



**Great Northern Power Development
Allied Syngas & NDIC**

**ALLIED SYNGAS
CORPORATION**

SOUTH HEART PROJECT

STATUS OVERVIEW

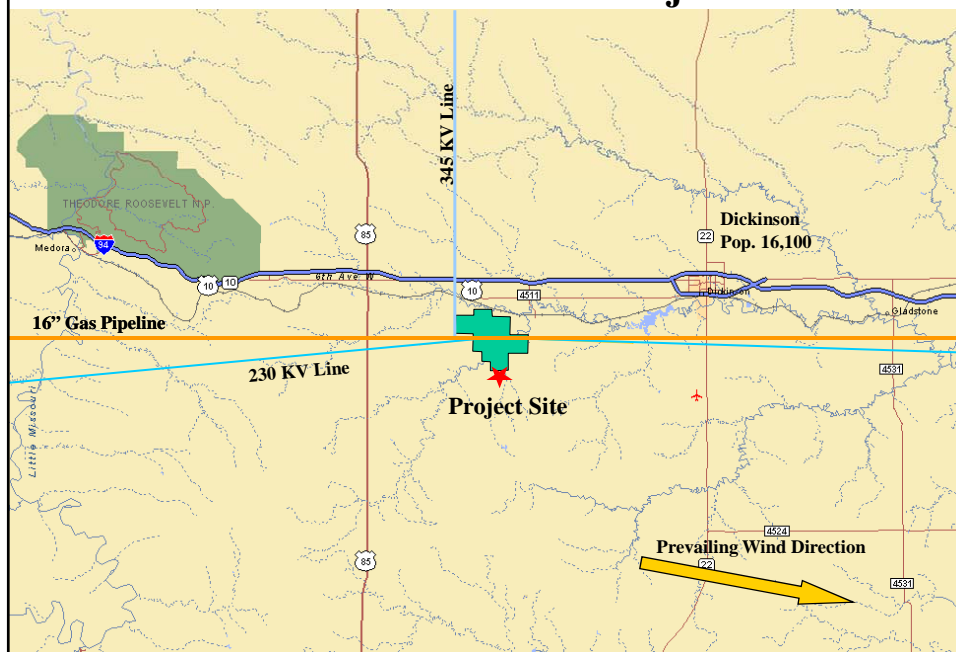
ENERGY DEVELOPMENT & TRANSMISSION COMMITTEE

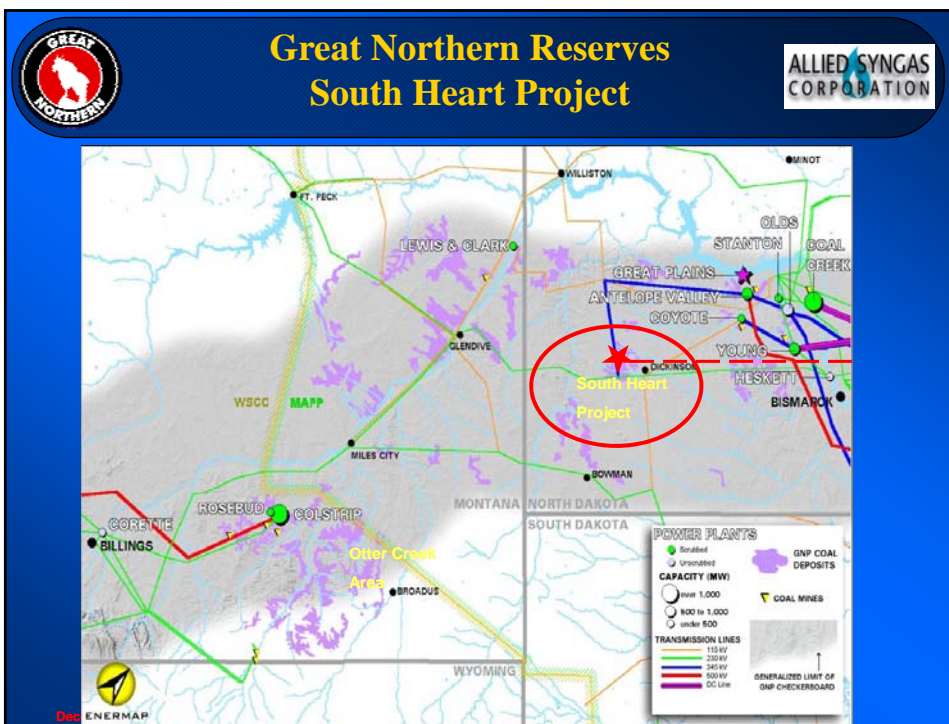
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GNPD South Heart Project








The Great Northern Entities



BACKGROUND / WHY WE ARE HERE

- **Great Northern Properties**
 - ✓ Nation's largest private coal owner
 - ✓ 20 billion tons of surface mineable coal
 - ✓ ~ 5 million mineral & ~ 200,000 surface acres
 - ✓ ~ 974,000 mineral acres in ND
 - ✓ ~ 3 Billion tons net to GNP in ND
- **Great Northern Power Development**
 - ✓ Sole Purpose Entity - focused on development of GNP reserves
 - ✓ Developing mine-mouth btu conversion plants
- **Affiliations:**
 - ✓ Natural Resource Partners (NRP) & Western Pocahontas Properties
 - 50 million tons per year mined
 - ✓ Quintana Minerals – E&P Oil & Gas
 - ✓ Quintana Energy Partners - \$650 million private equity fund –natural resource/energy based

Major Holders of Recoverable U.S. Coal Reserves	
	Estimated Reserves (billion short tons)
1. U.S. Government	91.0
2. Great Northern Properties LP	20.0
3. Peabody Energy Corp.	9.2
4. CONSOL Energy Inc.	4.2
5. Arch Coal, Inc.	2.9
6. The North American Coal Corp.	2.5
7. Massey Energy Co.	2.2
8. RAG American Coal Holding, Inc.	1.9
9. Pocahontas Land Corp. (Norfolk Southern)	1.8
10. Natural Resource Partners LP	1.8
11. Kennecott Energy Co.	1.6
12. Horizon Natural Resources Co.	1.2
13. BHP Billiton	1.1
14. Murray Energy Corp.	1.1
15. Tilton Coal Co. LLC	.7

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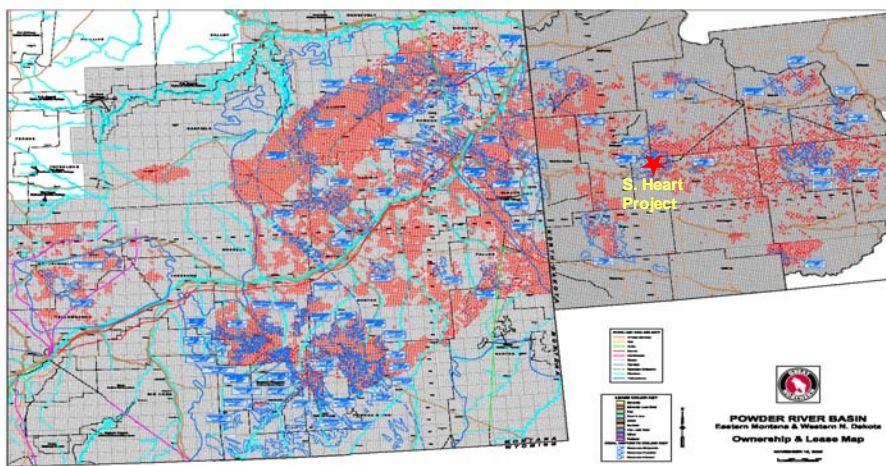
Source: National Mining Association



GNP MINERAL OWNERSHIP

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5 MILLION MINERAL ACRES AND 200,000 SURFACE ACRES!
ALMOST 1 MILLION ACRES AND 3 BILLION TONS OF COAL IN NORTH DAKOTA!!



Allied Entities

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- **Allied Resource Corporation** – an energy and energy-services corporation based on proprietary technologies
 - ✓ **Gasification: Allied Syngas Corporation** – gasifying coal and various waste products into synthesis gas through the BGL (British Gas Lurgi) and other processes
 - ✓ **Engineering Services: Envirotherm, BAMAG, KWH, Allied Environmental Solutions, Inc.** – filter systems for coal-fired power plants (particulate filters, denitrification or DeNOX, desulphurization or DeSOX) water purification and waste-to-energy systems
 - ✓ **Lube Oil Refining: Puralube** – highest quality lube oil from waste lube oil



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Allied Syngas Corporation

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- Located in Wayne, PA
- Exclusive licensee to commercialize the British Gas/Lurgi (BGL) gasification process in North America
- Build, Own and Operate business model
 - ✓ “Over the fence” industrial applications (syngas, hydrogen, etc)
 - ✓ Fuel production (SNG, CTL, DME)
 - ✓ Highly selective electric applications
- ASC’s standard gasification module is the “BGL 1000”
 - ✓ Producing a nominal 1,000 MMBtu/hr gasifier of clean medium Btu syngas
 - ✓ Consuming a nominal 1,000 tons/day of coal/fuel



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South Heart - Engineering

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- Worley Parsons - primary design firm
 - ✓ Worked w/ Allied Syngas on 2 year DOE Sponsored Coal Gasification Feasibility Study utilizing BGL technology
 - ✓ Just completed 6 month Conceptual Design Optimization Study – 450 page comprehensive study
 - ✓ Requisite Platform to be able to start Pre-FEED



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South Heart Project History - Current Drivers

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- **Commodity pricing**
- **Delays in baseload electricity requirements**
 - ✓ Difficult Regulatory Process
- **Heightened environmental concerns**
 - ✓ CO₂
 - ✓ Mercury
- **Technology advancements**
- **Existing and Available Infrastructure**



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Technology Change

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Synthetic Natural Gas Leads the Way

- **Commercialized (Dakota Gasification) (SVZ – Germany)**
- **Not waiting on regulated utilities or small potential market**
- **Fungible commodity (Short/long term contracts; swappable, hedgeable)**
- **Experienced Oil & Gas Company – Only difference is mining gas, not drilling for it!**
- **Financible, suitable for creative financial engineering**
- **Very little ancillary infrastructure required (Northern Border Pipeline, WBI)**
- **Flexibility to expand and provide other product slates**
- **Very favorable emissions & visual profile**
- **Competitive**



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South Heart Project LV21 – Phases I, II & III

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- **Previous Phase I, II, & III activities all beneficial**
 - ✓ Fatal flaw studies necessary first-step for any project
 - ✓ Permitting activities – air modeling protocols are key
 - ✓ Transmission studies – necessary for plant & beyond 2015
 - ✓ Technology studies – critical to recent developments
 - ✓ Mine planning common to all
 - ✓ Socio-economic impacts similar
 - ✓ Prudent funding requests - \$3.7M to-date



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South Heart Project LV21 – Phase IV

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- **Phase IV LV21 Grant Approved Nov. 20, 2007**
 - \$7.3 MM requested for Oct 2007 thru Dec. 2008
 - Phase IV total spending: ~ \$28MM (\$56 MM to NTP)
 - Permitting
 - Air & Mine
 - Technology: Pre-FEED, FEED studies
 - Project Engineering – Gasification through Methanation
 - Coal beneficiation
 - CO2 Capture and Sequestration
 - Transmission/Power Generation
 - 170 MW needed for Project
 - Business Development



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Why the BGL Gasifier?

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- ✓ BGL Gasifier is based on the lignite proven Lurgi Gasifier (Over 75% of global gasification is based on Lurgi technology)
- ✓ British Gas and Lurgi spent over 25 years and \$500 million improving the efficiency, reliability and environmental footprint of the original Lurgi design
- ✓ The BGL Gasifier has been in commercial operation since 2000 at the SVZ facility in Schwarze Pumpe, Germany
- ✓ The BGL Gasifier predecessor, the Lurgi Mark IV gasifier, has been in commercial operation at the Dakota Gas plant for nearly 25 years and in Sasol's Secunda facility for 40 years
- ✓ Commercially demonstrated and bankable (Schwarze Pumpe and Dakota Gas)



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Schwarze Pumpe/BGL Gasifier

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GNPD LV21 Phase IV Project Attributes

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- On-line at least 2 to 3 years earlier than CFB Project
- Broader Base of Customers that are ready now
- Existing Infrastructure
- Expandability
- Initial project cost \$1.4B
- 250 permanent jobs (25% more than CFB project)
- CO2 capture and sequestration
- Very favorable emissions profile
- Potential IGCC power block expansion to meet future Utility baseload requirements (Transmission needed)

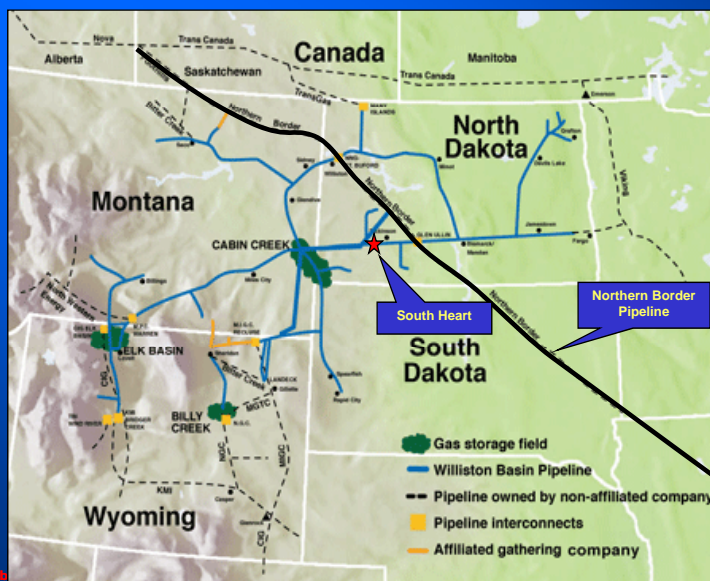


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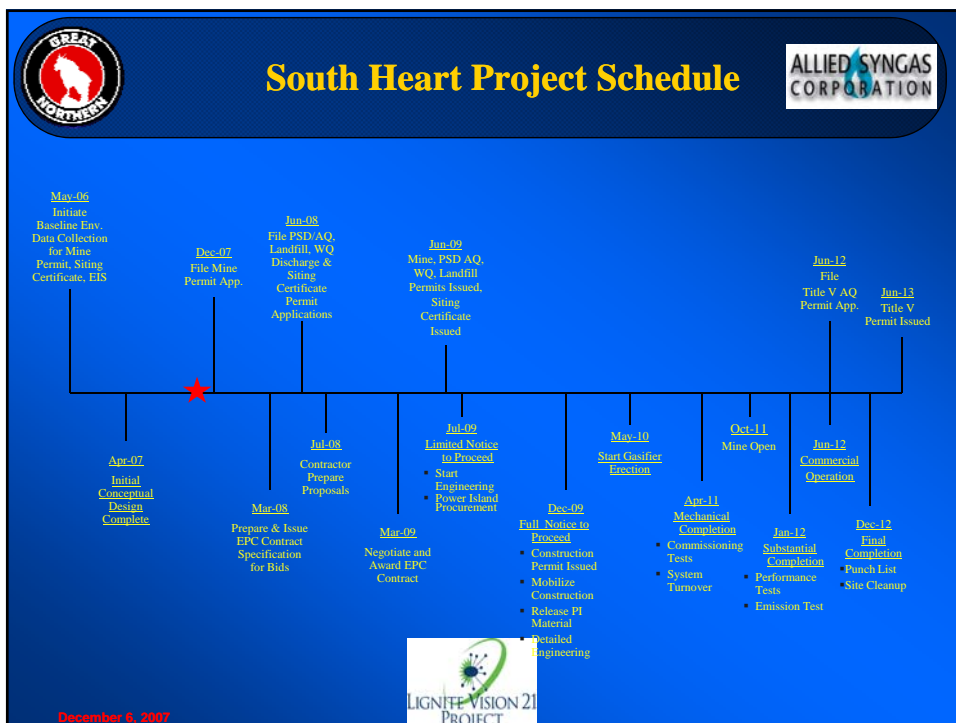
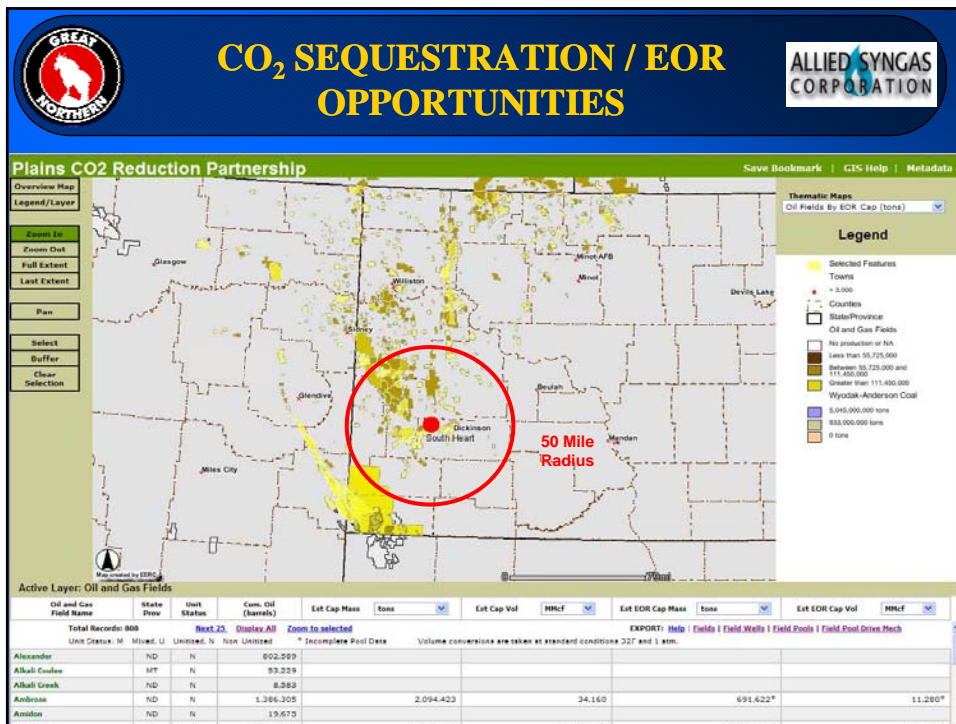


Existing Infrastructure – Natural Gas Pipelines

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South Heart Project LV21 - Phase IV Budget

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BUDGET – Phase IV

1. Technology / engineering	\$18.2
2. Transmission / pipelines	\$ 1.5
3. Environmental	\$ 1.1
4. Business Development	\$.7
5. Project Management	\$ 2.6
6. Mine / Site Development	<u>\$ 4.2</u>
Total	\$28.3MM



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South Heart Project – Path Forward

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- Major Next Steps
 - ✓ Acquisition of PSD Permit to Construct
 - ✓ Acquisition of Mine Permit
 - ✓ Pre-FEED and FEED completion
 - ✓ Selection of EPC Contractor
 - ✓ Formation of final project development team
 - ✓ Finalization of long term off-take contracts



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SOUTH HEART PROJECT SUMMARY

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- Progress continues w/joint venture formation, mine permitting & pre-FEED as current major activities
- South Heart site is ideally located to take advantage of existing infrastructure and favorable geology
- Coal-to-SNG technology is existing & commercially demonstrated - with minimal technology risk
- GNPD can provide low-cost, long-term, fixed priced natural gas with minimal technology/carbon risk on accelerated timeline with greater economic impact



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Questions?



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