currently it is anticipated that buried utilities will exist within the footprint of the proposed facilities. Relocation of these utilities is not considered necessary at this time; however, careful excavation or planned marking of these buried utilities will be required to ensure they are not damaged during project execution.

Currently most of the new utilities are planned to be installed overhead in pipe racks. The only new utility that is anticipated to be installed underground is a fire water main loop that circles new and existing structures.

Fire-main piping will be HDPE material designed to FM Global Standards.

Process water and potable water piping will be HDPE material, DR 11, butt-fusion welded.

In the absence of as-built data for the sanitary sewer, WSP has made allowances for routing of new and tie-in to existing sanitary sewer. During the FS, it will be necessary to confirm the arrangement of the existing sanitary sewer system, to verify the assumptions made during the PFS and update the design as required.

Surface drainage from the newly developed areas will report to existing and modified yard drainage located around the new process buildings.

On the west side of the facility near the solvent extraction building, WSP allowed for a new catch basin to be installed to allow for dumping of mixer-settler vessels in the event of a fire. A gravity drain line will connect to each mixer-settler allowing operations personnel to manually open drain valves to evacuate the vessels as needed.

4.3 Water System

Raw water will be supplied to the process plant from existing site water wells. The current site water tank, water pumps, and piping system will be used for process water. A new firewater tank, pumps, and piping system will be supplied with this project. Potable water will be supplied from the existing water tank but will use a new water treatment system. New administrative facilities will connect to the existing sanitary sewer system.

Water treatment equipment will be needed to condition the facility water prior to entry into the new steam boiler. Water treatment equipment will consist of a first and second pass reverse osmosis system with a small anti-scalant dosing unit and associated metering pumps. The treated water will be used by the new boiler and backwash for membrane cleaning will be discharged to building drainage systems. The treated water will also be used for potable water onsite and may service the existing facilities.

4.4 Ventilation

The ventilation systems at the EFR facility include process ventilation and treatment and the removal of fugitive emissions and heat from the building. Further description of these ventilation systems is provided in the sections below.

4.4.1 Dust Management

Dust emissions generated during calcination will be collected by a baghouse and fan system. Cleaned gases will be discharged to the atmosphere and collected dust will be discharged from the baghouse hopper to a barrel or other container located below for further processing or disposal as needed. No provision has been made for automated means of collected dust disposal. Dust quantities are considered small enough that a barrel and infrequent disposal (by forklift or other) is sufficient.

4.4.2 Scrubber Systems

Wet gas vapors from Leach tanks in Areas 200 and 700 will be extracted to a wet scrubbing system for vapor treatment prior to discharge to the atmosphere. The acid laden exhaust stream will pass through the bottom of a packed tower, which will spray a solution from specialized nozzles. The chemical solution will react with the acid vapors and will be removed in the scrubber blowdown water stream. The scrub liquor will be pumped back to the leach system. Ducting would be supported from roof trusses and exit the process building to a vertical scrubber and fan system. Concrete pad would be placed immediately outside of the respective process building for scrubber and fan placement.

4.4.3 General Vapor Removal

Extraction fans will be used to remove vapors from mixer-settler tanks in the solvent extraction areas with the vapor discharged outside of the buildings and to the atmosphere. Discharge will be from vertical stacks at a level of at least 10 feet above roof line to properly disperse.

4.4.4 General Building Ventilation Systems

Each building will have make-up air units, with mechanical air-handling equipment that heats the building air and circulates for temperature control. Currently, wall mounted steam heaters are planned to provide warmth for the building.

In addition, the MCC rooms, control rooms and other occupied spaces will have air conditioning systems. These spaces will be kept at positive pressure relative to the process area, to achieve suitable air quality and temperature for operators.

4.5 Structural

The three major process buildings (Crack & Leach, Solvent Extraction, and Precipitation & Calcination) are planned to be pre-engineered metal buildings (PEMB). The details of the PEMBs are discussed in Section 4.6. The MCC and control room buildings are planned to be two-story of concrete masonry unit block (CMU) construction with concrete over metal deck floor to provide the required 3-hr fire rating. Generally, the foundation systems for all structures will be shallow spread foundations; this is consistent with the existing structures on site and the provided historic geotechnical report for the site. For the three major process buildings, the building foundations will be isolated from the interior floor slab and equipment foundations. The buildings will have containment in the form of trenches and sumps with sloped floor slabs. The three process buildings are designed to have a 2 ft stem wall around the perimeter for housekeeping purposes. The concrete floor slab and equipment foundations are planned to uncoated, Type II concrete in Area 700, reagent area, being coated with epoxy floor sealant. In general, tanks are planned to have vendor-supplied access platforms, however an allowance has been made for interconnecting structural steel platforms and access stairs to the elevated platforms.

Foundations for exterior equipment, such as process ventilation equipment and electrical equipment will be on mat foundations bearing below the frost depth.

Above-ground utility racks are planed throughout the facility, supporting piping, electrical and ductwork between major process buildings. Utility racks will be founded on spread footings. Within the major process buildings, utility racks will be routed in key corridors and provide support to piping, electrical and ductwork sperate from the PEMB structures. T-post and other small pipe supports will be located as needed for individual pipe runs. All structural steel interior and exterior is planned to be galvanized steel.

Limited foundation design work was completed for the new electrical substation area; however, an allowance was included for isolated spread foundations for electrical equipment and generators.

Concrete containment, pedestals and shallow foundations are planned for the natural gas tank area similar to the existing foundation and containment system.

The new fire water tank and pumps will be supported on a common raft foundation.

Shallow foundations and slab-on grade was assumed for the administration building.

4.6 Architectural

The associative process requires large open areas containing hazardous chemicals. Due to the large open area of hazardous chemicals, the building occupancy classification is H-2 as defined by the International Building Code. To achieve the design intent (maximized open areas), the construction type associated with the occupancy classification (H-2) is Type IA. A 3-hr fire separation wall is also included within the design providing area separation for allowable area compliance. Building construction consist of a 3-hr exterior envelope comprised of insulated mineral wool panels and/or insulated tilt-up concrete wall panels.

4.7 Electrical Power Supply and Distribution

The electrical power distribution will be utilized in conjunction with the existing system. The new electrical system is designed to be flexible and will have enough capacity to allow for future expansion.

The new main substation will be used for the new processing facilities and substation will be housed closer to the existing facility.

4.7.1 Overall Power Distribution

The electrical system will consist of four motor control centers (MCC) rated at 480V, one low voltage switchgear at 480V, three pad mounted oil filled transformers to step down the 4160V to 480V fed from pole mounted fuses located near each of the three buildings.

The buildings are fed from the main substation which is fed from the 69kV overhead line supplied by Rocky Mountain Power.

4.7.2 Main Electrical Substation

The main substation will be housed closer to the existing substation. The purpose of the new substation is to be the central protection and distribution unit from the 69kV utilities supplied overhead line.

The utility supplied 69kV power transmission line will be separated using 69kV rated pole mounted fused cut-outs to segregate the utilities supplied power. The pole mounted fuses also protect the transformer from any up-stream fault current experienced by the utilities and protects the utility transmission line from downstream fault.

The medium voltage 10MVA rated transformer will step down the voltage from 69kV transmission line voltage to 4160V site distribution voltage. On the load side of the transformer, a neutral grounding resistor will be added to reduce the ground fault current to 25 amperes. The 10MVA rating was calculated using the Phase 2A load using the utilization, diversity, demand, and power factors. The additional loading of Phase 2B was estimated to be 70% of the Phase 2A load.

The medium voltage transformer will feed the 4160V, -1200-amp substation with 8 vertical sections, with a minimum enclosure rating of NEMA 3R. The substation will house a vacuum-type breaker with 52 AC circuit breakers to interrupt the circuit under fault conditions. The substation will feed each of the buildings using 5kV rated armored cables, installed on an overhead pole line.

4.7.3 Site Power Electrical Distribution

The C&L building will have an electrical room which houses the 480V MCC with 1200A rating fed from a medium voltage transformer stepping down from 4160V to 480V. The MCC for the C&L building is fed from a 1 MVA step down transformer using 4 parallel conductors of 3C#500kcmil. The SX building electrical room will house two 1200A MCCs rated at 480VAC fed from a 2000A low voltage switchgear, rated at 480VAC. The low voltage switchgear for SX building is fed 2 MVA step down transformer using 2000A rated cable bus. The 480VAC, 1200A rated MCC for the P&C building is fed from a 500kVA step down transformer using 2 parallel conductors of 3C#500kcmil. All the transformers are fed from fuse cut-outs installed on wooden poles. Each transformer will be provided with a 5A neutral grounding resistor to provide a resistance-grounded electrical system for safety and reliability.

Each building is fed from a dedicated vacuum-type-rated circuit breaker installed inside the medium voltage switchgear.

4.7.4 480 V Motor Control Centers

The 480 VAC MCCs will incorporate NEMA-type motor starters, fused disconnect units, feeder breaker units and integral variable frequency drives, if required.

Estimated MCC loads are tabulated in Table 4-1 and are grouped according to process. Load distribution can be evaluated during the FS, to distribute the loads more evenly between MCCs.

Table 4-1: Estimated Motor Control Center Loads

Equipment Number	Connected Load kW	Operating Load kW	Equipment Rating A
P&C-MCC-001	444	403	600
SX-MCC-001	353	254	1200
SX-MCC-002	730	460	1200
C&L-MCC-001	1,184	705	1200

4.7.5 Cabling

Tray cabling will be used for electrical power feeders within electrical room, plant area and to interface between plant and electrical room. Metal-clad (MC) cables will be used for power and control cables for field equipment and devices. Tray cabling is cost-effective in the electrical rooms as it costs less than MC cable and has comparable installation costs. MC cable is more cost-effective in the field than tray cable with conduit drops for mechanical protection since conduit installation is time-consuming and requires highly skilled individuals to install properly. 1kV rated cable will be used for power, 600V rated cables will be used for control and 300V rated cables will be used for analog signals. Communication will be through CAT6e and single mode fibre (SMF).

The 5kV MC cable will be brought through overhead lines mounted using 60-foot wooden poles. The fibre communication cable will also follow similar routing as the 3-phase power cable to each of the electrical rooms from the substation.

4.7.6 Cable Tray

An aluminum ladder-type cable tray will be installed in electrical room and non-corrosive process areas. Fiberglass, steel or coated metal cable tray will be used in corrosive process areas. All cable trays will be covered and should be torqued shut.

Separate cable tray systems will be provided for the medium-voltage (4.16 kV) cables, low-voltage (480 V) power cables, and instrumentation/control cables.

Power and communication cables will be separated through a divider. Cable trays will be supported, labelled, grounded, and bonded at section of the cable tray.

4.7.7 Grounding and Bonding

All new buildings, structures and external package equipment will have perimeter #4/0 AWG copper ground-conductor loops and copper ground rods bonded to building, structures and packages at 40-foot intervals. Grounding test wells will be provided in at least two places, to provide testing access to the grounding system. New perimeter ground loops will be tied into the existing plant grounding system at a minimum of two locations.

Electrical rooms will be provided with grounding systems for bonding of all electrical equipment to ground bars. Grounding systems will be tied to the plant grounding system in at least two locations.

For each 4.16 kV feeder cable, a separate #4/0-1C insulated green grounding conductor will be installed into the conduit and grounded at the 4.16 kV switchgear in the main switchgear electrical room and at the dry-type power distribution transformer.

All new cable trays will be provided with a grounding conductor and bonded at intervals to the requirements of the latest national electrical code. Bonding jumpers will be provided at cable-tray joints.

Low-voltage 460-V motors will be grounded using conductors of motor feeder cables to ground lugs inside motor termination boxes.

All buildings, structures, tanks, packages, handrails, ladders, platforms and rebar will be bonded to the ground system.

4.7.8 Lighting

Each MCC will house a 45 kVA, 480V to 120/208V dry-type power transformer and 120/208V panel board will provide power to indoor LED lighting and receptacles for process areas, electrical room and operator control room. Another 45 kVA, 480V to 120/208V dry-type lighting transformer, 120/208V panelboard and contactor/control panel will provide power and control to outdoor LED lighting and receptacles for buildings, tank farm areas and roadways.

Depending on the lighting requirements, a lighting contact may be installed inside the electrical room to service all the outdoor lights.

Indoor emergency egress LED lighting will be powered from 10 kVA dedicated UPS.

4.7.9 Programmable Logic Controller and Instrument Power

The PLC cabinet complete with controller will be powered by a 10 kVA dedicated UPS through a maintenance bypass switch. The switch will also be powered from a 45 kVA power transformer located inside the electrical room. The transformer will provide power through the panel board to power the PLC cabinet, and operator workstation.

4.7.10 Heat Tracing of Process Piping

A 45 kVA, 480V to 120/208V dry-type transformer, 120/208V panelboard, microprocessor-type heat tracing power/control panel and 45 kVA UPS will provide power and control to process piping heat tracing segments, to maintain temperatures as identified in piping line list.

A power transformer, panelboard, UPS and microprocessor-type heat tracing power/control panel will be installed in the electrical room.

4.7.11 Welding Outlets and Receptacles

60A Welding outlets and receptacles will be installed and distributed in all the process buildings.

4.8 Instrumentation and Controls

The level of automation is considered moderate, to enable operation of the plant from the central control room with minimal operator intervention in the field.

Instrumentation and controls packages were factored as a percentage of mechanical package value. Instrumentation and control costs will be refined in the FS. Instrumentation and controls packages will be further defined in the Feasibility Study.

The Process Control System (PCS) proposed is a Rockwell ControlLogix system. PLC hardware will be installed in control cabinets and in a Remote I/O (RIO) cabinet in the various electrical rooms (a pressurized clean environment) throughout the plant. PLC and RIO cabinets will be supplied with network switches and will communicate with each other over a dedicated Ethernet I/P control network. The new control network will be connected to and form part of the existing overall control network.

Most discrete inputs / outputs (I/Os) will be 24 VDC and will use high-density 32-point digital inputs and outputs. Analog I/Os will be 8-point isolated input and output cards. All motor controls will be through digital communication over an Ethernet I/P network.

All field instruments will be connected to the PLC and RIO cabinets with MC cables with a waterproof outer jacket rated for 300V and will run in trays separate from the 120 VAC and motor cables.

PLCs will be Allen Bradley CompactLogix or ControlLogix vendor packages, similar to the existing plant PCS. This will provide seamless integration into the PLC network through Ethernet I/P, allowing the operator monitoring and control from the central control room.

The central control room will have one operator station and one engineering workstation. The operator station will comprise a computer with the latest generation of processor and hardware. The operator will be able to monitor the process and acknowledge alarms, and to make changes to the process setpoints, provided he has the access rights.

The engineering workstation will also function as a second operator station. Rockwell Factory Talk will be used for HMI graphics. The PLC will be on a ControlLogix hardware platform, programmed with Studio 5000.

Some vendor packages that come with instruments only will be wired into the owner's control system. These instrumentation costs are included in the mechanical equipment costs. WSP's estimate includes wiring of the instruments to the owner's PLC cabinets, and PLC programming.

Other vendor packages come complete with all instrumentation and controls. The costs of these instruments, along with installation, wiring and control system, are included in the mechanical equipment costs. The final connection of the vendor-supplied PLC to the owner's PLC network through Ethernet I/P is also included in the estimate.

Field instruments for transmitters will be standardized throughout the facilities where suitable and available.

4.9 Fire Detection and Suppression

Fire protection for the SX facilities will be provided in conformance with NFPA 122, *Standard for Fire Prevention and Control in Metal/Nonmetal Mining and Metal Mineral Processing Facilities*. Requirements applicable to new solvent extraction facilities are provided in NFPA 122, Section 13.21. Additional loss prevention guidance for SX facilities is provided in FM Global Property Loss Prevention Data Sheet 7-12.

The mixer/settler trains in the SX building will be protected by foam-water deluge systems utilizing Type II foam application devices delivering fire suppression foam solution to all liquid surfaces in the mixer/settler assembly. All mixer/settlers in the

Zone of actuation will receive foam discharge within the mixer and settler vessels. The deluge foam system in each Zone will be actuated by linear heat detection installed above the liquid surfaces, with detection zones corresponding to the foam deluge system zones. UL listed fire suppression releasing control panels will monitor the linear detection controllers, and upon verification of an alarm condition, the releasing panel will initiate the solenoid release of the foam system deluge valve serving that zone. The releasing system has the potential to incorporate a time delay feature, with discharge "abort" stations, to allow for staff intervention prior to foam system discharge.

Based on the proposed SX facility layout, the mixer/settler units would be divided into multiple separate zones for detection and foam deluge system discharge. Although separate zones are provided, the foam system, and the fire protection water supply system serving the facility will be designed to flow all foam deluge zones at the same time due to the proximity of the mixer/settlers within the facility.

In addition to the local foam suppression provided for the mixer/settlers, a closed-head foam-water sprinkler system will be provided for protection of the SX building, and protection of building areas outside of the mixer/settlers. Foam system protection will also be extended to the crud tanks and organic solvent and diluent tanks, as required by NFPA 122. The sizing of the foam system equipment and fire protection water supplies to the SX facilities will be based on simultaneous flow of the overhead foam-water sprinkler system with the zoned mixer/settler foam deluge systems.

4.9.1 Fire Protection for Ancillary Facilities

The Fire Suppression System equipment room will be protected by automatic sprinkler systems. The Control Room and MCC Room will be protected by clean agent fire suppression systems. It is recommended that the other ancillary structures be protected by automatic sprinkler systems.

4.9.2 Fire Detection and Fire Alarm Systems

Fire alarm systems will be provided for all process buildings, electrical and MCC Buildings, the Control Room, and Fire Suppression Equipment Buildings. Initiating devices will include manual fire alarm pull stations, sprinkler system water flow switches, and foam system activation pressure switches. Notification appliances will include audible and visual fire alarm notification devices for "Private Mode" notification.

Detection systems utilized for fire suppression releasing service will be provided with their own detection and releasing system control panels, but these releasing panels will be monitored by the fire alarm system control panels.

Integration of these new fire alarm control panels into the existing plant’s overall fire alarm reporting system will be by others.

4.9.3 Fire Protection Water Supply Upgrades

The new fire suppression systems proposed for the SX facilities and the new Ancillary facilities will require upgrades to the existing fire protection water supply system onsite. This will include the installation of a new fire pump installation incorporating new electric and diesel driven pumps for redundancy, as well as a new dedicated fire water storage tank. The existing underground fire water distribution system on site has had multiple pipe failures recently, resulting in degradation of the fire water distribution system serving the site. With the installation of new fire pumps, with higher system flows and pressures expected, a new fire water distribution system should be provided to feed both existing and proposed fire protection systems throughout the facility.

4.10 Ancillary Buildings and Services

4.10.1 Control Room

Phase 2A will include a new two-story building supporting the central control room, the Solvent Extraction MCC, the Precipitation and Calcination MCC, and Control Infrastructure. The Control room will adjoin the Solvent Extraction building and allow for process monitoring of the SX facilities. The control room will be on the second story and the electrical and controls equipment will be on the lower level. This equipment will not fall under Hazardous Area Classification of Class 1 Division 1; as the SX facilities are. The control room and electrical room will need a positive pressure HVAC controlled system and fire separation to comply with electrical and fire protection codes. The building dimensions are tentatively 30 ft x 60 ft. The building with be a vendor supplied modular building with a skid base. It will come furnished with insulation, HVAC, lighting, interior cable tray, and grounding. The Control room will come shipped as 4 sections and assembled onsite.

4.10.2 Fire Suppression / Air Compressor Building

The Fire Suppression and Air compressor building will have similar equipment to the current Fire Suppression and Air compressor room adjoining the current Solvent Extraction Building. The major equipment inside will be the foam storage vessel and mixing/proportioning device, fire suppression piping system and infrastructure, air compressor, air dryer, and air receiver(s). This building will adjoin the SX facility to provide the fire suppression foam to the SX. The building dimensions are tentatively 30 ft x 60 ft. The building with be a vendor supplied modular building with a skid base. It will come furnished with insulation, HVAC, lighting, interior cable tray, and grounding.

4.10.3 Natural Gas Storage and Infrastructure

Additional natural gas supply will be provided by securing rental tanks from the local supply company and placed near existing tanks. New concrete support pedestals would be provided. Distribution of the natural gas would be provided by new piping circuit to boiler and building unit heaters. Pipe supports would be provided by pipe racks external to the process buildings and supported off building interior walls or roof trusses. Detail pipe layout and support design would occur during feasibility and detailed design efforts.

4.10.4 Emergency Dump Pond

The Emergency Dump Pond and associated infrastructure is designed to quickly remove all flammable material from the SX facility in the case of a fire. The flammable material will be routed outside the 50-ft setback from the SX building, as required by fire code.

4.10.5 Boiler

A natural gas fired boiler would be provided to provide steam for process heating for the steam coils located in the process tanks. The boiler would require conditioned and treated water. Piping for the supply of the steam and return of condensate would be provided as part of the design. All steam and condensate piping would be jacketed and insulated for heat conservation and personnel protection.

5.0 RISKS AND OPPORTUNITIES

5.1 Risks and Opportunities

The -highest-ranking risks after a combined WSP/EFR Risk Review session, those with a matrix rating of 16 and higher, or those added after the Risk Register review session, are summarized below.

5.1.1 Operations Risks / Opportunities

- Variability of Feedstock Supply – Feed is over or under-supplied causing the process to run non-optimally. Energy Fuels is working to secure feedstocks to ensure consistent operation. Additionally ensuring the feedstock quality and variability is consistent with the process design criteria. WSP has not performed due diligence on the feed material quality or variability.
- Staffing Operations and Maintenance – Availability of staff to operate and maintain the facility is limited in the locality of the plant. Energy Fuels will need to work to staff the new facility prior to completion.

5.1.2 Design Risks / Opportunities

- Fire Suppression Event – Organics in the solvent extraction areas come with a risk of fire and a fire suppression event could contaminate the product. Additional design work will be required to minimize the chances of a false-positive fire detection and accidental fire discharge.
- Sizing of the major equipment sizing based on the process design criteria. Specifically, confirmation of thickener underflow densities. Energy Fuels is completing test work to validate various process conditions including densities and settling rates. This will confirm proper equipment sizing ensuring the subsequent feasibility study phase of the project. WSP has not performed due diligence on the lab, pilot, or bench testing completed.
- Based on a preliminary speciation of the soluble elements in the process streams and expected chloride levels the use of austenitic stainless steel has been eliminated from consideration. Materials of construction currently consist of rubber-lined steel or FRP for process tanks and thickeners, and rubber-lined steel, HDPE or PE for piping materials of construction. Material selection should be reviewed at the next stage of estimate to confirm their suitability to this particular application.
- Process tank and thickener sizing were based on preliminary process design criteria for the mass balance. The anticipated size of some of the process tanks and thickeners will exceed the ability to properly shop fabricate and ship to the plant site prompting field erection. Size selection should be reviewed at the next phase to determine the most cost-effective option. WSP has not performed due diligence on the lab, pilot, or bench testing data used in development of the process design criteria.

6.0 CAPITAL COST ESTIMATE

The purposed of this report is to confirm through a series of narratives precisely how the estimate was developed and compiled.

The Class 4 Capital Cost Estimate for the Mill PFS was developed to provide an estimate suitable for the level of engineering completed in the Pre-Feasibility study. This includes costs to design, procure, construct, and complete commissioning of the process facilities and ancillary buildings, as discussed in the Mill PFS.

The costs in this section of the report are expressed in second quarter (Q2) 2023 U.S. Dollars (USD) with no allowance for escalation, currency fluctuations, taxes, duties, or interest during construction. Construction costs are based upon lump sum and unit price fixed fee contracts.

6.1 Estimate Scope

The capital cost estimate for the Mill PFS includes:

- Direct field costs of executing the project including construction, installation and commissioning of all structures, utilities, materials, and equipment
- Indirect costs associated with design, construction and commissioning
- Reagent first fill and initial equipment spare parts
- Owner's cost (estimated by WSP)
- Provisions for contingency

The capital cost estimate for the Mill PFS does not include:

- Inflation adjustments from Q2 2023
- Taxes, duties
- Additional Natural Gas storage & infrastructure (assumed to be provided by Utility Company)
- Uranium Mill reinstatement or expansion costs
- Lab, pilot, or bench scale testing
- Environmental Permitting
- Radiation Safety
- Tailings management

6.2 Capital Cost Summary

The following Table 6-1 represents the estimated capital cost for the project. The table shows the total project cost by discipline and includes scope items for the rare earth mill, namely the surface facilities, infrastructure, and new office facility. No additional allowance for reinstatement of the existing uranium mill has been included.

The subsequent Table 6-2 provides cost detail listed by work breakdown structure based upon process stream and areas.

Table 6-1: Capital Cost Estimate Summary by Discipline

Cost Type	Disc Description	Total Amount (USD)	Percent of DFC	Percent of TIC
Direct Field Costs	Civil	$ 2,500,000	1%	1%
	Civil Piping	$ 1,500,000	1%	0%
	Detailed Civil	$ 500,000	0%	0%
	Concrete	$ 26,900,000	14%	8%
	Structural Steel	$ 7,200,000	4%	2%
	Building Finishes	$ -	0%	0%
	Building Packages	$ 56,300,000	28%	16%
	Building Services	$ 11,600,000	6%	3%
	Mechanical	$ 44,200,000	22%	13%
	Mechanical Bulks	$ 1,000,000	1%	0%
	Tanks	$ 10,100,000	5%	3%
	Process Piping	$ 4,800,000	2%	1%
	Electrical	$ 22,300,000	11%	6%
	Instrumentation	$ 5,300,000	3%	2%
	Coatings	$ 3,500,000	2%	1%
	Insulation	$ 600,000	0%	0%
Direct Field Costs Total		**$ 198,300,000**	**100%**	**57%**
Indirect Field Costs	Construction Indirects	$ 31,700,000	16%	9%
	Reagents First Fill	$ 6,500,000	3%	2%
	Camp & Catering	$ 11,900,000	6%	3%
Indirect Field Costs Total		**$ 50,100,000**	**25%**	**14%**
Other Indirect Costs	Taxes (Excluded)	$ -	0%	0%
	EPCM	$ 22,800,000	11%	7%
	Owner's Costs	$ 7,500,000	4%	2%
Other Indirect Costs Total		**$ 30,300,000**	**15%**	**9%**
Provisions	Contingency	$ 69,700,000	35%	20%
	Escalation	0	0	0
	Risk	0	0	0
Provisions Total		**$ 69,700,000**	**35%**	**20%**
Grand Total		**$ 348,400,000**	**176%**	**100%**

Table 6-2: Capital Cost Estimate Summary by Work Breakdown Structure

WBS	WBS Description	Total Amount (USD)
000	2A U3O8 Mill Reinstatement	$ -
100	2A Cracking & TSP Wash	$ 24,300,000
200	2A HCl Leach & Ra Removal	$ 5,900,000
300 (&400)	2A Solvent Extraction	$ 92,000,000
500	2A Oxalate Precipitation	$ 8,200,000
600	2A Calcining & Packaging	$ 6,300,000
700	2A Reagents	$ 4,700,000
800	2A Non-Process Systems	$ 10,400,000
900	2A Ancillary Infrastructure	$ 46,500,000
IND	Construction Indirects	$ 31,700,000
	Reagents First Fill	$ 6,500,000
	Camp & Catering	$ 11,900,000
Other Ind	Taxes (Excluded)	$ -
	EPCM	$ 22,800,000
	Owner's Costs	$ 7,500,000
Prov	Contingency	$ 69,700,000
	Escalation	$ -
	Risk	$ -
Grand Total		**$348,400,000**

6.3 Accuracy of Estimate

The estimate meets the classification standard for a Class 4 estimate as defined by AACE in their recommended practice 47R-11, Cost Estimate Classification System – as applied in Engineering, Procurement and Construction for the Mining and Mineral Process Industries.

The CAPEX estimate has an intended accuracy of -30/+40%. Some individual elements of the estimate may not achieve the target level of accuracy, but the sum of all estimate elements combined falls within the parameters of intended accuracy.

The determining characteristic for the classification of the estimate is the maturity level of definition available to support the estimate. Our estimate classification guidelines for achieving a Class 4 estimate correlate to the level of completion of the engineering work that has been carried out. This relates to the overall level of design including progression of drawings, specifications and design briefs and the number and cost certainty of quotations received from outside sources.

6.4 Execution Strategy

The execution strategy assumes that project delivery will be under the direction and coordination of an EPCM contractor.

6.5 Scope of the Estimate

The capital cost estimate reflects a detailed bottom-up approach that is based on key engineering deliverables that define the project scope. This scope is described and quantified within material take offs (MTOs) in a series of line items.

The MTOs were developed as the principal means of conveying the engineering information to the estimator and divided all the engineering completed into areas and disciplines. Where MTOs were not developed, factors or allowances were used.

This method allowed for an efficient transfer of the design information and enabled MTOs to be generated with sufficient detail to be uploaded to the estimate. This same methodology will be used in the future to convey the scope of work of the project to the various contractors and project controls personnel.

6.6 Currency

Currency exchange rates are provided as of Q2 2023. No inflation factor has been applied to account for inflation since the Q2 2023 USD estimate.

Table 6-3: Currency Exchange Rates

Currency	Currency Code	Estimate Cost per USD
Euro	EUR	1.09
Canadian	CAD	0.76

Costs are expressed in the base currency of U.S. Dollars (USD).

6.7 Unit of Measurement

The imperial system was used throughout the estimate and material take offs (MTOs). The Table 6-4 below lists the units of measure, with other units being used as appropriate.

Table 6-4: Units of Measurement

Description	Unit of Measure	Symbol
Distance (short)	Feet	ft
Area	Square feet	ft^2
Volume	Cubic yard	yd^3
Weight (small)	Pounds	lb
Weight (large)	Ton	ton
Package	Lump Sum	LS
Unit	Each	ea
Factored Allowance	Lot	lot

6.8 Definitions

The Class 4 capital cost estimate described throughout this document represents an evaluation of all the cost elements of this project and corresponding effort as defined by the agreed upon scope.

The following definitions shall apply throughout:

Direct Cost: the cost of installed process equipment, material and labor directly involved in the physical construction of the permanent facility and infrastructure.

Indirect Cost: all support costs required for the orderly completion of the project but not directly related to a specific measure of work and not part of the final physical facility installation yet is part of the total cost of facilities.

Contingency: a monetary provision intended to cover items that are included in the scope of work as described in this report but cannot be accurately defined and/or quantified at this stage.

Escalation: the provision in estimated costs for an increase in the cost of equipment, material, labor, and other resources, due to continuing level of price.

6.9 Estimate Report Structure

Capital costs are presented within the estimate, coded in accordance with the project WBS, with column headings as described in the figure below:

Table 6-5: Estimate Report Structure

Title	Description
Seq	Unique sequential identification number of each line item.
Cost Type	Classifies whether the line item is a direct field cost, indirect cost, or provision in the estimate. This is used for cost summaries.
MTO and MTO Rev	Identifies the material take-off and revision the line item came from.
WBS	Work Breakdown Structure codes for process stream and areas.
Quantity Development Method	Identifies the approach used to derive the quantity for each line item based on the level of accuracy that it implies.
Material Pricing Source	Categorizes each price in the estimate based on the level of definition represented.
Discipline	The craft trade of work being performed for a specific line item.
Description	Detailed description for each item in the estimate.
Quantity	Amount of equipment or materials listed in the item description.
Unit	Quantity unit of measure.
Total Labor Hours	The direct work hours to perform a unit of work. This includes work hours for contractor crews, on-site construction management and indirect services. Off-site work hours such as engineering hours are not shown in the estimate. Work hours for items costed as supply and install have been

	included or estimated, with the cost shown in the Subcontractor Amount column, instead of the Labor Amount column. The total hours including labor and subcontractor hours are shown in the Total Labor Hours column.
Labor Amount ($)	The labor work hours multiplied by the total crew rate for each item of work.
Material Amount ($)	The cost of process and utility equipment such as columns, vessels, exchangers, pumps, motors, tanks, compressors, transformers, and special equipment. This also includes bulk materials that are bought in commodity lots but are made up of individual items that are indistinguishable from other items in the lot. Bulk materials include, but are not limited to, aggregate, concrete, structural steel, cladding, piping, and cable.
Equipment Amount ($)	Estimated as dollars per direct workhour by discipline account for contractor-supplied construction equipment that includes for equipment ownership or rental, depreciation, insurance, fuel, lubricants, maintenance, service and repair.
Subcontractor Amount ($)	Pricing provided that includes supply and installation, for example: roads, cladding and design, supply, and install contract (DSIC) packages. This also includes any factored amounts for disciplines or items that weren't quantified.
Other Amount ($)	The Other Amount column is used to capture costs that don't fall under the other categories. This is typically used for indirect costs.
Total Amount ($)	The sum of Labor Amount, Material Amount, Equipment Amount, Subcontractor Amount, and Other Amount.

6.9.1 Project Work Breakdown Structure

The estimate was developed in accordance with the project Work Breakdown Structure as shown in Table 2-1.

6.9.2 Construction Schedule

The capital cost estimate was based on an 18-month schedule for construction plus 3 months for commissioning, for a duration of 21 months to completion and hand-over.

Table 6-6 - Preliminary Engineering, Procurement and Construction Schedule

Project Phase	Duration
Feasibility Study	9 Months
Procurement	18 Months
Detailed Engineering	12 Months
Construction	18 Months
Commissioning	3 Months

6.9.3 Estimate Support Documents

The principal technical and execution deliverables relied upon in the preparation of the capital cost estimate include:

- Site plan and rudimentary facility arrangement sketches
- Project scope of facilities
- Project WBS
- Mechanical equipment list
- PFDs
- Rudimentary MTOs for earthworks, civil piping, concrete, structural steel, and electrical primary power up to and including MCC centers
- List of pre-engineered and modular construction buildings
- Vendor budget quotations on major equipment and secondary equipment
- In-house historical data from recent projects

6.9.4 Quantity Development Basis

Material take-off quantities were provided by engineering. The following Table 6-7 demonstrates the level of quantity development for the estimate by discipline.

Table 6-7: Quantity Development Methodology

Quantity Development Methodology (% of Total Amount)							
Disc	**Disc Description**	**Measured**	**Developed**	**Factored**	**Allowance**	**Total**	***% of Total***
A	Mining						
B	Civil	1%	85%	11%	2%	100%	*1%*
B1	Piling						
C	Civil Piping		89%	11%		100%	*1%*
D	Detailed Civil		100%			100%	*0%*
E	Concrete	5%	78%	17%	0%	100%	*14%*
F	Structural Steel	5%	75%	20%		100%	*4%*
G	Building Finishes						
G1	Building Packages	84%		7%	9%	100%	*28%*
H	Building Services	2%		96%	2%	100%	*6%*
J	Mechanical	95%		5%		100%	*22%*
K	Mechanical Bulks	4%		96%		100%	*1%*
L	Tanks	95%		5%		100%	*5%*
M	Process Piping		70%	11%	19%	100%	*2%*
N	Electrical	42%	2%	53%	3%	100%	*11%*
P	Instrumentation			100%		100%	*3%*
Q	Coatings	53%	8%	38%		100%	*2%*
R	Insulation	37%		37%	25%	100%	*0%*
	Weighted Total	**57%**	**17%**	**22%**	**4%**	**100%**	***100%***

Measured – Quantities taken off from design drawings, 3D Models, equipment and instrument lists based on PFDs and piping diagrams, calculations from mass/energy balance calculations, and other engineered calculations specific for the Project.

Developed - Quantities calculated from general project information and reports, GAs, conceptual design, sketches.

Factored - Calculated from similar sized projects and factored to adjust for plant size, capacity, and site-specific requirements.

Allowed - Quantities estimated based on engineering or estimating judgement and is unsupported with engineering data or calculations.

6.9.4.1 Civil Works

Civil quantities were developed by engineers from drawings, sketches, and design specifications. Earthwork quantities for mass excavation, backfill, pond liner, drive-way surfacing, fences, underground services, slope protection were stated with no allowance for swelling or compaction of materials.

6.9.4.2 Concrete

Bulk quantities for structural concrete were developed based off preliminary site arrangement drawings, estimated building sizes, and conceptual foundations and slab designs based on typical designs practices and existing structures at site. All inclusive historic unit rates were used based off bulk concrete quantities. Rate adjustments were provided for detailed concrete work (sumps and pedestals) vs. mass concrete pours.

Quantities are calculated neat without allowances for wastage, over-pour, and other variables. Allowances for these items are built into the historical unit rates for total installed concrete.

6.9.4.3 Structural Steel

A large portion of structural steel was included in the pre-engineered building packages. Engineering estimated additional fabricated structural steel for access platforms and utility racks throughout the site. Material take-offs were generated from typical utility rack and access platform structures and factored based on linear feet or square footage required. Engineering provided material take-offs for the structural steel in light and medium weight categories as well as miscellaneous items.

6.9.4.4 Building Finishes

Cladding and building finishes are generally included with the building packages. Engineering provided a detailed MTO listing pre-engineered and modular building packages based on proposed sizes. Estimating factored building costs known from other projects.

There is no allowance for stick-built construction type buildings.

6.9.4.5 Architectural

All architectural quantities were estimated from preliminary conceptual drawings and sketches showing framing and architectural elements relating specifically for this project. Where project specific information was not available such as quantities for tilt-up or precast concrete, adjustments to quantities was applied using information from past projects.

Where specific information on general arrangements were not available, adjustments to quantities was applied using information from similar projects. The basis bases of design are:

- General arrangement drawings
- Inter-discipline layout information

MTO quantities were provided by engineering. All interior facilities such as control room, washrooms, electrical rooms, and offices are based on masonry type structures built on site. Architectural fit-out and finishes were calculated on $/sf.

The costs for detail earthworks, concrete foundations and internal steel, building service, lighting and grounding of these structures were included by other relative disciplines.

6.9.4.6 Mechanical

Engineering provided a mechanical equipment list (MEL) with equipment tags, WBS, capacities and dimensions. The requirements for platework and tanks were included in the mechanical equipment list (MEL). Plate work and tank tonnages were provided by Engineering (Appendix B). Electric motors were itemized and priced with the equipment.

The following packages were priced based on preliminary single source budgetary quotes for the WSP Scope:

- Process Pumps
- Thickeners
- FRP tanks
- Mixer/Settlers
- Reagent Feed Systems
- Scrubber Systems
- Calciner

The following packages were priced based on in-house or previous project data:

- Screw Feeder
- Firewater System
- Air Compressor System
- Boiler and water treatment system
- Baghouse and Fan system
- Agitators
- Belt Filter

Freight was considered in the indirect costs.

6.9.4.7 Mechanical Bulks

Mechanical Bulks and carbon steel tanks were priced based on a cost per weight basis from recent in-house data from similar projects. FRP tanks are based on single source budgetary quotation.

WSP standard installation manhours per lb. from the database was used for mechanical bulks and tanks.

6.9.4.8 Piping

All piping was quantified from project PFDs and General Arrangement drawings based on pipe specification, piping material and pipe diameter. These measurements are calculated as length through the fittings by using linear measurements in the mechanical layouts and adding elevation lengths from mechanical sections.

All pump suction piping was given identical lengths and a unique complexity factor throughout.

Line temperature, pressure and material requirements were established by the process group and shown on the mass balance mark-up. Based on this information, WSP developed a set of piping classes to suit the parameters. This allowed us to proceed with a precise MTO without P&IDs.

Fittings and flanges were based on pipe quantities.

Manual valves were added as a factor and included pump suction and discharge isolation valves as well as high and low point vent and drain valves. The analysis was based on our extensive industry experience and with reference to other similar projects and processes.

Allowance for pipe supports was added, based on a percentage of materials and field labor.

Pipe insulation and heat tracing requirements were identified on the piping MTO line list and costed separately in the insulation and electrical account.

This above information was input into WSP estimating piping model to derive costs for installation labor hours and material. The model includes labor and material costs for piping, fittings, supports, testing and marking. Pipe material pricing is based on project material specifications.

6.9.4.9 Electrical, Instrumentation and Controls

Engineering provided the electrical material take-off (MTO) up to and including MCC sections. Where items were not fully designed yet, in-house data was referenced by estimating to provide appropriate cost allowances based on prior similar projects.

Budgetary quotations were received for some of the major primary electrical items. The items that were not priced from budgetary quotations are based on in-house data. Allowances were included for portions of the scope of work that haven't been designed at this stage of the project.

Instrumentation & control system costs and installation hours are estimated based on a combination of in-house prices, historical data and NECA/RS Means. Programming of the PLCs and HMIs is included, based on historical data from similar projects.

6.9.4.10 Insulation/Coatings

Where identified, insulation and coatings were based on duty, type, thickness, and area required. Piping insulation was taken off by diameter of pipe, thickness of insulation, and length of pipe. Pricing was based on historical budget pricing received from an insulation contractor.

6.9.5 Unit Rate Development

Budgetary quotations were obtained from vendors to meet the cost certainty requirements of the class of estimate. These quotations were included in the MTOs by engineering. The recommended cost considers available options and any adjustments to the bid due to deficiencies. Subcontractor unit rates from previous projects were used to price supply and install items. The unit rates include for all contractor indirect costs, such as mobilization, demobilization, and contractor temporary facilities, as well as the actual unit cost to supply and install the item.

6.9.6 Construction Equipment Costs

Construction equipment costs are applied as a dollar amount per direct labor work hour, based on our historic in-house project data. The exact amount is specific to each discipline.

The estimated costs represent a dollar amount per direct workhour by discipline account for contractor-supplied equipment. This includes for equipment ownership or rental, depreciation, insurance, fuel, lubricants, maintenance, service, and repair.

Project supplied cranes to be used for general lifting requirements on site are part of construction indirect costs. As a rule of thumb, cranes with capacity of 100 tons or greater are included within the construction indirect costs.

6.9.7 Direct Costs

6.9.7.1 Craft Labor Rates

Composite all-in contractor wage rates were developed for each discipline based on historical crew mix and Construction Labor Relations Association of Saskatchewan, Canada (CLRA) collective labor agreements. Based on RS Means published City Cost Index, rates were adjusted to represent rates that may apply in the local area around the mill site. These were compared to base wage rates published by the government of Utah where possible. These rates have been cross referenced against other similar project labor rate costs in the central U.S. and are within expected tolerances.

Construction crew rates are based on a craft mix comprised of foremen, journeymen, apprentices, skilled labor, and unskilled labor.

Labor work hours and blended labor rates were based on the following shift pattern:

- 10-hour days with a rotation of 2 weeks on the job site and 1 week off

The labor rates are inclusive of, but are not limited to, the following costs:

- Base Wage Rate
- Overtime Premiums
- Benefits & Burdens
- Government Assessments
- Contractor Overhead
- Contractor Profit
- Contractor Indirect Costs:
  - Small Tools & Consumables
  - Supervision, Administration and General Support
  - Contractor Mobilization and Demobilization
  - Contractor Temporary Facilities

Table 6-8: Labor Rates and Productivity

Estimate Rates and Factors					
Disc	**Disc Description**	**Labor Rate (USD)**	**Labor Productivity Factor**	**Equip Rate (USD)**	**Design Growth Allowance**
A	**Mining**				12%
B	**Civil**	$136.56	1.34		12%
B1	**Piling**		1.50	$15.50	12%
C	**Civil Piping**	$107.14	1.78	$19.50	12%
D	**Detailed Civil**	$105.98	1.38	$15.38	12%
E	**Concrete**	$105.98	1.38	$15.38	20%
F	**Structural Steel**	$139.76	1.34	$19.50	25%
G	**Building Finishes**	$89.14	1.45	$13.50	12%
G1	**Building Packages**	$125.00	1.50	$15.38	7%
H	**Building Services**	$99.97	1.45	$15.38	12%
J	**Mechanical**	$106.34	1.45	$19.50	5%
K	**Mechanical Bulks**	$111.07	1.45	$17.25	5%
L	**Tanks**	$111.07	1.45	$19.50	5%
M	**Process Piping**	$107.14	1.78	$13.50	12%
N	**Electrical**	$108.68	1.65	$15.38	12%
P	**Instrumentation**	$111.69	1.60	$7.13	12%
Q	**Coatings**	$91.34	1.45	$7.13	12%
R	**Insulation**	$91.34	1.45	$7.13	12%

6.9.7.2 Labor Productivity Adjustments

The labor productivity factors reflect findings from recent and ongoing projects in Saskatchewan, Canada. WSP also has extensive project experience throughout North America and assessed the factors used for suitability. Labor productivity impacts were not lowered to account for potential radiological safety precautions. Labor Productivity Rates are shown above in Table 6-8.

6.9.7.3 Construction Equipment

Construction equipment costs are applied as a dollar amount per direct labor work hour, based on our historic in-house project data. The exact amount is specific to each discipline.

The estimated costs represent a dollar amount per direct workhour by discipline account for contractor-supplied equipment. This includes equipment ownership or rental, depreciation, insurance, fuel, lubricants, maintenance, service, and repair.

Project supplied cranes to be used for general lifting requirements on site are part of construction indirect costs. As a rule of thumb, cranes with capacity of 100 tons or greater are included within the construction indirect costs.

6.9.7.4 Supply Pricing

All equipment and materials are assumed new.

6.9.8 Indirect Costs

Construction indirect field costs have been factored from previous projects on a percentage of direct field cost basis. A factor of 16% of Direct Field Costs has been included to cover non-camp related items. A separate cost has been included for first fills. Including the construction camp and catering, the total construction indirect cost works out to 25% of the DFC.

Construction indirect costs are intended to capture the following costs incurred during construction:

- Freight to Site and Logistics Management
- Scaffolding
- Temporary Construction Facilities and Hookups (excluding contractor temporary facilities)
- CM Supplies and Furnishings
- Temporary Utilities including Fuel, Water and Power
- Communications
- Waste Disposal
- Temporary Roads, Laydowns, Parking and Work Areas

- Warehousing and Laydown Management
- Mobile Equipment (including cranes), Crane Pads and Fuel
- Janitorial Services
- Site Bussing, if required
- Bottled Water
- Mail Delivery/Courier
- Testing and 3rd Party Inspections
- Site Survey
- Security
- Safety Supplies and Training
- Drug and Alcohol Testing
- Site Medical Personnel
- Vendor Reps
- Spare Parts
- First Fills
- Contractor Support during Commissioning
- Hydrovac
- Team Building
- High Angle Rescue

6.9.8.1 Engineering and Procurement

The cost for Engineering and Procurement (EP) services includes all efforts required up to pre-commissioning of the project and necessary to bring the project to a state of construction and mechanical completion. The cost for EPCM services has been factored based on WSP recent project metrics at this stage and has been reviewed for reasonability.

The EP estimate covers home-office based engineering services to design and procure the equipment for the mining, process, and associated infrastructure. Staff who are assigned to or move to the field office are included in the Construction Management (CM) estimate.

The EP estimate includes for the following home-office based services and expenses:

- Project management
- Project administration
- Engineering management
- Detail design
- Document control
- Home office health, safety and environmental
- Home office human resources
- Home office project controls
- Home office accounting and business services

- Home office computers and information technology services
- Home office procurement
- Vendor inspection and expediting
- Home office contract administration
- Estimating
- Travel costs for home-office staff
- Travel costs for inspection and expediting

6.9.8.2 Construction Management

The CM estimate covers the field or site-based services that are required to manage and supervise the contractors who will carry out the work through unit price, fixed fee, or lump sum contracts. Staff who are assigned or move to the field office are included in the CM estimate.

The CM estimate includes the following site-based services:

- Project management
- Field engineering
- Site document control
- Construction management
- Construction supervision to general superintendent level
- Site administration
- Site quality assurance and control
- Site project controls
- Site procurement
- Field contract administration
- Travel costs for field staff once assigned to site
- Health, Safety, Security, Environmental and Assurance (HSSEA) staff

Support expenses for the CM staff are included in the construction management costs, including but not limited to communications and safety equipment.

6.9.8.3 Contractors' Temporary Construction Facilities

An allowance has been included for the cost of catering and servicing an on-site camp. The allowance has been factored as an indirect cost based on in-house data from other projects. The size or specification of the facility has not been considered or defined.

6.9.8.4 Construction Support & Services

Construction support covers materials, equipment, and personnel to maintain the site during construction, and to support site warehousing and laydown management. These services include temporary construction maintenance, warehousing and laydown management, and garbage removal. Construction support items include:

- Project pickup trucks
- Warehouse and site logistic equipment
- Crane pads
- Mobile equipment cranes over 90-ton capacity
- Scaffolding
- Temporary dust suppression
- Temporary road maintenance.

6.9.8.5 Construction Utilities

Construction utilities cover items such as the following:

- Fuel for project team's equipment
- Construction water storage and distribution (by Owner)
- Communications (by Owner)
- Electrical utility charges (by Owner).

6.9.8.6 Health, Safety, Security, and Environment (HSSE)

HSSE covers the following components:

- Site orientation training for contractor personnel
- Initial blood tests and monthly monitoring
- Allowance for other specialty safety training
- First aid attendant services
- Post-incident drug and alcohol testing
- Site security services (not included assumed by Owner).

6.9.8.7 Freight, Logistics, Taxes, and Duties

Freight costs were calculated as 6% of the plant equipment & bulk material costs, and a percentage of subcontractor's estimated cost. No taxes or duties were included in the estimate.

6.9.8.8 Vendor Representatives

Vendor representatives are included for process equipment that requires them to validate manufacturers' warranties and provide on-site supervision of construction erection, pre-commissioning testing, and/or commissioning. Travel time, airfares, lodging, and other out-of-pocket expenses are included in the allowance. Costs are calculated as 0.5% of mechanical equipment value.

6.9.8.9 First Fills

First fills include such items as grinding media, lubricants, and reagents, but exclude general warehouse inventory. Costs are based on list of quantities and pricing of various reagents and grinding media provided by the WSP team.

6.9.8.10 Spare Parts

Spare parts were calculated as 5% of equipment purchase value.

6.9.8.11 Owner's Costs

The Owner's Costs for this project were factored. The Owner's Costs for the project are on the low end of the typical range. For any project, the Owner's Costs are highly dependent on the owner's strategy and the size of the team they choose to employ on the project. The overall amount carried was reviewed with EFR as is believed to be suitable for the project.

The Owner's Cost estimate includes the following items:

- Home Office Staffing
- Home Office Travel
- Home Office General expenses
- Home Office Miscellaneous Expenses
- Field Staffing
- Field Travel
- Field General Expenses
- Other Office Costs
- Pre-Operational Costs
- Staffing Expenses
- Training Expenses
- Miscellaneous Expenses
- Operational Costs
- Owner's Contingency

6.9.8.12 Contingency

Contingency is a monetary provision intended to cover items that was included in the scope of work as described in this report but cannot be accurately defined at this stage. This is due to the normal range of variability of quantities, productivity, unit rates, the current level of engineering completed and other factors. Contingency should be considered as expenditure that is predictable but indefinable at this stage of the project and is expected to be spent. Contingency does not include for any project scope change nor does it exist to cover any of the items listed within the exclusions in this report.

At this stage of the project, contingency has been applied based on a deterministic method. This entails looking at previous projects at this stage of development and establishing a reasonable factor to be applied.

WSP's recommendation is that contingency be applied at a factor of 25% of the Total Measurable Costs (TMC) for surface construction.

6.9.9 Escalation

Escalation is the allocation of cost to cover increases in actual and/or estimated costs of equipment, material, labor, engineering etc. over time due to continuing price level changes. Capital cost estimates for the project were initially developed in nominal dollars (dollars of the day) utilizing rates and pricing in effect at the time of estimate preparation, thus 2nd quarter 2023 United States Dollars (USD). Escalation accounts for likely increases incurred over time between the estimate base date and the anticipated cost on the date of expenditure.

The cost of escalation since Q2 2023 was excluded from the estimate.

6.9.10 Assumptions

The following assumptions have been used in compiling this estimate:

- All contracts are to be competitively tendered.
- Where possible, site construction contracts will be approached via unit rate basis.
- Site work is continuous and is not constrained in any way. Clear, unobstructed and uninterrupted access is available to all job sites.
- It is assumed that Issued-for-Construction (IFC) drawings will be complete before contractors begin work in the field.
- All equipment and materials will be new unless stated otherwise.
- There is no requirement for the excavation and disposal of contaminated soil or for any kind of demolition works.
- There is no allowance for personnel productivity lose due to radiation testing required to limit contamination transfer beyond the construction site.
- Adequate supply of skilled craft labor is available in the geographic area for construction.

6.9.11 Exclusions

The following items are not included in the capital cost estimate:

- Land acquisition
- Cost of financing and interest during construction
- Cost changes due to currency fluctuation
- Force majeure issues and events
- Scope changes
- Changes due to government legislation
- Project delays due to abnormal climatic conditions
- Lost time due to industrial disputes, strikes, or civil unrest
- Environmental/ecological/cultural considerations other than those addressed in the current design
- The cost of producing any environmental related documents and studies related to obtaining permits, approvals, or variance agreements from governing authorities.
- The cost of radiation safety related documents and studies related to obtaining permits, approval, or variance agreements from governing authorities, additional radiation safety equipment or systems.
- Contract incentives to EPCM contractor and contractors, e.g., early completion bonuses
- Sustaining and operating costs
- Working capital
- Changes to design criteria
- Accelerated schedule
- Site mitigation (identification and removal of contaminated soils, major oil and fuel spills, heavy metals, pesticides, asbestos solids, etc.)
- Deferred capital
- Duties and taxes
- Systems operation and maintenance
- Sunk Costs/Study Costs
- Schedule delays such as those caused by:
  - Scope changes
  - Delay in notice to proceed/client approval
  - Labor disputes
  - Unavailability of sufficient or experienced craft labor
  - Undefined geotechnical or environmental conditions
  - Unidentified or adverse subsurface soil conditions
  - Other external influences
  - Receipt of information beyond the control of WSP

7.0 OPERATING COST ESTIMATE

7.1 Summary

The operating cost estimate for the Mill PFS was developed to provide Energy Fuels with the basis for their economic evaluation.

The Operating Cost Summary (OPEX) is summarized below in table 7-1. The processing facility is reagent intensive, with the reagent costs as ~70% of the annual operating budget. The two main reagents are caustic and hydrochloric acid.

The estimated operating costs have a target accuracy of order of magnitude of ±25% in Pre-Feasibility, as of Q2 2023. The reagent consumption estimates were developed from the mass balance. Operating and maintenance labour was developed from a crew list. Maintenance materials and general and administrative cost allowances were applied. Pricing for reagents and labor was chosen in collaboration with Energy Fuels and based on both companies' in-house data, public information from similar operations, and budgetary quotations. Energy Fuels maintains ownership of the commercial sourcing of the reagents and the feed material for the Phase 2A facilities. WSP relied upon Energy Fuels' commercial pricing data for the reagents.

7.2 Basis of Estimate

The operating cost estimate was finalized on April 21, 2023. Unless otherwise indicated, all costs are expressed in Q2 2023 US Dollars with no allowance for escalation. The operating cost basis is as follows:

- OPEX estimate accuracy of ±25%
- Reagent unit costs provided from Energy Fuels and vendor quotations
- Reagent consumption based on WSP mass balance and stream tables
- Process and maintenance staffing and labor rates based on WSP estimates
- Maintenance and material costs based on WSP estimates
- Maintenance and materials cost for existing EFR facilities is excluded from this estimate
- Electrical power and LNG costs estimated from historical EFR rates
- General and administrative (G&A) costs based on WSP estimates
- Contingency allowance has been included at 10%

7.3 Process Operating Costs

The total annual process operating costs are estimated to average at $93,600,000 per year. The largest contributor to the operating costs is the Reagents as $68,200,000 per year. The Reagents constitute ~73% of the annual operating budget.

The remaining $16,900,000 includes LNG, water, Labor, Maintenance Materials, G&A, power, and sustaining capital. The 10% contingency allowance is estimated at ~$8,500,000.

The operating cost has also been calculated on a per unit basis. The operation cost is $13.54 per pound (lb) of NdPr Oxide, or $29.86 per kilogram (kg) of NdPr Oxide. The Phase 2A Prefeasibility estimated annual production is 6,910,371 lb per year of NdPr Oxide. This estimated annual production rate is an output from the Phase 2A PFS mass balance and stream tables, as approved by Energy Fuels team.

See Table 7-1 for the operating cost summary.

Table 7-1: Operating Cost Summary

Area	Annual cost $	Source
Reagents	$ 68,000,000	Reagents sheet (by EFR)
Liquid natural gas	$ 5,000,000	Reagents sheet (by EFR)
Water	$ 50,000	Reagents sheet (by EFR)
Total labor	$ 5,000,000	Labor sheet (by WSP)
Maintenance materials	$ 4,000,000	Estimate (by WSP)
General and administrative	$ 1,000,000	Estimate (by WSP)
Power	$ 800,000	2200 HP installed ~80% used (by WSP)
Sustaining capital	$ 1,000,000	Estimate (by WSP)
Subtotal	**$ 85,000,000**	
Contingency	$ 8,500,000	Estimate (by WSP)
Total operating cost	**$ 93,500,000**	**$/year**
Total specific operating cost	$ 29.86	$/kg NdPr Oxide
Total specific operating cost	$ 13.54	$/lb NdPr Oxide
Production rate	6,900,000	lb/year NdPr Oxide
Reagent cost (%)	73%	% Total costs from reagents

7.4 Economic Evaluation

Energy Fuels was responsible for the economic evaluation during the Pre-Feasibility Study. WSP provided the capital and operating cost estimates, as agreed with EFR. Energy Fuels was responsible for the commercial procurement of reagents, which is a majority of the project operating costs. WSP collaborated with EFR to establish the base-case financial and economic parameters for the project. Energy Fuels completed due diligence on the feed material quality, variability, and commercial pricing. Energy Fuels will remain responsible for the economic justification of the project to stakeholders.

8.0 FEASIBILITY STUDY CONSIDERATIONS

The following is a list of studies to be considered for the Feasibility Study:

- Geotechnical drilling and evaluation
- Utility study for water and sewer infrastructure
- Conduct a full materials of construction review of piping and equipment, to optimize performance and cost
- Process design criteria testing and validation, as required
- Feed material variability and consistency test work
- Reagent commercial pricing
- Solvent extraction building construction type and methods
- Detailed environmental study
- Radiation safety study
- Dust management, vapor recovery, building ventilation, and scrubber system requirements

8.1 Environmental and Permitting

Potential environmental risks to the project construction schedule and budget include the following. A detailed environmental study or radiation safety study was not completed for this report. EFR was responsible for all radioactive material, environmental, and all other permitting activities.

- Dust collection, tank ventilation and scrubbed gas stream are designed to discharge to the atmosphere. In future phases further environmental reviews may be required, and air permit obtained from the Utah Department of Environmental Quality to ensure that this will be acceptable with applicable regulatory and governing bodies.
- An evaluation should be performed to determine if any other permits are expected to be required for the project including: building permit with the local City or County jurisdiction, Fire Marshal, and approvals from the insurance underwriter.