Executive Summary

The Client Group, made up of Representatives of the Frontier Group of Companies, Inc. (FGC), the Business Development Corporation (BDC), the City of Weirton Administration (City), the Northern WV Brownfields Assistance Center, The Thrasher Group, Inc., and DJS Ventures, Inc., has developed this document for the redevelopment of the area previously used by Weirton Steel and some limited areas included within the Three Springs Industrial Park. This plan was developed using current economic and market analysis, along with an assessment of the existing infrastructure condition in mind. Working with the City Utility Boards and a few potential candidates that could move into the Weirton Metropolitan Area, the following approach was determined to make sense for all parties involved. The goal of the analysis was to determine the best way to help continue and develop the five market clusters that the region has been successful with growing the local economy in recent years:

- Value-added Metals
- Petro-Chemical
- Energy
- Transportation Economy
- Healthcare

While the analysis was proceeding, the FGC continued working on cleaning up the buildings previously used by Weirton Steel and ArcelorMittal, including the demolition of various structures and utilities. This work is nearing the end, except for the buried foundations that will be reviewed next.

The Client Group has reviewed various concepts and has chosen to move ahead with the redevelopment concepts proposed in the attached report. It has been acknowledged by all parties that in order for this project to be successful, the partnership formed through this process needs to continue. Recently, this partnership has met with several federal and state officials and has been identified as a true Public Private Partnership. The partnership, at this time, has decided to move forward with the project and submit Phases 1, 2, and 4 as a candidate for the Build Grant from the US DOT. This application is $14.7 Million. If this project is selected the City of Weirton, the applicant, will be notified in November of 2019.

The partnership is also proposing to move ahead on an INFRA grant later this year. If successful, this will allow:

- The existing bridge from Ohio SR-7 to Brown's Island to be demolished and reconstructed.
- The Bridge from Brown's Island to The Site to be rehabilitated.
- An elevated roadway leading from the existing bridge to the intersection of Phase 2 and 4 of the Build Grant.

This connection will provide a direct connection from Ohio SR-7 to WV-SR2 without having to travel through downtown Weirton. Additionally, this will provide a safer means to transport products made within the proposed industrial park to be called Frontier Crossings. The residents of Frontier Crossings will have the ability to access freight via barge, rail (unit spurs), and highways.

These investments are being made to help stimulate the Weirton Metropolitan Area through job creation. These proposed jobs will help further drive down the current unemployment rate and stimulate the quality of life that is available to the City of Weirton and its community.

WEIRTON REUSE REPORT

FOR THE

CITY OF WEIRTON
BROOKE COUNTY, WEST VIRGINIA

FINAL REPORT

JULY 2019

THRASHER PROJECT #101-030-3363

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I. INTRODUCTION

The decline in the steel industry and the economy over the last decade has caused the Northern Panhandle of West Virginia and the City of Weirton to be in a distressed situation. Recently, with the slight upturn in the economy and the purchase of the former ArcelorMittal steel plant site by the Frontier Group of Companies (FGC), there was a desire to build a team to forecast the opportunities of the 1,300-acre site as well as the economic benefit of a redevelopment plan for the City of Weirton and the greater region of the Northern Panhandle of West Virginia.

To prepare this plan and forecast the economic impact of such a redevelopment program, the Business Development Corporation of the Northern Panhandle (BDC), the City of Weirton (Weirton), and the Frontier Group of Companies (FGC) formed a Public-Private Partnership (Client Group). This collaboration brings unique perspectives from the property owners, economic development agency, and the city that allows us to comprehensively and holistically chart a course for these 1,300 acres that will breathe life into the bones of an abandoned mill, while filling critical gaps in the lack of amenities in our community.

The Client Group receives additional capacity from the Brooke-Hancock-Jefferson Metropolitan Planning Commission, the designated Metropolitan Planning Organization (MPO) for the region, and through the designation of an Economic Development District (EDD).

In 2011, the BDC commissioned a Regional Investment Strategy Report to identify which industry clusters were best suited to be targeted to spur an industrial renaissance of the Northern Panhandle of West Virginia. The clusters that were identified include:

- Value-added Metals
- Petro-Chemical
- Energy
- Transportation Economy
- Healthcare

With this information, the Thrasher Team (comprised of The Thrasher Group, DJS Ventures, Inc., and West Virginia University College of Business) was invited to work with the Client Group to develop a Reuse Plan for 1,300 acres, characterized as surplus land of the former ArcelorMittal steel manufacturing facility and additional underutilized industrial land in the Three Springs Business Park. The area discussed in this study can be found in Appendix A.

a. Purpose and Need

The Weirton area has suffered dramatic economic losses from the closing of coal, industrial, and manufacturing facilities over an extended period of time. West Virginia is among the hardest hit by coal's decline in America, as the state had the greatest number of coal mining jobs annually from 2000 to 2015 and had the second greatest decline in those jobs in Appalachia (behind only Kentucky). These losses have hit the Weirton area particularly hard.

Unfortunately, Weirton is a prime example of a Rust Belt city impacted by the decline of the steel industry. The City of Weirton was founded in 1909 at a time when Weirton Steel was a key and growing employer for the area. The City was later incorporated in 1947. Weirton grew to its peak of more than 28,000 residents in 1970. Weirton Steel became West Virginia's largest private employer in 1979 and 1980 when Weirton Steel employed approximately 13,000, which was just over 50% of Weirton's population of 24,736.

However, competition from foreign steel imports and other factors caused the facility to continuously downsize. Weirton Steel (later ArcelorMittal) moved from the 5th largest employer in West Virginia to the 67th. By 2005, only 2,100 were employed at the facility. Today, the employee count at ArcelorMittal Weirton Tin Plant is less than 800 workers. The City of Weirton is trying and investing in addressing the negative economic impacts and losses resulting from this industrial/steel downturn and the legacy brownfield liabilities that remain.

Abandoned industrial buildings dominate the study area referred to as the ArcelorMittal site, now owned by FGC. FGC has been proactive since their purchase of the parcels and associated infrastructure and has demolished many deteriorating buildings that were in disrepair. FGC has worked with the balance of the Client Group to secure the site and deter trespassers, illegal activity, and vandalism. Additionally, FGC has started the process of identifying and working on the brownfield remediation areas of concern within the boundaries of the site. FGC is currently working with the U.S. Environmental Protection Agency (EPA) and the West Virginia Department of Environmental Protection (WVDEP) to address all brownfield issues associated with the property.

Weirton is also part of the Greater Pittsburgh Metals Manufacturing Community's "Investing in Manufacturing Communities Partnership (IMCP)" coalition, as designated by the Economic Development Administration (EDA). More than 37% of the community's workers are employed in the Manufacturing-Advanced Materials-Energy cluster.

b. Planning Process

The Client Group and the Thrasher Team have collaborated on the master planning process, meeting monthly with the stated goal of developing a usable road map or master plan for site-wide rehabilitation and re-use. Topics covered include: the existing railroad (main line and spurs), access to the state highways, traffic (external and internal) improvements, road construction, rail access, bridge and port improvements, and master land use planning users. Several iterations were reviewed and revised. The ultimate concept for the Main Street area, also known as Frontier Crossings, can be found in Appendix B.

The initial task of the Client Group was to determine if sufficient infrastructure was available for future users: electricity, natural gas, water, wastewater, treatment, roads/access, railroad, and/or river transportation. During this process, several potential users of the proposed development were interviewed, screened, and taken on a tour of the potential locations that would suit their respective needs. The City advised that City wastewater capacity, in particular, was insufficient to service new additional manufacture facilities. The utilities are governed by the Weirton Area Water and the Weirton Area Sanitary Boards, respectively. These boards, in cooperation with the City of Weirton, have formed Citizen Advisory Boards to work through the process to identify needs and solutions to meet the needs. While this process will continue well after this report is completed, this is a vital step to involving the community in the process of planning our future while capitalizing on our rich industrial heritage.

As of the completion of this report, the task force has identified the needed improvements at the water and wastewater plants are preliminarily estimated to cost $25 million and $30 million, respectively. This does not include improvements to the distribution system or the collection system.

While the infrastructure is a vital part of the project, it equals the importance of understanding the economy and the needs of the potential industrial users. The industrial end users will not be able to operate or be financially feasible if they cannot accept delivery of the raw goods in a timely manner, or if the local labor force cannot meet the demands of manufacturing the products that are to be sold in the market place. These were the other items that were discussed during the meetings. The results of our findings will be presented later in the report.

c. Regional Investment Strategies

While working through the planning process (and will be further presented later in this document), the United States Economic Development Administration (EDA) held a Regional Economic Diversification (RED) Summit in the City of Weirton. Flyers and concepts for all areas of interest from the RED Summit can be found in Appendix C. During the RED Summit, the roundtable discussions were broken into three main categories:

- A New Vision for Weirton's Economy, Infrastructure, and Community
- Transportation & Regional Connectivity
- Advancing & Attracting the Weirton Workforce

During each of the above-noted sessions, there were several items identified to be the possible critical path to the ultimate development of the site in its totality:

- Roadway Improvements/Connectivity
- Rehabilitation of the Bridges

- Barge Loading Facilities
- Rehabilitation of the Rail Lines
- Workforce Training
- Co-op Cogeneration
- Expansion of the Municipal Water and Wastewater Treatment and Collection/Distributions Systems
- New Raw Water Pumping Station
- Removing the RCRA Designation
- Building Contamination
- Securing Individual Companies

These topics will be analyzed later in this report.

II. ECONOMIC TRENDS REPORT

a. Brooke & Hancock Counties

The City of Weirton sits in both Hancock and Brooke Counties, at the tip of West Virginia's Northern Panhandle. Weirton, along with Hancock and Brooke Counties, has experienced the plight of many communities along the industrialized Ohio River. Population, labor force, and employment numbers have trended downward over the last 20 years due to declines primarily in manufacturing employment. During 2000 to 2019, Hancock County has experienced a 19.2% drop in its labor force from 15,671 to 12,661 and a 20% drop in employment from 14,952 to 11,913. Similarly, Brooke County has experienced an 18.2% drop in its labor force and a 19.2% drop in employment. Detailed information can be found in Appendix D.

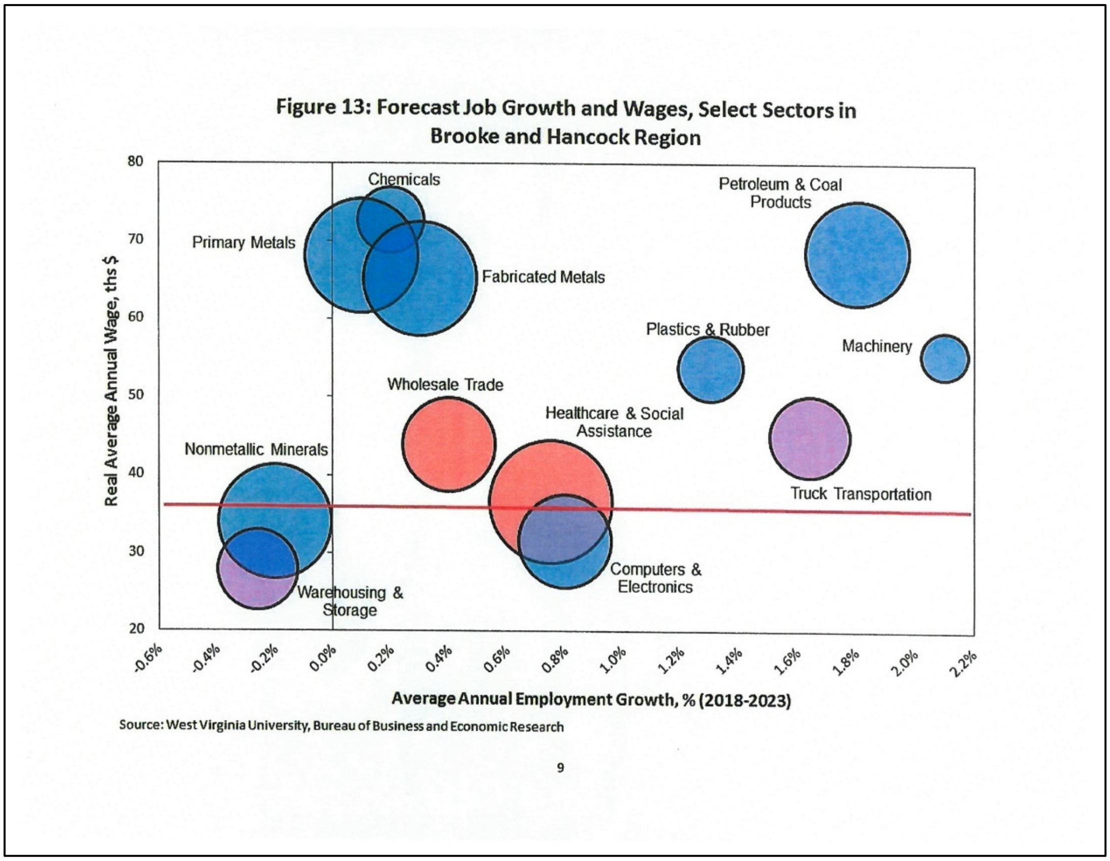
Last year's numbers offer the promise of a brighter future. Hancock County saw employment grow 2.4% from 2018 to 2019, going from 11,634 to 11,913. Brooke County also saw an increase in employment, from 9,028 to 9,083. While these are slight increases, they also represent the first time since the Great Recession in 2008 that employment grew in these two Northern Panhandle Counties.

The growth was generated by activity in several industries:

- Energy Industry (specifically, natural gas and natural gas liquids)
- Logistics and Transportation
- Plastics Production
- Primary and Fabricated Metals

These sectors are projected to continue to grow over the next 5 years, as depicted in the Bubble Diagram on the next page, and further described in the next Section. Leading the growth is the natural gas industry, with projected employment growth of up to 5% per year. The industry also pays average annual wages of approximately $70,000/year. Projected employment growth in logistics and truck transportation nears 2% per year, although average annual wages are much lower at approximately $45,000. Projected employment growth in plastics production is approximately 1.5% per year with average annual wages of $55,000. Projected employment growth in primary and fabricated metals is 0.3% per year, but that does not take into account the recent effect of the U.S. trade policy.

As the bubble indicates, those sectors in the upper right quadrant have the most appeal from an economic development standpoint. That quadrant represents industries with above average wages and projected growth over the next five years. In the Industrial Cluster Section below we will further examine the trends driving that growth.



b. Tri-State Metro Area

Area Development Magazine does an annual survey of businesses to gauge economic strength. More than half of the respondents said they are decision makers for their companies. Forty percent of these respondents said they plan to open a new domestic facility within the next five years. The availability of skilled labor was the number one ranked criterion in their site location decision.

The Brooke Hancock Jefferson Metropolitan Area, with a population of approximately 120,000, is considered a rural metropolitan area by the U.S. Census. It is well under the 200,000-population threshold for a rural designation. With a total labor force of approximately 50,000, and approximately 3,500 unemployed, this may generate a cause for concern among employers considering availability of a labor force. See below:

	Labor Force	Employed	Unemployed	Unemp. Rate
Brooke Co.	9,677	9,083	594	6.1%
Hancock Co.	12,661	11,913	748	5.9%
Jefferson Co.	27,643	25,464	2,179	7.9%
TOTALS	**49,981**	**46,460**	**3,521**	**7.0%**

It is important to note that Weirton is a particularly unique rural metropolitan area in the Ohio Valley. The Weirton Steubenville Metro Area is near the Greater Pittsburgh Metro Area. With transportation improvements along US Route 22 and the new Pennsylvania State Route 576, the two metro areas are more accessible than ever. Route 576 now connects the Greater Pittsburgh International Airport (Airport) with US Route 22 that goes directly to Weirton. Weirton, and the subject redevelopment site – Frontier Crossings, has better access to the Airport than more than half of the Greater Pittsburgh Metro Area market. Construction is now underway to extend PA 576 to Interstate 79 near the Southpointe area/Exit 48. Completion of this extension will further improve access from Weirton to Interstate 79, the Southpointe Business Park, and Washington County.

Because of these unique characteristics between these two metro areas, this study generated labor market data for a commute of approximately 45 minutes from subject redevelopment site, Weirton Frontier's Crossings. This labor market counted 50% of Allegheny County, 60% of Beaver County, and 80% of Washington County (when the PA Route 576 extension is completed). This labor market shows a remarkable resilience over the last 20 years. Despite all the changes in the manufacturing economy and the Great Recession, the labor market essentially remained the same in both labor force (500,000) and employment (480,000). There were declines leading up the Great Recession in 2008, followed by increases since 2010.

Regional Area Labor Market Table

Bureau of Labor Statistics

Regional Area Labor Market

Area: Tri-State 9 County Area surrounding Weirton, WV.

Years: 2000 to 2018 with Allegheny 50%, Beaver 60%, Washington County at 80%

Year	Period	labor force	employment	unemployment	unemployment rate
2000	Jan	508,282	482,473	25,809	5.1%
2001	Jan	512,158	485,362	26,797	5.2%
2002	Jan	511,090	477,677	33,413	6.5%
2003	Jan	511,519	476,038	35,481	6.9%
2004	Jan	508,049	473,543	34,506	6.8%
2005	Jan	503,365	470,654	32,711	6.5%
2006	Jan	501,333	472,138	29,195	5.8%
2007	Jan	505,721	478,289	27,433	5.4%
2008	Jan	511,952	483,437	28,514	5.6%
2009	Jan	517,347	476,350	40,997	7.9%
2010	Jan	508,078	455,910	52,168	10.3%
2011	Jan	508,902	462,610	46,291	9.1%
2012	Jan	509,119	467,760	41,359	8.1%
2013	Jan	514,694	469,980	44,714	8.7%
2014	Jan	506,610	471,426	35,184	6.9%
2015	Jan	505,175	474,026	31,149	6.2%
2016	Jan	504,618	472,903	31,715	6.3%
2017	Jan	501,596	469,970	31,626	6.3%
2018	Jan	497,733	470,019	28,913	5.8%
2019	Jan	501,351	477,973	23,378	4.7%

Source: Bureau of Labor Statistics

In looking at a larger regional labor market, the pool of unemployed workers jumps from 3,500 to over 23,000. Of course, the skills of those in the labor pool are also a critical component in availability of the labor force. The regional leaders in the metropolitan Weirton area are aware of the importance of a trained workforce in attracting employers. Several regional efforts are in place and underway to enhance workforce skills. These efforts are being led by several organizations, including the West Virginia Northern Community College and the school districts of Hancock and Brooke Counties.

In addition to the pool of unemployed that make up the available labor force, there is also the pool of the currently employed, particularly those in the skilled trades. Among those employed, it is worth noting the high concentration of those in the skilled trades in the Weirton area. Those working in production, construction, extraction, installation, and repair account for almost 27% of the workforce (See Appendix E). In comparison, in the Pittsburgh Metro area, these trades account for approximately 20% of the workforce. The national average is less than 15% of the workforce. Together the Weirton and Pittsburgh Metro areas have almost 78,000 employed within these trades.

Consequently, a prospective employer at the Weirton Frontier Crossing site, particularly an employer in the growth industries described above, would have available as a prospective labor pool:

- Within the Weirton Metro area:
  - 3,500 unemployed
  - Approximately 10,000 employed within the skilled trades of production, construction, extraction, installation, and repair
- Within the Greater Weirton/Pittsburgh Area:
  - 23,000 unemployed
  - Approximately 68,000 employed within these trades

III. INDUSTRY CLUSTER REPORT

a. Energy and Natural Gas Industry

i. Upstream - Marcellus and Utica Shale

The Tri-State region consisting of West Virginia, Eastern Ohio, and Pennsylvania (named the “Shale Crescent” by a regional marketing group - Shale Crescent USA) sits atop natural gas deposits lying 5,000 feet or more below the surface in shale deposits. Until the innovation of fracking became available, those deposits sat untapped. With the use of modern fracking techniques consisting of high-pressure water and chemical combinations injected into shale, the energy industry has unlocked these natural gas and natural gas liquids. Within the last decade, it has led to unprecedented industry activity in both the Marcellus Shale deposit (approximately 5,000 feet below the surface) under Pennsylvania and West Virginia and the Utica Shale Deposit (approximately 10,000 feet below the surface) under Ohio.

It is rapidly changing the geography of the U.S. natural gas industry. According to studies completed by Shale Crescent USA, in 2008 the Shale Crescent accounted for 2% of the domestic natural gas production. By 2017, it accounted for 27% of domestic natural gas production. The Shale Crescent represents 85% of the natural gas production growth since 2012. By 2040, this region is projected to supply 40% of domestic natural gas production. Since 2012, Shale Crescent natural gas prices have been lower the Gulf Coast and are projected to stay approximately 25% lower. The Shale Crescent is also rich in "wet" gas, that is, natural gas liquids (NGLs) including ethane (used for production of ethylene – the raw material of many plastics), propane, butane, isobutene, and pentane. In terms of actual production numbers, the Shale Crescent:

- Currently produces 25 billion cubic feet (BCF)/day of natural gas and is expected to reach 30 BCF/day by 2022 and 40 BCF/day by 2040
- Currently produces 740,000 barrels/day in natural gas liquids (NGLs) and is expected to reach 1.2 million barrels/day by 2022.

Were the Shale Crescent an actual country, it would be the third largest natural gas producing country in the world, behind only the remainder of the USA and Russia. To generate and transport this gas, the Shale Crescent has generated close to $80 billion of investment over the last ten years. (See Appendix F). This has included pipeline investments, gas fractionators separating the natural gas and the NGLs, two ethane crackers, corporate acquisitions, and a pending ethane storage hub. For more details on the natural gas advantage in the Shale Crescent, please see the marketing package in the Appendix F.

ii. **Upstream – Weirton Area**

1. **Instrumentation.** This drilling and transport activity create opportunities for suppliers to these industries. Locally, international companies have expanded to the Weirton area to supply the natural gas and NGL industry. This includes Bidell and Pietro Fiortini. Bidell manufactures natural gas compression equipment that transports the gas along pipelines. It is located in Western Canada and wanted a presence in the Marcellus/Utica Shale areas. Pietro Fiortini located in Italy, manufacturers instrumentation devices used by the natural gas industry. It also wanted a presence in the Marcellus/Utica shale basin. Similar opportunities should exist with other suppliers' industries such as equipment makers for natural gas dehydration equipment, including such companies as: Cimarron, Enerflex, Gas Technology Corporation, Croft, and Exterran. All are based in the Gulf Coast, with no manufacturing capability in the Marcellus, Utica Shale area.

2. **Drilling and Production**. Of course, the energy and production companies and their suppliers need flex space and outdoor storage space for production equipment. These facilities and "lay-down" yards are seen throughout the Tri-State area. Typically, they require 10,000 – 15,000 square feet of flex space and five acres of land. Weirton Frontier Crossings can provide such space.

It should be noted that demand and supply for natural gas, like other commodities, tends to be cyclical. The publicly traded companies who are among the region's biggest producers – EQT Corporation, Range Resources, CNX Resources, and Southwestern Energy are acting a bit more conservatively of late where drilling and production is balanced against operating cash flow generated. According to an equity analyst in the energy industry, "growth for growth's sake is no longer acceptable for investors - they want to see profitable growth". For example, Range

Resources has cut its drilling budget by about 25%, compared to 2017. While there is a current lull in demand for space by the energy production companies, the size and scope of the regional shale deposits holds great promise for future demand for both industrial and office space at Frontier Crossings.

iii. Midstream Processing

The wet gas emerging from the Marcellus/Utica shale in the Shale Crescent offers multiple mid-stream processing opportunities. First, of course, is the ethane (C2H6). This ethane is “cracked” to generate polyethylene, the raw material for many plastics as notated by little triangles on plastic products including:

- #1 polyethylene terephthalate (“PET”)
- #2 high-density polyethylene (“HDPE”)
- #4 low-density polyethylene (“LDPE”)

The Weirton Frontier Crossing site will sit about 30-40 miles between two ethane crackers – the Shell Cracker and the PTT Global Cracker.

ETHANE

Shell Cracker. Approximately 35 river miles upstream from Weirton’s Frontier Crossings on the Ohio River, Shell is in process of constructing a $6 billion ethane cracker on a 600-acre site. In June of 2016, after several years of due diligence, Shell made their final investment decision to proceed with construction. By November of 2017, Shell completed site preparation and started vertical construction. In October of 2018, Shell installed its 285-foot, 2,000-ton cooling tower. The tower spent over three and a half weeks in transit up the Mississippi and Ohio Rivers and required one of the world’s largest cranes to lift it into place. Shell will complete construction in 2022, and the facility will produce 1.6 million tons of polyethylene per year. According to the Northeast Petrochemical Outlook, the Shell facility will have 4 processing units – an ethane cracker and three polyethylene units. Two polyethylene units will manufacture high density polyethylene (HDPE) and a third unit will produce low density polyethylene (LDPE).

PTT Cracker. Approximately 40 miles downriver from Weirton's Frontier Crossings, a joint venture comprised of PTTGC American and Daelim are planning the construction of a second ethane cracker on a 500-acre site in Dilles Bottom, Ohio. According to the Petrochemical Update, the plant will produce 1.6 million tons of polyethylene a year, an output similar to the Shell cracker. A final investment decision has not been made, however the land has been acquired through several acquisitions and contracts have been signed with engineering firms for design work.

MOU. According to the West Virginia Department of Commerce, the China Energy Investment Corporation has plans to invest $83.7 billion in shale gas development and chemical manufacturing projects. A Memorandum of Understanding was signed in 2018 between the State of West Virginia and China Energy. China Energy is the result of a merger between China's state-owned coal mining company Shenhua Group and energy producer Guodian Group. The State and China Energy are in discussions regarding projects that focus on power generation, chemical manufacturing, and underground storage of natural gas liquids.

As described above, the ethane crackers require hundreds of contiguous acres. Because the Frontier Crossing site does not have that type of contiguous acreage, it most likely is not a candidate for such an ethane cracker site. However, the other natural gas liquids also are "cracked" into derivative products. These facilities are not as large as the ethane crackers; they require anywhere from 15 to 100 acres and would be fitting candidates for Weirton's Frontier Crossings.

PROPANE

For example, propane (C3H8) was typically cracked as a by-product of the ethane cracker process. Today, it is being cracked "on purpose" by a dehydrogenation plant specifically designed to crack propane to generate propylene, a raw material for #5 polypropylene ("PP"), and hydrogen. "On purpose" propane crackers are a relatively new phenomenon and new more efficient technologies are emerging. Plant sizes vary, but several appear to be in the 100-acre range, which Brown's Island may be able to accommodate. There are no "on purpose" propane crackers in the Marcellus/Utica basin.

BUTANE/METHANOL

Butane (C4H10) can be processed into a number of products including gasoline and diesel, as well as food additives such as malic acid. Natural gas can be processed into methanol through a desulfurization and distillation process. Methanol demand is growing in uses that include a fuel source for factories, electricity generation and vehicles, for synthetic fibers, plywood, and pharmaceuticals. The plant sizes appear to be as small as 30 to 40 acres. US Methanol, LLC, recently relocated a Brazilian operation to Charleston, WV to be close to a natural gas source. The recently completed Liberty One plant commences production this year. US Methanol is currently designing a second plant in Charleston to double production capacity.

b. Chemicals and Plastics

The American Chemistry Council ("ACC") has been tracking the boon in natural gas and NGL production in the Shale Crescent. It analyzed a hypothetical scenario assuming the region produces 350,000 to 400,000 barrels per day of ethane by 2025. It also assumes the necessary storage and pipeline infrastructure is built. Based on these assumptions, the ACC projects $35.8 billion of investment in the Shale Crescent for chemical and plastics production. This includes:

- Five ethane crackers (one is currently under construction - one is in planning stages)
- Two propane dehydrogenation plants

- Plastics compounding
- Plastics products

The ACC also projects the economic impact, including:

- $36 billion of capital investment
- Over 100,000 jobs created, including direct jobs, indirect jobs (supply chain), and payroll induced jobs (household spending of wages and salaries)
- $28 billion of economic expansion including
  - $23 billion in chemicals and plastics resins
  - $5.4 billion in plastics compounding and plastic products
- $6.2 billion of annual payroll

We discussed the crackers and the propane dehydrogenation in the previous section. The Shell and PTT crackers together will produce over 3 million tons/year of polyethylene, the building block of PET, HDPE, and LDPE. Where will all of it go?

In-region plastics producers. There are existing plastics producers in the northern Panhandle, including Eagle Manufacturing and Mondi in Wellsburg, Graham Packaging in Newell, and Silgam Plastics in Triadelphia. They currently ship the polyethylene from the Houston area, at a cost of approximately 8 to 10c/pound. It is not unusual for a mid-sized plastics producer to purchase 20,000,000 million pounds of polyethylene. This translates into $1.6 million of shipping costs. With the two local crackers, that shipping cost could probably go as low as 2c/pound with the option of shipping by rail, river, or truck. This translates into over $1 million of savings for a typical local plastics producer. The two crackers should lead to expansion opportunities for these local plastics producers and could be potential candidates for facilities at Weirton Frontier Crossings.

Out of region plastics producers. Based on feedback from industrial real estate professionals, the potential to attract out-of-region plastics producers to locate near the crackers may be more limited than anticipated. For the plastic bottle producer for example, the polyethylene pellets from the crackers are cheaper to ship in then the end products, such as plastic bottles, are to ship out. It is a matter of pure volume in shipping; the finished product (bottles) takes up more space than the raw material (pellets). Plastics producers of "volume" products such as bottles and tube products will stay where they are to remain close to their end customers. They will already realize a savings from the reduction in shipping costs from the new crackers versus shipping costs from Houston.

The North American Standard Industrial Classification System lists twelve 6-digit Industrial Classifications that are possible candidates for "downstream" production space near the ethane crackers: (the first number is for convenience purposes only)

#1 325211 - Plastic material and resin manufacturing
#2 325220 - Artificial & synthetic fibers and filaments manufacturing
#3 325991 - Custom compounding of purchased resins
#4 326111 - Plastic bag and pouch manufacturing
#5 326112 - Plastic packaging film and sheet (including laminated)
#6 326113 - Unlaminated plastic film and sheet
#7 326121 - Unlaminated plastic profile shape manufacturing
#8 326122 - Plastic pipe and pipe fitting manufacturing
#9 326130 - Laminated plastic plate, sheet, and shape
#10 326160 - Plastic bottle manufacturing
#11 326191 - Plastic plumbing fixture manufacturing
#12 326199 - All other plastic product manufacturing

Applying the observations of the industrial real estate community, Weirton Frontier Crossings most likely would have more success pursuing those classification with end products not taking up air volume. This includes the first six classifications. Companies in these classifications produce such items as resins, synthetic fibers, compounds, plastic bags, and plastic film and sheets. Mailing lists are available for companies within these NAISC classifications, and these classifications would be good candidates for regional industry attraction efforts, including Frontier Crossings.

c. Metals Industry

The outlook for the U.S. domestic steel industry is brighter than it has been in years. For example, the combination of tax cuts, tariffs on imports, and a domestic growth rate of 3% have helped USX generate a $1.1 billion profit in 2018. This was up from a $387 million profit in 2017, and $440 million in losses in 2016. As a local example, the JSW Group Limited, an Indian infrastructure conglomerate, committed $1 billion to reopen the mill at Mingo Junction, Ohio and another mill in Texas. The Mingo Junction mill, only 9 miles away from Weirton Frontier Crossing, has been closed since 2008.

With the industry experiencing a bit of a revival, the Northern Panhandle of West Virginia should benefit through a variety of existing metal producers, coaters, and fabricators, as well as regional industry attraction efforts. Of course, portions of the former Weirton Steel site are still occupied by a metals producer, ArcelorMittal. The mill primarily produces tin products for the canned goods, aerosol, and other consumer industries and employee approximately 900.

While Arcelor is the largest of the local metal producers/fabricators, it has plenty of local company. While not of the scale of JSW's investment in Mingo Junction, there has been over $50 million business expansion by these local manufacturers. This includes:

- ***Coaters***
  - Wheeling - Nisshan, Follansbee. The company purchased land from the Business Development Corporation of the Northern Panhandle for a $28 million expansion, particularly of their ZAM line. ZAM is a proprietary, corrosion resistant galvanizing product consisting of zinc, aluminum, and magnesium. Because of its unique qualities, the potential exists for customers to locate near Wheeling-Nisshin and become prospects for Weirton's Frontier Crossings. Customers include makers

of automotive parts, steel framing, solar panel racks, guard rails, and architectural metals.

- Pre-Coat - Weirton. The company also recently expanded, adding more production capacity to their business of coating metals.
- Jupiter Aluminum - Beech Bottom. The company invested $15 million in expansion of its aluminum coating business.

- ***Packagers***
  - Crown Cork and Seal – makes metal beverage and food cans, aerosol containers, etc.
  - Ardaugh Group – global packaging company with a Weirton metal packaging facility
  - ITW/Rig Packaging – metal and plastic packaging products

d. Logistics and Transportation Industry

On behalf of the Brooke-Hancock Jefferson Metropolitan Planning Commission, in 2011 Cambridge Systematics completed a Freight Study of the three-county area. The Study explored issues and opportunities related to freight traffic in the three County area. As part of the study, it surveyed representatives from the public and private sector including the railroads, waterborne freight industry, shippers, U.S. Army Corp of Engineers, cities, and counties.

It made several observations:

- The rail or trucking industry is picking up or dropping off very little river traffic, according to commodity flows;
- Rate structures and access need improvement in the connections between rail and ports;
- In the mid-portion of the study area, there are very few trucks-to-rail transfer points despite the density of major freight generators with rail access and the fact that U.S. 22 has a major river crossing within the area;

- Container-on-barge facilities and improved intermodal facilities that link rail and barge operations hold promise for the greater Steubenville-Weirton area. When a tow leaves Weirton, it takes a day and a half to travel to Pittsburgh. The locks between Weirton and Pittsburgh are too small to take the standard 15-barge tow at one time, resulting in inefficiencies as operators have to split their tow, lock them separately, and reattach them on the other side. Rail service could accomplish the trip faster from Steubenville-Weirton, taking containers off the river in the BHJ region and railing to Pittsburgh rather than towing the entire water route.

The Study further noted there are several freight intensive industries in the area, including**:** ArcelorMittal Weirton, Walmart Stores, Bellofram Corp., Ergon, and Wheeling **–** Nisshin.

Since the Study was completed, a tri-modal facility has opened in Follansbee, just south of the Mountain State Coke Works. It is an 80-acre site with port, rail, and truck access.

Currently, river traffic is primarily coal and other commodities, according to data from the Army Corp of Engineer (See Appendix G). In 2016, 43 million tons of freight was shipped out of West Virginia. 33 million of that was coal (75%), another 8 tons petroleum (16%), 1.5 tons of sand/gravel (3%), and 2.5 – "Other." Approximately 10 million tons were shipped into West Virginia, again primarily commodities including coal (47%), petroleum (41%), sand/gravel (8%). Iron ore and steel scrap were only 7,402 tons. With the steel industry increasing output, this number could grow significantly in the Ohio Valley.

It is apparent with the plethora of Federal programs (see page 59), that federal policy and funding is encouraging the use of rail and water as a more efficient means of transportation over trucks and highway. The data is compelling. According to the U.S Department of Transportation, barge transport is approximately 9 times more fuel efficient than truck transport and approximately 2.5 times more efficient than rail. Rail is approximately 3 times more efficient than truck. See below:

Efficiencies of Barge vs. Rail vs. Truck			
	Cargo Capacities in Tons	**Units to Carry**	**# of Miles One Ton is Carried per Gallon**
Barge	1,500	1 barge	514
Rail	100	15 rail cars	202
Truck	25	58 trucks	59

While the freight industry continues to move toward containerization with double stack trains and intermodal transport, there is no such facility in the Northern Panhandle. According to Roger Bennett of Norfolk Southern, such an intermodal facility requires a volume of a minimum of 50,000 container lifts/year, in order to prove economical. Given that the Weirton area is served by a branch line of Norfolk Southern, it is very unlikely that such an intermodal facility at Frontier Crossings could generate that type of volume. The Norfolk Southern main line remains on the Ohio side of the River and continues through to Mingo Junction. The branch line crosses at Weirton and then goes north to Newell and south to Wellsburg.

Norfolk Southern is in the process of improving its train service along the branch line. In the recent past, there was branch line service only 2 to 3 days/week. Norfolk Southern is increasing that service to six to seven days/week – two trains per day. Those cars then go to the larger yards at Conway, PA or Mingo Junction, OH for aggregation and shipment to their destination. Norfolk Southern's commitment to increase service on this branch line is of significant factor in the marketing of Weirton's Frontier Crossings.

The Weirton Area is also served by river transfer facilities by the World Point Terminal facilities at the Half Moon Industrial Park operated by Fred Grey. World Point owns and operates terminal assets for the storage of crude oil, light refined products, and heavy refined products. They have facilities strategically located throughout the Midwest, Gulf Coast, and East Coast. The fact they have such a facility in Weirton is a testament to the logistical advantages of the Weirton location, and World Point has invested over $20 million in the Weirton facility. Starvaggi also operates a terminal facility at the Half Moon Industrial Park that handles raw materials, as well as finished products. The terminal contains 4,200 feet of river frontage with 3,000 feet of dock, which can handle up to 72 barges for loading and unloading.

As a follow up activity, the Brooke-Hancock-Jefferson Metropolitan Planning Commission ("BHJ") is pursuing a regional partnership with the Central Ohio River Business Association (CORBA). CORBA is a Coalition of river users that numbers over 65 members. Formed in 2011, its mission is to "push commerce within the maritime community." It has developed a Central Ohio River Information System that allows users to find businesses with intermodal access, storage options, and other transportation data. It has also expanded its port system, from initially 7 miles around Cincinnati, to roughly 100 miles, to become the 13th largest port in the country. This has enhanced their opportunities for Federal funding. CORBA has also entered into a Memo of Understanding with the Port of New Orleans to enhance cooperation and grow business opportunities. Pursuit of such a statewide partnership would raise the profile for river traffic along the Ohio, and benefit both eastern Ohio and the Northern Panhandle.

Within the Weirton area, the existence of such facilities as the World Point Terminal, the Walmart Distribution Center, and Rue 21 point to the logistical advantages of the region. Companies in this region can distribute product to over two-thirds of the United States population within 48 hours. In particular, Weirton's Frontier Crossings offers river, rail, and highway access. Within the tri-state real estate marketplace, there are very few sites that offer this and have land available. This is the subject of further discussion in the next Section.

IV. EXISTING CONDITION DISCUSSION

The existing conditions of the Area of Interest owned by Frontier and the BDC parcels is best described as approximately 1,300 acres of real estate with significant topographic, utility, roadway, and other infrastructure challenges. A project site map of the entire property owned by the FGC and the BDC can be found in Appendix A. During the discussions and throughout the study, the Client Group and the Thrasher Team modified the map using available GIS information and coordination with another consultant that had a history of working within the project limits.

Generally, the existing site is served by various transportation modes. The tract of land is traversed by State Route 2, which is elevated through the heart of the site. Additionally, the northern part of the site is served by city streets, and the southern portion of the site is served by existing plant roads. The site also has existing Norfolk and Southern Railroad main lines running through it, with several privately-owned rail spurs for loading and unloading. Since the site is on the Ohio River, there exists at least twelve barge docking locations and two barge loading and unloading facilities with cranes. In addition to the information above, the parcel of land known as Brown's Island is also connected to the site via an oversized bridge from the mainland to the island. The island also has and existing bridge that crosses from the island to the Ohio side of the river to an old interchange with Ohio State Route 7.

As for the various utilities, when the ArcelorMittal Weirton plant was in operation, it had operated its own water and wastewater treatment plant. Currently, the wastewater plant has been taken out of service, but the water plant is still operating and provides river water to the ongoing operations at the tin plant and other operating facilities that are still online. When the Thrasher team discussed the existing collection and distribution lines with the Weirton Area Utility boards, we were told that the lines that had been uncovered were in disrepair and should not be connected to the public utility lines for fear of not being in water tight condition.

The current zoning or land use has been that the parcels were being used by Weirton Steel and did not comply with the City Zoning nor the City's Land Use Plan. Recently, the City of Weirton has completed the Comprehensive Plan for the entire City, and because of this Reuse Plan being underway, the City is patiently waiting until the development concepts be completed to incorporate the land usage and potential zoning on the City's soon to be completed comprehensive master plan.

a. Site & Infrastructure Opportunities and Challenges

Throughout the several concept iterations the Client Group and Thrasher Team used, the available GIS information and a topographical slope model to determine the various slopes across the entire site. These slopes were broken down into the following categories:

- 0% to 20% - was the low, best site for the easiest areas to be developed
- 20% to 40% - would be too challenging at this time for the redevelopment
- 40% and higher would be removed from the immediate consideration for development

Based upon this review, it was initially estimated that approximately ± 530 acres 20% or less was in slope. A copy of the Slope Analysis can be found in Appendix H. These areas were then compared to the existing West Virginia Flood Plain Mapping, A copy of this can be seen in Appendix I. The flood plain did not affect most of the site, except along the small tributaries to the Ohio River. However, the parcel known as Brown's Island, a ± 230-acre land mass, is covered almost entirely in flood plain. This mapping basically made the entire island undevelopable. During discussions, the Thrasher Team asked if the island could be flown with LiDAR to determine if the FEMA mapping was using old datum, or if it truly was a low-lying land mass. The Client Group did agree to have the Thrasher Team fly the island, and it appears that the mapping was using old information. FGC expects to, based on this analysis, apply for a Flood Plains Map amendment that will leave approximately 154 acres outside the 100-year flood plain area.

The existing transportation system roughly outlined above seems to be in decent condition for being used as it was originally intended and its age. However, the system will need to be realigned and brought up to today's standards. With the proposed land usage to be for multiple users instead of just one large user, potentially the number of vehicles traveling on the new realigned roads would be much higher. Roads and bridges will need to be widened and intersections will need to be modified to permit the new volumes of cars and trucks to be able to travel them safely.

During the conversation with existing businesses, we have been told that on several occasions the delivery trucks have damaged traffic signal heads and trailer wheels have hopped on existing curbs and sidewalks. During several conversations, the ability for the public to have access from SR-2 to SR-7 through the site has been discussed. This would have to take place across Brown’s Island. The largest concern with the access to Brown’s Island, to either state, is the ability for the bridges to be rehabilitated or replaced, if needed. According the RED Summit, the piers in the river are governed by the United States Army Corps of Engineers (USACE), while the bridge decking and everything above the water are governed by the United States Coast Guard.

It appears that the existing railroads on the site are being used, and other then the spurs that have not recently been used, they all seem to be in decent condition. The spurs that have not been used recently just appear to have high grass growing in the rail bed. Before these are all placed back into operation, they will need to be reviewed by the Norfolk and Southern inspectors to ensure that they will not hamper the main line train traffic.

The river access has been maintained and FGC has full access and right of control over all barge cells. The USACE has implied that they are concerned with maintaining the 300’ wide shipping channel, however if the existing facilities are maintained and the permits are kept current, the facilities are available to be used. The existing barge crane buildings are in existence and appear to be in good condition. However, the cranes may need to be replaced or upgrades to meet current standards. These will need to be inspected and certified before they are placed into operation.

Since the site is served by both private and public utilities, we will identify the following utilities and discuss each one at this time independently. As mentioned previously, the water and sanitary sewer are public and managed by the Weirton Area Water and Sewer Boards. These two independent boards have already formed an ad hoc committee to study the needs of this particular site and the future proposed occupant loading. These ad hoc boards are looking at either expanding the existing City's facilities and transporting the flows to and from the site or refurbishing the water plant and wastewater plants on the site and allowing the City to operate the rehabilitated facilities as their own. This may provide the City of Weirton with some additional capacity and flexibility. However, until the review of the facilities is completed, all we can say for now is that flows will be provided at the time of the need.

Mon Power serves the electric power needs of the northern 2/3 of the state of West Virginia and the proposed development area of Weirton. As with most utilities, the power needs will be analyzed based on the proposed end users and current lines will most likely need updated and re-routed.

FGC and ComCast (Xfinity) provide the "land line" services to the area for television cable, internet, and telephone. Other companies offering the same services fall into the satellite provider category. Lines to the newly proposed sites will need to be updated and re-routed based on the overall needs of the area as well.

Currently the natural gas needs are being served through a master meter owned and operated by Mountaineer Gas. The volume of gas being supplied is being delivered through a Columbia Gas Transmission line. Mountaineer Gas does have a distribution line in the area and does serve the Biddell facility. However, at the time the end user is known, and the volume and pressure of gas needed, the design team will need to work closely with Mountaineer Gas to provide the needed supply.

b. Site Development Factors

As in most projects of this scope, many challenges arise along the way from the initial inventory and analysis stage through to final construction. It is a balancing act of several factors at once to ultimately come up with the best design solution. These factors have all come into play with the current stages of the Weirton plan and will continue to be worked through to the final stages of development.

- *Property/ROW Acquisition* - Mainly with the development of new and updated transportation routes, new parcels of land and ROW may need to be acquired for the proper routing and access of vehicular, train, and even boat routes. One example is the need for roundabouts, which move vehicular traffic more efficiently, but take up more room than a typical intersection.

- *Zoning/Current and Adjacent Land Use* - Current zoning in the project area consists of R-1 (single-family), R-2 (single and two family), PUD (Planned Unit District), and PDD (Planned Development District). These are in line with the proposed land uses for the redevelopment project. The main factor will be the interaction between adjacent land uses, especially those where residential meet the commercial/industrial areas and how to properly transition or buffer between them. The incorporation of "green corridors" can help provide needed buffers between land uses and create recreational opportunities for area residents and even those in the adjacent workplace.

- *Contaminated Sites* - The property the project area pose their own development challenges. FGC is presently working with WVDEP to enter the property into the voluntary Remediation Program and working with EPA to close out all RCRA units for the property. These and other questions will need to be answered to determine the best re-use for these impacted areas.

- *Topography* - As previously mentioned, the topography of the site offers unique development challenges. From relatively flat grades to those of 40% plus, the land uses were designed accordingly to accommodate each proposed area. The flatter areas are more suited for industrial/manufacturing uses with the need for truck, rail and boat access. The slightly steeper areas can host smaller industry and commercial properties and the steeper of the developable slopes can accommodate light commercial and residential uses. Although residential can be placed in all these areas, much of the decision deals with transportation access as the main governing factor.

- *Transportation Uses/Access* - The trimodal transportation opportunities are an enticing element for business attraction. However, these access routes must properly be designed and redesigned to accommodate their future needs:

    - Truck: Truck and trailer traffic serving various industries is already prevalent in the area and many roads need updated, widened and newly built. The addition of roundabouts in key areas will aid in keeping all traffic flowing more efficiently.

    - Train: Some of the current rail lines are active within the project area, with many lines currently inactive or in need of repair. The goal is for all main and spur lines (which are active or can be repaired) to be in working condition. The current lines (especially spur lines) can be re-examined and re-routed if necessary to benefit future users.

    - Boat: There is obviously plenty of room for barge access and navigation in the river, along with dock space at the shore line. There are two older cranes which need repaired but will be a huge benefit once completed to transfer goods back and forth between the barges and the trucks/trains.

- *Drainage and Water Quality* - With the current topography and brownfield history, collecting and treating the stormwater run-off is a main concern before it enters U.S. waterways. Terracing the topography will help reduce the run-off speed and guiding the water into basins at various elevations will help to address water quality. The basins can be designed not only for functional use, but to hold water year-round and double as water features providing wildlife habitat and human interaction. When creating the basin, the sub-soil will need to be analyzed based on the type of basin desired as to whether they will hold water 24/7 or naturally drain.

V. REAL ESTATE MARKET REPORT

a. Demand

Demand for industrial space is driven in part by growth in employment in those sectors using industrial and manufacturing space. The Bureau of Business and Economic Research at West Virginia University projects very modest growth in those industries through 2023 in Brooke and Hancock Counties. Specifically, the sectors of mining, utilities, construction, manufacturing, wholesale trade, and transportation and warehousing are projected to grow 2.4% between 2018 and 2023, from 5,304 to 5,430 employees. Of course, this is better than the decline experienced within those industries for several years prior to 2017. However, this projected employment growth alone will only generate demand for approximately 65,000 square feet of new space.

But these statistics do not tell the larger story of the dynamics of the natural gas and petrochemical investment in the region. They also do not account for functional obsolescence of the existing space and the need for upgrades or replacement of that space. These statistics also do not account for the larger Pittsburgh metropolitan market and the new I-576 Corridor south of Pittsburgh that greatly eases access between the Pittsburgh airport and the Pittsburgh labor market, including Washington County.

Demand for more than 15,000 square feet of industrial space within a 25-mile radius of Weirton was very impressive last year. The demand for 2017 and 2018 are shown on the tables below. Specifically, there was over 1.8 million square feet absorbed in the greater Weirton marketplace in 2018. This includes 710,000 square feet of Class A space. Most of that absorption, 472,000 square feet, occurred in the Clinton Commerce Park in Clinton, PA, just south of the Airport. The Clinton Commerce Park is modern industrial and distribution space and is approximately a 20-minute drive from this Park to Weirton Frontier Crossings. It has no rail or river access, only highway.

The industrial complex in Martins Ferry also saw tenant(s) lease over 500,000 sq.ft. at 1001 Main St. The industrial parks in Leetsdale, PA, along the Allegheny/Beaver County Border on Route 65 also saw tenants absorb over 250,000 square feet of space. These Parks do have river and rail access, and they are one of the only existing modern industrial parks in the region with such access.

In 2017, the demand for space was not quite as strong, but was still substantial. Over 870,000 square feet was absorbed. The largest was Berlin Packaging, taking approximately 300,000 square feet in the Clinton Commerce Center.

In total, the 25-mile Weirton market absorbed almost 2.7 million square feet over the last two years. This includes over 400,000 square feet in the Leetsdale/Buncher Industrial Parks, with both river and rail access, and all of it either Class A or Class B space.

Demand – 2017

Lease Comparables (> 15,000 sq.ft.) within 25 miles of Weirton - 2017

	Parcel	Tenant	Use	Class A	Class B	Class C	Rail	River	TOTAL
	Northern Panhandle & Southeast Ohio								
1	607 - 611 N 1st St., Martins Ferry, OH					15,200	x		
2	2700 Sunset Blvd., Steubenville, OH.					19,000			
	West Pittsburgh Industrial								
3	1030 McKee Rd., Oakdale, PA.	Rectanwald	construction		19,200				
4	600 Vista Park Dr., Pittsburgh, PA.	Fedex Ship Center	transportation			40,000			
5	1 Lewis Ave, Coraopolis, PA.				20,000				
6	200 Crown Ct., Oakdale, PA.	Carrier	HVAC equpment		15,000				
7	200 Solar, Imperial, PA.	Tire Hub	Distribution	42,689					
8	300 Crown Ct., Oakdale, PA.	SEKO Logistics	transportation			20,000			
9	300 Crown Ct., Oakdale, PA.	Zenith Logistics	distribution		30,000				
10	150-159 Crown Ct., Oakdale, PA	CEVA Freight	transportation	30,400					
11	2300 Sweeney Dr.-Bldg. 1	Berlin Packaging	wholesale dist.	297,200					
	I 79 Corridor/Washington County								
12	30-50 Curry Ave., Canonsburg, PA.	ComTech Industries				42,750			
13	101 Four Coins Drive, Canonsburg, PA.	Quantum Energy	oil and gas		17,000				
14	367 Morganza Rd., Canonsburg, PA.					21,000			
	Beaver County								
15	2301 Duss Ave. - Bldg. 17, Aliquippa, PA.	Iron Mountain	business services		20,846		x	x	
16	2301 Duss Ave. - Bldg. 30, Aliquippa, PA.					45,446	x	x	
17	111 Leetsdale Dr. - Bldg 111, Leetsdale, PA.				58,000		x	x	
18	200 Leetsdale Industrial Dr. - Bldg 200			37,000			x	x	
19	2301 Duss Ave.- Ambridge,, PA.					17,295	x	x	
20	401 Riverport Dr. - Leetsdale	VSMPO	manufacturing		63,064		x	x	
	TOTALS			**407,289**	**243,110**	**220,691**			**871,090**

Demand – 2018

	Lease Comparables (> 15,000 sq.ft.) within 25 miles of Weirton - 2018								
	Parcel			**Class A**	**Class B**	**Class C**	**Rail**	**River**	**TOTAL**
	Northern Panhandle & Southeast Ohio								
1	1001 Main St., Martins Ferry, OH.					540,000	x		
	West Pittsburgh Industrial								
2	200 Solar Dr., Imperial, PA.	Signode	manufacturing	73,081					
3	200 Crown Ct. - Oakdale, PA.	Pilot Freight	transportation		15,000				
4	304 Deer Run-Bldg.304, Sewickley, PA.	Towlift	manufacturing		28,668				
5	102 Technology Dr., Pittsburgh, PA.	Black & Veatch	wholesale			63,550			
6	304 Deer Run-Bldg.304, Sewickley, PA.	Virginia Air Dist.	manufacturing		19,000				
7	1400 2nd Ave., Coraopolis, PA.	Montour Ind. Supply				18,000			
8	400 Crown Ct., Oakdale, PA.	XPO Logistics	distribution		60,000				
9	501 North Dr., Sewickley, PA.	Amazon	distribution		70,000				
10	2300 Sweeney Dr. Ext - Bldg II, Clinton, PA	Shell Appalachia	oil and gas	265,568					
11	2291 Sweeney Dr., Clinton, PA.	Fed Ex.	transportation	206,214					
12	300 Crown Ct., Oakdale, PA	RAK Porcelain	manufacturing		50,000				
	I 79 Corridor/Washington County								
13	3 Morgan Rd., Burgettstown, PA				28,800				
14	2200 Main St., Washington, PA.				108,275				
15	135 Meadow Ln. - Canonsburg, PA.	Anixter	wholesale	50,000					
	Route 65 & Beaver County								
16	2 Avenue A, Leetsdale, PA.	Sumerel Tire	manufacturing		79,900		x	x	
17	700 Brickworks Dr. - Bldg. 700, Leetsdale, P	CCG	construction	27,500			x	x	
18	700 Brickworks Dr. - Bldg. 700, Leetsdale, P	FSA Logistics	transportation	17,880			x	x	
19	400-420 Riverport Dr., Leetsdale, PA.				35,100		x	x	
20	200 Leetsdale Industrial Dr. - Bldg. 200	Chep USA	manufacturing	70,000			x	x	
21	180 Leetsdale Industrial Dr. - Bldg 180	Wurth Baer Supply	wholesalers		25,830		x	x	
	2018 Totals			**710,243**	**494,743**	**621,550**			**1,826,536**
	2017 Totals			**407,289**	**243,110**	**220,691**			**871,090**
	Two Year (2017 and 2018) Totals			**1,117,532**	**737,853**	**842,241**			**2,697,626**
	% of Total			41%	27%	31%			

b. Existing Supply of Industrial Real Estate

Close to half (48%) of the available supply of industrial space is in buildings rated as Class C Industrial real estate. These are older buildings, typically property used by the steel industry during its peak years. Today, those properties are old (many pre-World War II), usually less than clean, and not in very good condition. There is also a very high percentage of space (51%) that has been leased, but the tenant has vacated the space, and it is now being re-leased. See below:

Current Supply of > 15,000 sq. ft. of Industrial Space Within 25 Miles of Weirton								
	Parcel	**Class A**	**Class B**	**Class C**	**Rail**	**River**	**Price/SF**	**TOTAL**
	WV & Eastern Ohio							
1	200 8th St. (relet), Chester, WV		30,000					
2	2481 River Rd.(relet), Beech Bottom, WV			200,000				
3	419 National Rd. (relet), Triadelphia, WV			50,000				
	West Pittsburgh Industrial							
4	Clinton Commerce Park - III, Clinton, PA	202,817						
5	Clinton Commerce Park - VII, Clinton, PA	66,387						
6	2291 Sweeney Dr. (relet), Clinton, PA	53,837						
7	155 Solar Dr., Imperial, PA		82,944					
8	753 US Route 30, Imperial, PA		55,460					
9	400 Crown Court, Oakdale, PA		40,000				$6.50	
10	30-50 Curry Ave., Canonsburg, PA			100,000	x			
11	4901 Grand Ave. (relet), Neville, PA	18,000						
12	135 Meadow Lane, Canonsburg, PA	80,000					$6.75	
13	1 Lewis Ave, Coraopolis, PA		65,343		x			
14	200 Main St. (relet), Coraopolis, PA			66,284	x			
15	1000 Halverston Dr. (relet), Moon, PA		53,519				$8.50	
	I-79 Corridor/Washington County							
16	103 Freedom Dr. (relet), Lawrence, PA		34,701					
17	55 Park Dr. (relet), Lawrence, PA			48,489				
18	2301 W. Pike (relet), Houston, PA		52,602					
19	20 Museum Rd. (relet), Washington, PA			21,648			$8.00	
20	250 W Wylie Ave., Washington, PA		266,000					
	Beaver County							
21	111 Industrial Dr. (111 relet), Leetsdale, PA		170,000		x	x	$4.75	
22	111 Industrial Dr. (33 relet), Leetsdale, PA		80,000		x	x	$4.50	
23	2301 Duss Ave. (relet), Ambridge, PA			171,900	x			
24	500 Perth Dr., Ambridge, PA			307,926			$3.50	
25	500 Woodlawn Rd. (relet), Aliquippa, PA			260,000	x	x		
	TOTALS	**421,041**	**930,569**	**1,226,247**				**2,577,857**

The demand and supply dynamics on the previous pages are summarized below:

DEMAND AND SUPPLY OF INDUSTRIAL SPACE

Type of Space	2017 & 2018 Demand (sq. ft.)	Current Supply (sq. ft.)
Class A	1,117,532	421,041
Class B	930,569	737,853
Class C	842,241	1,226,247
TOTAL	**2,697626**	**2,577,857**

If current trends for Class A and Class B industrial space continue, it appears that supply will outstrip demand within the next year or two. To satisfy this demand, new industrial space will need to be added to the tri-state market.

The amount of Class A and B industrial product with rail and river access is further limited and favors new building development. Other than the Leetsdale/Buncher Industrial Parks, there is almost no Class A or Class B industrial property in the tri-State area that has tri-modal access. The combined Leetsdale/Buncher Industrial Parks has approximately 4 million square feet of space with approximately 140,000 square feet not under lease, or 3.5%.

If current trends continue for river and rail access, demand for quality Class A or B industrial space will outstrip all supply during 2019. Those trends are summarized below:

2017 & 2018 Demand for Class A & B Industrial
with River & Rail Access: 414,274

Current Class A & B Industrial Supply
with River & Rail Access: 250,000

The Leetsdale Park features some particularly attractive features for an industrial park. It was developed by Chapman Properties on a former Bethlehem Steel facility on 126 acres. The Park houses intermodal port facilities, heavy industrial, light industrial, and multi-tenant flex space, along with attractive river frontage, walking trails, and attractive landscaping. There is very limited, if any, land available for future development.

This Study will now examine available industrial sites within 25 miles of Weirton. The purpose is to determine which sites have the most advantageous characteristics to host industrial product with river, rail, and highway access.

c. Supply of Industrial Land for Development

i. **Weirton's Frontier Crossing –** the subject of this report. Located less than 3 miles to US Route 22, a 4-land divided highway. There is a total of ±532.6 easily developable acres located on seven parcels. The largest parcel is Brown's Island with approximately ±150 developable acres, followed by the Main Street (a.k.a. Frontier Crossings) ±123-acre mainland parcel. Norfolk Southern serves the site with trains six to seven days per week. The site was formerly part of the Weirton Steel Complex.

ii. **Half Moon Industrial Park** – located in Weirton with approximately 200 acres along the Ohio River. The site is served by Norfolk Southern Railroad. Current businesses in the park include:

- Arcelor – flat carbon division
- Ardaugh – produce metal and glass containers
- USG – gypsum panels and ceiling suspension systems
- Bulldog Rack – manufacturer of storage rack systems
- Neo Industries – roll plating to the steel and aluminum industries
- Crown Packaging – metal closure design and production
- Sal Chemical – family owned distributor of specialty chemicals
- Weirton Water Works
- CSI – Coil Slitting International – precision coil slitting services
- Chrome Deposit – chrome plating
- World Point Terminal – oil and refined oil products

- Starvaggi Terminal – raw materials and finished products

Ardaugh and Crown Packaging, in particular, appear to be reaching capacity at their location, at least in terms of the ability of their employees to park cars on location. The Park provides a good barometer of the primary metals industry within region. 7 of the occupants listed above either produce, process, or shape/fabricate metals. Almost all the buildings in the Park would be classified as C industrial space, and the road system is very worn and dated. There is very little land available for new construction.

iii. **Three Springs Business Park –** located along Three Springs Drive near the U.S. 22 Interchange, this 125-acre park houses both light industrial and office/flex space. Occupants include:

- Rue 21 - a specialty retailer with a 189,000 sq. ft. distribution center on site
- Pietro Fiortini – an Italian firm that produces instrumentation devices for the natural gas production industry
- Ocean-Air International - firm that specializes in moving military families
- North American Industrial Services – a heavy industrial maintenance company

These four firms all capitalize on the region's strengths:

- Natural Gas Industry - Pietro Fiortini
- Metals - North American Industrial Services
- Distribution/Logistics - Rue 21, Ocean-Air.

Three Springs has 72 acres available for additional industrial and flex space development.

iv. **Tri-Modal Industrial Park –** located in Follansbee about 4 miles south of Weirton Frontier Crossings, this 80-acre industrial facility has both river, rail, and truck access. The site includes 3,000 feet of riverfront and 6 barge mooring clusters. The Trimodal Terminal has over 20,000 feet of rail lines on site served by Norfolk Southern. It offers transloading access between truck and rail. The site is also adjacent to the Mountain State Carbon, which produces coke and foundry coke for the steel industry. This coke production facility contributes to the heavy industrial character of the Tri-Modal Terminal.

v. **Beech Bottom Industrial Park –** located in Beech Bottom, WV, approximately 12 miles from Weirton Frontier Crossings, it sits on approximately 600 acres of land, with approximately 100 acres suitable for development. The Business Development Corporation of the Northern Panhandle, together with a private investor, has transformed this large complex industrial complex into a multi-tenant site anchored by Jupiter Aluminum.

vi. **Mountaineer -** this site in Newell, WV has 250 acres, but with much more limited development potential because of wetland issues.

vii. **Starpointe Industrial Park –** located in Burgettstown, PA., Washington County, approximately 8 miles from Weirton Frontier Crossings. Starpointe reclaimed mine-scarred land with a first phase of 148 acres, generating 11 pad ready parcels. Occupants include the new home of Shell Lubricants, in a 455,000 square foot distribution center managed by a third-party operator, Kenco Logistics.

viii. **Clinton Commerce Center/Findley Industrial Park/World Trade Center –** located close to the Greater Pittsburgh International Airport, approximately 22 miles from Weirton Frontier Crossings, the Allegheny County Airport Authority and developers are redeveloping approximately 500 acres for industrial, office, and mixed uses.

1. Clinton Commerce Park is the flex space/distribution park developed by Al. Neyer, LLC. They started construction on two new speculative flex buildings totaling over 250,000 square feet, confident that the tight marketplace will generate demand for such space. They have already built two buildings totaling over 550,000 square feet, occupied by Berlin Packaging and Royal Dutch Shell. Both buildings recently sold to Stag Industrial, out of Boston for approximately $75.00 per square foot. Under its agreement with the Airport Authority, Al. Neyer is planning another two to three buildings totaling over 700,000 square feet.

2. Findley Industrial Park at Westport is located off of Exit 4 of I-576 with approximately 200 acres available. It can accommodate individual buildings from 40,000 square feet to 800,000 sq.ft. Asking prices of land are in the range of $80,000 to $100,000.

3. The World Trade Center Innovation Campus is the Airport Authority's plan to accelerate both development in the Airport Corridor and interest in the Airport itself. According to local leaders, the lack of critical flight routes places the City/Region at a distinct disadvantage in the competition to attract investment. The 195-acre Innovation Campus is planning a mix of office, industrial, and restaurants/entertainment. It is also a foreign trade zone, which provides relief from duties and tariffs that would normally impact their supply chains. Construction of the first buildings will begin in about 2 to 3 years, following site preparation and infrastructure buildout.

ix. **Jefferson County Industrial Park –** located in Wintersville, OH off of US-22 at County Road 43, about 13 miles from Weirton Frontier Crossings. The Park is owned by Jefferson County and managed by the Jefferson County Port Authority. There are approximately 50 acres available for development. Current tenants include National Colloid (specialty chemicals), Certwood (injection molding-plastics), and Bully Tools.

x. **New Horizons –** located near the Jefferson County Industrial Park, off of US-22, about 12 miles from Weirton Frontier Crossings. The site is a reclaimed strip mind, with about 1,000 total acres, but with limited developable acreage because of site issues. In 2003, Walmart built an 880,000 square foot distribution center on this site. The site is currently seeking additional occupants.

xi. Tidewater – located in Steubenville, OH. The site consists of 118 acres with river and railroad access, along State Route 7.

These eleven sites are summarized on matrix below:

Comparison of Industrial Land Sites within 25 Miles of Weirton								
	Industrial Site	**City, State**	**Sites > 100 acres**	**Future Capacity (acres)**	**River**	**Rail**	**Distance Divided Highway (miles)**	**Distance Airport & & Labor M. (miles)**
1	**Weirton Frontier Crossings**	**Weirton, WV**	x	1,000	x	x	3 - US22	23
2	**Half-Moon Industrial Park**	**Weirton, WV**		built out	x	x	1 - US22	21
3	**Three Springs Business Park**	**Weirton, WV**		72			<1 - US22	20
4	**Tri-Modal**	**Follansbee, WV**		90	x	x	7 - US22	27
5	**Beech Bottom**	**Beech Bottom, WV**	x	102		x	16 - US22	36
6	**Moutaineer Site**	**Newell, WV**	x	1,000	x		2 - SR 7	40
7	**Starpointe**	**Burgettstown, PA**		100			<1 - US22	15
8	**Clinton Commerce Park**	**Clinton, PA**	x	300+			<1 - I576	1
9	**Jefferson County Industrial Park**	**Wintersville, OH**		50			13 - US22	31
10	**New Horizons**	**Steubenville, OH**	x	1,000			2 - US22	32
11	**Tidewater**	**Steubenville, OH**	x	112	x	x	<1 - SR7	26

d. Analysis

Frontier Crossing is the ***only site within a 25-mile radius*** site that offers:

- Large sites (150 acres – Brown's Island, 123 acres mainland site)
- Additional development capacity – up to 1000 additional acres
- River/barge access
- Rail access
- Convenient four-lane divided highway access (and immediate access if bridge improvements are made to connect to Ohio Route 7)
- 25-minute drive to Greater Pittsburgh International Airport
- 25-minute drive to a larger metropolitan labor market

The Client and Thrasher Group have also discussed proposing and seeking federal and/or state funding for a bridge connection to Ohio Route 7 from the City of Weirton onto Brown's Island, and then to the state of Ohio. This bridge connection would provide an additional crossing over the Ohio River from West Virginia to Ohio and would serve to reduces truck travel time along local Route 2 in Weirton, allowing truck traffic to by-pass downtown Weirton. The bridge improvements will provide two means of access to the site. Trucks will never have to leave a four-lane divided highway to access the site, saving minutes and thus dollars for transportation. The City of Weirton, seeking economic revitalization, will benefit from the alternative truck route along Route 7. In addition, the bridge improvement will ease access to the labor market in Jefferson County, which has the highest unemployment rate among the three counties in the Weirton Metro area (Appendix J), along with the largest labor force.

Consider:

- The demand for industrial real estate averaged over 1 million square feet in this 25-mile radius in 2017 and 2018;
- Natural gas production in the Shale Crescent region will approach 40% of the country's natural gas production within the next 20 years;

- American Chemistry Council projects $36 billion of investment in this Shale Crescent region in the next 7 years;
- The steel industry has recently reinvested over $1 billion in the local region;
- There is approximately an 18-month supply of Class A and Class B industrial real estate in the Weirton region, based on current demand;
- The logistics industry recognizes the Weirton area as a distribution center including projects such as the Walmart distribution center, Rue 21, and Shell Lubricants.

This combination of factors supports a concerted regional effort to invest in the necessary infrastructure to prepare Frontier Crossings for industrial reuse.

VI. MASTER PLAN AND DISCUSSION

a. Justification for Funding

Small communities and even large cities are unable to fully fund economic development projects and seek the need for financial assistance elsewhere. It starts with improving the infrastructure, to allow for business development leading to the need for housing for people to live while they work (and play) in the revitalized community. Most all aspects of the project can benefit from various funding sources.

i. Transportation

- Roads - need to be widened and rebuilt to handle the new truck traffic for the area
- Barge cranes - need updating so they can service the transport of materials from the barges to the rail and truck transportation and vice versa. The rehabilitation of the cranes also creates the opportunity for a designated U.S. port.
- Rail - reactivation and rehabilitation of the main rail lines and spurs for new companies to utilize in transporting their goods
- Docks - need to be updated to make sure all barges are secure when docked

- Bridges - along with the roads, bridges need updated or newly built to accommodate the size and volume of new truck, business commuter and residential traffic - even the clearance for barge traffic underneath needs to be taken into consideration.

ii. Utilities

In order for companies to move to the area, utilities need to be readily available to support their day to day operations. Although utilities exist which supported the previous steel plant, the few existing companies and even fewer residential lots, they all need updated to meet today's standards and support the capacity of the future tenants.

An existing wastewater treatment plan needs updated or completely rebuilt and can service the entire development area.

Water intakes at the river currently and previously supported various industry. With the addition of new companies, these water intakes can be expanded for general water sourcing and plant cooling with the water being returned to the river or the wastewater plant as needed.

iii. Workplace

The creation and attraction of new companies is the sole purpose for the redevelopment of Weirton-to bring new life and growth to the community. Any funding available dedicated to new business growth will have a huge impact on the workplace opportunities and creation of new jobs.

iv. Housing

Row housing, as proposed, is a more affordable option than single family detached homes yet allows more space than a typical apartment unit. These are ideal for families just moving to the area and beginning to establish their roots in the community.

v. Recreation

The green space and trails are proposed to create buffers, general recreation, wildlife habitat and the encouragement of "bike to work."

b. Master Plan Description

The overall master plan is quite simple. Business and industry at the center, with residential development at the perimeter (and higher elevations). The hierarchy of uses is essentially, from the river to State Rt. 2; industrial/manufacturing to mixed-use to residential in a three-layered effect. Barge traffic supplies products to rail and truck transportation and vice versa back to the river. Old barge cranes along the river will be restored along with water intakes from the river to supply the various real estate and an existing wastewater treatment plant will be rejuvenated to service the new tenants as well. Truck routes are designated in limited areas with direct access to St. Rt. 2 and across the bridge to Brown's Island and St Rt. 7 in Ohio. At the heart of the development is the Open Hearth Building, salvaged from the old steel mill. It will create a unique focal point to the area and offers many possibilities for a truly one of a kind destination. To soften the area, green space and trails are incorporated for buffering, general recreation and encouraging 'bike to work'.

VII. MARKET STRATEGY

Following ten years of business expansion, the national economy has hit a "pause" button of sorts. "There is just so much uncertainty going on everywhere that businesses are just pausing" Timothy Fiore, chairman of the Institute for Supply Management manufacturing survey committee said in a Bloomberg interview. Part of that uncertainty involves rising tariffs on steel and aluminum, part is due to the continuing trade war with China, and part is due to the current 10-year length of the economic expansion.

As mentioned, the oil and gas industry has responded with a focus on growth through operating cash flow and not just growth for growth sake and increasing market share. That may account for the significant number of vacancies for space already leased.

As mentioned previously, Area Development Magazine does an annual survey of business executives to gauge economic strength. These executives rated the top factors in selecting a site location, as follows:

a. Availability of skilled labor
b. Labor costs
c. Highway accessibility
d. Corporate tax rate and exemptions
e. Other Factors of Production
f. Quality of life
g. State and local incentives

The location factor showing the biggest increase in importance is railroad service, although it was still listed as No. 26 among factors. The location factor showing the biggest decrease in importance was "access to major markets", dropping from 7th place in 2017 to 14th place in 2018.

With these priorities is in mind, several suggestions emerge for Weirton Frontier Crossings:

a. Availability of Skilled Labor

i. Expand the labor market draw to include Brooke, Hancock, and Jefferson Counties, as well as the larger 45-minute drive radius that includes:
   - Pennsylvania - western Allegheny County, western Washington County, and southern Beaver County
   - Ohio - Columbiana County and Hamilton County.

ii. Continue the concerted effort by the West Virginia Northern Community College and others to develop job specific training programs that directly link training to real job opportunities.

iii. Locate an on-site training center where the training organizations, employers, and potential employers can host education and skill-specific training in a dedicated environment. It also can become "common area" to host events for Frontier Crossing tenants and for regional use.

b. **Labor Costs.** Market the region's competitive labor rates. West Virginia has very favorable labor costs as indicated by the following:

i. Worker's compensation rates are the 7th lowest in the country
ii. Employer turnover rates are 15% below the national average
iii. The median hourly wage in West Virginia was $14.79 hour, ranking it among the lowest in the country

c. **Highway Accessibility.** Complete the bridge improvements that will directly connect Weirton Frontier Crossings with the Ohio Route 7. Among other things, this will:

i. Ease labor market access for those in eastern Ohio,
ii. Increase transportation productivity for distribution and logistics to the site,
iii. Ease truck and site traffic away from Route 2 via downtown Weirton, increasing the downtown commercial district's prospect for revitalization, and provide access to and increase the potential for private investment in the reuse of Brown's Island, the largest developable site in Weirton Frontier Crossing.

d. **Corporate Tax Rates and Exemptions.** West Virginia's corporate tax rate of 7.75% is lower than Pennsylvania's rate of 9.99%, but higher than Ohio, which does not have a Corporate Income Tax, but has a Gross Receipts Tax. Ohio and West Virginia both have graduated personal income tax rates with a maximum of 5% in Ohio and 6.5% in West Virginia. Pennsylvania has a flat 3.07% rate. (Appendix K)

e. **Other Factors of Production**. Highlight those factors of production where Weirton Frontier Crossings has either a distinct advantage (natural gas rates, rail access, river access, plentiful water, large land parcels) and address those where there is a cost disadvantage (electric rates). (Appendix L)

i. Natural Gas - Frontier Crossings and the State of West Virginia have a plentiful supply of low-cost natural gas. At a price of approximately $2.43/1,000 cubic feet, industrial gas in West Virginia is the second lowest rate in the country.

These low natural gas rates favor industries where gas is used in production, such as steel production and fabrication, petrochemicals, etc.

ii. NGLs - Plentiful supply of natural gas liquids for further hydrocarbon chained production.

iii. Tri-modal transportation - Frontier Crossings is the only site in the tri-State area that offers over 500 acres of land for redevelopment with a water, rail, and highway access, along with a 25-minute drive to the Greater Pittsburgh International Airport.

iv. Water – over 40 billion gallons per day pass by Frontier Crossings along the Ohio River.

v. Pittsburgh International Airport – it is striking that Frontier Crossings is closer to the Greater Pittsburgh International Airport than most of the greater Pittsburgh metro area. It facilitates the marketing of Frontier Crossings as part of greater Pittsburgh. It also facilitates the attraction (not just manufacturing space), but also corporate sales and executive personal.

vi. Electric – many “lighter” production processes, such as plastics production rely on electricity rather than natural gas. West Virginia still has a highly regulated electricity market, where rates can be almost double that in Ohio (according to local industry sources, the differential is .11c/kilowatt hour versus 6c/kilowatt hour). Frontier Industrial Company is currently pursuing an on-site co-generation facility that would serve Frontier Crossing, as well as the Weirton region. This would provide more competitive rates and eliminate one of the few factors of production where Frontier Crossings does not have a competitive advantage.

vii. Proximity to Markets - 70% of US and Canadian polyethylene demand within 700 miles.

f. **Quality of Life.** As described, the Weirton Metro area is unique in that it is a rural metropolitan area adjacent to a metropolitan area. It has the advantages of the rural metro area, such as very affordable housing (e.g. median home price of $83,200 and low crime rates), combined with the advantages of a larger metropolitan area (e.g. 12 colleges and universities within a one-hour drive and access to major sports and cultural attractions). (Appendix M)

VII-A MARKET STRATEGY - NEXT STEPS:

a. **Greater Pittsburgh Industrial Market**. Position Frontier Crossings as part of the Greater Pittsburgh industrial market. This will capitalize on the lack of Class A and Class B industrial properties in this larger metro market, particularly those sites with river and rail access. This effort should include:

   i. Networking with industrial brokers in the greater Pittsburgh market by sending marketing materials, holding an open house, etc.

   ii. Networking with the Pittsburgh Regional Alliance, who has responsibility for marketing the tri-State region

   iii. Networking with the Marcellus Shale Coalition, based in Pittsburgh, who represent the major energy companies with a presence in the Marcellus Shale

b. **Northern Panhandle of West Virginia**. Continue to network with Ohio Valley and West Virginia economic development groups such as the West Virginia Development Office, West Virginia Manufacturers Association, Shale Crescent, and Polymer Alliance.

c. **Multi-Tenant Building.** Perhaps as a reflection of uncertainty in the marketplace, site location decisions occur sometimes with very little lead time in relation to the date of occupancy. According to some industrial real estate professionals, sites, or buildings that are not ready to occupy within a period of 6-12 months are not on the "radar." As a way to launch Frontier Crossing, the development team should consider building or renovating a multi-tenant industrial property within the early stages of Phase I of the project.

d. **Time Certainty. Land -** While not on the same short time frame as a search for an existing structure, those seeking land for construction of industrial facilities also want time certainty. According to industry professionals, that time frame can be as short as eighteen months. Again, as part of the first phase of the development, the team should work to bring access and infrastructure to land parcels that can meet a **<u>time certain schedule</u>** for site location.

e. Targeted Industry Attraction Efforts

i. Energy and Natural Gas

- Upstream
  - Attract additional instrumentation companies that supply the natural gas industry, such as gas dehydrogenation equipment manufacturers.
  - Provide in the master plan - flexspace combined with 5 to 10 acre "lay-down" yards.

- Mid-stream – attract those within the hydrocarbon value chain gaps. This would include:
  - "On purpose" dehydrogenation facility
  - Manufacturers of fuel additives
  - Manufacturers of food additives

- Downstream – chemicals and plastics
  - Capitalize on transportation advantages for raw materials

- Facilitate expansion of local/regional existing plastics producers **especially those that can service the fuel additive and food additive industry**
- Attract manufacturers of compounds and resins
- Attract manufacturers of plastic wraps and sheets

ii. Steel Industry

- Capitalize on advantages of low-cost natural gas
- Attract suppliers/customers to Mingo Junction
- Attract customers of Wheeling Nisshan
- Provide multi-tenant space to locally owned suppliers and "small shops"

iii. Transportation & Logistics

- Court this sector as a way to diversify both the local economy and Frontier Crossings. For better or worse, West Virginia, the Northern Panhandle, and Frontier Crossings are heavily dependent on the natural gas, chemical, and plastics industry to drive growth. (Appendix N). Distribution operations take advantage of the Frontier Crossing's unique access to rail, river, highway, and the Pittsburgh International Airport.

iv. Smart Park

- Strive for that "smart park" theme, where companies look to Frontier Crossings not just for land or buildings, but for a variety of needs, including complementary business groupings (e.g. the bottle manufacturer located next to the producer of product or the customer of Wheeling – Nisshin ZAM), energy needs through the co-generation facility, labor requirements through the training centers, and timely railroad service from Norfolk Southern.

VII-B FISCAL IMPACT

Highlights

Revenues were projected based on the assumptions that are described below. These revenues are then detailed in the charts below for both the Full Build Out scenario and the First Phase scenario. The following summarizes key findings:

- The Full Build Out generates over $58 million of annual revenue, not counting the State Corporate Income Tax, which was not factored into the revenue calculations.
- The First Phase generates almost $18 million of annual revenue, again not counting State Corporate Income Tax proceeds.
- The State of West Virginia is the biggest revenue beneficiary due to the Sales Tax and the Personal Income Tax. At Full Build Out, the State receives approximately 64% of the $58 million of annual revenue or approximately $37 million per year. During the First Phase, the State generates 67% of the revenue or almost $12 million annually.
- The City of Weirton, at Full Build Out, receives approximately 15% of the $58 million or $8.8 million annually. This is through a combination of the Real Estate Tax, Personal Property Tax, Sale Tax, Municipal Service Fee, and Police and Fire Fees. During the First Phase, the City receives approximately $2.6 million of annual revenue.
- The Weirton School District, at Full Build Out receives approximately 16% of the $58 million, or approximately $9.5 million annually. This is through the Real Estate Tax and Personal Property Tax.
- Hancock County, at Full Build Out receives approximately 5% of the $58 million or $2.7 million of annual revenue. This is through the Real Estate Tax and Personal Property Tax.

KEY ASSUMPTIONS

Real Estate Taxes.

- Industrial Property is appraised at $100/square foot, including the value of the land. According the Hancock County Assessor's Office, the assessed value of the property in Hancock County is 60% of the appraised value, and industrial and commercial property is considered Class 3 and 4 for tax rate purposes. Accordingly, tax rates are:

  i. Weirton – 5 mills (.005 * assessed value)
  ii. County – 5.72 mills (.00572 * assessed value)
  iii. School (including school bond, school current, school excess levy, and sheltered work) – 20.02496 mills (.0202496 * assessed value)

- Commercial property is appraised at $200/square foot, including the value of the land.

- Full Build Out Assumptions
  i. 3,246,000 Square Feet of Industrial
  ii. 283,000 Square Feet of Commercial/Office/Retail

- First Phase Assumptions – in conjunction with the US DOT Build Grant Road improvements include - Roundabout with extensions, Phase 2 Road, Avenue C
  i. 854,000 Square Feet of Industrial
  ii. 283,000 Square Feet of Commercial

Personal Property Taxes.

- The industry clusters potentially locating at Frontier Crossing may typically also invest in specialty plant and equipment that would not necessarily be included in the real estate appraisal and assessment described above.
  - Full Build Out Assumption - An assumption of $1.2 billion of investment would be made in "Personal Property" for West Virginia taxing purposes. This was based

on the development capacity of Frontier Crossings and the investment in specialty plant and equipment at such locations as the Shell Cracker plant.

  - First Phase Assumption – Roundabout with extensions, Phase 2 Road, Avenue C. An assumption of $200 million of investment in Personal Property during this First Phase.

- West Virginia encourages the development of the oil and gas industry in the State by assessing the industry's Personal Property at a 5% salvage value. It was assumed that 70% of the Personal Property investment during both the First Phase (70% of $200 Million) and Full Build Out (70% of $1.2 Billion) would be covered under this 5% salvage value appraisal method. It was assumed, 30% of the Personal Property Investment in Frontier Crossings during both the First Phase and Full Build Out would not fall under this rule and would be appraised at the value of the investment.

Sales Tax

- West Virginia has a 6% sales tax and the City of Weirton has a 1% sales tax on the sale of taxable goods, custom software, and services provided within its boundaries. The assumption was made that $150 per year of sales occur per square foot of real estate at Frontier Crossings, for both industrial and commercial real estate. For example, a 40,000 square foot facility would generate $6 Million of taxable sales.

Municipal Service Fee

- The City of Weirton places a $2.00 per employee per week tax on employers to pay for municipal services. It was assumed that one job is created on every 1,000 square feet of industrial and commercial real estate. This is a somewhat low job projection for many manufacturing/industrial uses but is offset by natural gas and petrochemical operations which typically require even greater amounts of square footage to generate one job.

Police and Fire Protection

- The City of Weirton assesses a $15 fee for every square foot of industrial and commercial real estate. This helps to pay for Police and Fire protection. The square footage numbers discussed above were used for both the Full Build Out and First Phase.

Personal Income Tax

- The State of West Virginia taxes income on a graduated basis according to the following scale:

  - First $10,000 = 3%
  - $10,001 - $25,000 = 4%
  - $25,001 - $40,000 = 4.5%
  - $40,001 - $60,000 = 6.0%
  - $60,000+ = 6.5%

It was assumed the average wage/salary for employers at Frontiers Crossings is $50,000 or $25/hour. As reflected in the bubble diagram on Page 7 depicting Average Annual Wages and Average Annual Employment Growth, several of the industries projected for growth at Frontier Crossings site pay average wages approaching $70,000/year.
The blended tax rate on $50,000 wage is 4.35%.

Business & Occupation Tax

- For those industries that are manufacturing, compounding, or preparing products, the City of Weirton exempts the first $25 million of quarterly sales from the Business and Occupation Tax. Using the $150 year per square foot of sales ratio, a company would need over 600,000 square feet to generate $100,000,000 of sales. While such sales and scale are possible for revenue projections at the current time, it was assumed the City will generate no business and occupation tax from manufacturing enterprises.

- It was also assumed the Frontier Crossing site will not generate revenue from companies on site that sever, extract, and reduce to possession natural resources products (coal, limestone, oil, natural gas). The Business and Occupation tax ranges from 1% to 6% (natural gas) for these extraction industries. For current purposes, it was assumed the such extraction would not occur on site at Frontier Crossings, and the City of Weirton will not generate Business and Occupation Tax from these sources.

- It was assumed that contractors in the City of Weirton will be involved in 20% of the total construction of the real estate at Frontier Crossings, both Full Build Out and the First Phase. A 2% Business and Occupation tax was applied to this construction cost. Unlike the other taxes, this is a one-time tax and is not generated annually.

VIII. FINANCIAL IMPACT:

a. Sources of Funds – Value of Land

As is frequently the case with industrial development projects, the economics of creating "site ready" land are somewhat upside down. That is, the infrastructure required to prepare the land does not generate a sufficient private economic return in terms of increase in land value and sales. Public investment is required, justified by the local job creation and increase in tax base.

In the case of Frontier Crossings, there are not many comparable sales in the region because there is not a great deal of land available for sale for industrial use, particularly land with river, rail, and truck access. However, there are several comparable sales from the Business Development Corporation of the Northern Panhandle ("BDC"). The BDC is a local non-profit economic development organization that owns and markets industrial land and buildings in the Northern Panhandle Counties of Hancock and Brooke. They have recently sold industrial land in Beech Bottom and Follansbee (approximately six and four miles away from Frontier Crossings, respectively) at prices ranging from $90,000 to $150,000/acre. That suggests an average price of $120,000/acre for land that is accessible and serviced by public utilities.

The best estimate to date is that there are 600 usable acres of land at Frontier Crossings. Usable acreage excludes the land that is either too steep of slope or in the flood plain or otherwise cannot be put to productive use. Currently, with limited or no road access, Frontier Crossing's land is valued at $26,667/acre, according to the Hancock County Assessor's Office. Consequently, the land value created by development of the infrastructure at Frontier Crossings is calculated as follows:

Value of Land with access & infrastructure:	$120,000/acre
Current Value of Land:	$26,667/acre
Net Value created by infrastructure:	$93,333/acre * 600 acres = $60,000,000
Estimated Cost of infrastructure:	$400 MM+ (including bridges)

From the private developer perspective, the Frontier Crossing project has an "upside down" return. A $400 million investment yields just $60,000,00 of economic value. The project needs significant public investment for a private developer to find financial incentive. To justify this public investment, Frontier Crossings has potential for significant private on-site investment that will generate both jobs and annual tax revenue for the City, State, and region. Those public benefits are addressed in Section VII below.

b. Sources of Funds - Public

The redevelopment team consisting of the City of Weirton, Frontier Group of Companies, and the Business Development Corporation of the Northern Panhandle held a Redevelopment Summit in Weirton in November 2018. It was attended by various Federal, State, and local officials. The infrastructure needs are significant, and the infrastructure build out will proceed in stages as discussed above. This becomes a classic economic development cast of stacking of a variety of economic development programs with private investment. The potential sources of public financing are described below, followed by a spreadsheet that attempts to match the Use of Funds with the Source of Funds.

i. **FEDERAL**

a) **INFRA – Infrastructure for Rebuilding America – US Department of Transportation.** The program provides up to 60% grant funding to highway and freight projects of the National Highway System or National Freight Network. Route 2, Route 7, and US Route 22 are on the National Highway System. This program provides a minimum of $5 million for small projects and a minimum of $25 million for large projects. Large projects are the lesser of $100 million or 30% of a State's federal-aid apportionment. 2019 applications were due February 28th. Eligible projects include:

- Highway freight project
- Highway or bridge project
- Rail-highway grade crossing or grade separation
- Intermodal freight project, particularly one that significantly improves freight movement

b) **BUILD – Better Utilizing Investments to Leverage Development – US Department of Transportation.** Program provides up to 80% funding to assist communities with surface transportation projects that promote economic development, innovation, safety, intergovernmental and public-private partnership, and play a transformative role in the community. Urbanized areas of less than 200,000 (such as Weirton-Steubenville) are eligible for a waiver that can provide 100% funding. Eligible projects include:

- Highway, bridge, or road projects
- Public transportation projects
- Passenger and freight rail projects
- Port infrastructure investments, including inland ports
- Intermodal projects

Planning grants are also available in the range of $500,000 (to a maximum of $1,500,000) for design and engineering work. The 2019 Notice of Funding Availability was issued April 23, 2019 with applications due July 15, 2019.

c) **TIFIA – Rural Project Initiative – Transportation Infrastructure Finance and Innovation Act. U.S. Department of Transportation.** The program provides loans for up to 49% of eligible costs for critical infrastructure projects. The interest rates of approximately 1.7% are fixed for up to 35 years or longer; payments can be deferred for several years until the projects are completed, and the program can pay all application fees. It can be used, for example, to capitalize a tax increment financing plan. Eligible project costs include:

- Roads, bridges, and tunnels
- Transit systems
- Intermodal connectors
- Pedestrian and bicycle infrastructure
- Freight transfer facilities
- Inland waterway ports
- Airports

d) **RRIF – Railroad Rehabilitation & Improvement Financing (RRIF). U.S. Department of Transportation.** Program provides loans or loan guarantees to fund up to 100% of a railroad project. Repayment periods can be up to 35 years with interest rates equal to the government borrowing rate. Eligible borrowers include railroads, state and local governments, and joint ventures that include at least one railroad. Eligible project costs include:

- Acquire, improve, or rehabilitate intermodal or rail equipment
- Refinance debt incurred for the purposes listed above
- Develop new intermodal or railroad facilities

e) **Marine Highway Program. U.S. Department of Transportation.** Program provides grants for new marine highway services that support the development and expansion of documented vessels or of port and landside infrastructure. Only $7 million was available in the 2018 funding round.

f) **Public Works and Economic Adjustment Assistance Program. U.S. Department of Commerce. Economic Development Administration.** Program provide catalytic grants for up to 50% of project costs up to $3 million to help distressed communities build, design, or engineer critical infrastructure and facilities. For profit entities are not eligible to apply. Eligible projects include:

- Water and sewer system improvements
- Industrial parks
- Shipping and logistics facilities
- Workforce training facilities
- Business incubator and accelerators
- Brownfield redevelopment

ii. **STATE**

West Virginia

a) **Industrial Access Road Program. West Virginia Department of Transportation.** Program provides grants of up to $400,000 for construction of roads for manufacturing, distribution, processing, or other economic development activities. Only a county or municipality may apply. State requires 10 to 1 match of private investment including land value, site development cost, building costs, equipment, and inventory. Grants can be obtained over multiple years.

b) **WV Water Development Authority (WDA)** provides a variety of programs for long-term, short-term, and private activity financing at favorable interest rates for design, construction, and improvement of water and wastewater systems. The loans are typically repaid from the revenues of the water systems. WDA also makes low-interest loans to fund the design and related costs of wastewater and water projects, which are then taken out with permanent financing when the project goes to construction.

iii. **LOCAL**

a) **City of Weirton, Hancock County, County School District – Tax Increment Financing.** TIF financing has been used before in the City of Weirton, so this financing vehicle is familiar to the development team. As a rule of thumb, according to the West Virginia Development Office, for every $10 of future private investment, TIF bonding can generate $1. For example, if $100 million of investment is anticipated over the next 10 years, a TIF revenue bond can generate $10 million.

b) The follow spreadsheet outlines the infrastructure priorities of the development team and matches them to the sources described above. Future steps include individual meetings with the staff of the U.S. Department of Transportation, and possible second redevelopment summit to present the proposed development plan.

SOURCES AND USES SPREADSHEET

Infrastructure Issues Identified in Frontier's 11/21/18 Memo	Initial Cost Estimate	Source	Amount	Applicant	Requirements	Contact
1a) Roundabout/Phase 2 Rd./Ave C Access: 850,000 sq.ft ind & 280,000 sq.ft -mixed	$14.733 Million	U.S. Dept. of Trans - BUILD	up to $25 MM	City of Weirton BHRPC	80% funding…waiver in rural area Due: 7-15-19	USDOT -Leopold E. Wetula. Leo.Wetula@dot.gov 202-366-0198
1b) Remainder of Frontier Crossngs Roads		U.S. DOT-BUILD/INFRA	See below.			Leo.Wetula@dot.gov 202-366-0198
2) General infrastructure - water, sewer, tie-ins. cooling water, sidewalks.	$50 MM	Tax Increment Financing US DOT - TIFIA	$100 MM 1.5%, 35 Year Term. 5 Year deferral	City of Weirton	10 to 1 rule of thumb $100/Mminvestment/$10MM TIF	City Manager, 304-797-8500. citymanager@cityofweirton.com USDOT - Leo Wetula. See below.
3) New Water Treatment Plant New Waste Water Treatment Plant	$25 MM $30 MM	EDA WAWB / WV Water Dev. A	$3 MM. Can go multi-year ??	City of Weirton	50% funding Open application period.	EDA - Tracy Rowan. Trowan@eda.gov. 304-533-4497 WAWB/WVWDA
4) Bridges: to Ohio & Rt. 7 Bridges: to WV and Phase 1 & 2 &3	$100 MM $50 MM	BUILD grant - USDOT	up to $25 MM	City of Weirton BHRPC	80% funding…waiver in rural area annual application - anticipated Spring i	USDOT -Leopold E. Wetula. Leo.Wetula@dot.gov 202-366-0198
4b)		INFRA grant	for "small" projects - min. $5 MM for "large" projects - min. $25 MM	BHRPC City of Weirton	60% funding..on National Highway Syst or National Freight Network Rt. 2,7, 22 are on National Highway System annual application..NOFA in Dec…due 2/28/19	USDOT - Paul Baumer. paul.baumer@dot.gov 202-366-1092
5) Main Street/Streetscape Improvements	$3 - 5 MM	CBDG WVDOT TIF				
6) Harbor/Barge/Port Facilities	$1 - 2 MM	USDOT Marine Highways	$100,000 - $2.5 MM	BHRPC	80% funding annual application - Oct in 2018	USDOT - Maritime. Chad.Dorsey@dot.gov.202-997-6205 also: Timothy.Pickering@dot.gov. 202-366-0704.
6b)		USDOT BUILD	Minimum $5 MM	BHRPC	60% funding annual application - Oct in 2017	USDOT -Leopold E. Wetula. Leo.Wetula@dot.gov 202-366-0198
7) Workforce Training Center	$40 - 45 MM	EDA	Max $3 MM	City of Weirton/BDC	50% funding Open application period.	EDA - Tracy Rowan. Trowan@eda.gov. 304-533-4497
8) Rail Rehabilitation	$2 - 4 MM	INFRA Grant	see above	BHRPC	see above	USDOT - Paul Baumer. paul.baumer@dot.gov 202-366-1092
8b)		RRIF Loan		Norfolk Southern or JV with NS	100%. Repayment over 35 yrs. @ govt. r	USDOT - BuildAmerica@dot.gov 202-366-2300
9) Building Rehab/Remediation	$2 - 3 MM	EPA grant	$500,000 max. can apply multi year	BDC	80% funding Applications are due Jan. 31, 2019	USEPA - Joe Nowak. Nowak.joseph@epa.gov 215-814-3303
9b)		Power of 32 deferred loan	$2 MM max	Frontier	deferral of repayment until lease-up, etc. open application	P32 - jlavrinc@calleycapital.com. 412-279-8141.
10) Removal of Concrete Structures & and Foundations	$ 6-10 MM	EPA grant	$500,000 max. can apply multi year	BDC	80% funding Applications are due Jan. 31, 2019	USEPA - Joe Nowak. Nowak.joseph@epa.gov 215-814-3303
10b)		Power of 32 deferred loan	$2 MM max	Frontier	deferral of repayment until lease-up, etc. open application	P32 - jlavrinc@calleycapital.com. 412-279-8141.
Other) Industrial Cooperative Co-Gen Plant	$10 -15 MM	EDA Grant	$3 MM. Can go multi-year	Frontier	50% funding Open application period.	EDA - Tracy Rowan. Trowan@eda.gov. 304-533-4497
		DOE				
Other) Pumping Station	$3 - 3.5 MM	WV Water Dev. Authority	City of Weirton			
Estimated Total Need	$ 298 - 357 MM					

IX. ECONOMIC IMPACT

a. Economic Impact

i. Investment:

The site has a capacity for the construction of approximately 3.5 million square feet, according to engineering calculations. Using an approximate cost of $100 per sq.ft. for industrial/flex space and $200/square foot for commercial space, that yields approximately $380 million of new construction for standardized, high quality industrial, and commercial space. While it is extremely difficult to estimate the impact of specialty plant and equipment, we do know that the Shell Cracker facility is generating an investment of approximately $6 billion on approximately 600 acres. We used a proxy of $1 billion of investment for 100 acres. We used that ratio to apply to approximately 120 acres at Weirton Frontier Crossings. That investment could occur on one site, such as Brown’s Island, or on several sites throughout Weirton Frontier Crossings. Given the American Chemistry Council has projected a $36 billion investment in the Ohio Valley, it is reasonable for a site such as Weirton’s Frontier Crossings to capture this at least 1/36th of this investment. The infrastructure estimate was provided through Thrasher’s calculations. Together, the building investment, specialty plant, and equipment investment and infrastructure investment yields a total over $2 billion, as summarized below:

ii. Job Creation:

Given this $2 billion investment, a ratio of one job for every 1,000 square feet of building was used to generate the job numbers, and this number is consistent with job creation for industrial and distribution space. This figure does not include the “off-site” jobs produced by supply chain purchases and by local expenditure of employee payrolls. If those were included it should amount to, approximately another 6,000 to 9,000 local/regional jobs will be created, using a multiplier between two to one and three to one. The American Chemistry Council used a multiplier of 3 to 1 to project the impact on the Ohio River Valley.

Economic Impact : Weirton Frontier Crossings			
	Site Capacity		
Crossings Location	**Industrial** square feet	**Commercial** square feet	**TOTAL**
Frontier Crossings	1,079,000	283,000	
Brown's Island	883,000		
Pennsylvania Landing	230,000		
Harmon Creek Rail Yard	377,000		
Freedom Way Industrial Park	400,000		
Prospect Hill	90,000		
Weir Industrial Corridor	187,000		
TOTALS - square feet of buildings	3,246,000	283,000	3,529,000
Construction cost / square foot	$100	$200	
Construction Cost per standard building	$324,600,000	$56,600,000	$381,200,000
Specialty Plant / Equipment	$1,200,000,000		$1,200,000,000
Infrastructure Investment	$450,000,000		$450,000,000
TOTAL INVESTMENT			**$2,031,200,000**
Job Creation @ 1 per 1,000 sq.ft.	3,246		