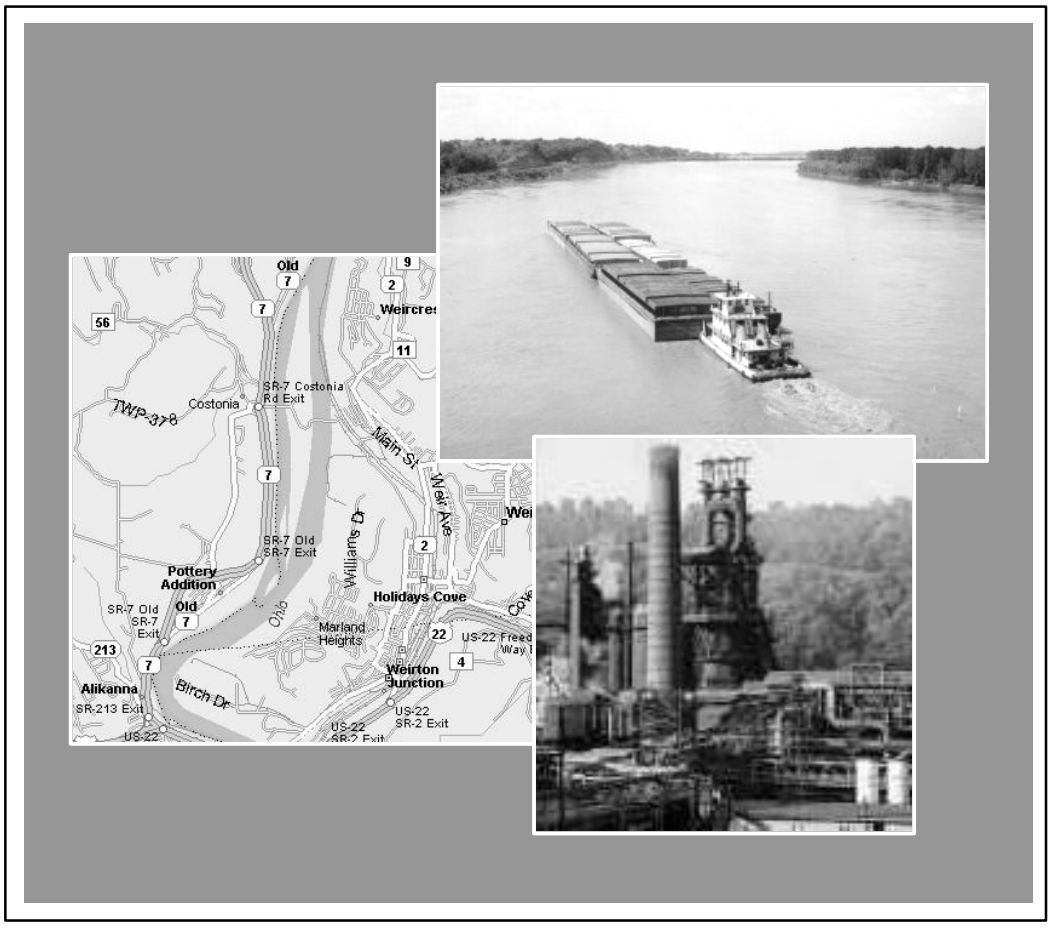
Public Support for the Development of Browns Island



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The Opinions Expressed herein reflect the views of the study's authors and do not necessarily represent the opinions of Marshall University, the University's Governing Body, or the State of West Virginia

Contents

Public Support for the Development of Browns Island: Summary of Findings

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Introduction

During the past decade, the use of public-private partnerships to fund, design, and construct transportation facilities has grown rapidly. The structure of these projects and the range of participants vary greatly from one setting to the next. However, one fundamental element is evident in each case; public and private funds are combined to produce a transportation investment that might, otherwise, be foregone.

The popularity of these public-private partnerships notwithstanding, the economics literature provides very little direct guidance regarding when and how public and private funds should be combined to provide transportation infrastructure. It is also not immediately clear who should own, or otherwise control, these facilities once they have been constructed.

Within this context, the Nick J. Rahall Appalachian Transportation Institute (RTI), in conjunction with West Virginia's Public Port Authority (WV-PPA) has sought to clarify the appropriate roles for public and private partners and identify economically efficient levels of participation for all concerned.

The RTI investigation is organized into two distinct components. First, the study provides a broad examination of the economic principles that support the public's intervention into private market settings. These principles are used to develop a set of practical guidelines for policy-makers. The second study component uses the standards developed in the first phase to examine potential public infrastructure investments for Browns Island near Weirton, West Virginia.

The Need for Public Intervention

Economists generally support the use of unconstrained market interactions as the preferred means of allocating resources among potential uses. Public investment in transport infrastructure represents a significant departure from a more market-oriented approach. Thus, the first issue policy-makers must address is why the public should engage in an investment that private market interactions will not produce.

The answer to this question typically lies in the presence of some form of market failure that is distorting private investment decisions, or in some public desire to affect regional economic development.

Economists generally recognize four types of market failure that justify governmental intervention in private markets. These include: (1) the presence of competition distorting market power; (2) the existence of a natural monopoly; (3) goods or services that are "public goods"; and (4) the existence of market externalities that impose costs or confer benefits to economic agents who are not directly involved in the market activity. Depending on the specific type of market failure, there are a number of alternative policy responses that may be effective.

Attempts to use government intervention as a means of stimulating regional economic development are very common. Occasionally,

such activities are linked to the market failures described above. More often, however, the intervention is necessary to mitigate the effects of past regional policies or to supplement the naturally available endowment of regional economic resources. For example, in West Virginia, many intervention efforts are targeted at repairing the effects of past tax policies on regional investment or improving the availability and affordability of developable property.

Project Benefits, Funding and Calculating a Benefit-Cost Ratio

Clearly, if the public sector is to actively partner with private concerns by investing in new transportation infrastructures, there must be identifiable benefits to greater population and the aggregate benefits must exceed overall project costs. Moreover, both the nature and the magnitude of these benefits must be reflected in the level of public participation.

The gains that policy-makers typically call "project benefits" can actually be divided into two very different subgroups – welfare-enhancing efficiency gains and economic transfers. To the extent that a project actually makes it cheaper to produce transportation services, the net savings represent real gains in economic efficiency. Further, to the extent that competition works to lower prices as costs fall, the benefits accrue to a wide range of agents throughout the economy.

Alternatively, many regional development investments do not lead to large efficiency gains, but instead redirect or relocate economic activities by marginally enhancing a particular region's competitive position of a particular region. The gains to the region that chooses to engage in such investments are, therefore, largely economic transfers from other areas. Note, however, that from a regional development perspective, these transfers can be an effective means of increasing both incomes and employment.

The extent to which estimated project benefits represent efficiency gains, as opposed to economic transfers, can materially impact the efficient mix of funding sources. Certainly, private partners must be expected to contribute resources in amounts that are consistent with anticipated profit increases. Public participants are expected to provide financial resources that reflect the accrual of benefits within corresponding jurisdictions. Hence, for state and local governments, financial participation can reasonably reflect both regional transfers and the portion of any efficiency gains that is realized within state or local boundaries. However, because pure economic transfers provide no net benefit at the national level, federal contributions to public-private partnerships must only reflect the value of welfare enhancing efficiency gains.

Most federal and state agencies have guidelines that dictate the process for calculating the project benefits and costs necessary to develop benefit-cost ratios. While benefit-cost analysis can be a valuable means of informing the decision-making process, the economics literature clearly warns against relying on this methodology in isolation.[1] Benefit-cost analyses are simply too fragile to withstand such a burden. Specifically, there are two important areas of concern.

First, it is extraordinarily difficult to fully capture the complete array of benefits and costs associated with transportation infrastructure projects. Traditional analyses have focussed on the benefits to current users and the cost of construction. However, this typical approach generally ignores the ways in which the new infrastructure and associated change in costs will redistribute traffic across the whole of the transportation system or even lead to altogether new traffic. Traditional methods also invariably fail to incorporate hard-to-capture environmental effects. The result is that most benefit-cost analyses convey useful information, but are insufficiently robust to serve as the lone basis for decision-making.

For those concerned with equity, the second criticism of benefit-cost analyses is more disturbing than any measurement issues.

[1] See Small, Kenneth A., "Project Evaluation" in *Essays in Transportation Economics and Policy*, Gomez-Ibanez, Tye, and Winston editors, Brookings Institution Press, Washington, DC, 1999.

Economic theory suggests that an activity or project is socially desirable if the economic agents who benefit *would be* willing to compensate other affected parties for any resulting costs. However, this theory does not require that the compensation actually take place. In reality, transportation infrastructure projects routinely create winners and losers. These distributional impacts are not considered within most benefit-cost analyses.

Theoretical Summary and Guidance

The preceding theoretical discussion yields a number of important conclusions. These may be summarized as follows:

1. Public involvement in infrastructure projects must be justified as either a response to a market failure or as an economic development effort designed to mitigate a regional disadvantage.

2. To the extent that a proposed project genuinely will improve the efficiency of the transportation system, federal funds may be justified. However, projects that simply generate regional benefits by transferring economic activity from one location to another should not include federal funding.

3. The processes for estimating project benefits and costs, at best, yield results that are incomplete. Hence, benefit-cost analyses should inform, but not replace a political decision making process.

Browns Island Application: Overview

As noted in the introduction, the current analysis not only sought to outline the appropriate theoretical setting for public-private partnerships, it also was also intended to provide a working example based on the potential development of a brown-field site on Browns Island near Weirton, West Virginia.

Browns Island is located at Weirton, West Virginia in the Ohio River on the Ohio side of the navigation channel. The property is wholly owned by Weirton Steel, which occasionally uses the property for storage purposes. The island is accessible by water and via road bridges from both the Ohio and West Virginia river banks. The bridge to the West Virginia side of the river is a substantial structure that directly links the island to Weirton Steel's production facilities. The bridge linking the island to Ohio is a more modest structure that provides a connection to Ohio State Route (SR) 7. There is no direct rail service to the island. However, Norfolk Southern (NS) does operate branch-line rail service on the Ohio side of the island where there is also additional developable property available for industrial or transportation uses.

In a region where flat, developable property is scarce, the island represents a significant potential asset to economic planners. Moreover, to the extent that the property's future development includes new transportation facilities, this development could also yield significant transportation savings for Weirton Steel. Thus, conditions favor the exploration of a public-private partnership aimed at developing Brown's Island for both purposes.

Browns Island Environmental Assessment

As noted, Browns Island is a brown-field site that was most recently used as the location of a coke processing facility. Portions of that facility still exist and, along with a variety of associated waste, would require removal in advance of any new development. The estimated cost of the required cleanup is $3 million.

Researchers from the RTI conducted an additional environmental assessment of the island. This study suggests that there are approximately 192 usable acres of land that are (or could be raised) above the one hundred year flood plane. There is also acreage at the north end of the island that is within the flood plane, but which might be usable by commercial interests that are less sensitive to flooding.

The RTI evaluation failed to identify any significant environmental issues or restrictions. Wildlife experts did suggest that the southern end of the island remain undeveloped, since it serves as habitat for a number of bird species. However, this restriction does not materially limit the development of either transportation facilities or industrial sites. The analysis also assumes that there will be no disturbance to the back channel that separates the island from Ohio. Again, however, prohibiting disturbances to the back channel, in no way, limits the potential uses for the island.

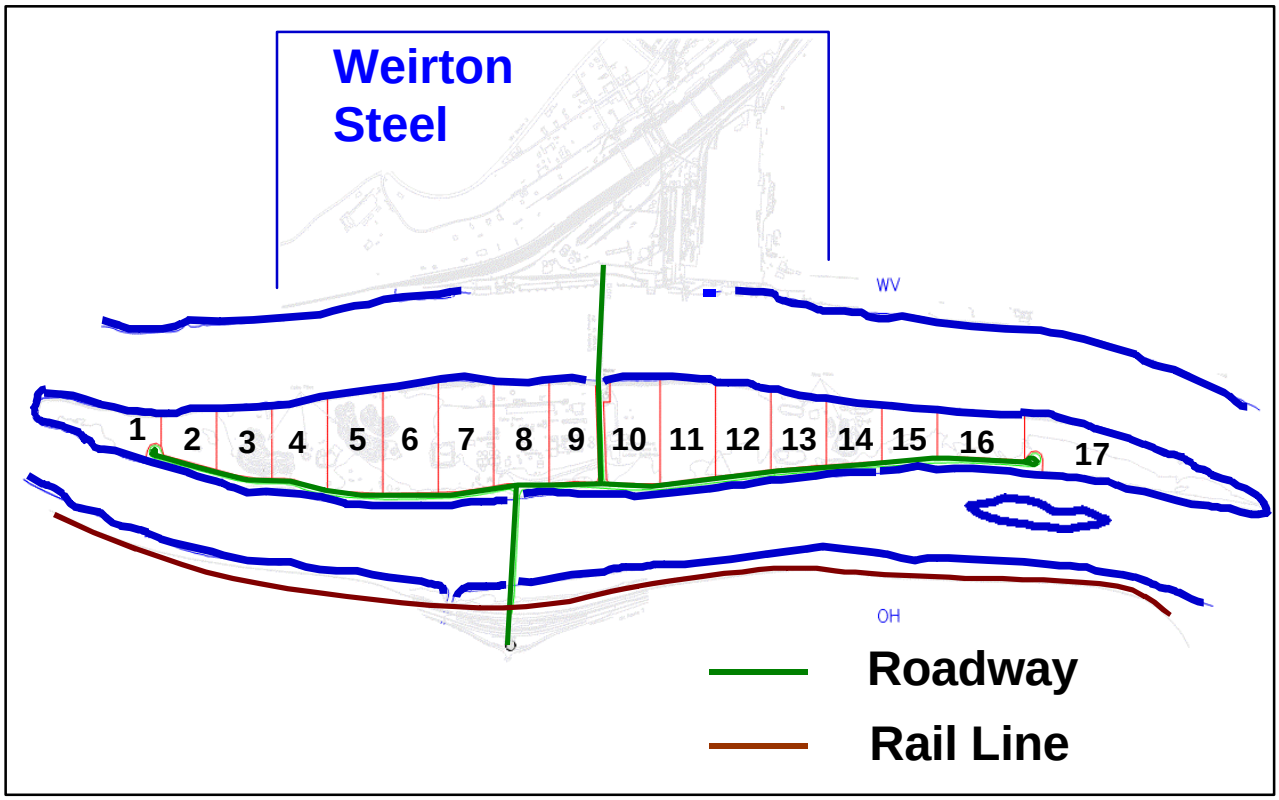
Recommended Development Program

The RTI study team considered a number of possibilities for the development of Browns Island. The goal in this analysis was to provide the maximum benefits to the project's potential partners without driving development costs to untenable levels. Specifically, the team sought to incorporate the transportation improvements that would directly benefit Weirton Steel and, at the same time, improve the development potential of remaining properties for other industrial uses.

The resulting site development plan is presented graphically in Figure 1. Under this plan, developable property on the island would be divided into 17 tracts. The development would include an access road along the back channel, thereby insuring that each of the tracts has direct access to the navigation channel. The bridge connecting the island to the West Virginia river bank would be retained for private use by Weirton Steel. The bridge from the island to the Ohio bank would be replaced with a more substantial structure that would directly interconnect with Ohio SR 7.

The plan does not call for the extension of railroad services to the island. However, it does note the availability of rail service on the Ohio bank. Moreover, given that the back channel is

Figure 1



not navigable, it would likely be possible to traverse that channel with pipelines, conveyors, or other necessary equipment.

Finally, as currently envisioned, the site development plan calls for the extension of utilities to the island and to each of the available tracts.

Cost Savings – Weirton Steel

As noted, Weirton Steel currently owns Browns Island. The steel maker's willingness to participate in a partnership through which it would end its control of the island is a direct reflection of the anticipated cost savings it would enjoy via the project.

Weirton supplied the study team with a variety of proprietary data detailing its railroad and barge movements of both raw materials and finished steel products, as well as handling costs for both inbound and outbound shipments. Based on these data, the study team estimates a present value of annual savings to the steel producer of more than $16 million.[2]

The $16 million estimate is based on identifiable savings on current traffic. It is likely, however, that this figure understates the actual value of the proposed project to the steel producer. As transportation costs fall, Weirton will become more competitive in more distant markets, so that it is likely the volume of traffic to which the savings apply would increase. It is also possible that one or more of the available tracts will be used to develop a metal products mixing center where Weirton products could be combined with output from other vendors to increase shipment sizes and annual volumes. Finally, it is possible (even likely) that in order to virtually eliminate transportation costs, a Weirton customer will opt to locate on the island.

Given its specialization in tin, it is unlikely that the final product mix produced by Weirton Steel will change significantly over the foreseeable future. However, this is not necessarily true for inputs. Weirton is an integrated steel produce, combining primary materials through a blast furnace process to produce steel. It is possible that, over the coming decade, the steel maker will partially or completely abandon this process in favor of an electric arc mini-mill process or a cold production process that relies completely on purchased slabs. Changes in production methodology could change the mix of necessary inputs and, thereby, alter the transportation savings attainable through facilities on Browns Island. Unfortunately, at this juncture it is not possible to anticipate the likelihood of a methodological change at Weirton Steel or to know how such a change would affect input mix and transportation costs.

Economic Development Opportunities

Nearly 200 acres of readily developable property, adequate highway access, nearby rail service, utilities and well over a mile of river frontage would make Browns Island suitable for a wide array of commercial and industrial uses. Similar opportunities are rare within the region.

Even though the proposed project is years from completion, the local Weirton Port Development District is already fielding inquiries from prospective tenants. As with the transportation data provided by Weirton Steel, the specific circumstances of inquiring firms is being treated as confidential information by the Port District. However, District representatives anticipate between 300 and 500 jobs in industries characterized here as Manufacture of Metals (NEC).

Potential economic impacts to the region were estimated based on these representations. These impacts are summarized in Table 1. The first column of results reflects the annual impact on employment, incomes, and output. The second column provides the present value of a 20-year stream of both income and output.

[2] This is based on a 20 year time horizon and an annual real discount rate of 6.125%.

Table 1
Potential Economic Impacts[3]

	Annual Value	*Present Value*
Employment	950	----
Income	$36 M	$409 M
Output	$120 M	$1.4 B

Project Costs

Table 2 provides a summary of estimated costs for creating tracts 2-12 in Figure 1, as well as providing other necessary infrastructure. These costs do not include the $3 million necessary for the environmental cleanup. The figure also excludes the funds that the island's tenants (including Weirton Steel) would need to construct private production or transportation facilities on the island.

Table 2
Estimated Costs

Cost Item	*Amount*
Bridge to Ohio SR 7	$5,750,000
Island Roadway	$1,030,000
Engineered Fill	$4,616,000
Grading and Site Preparation	$240,000
Utility Allowance	$1,450,000
Modification to WV Bridge	$450,000
Railroad Siding (Ohio bank)	$220,000
Engineering / Geotechnical	$1,150,000
Total	$14,906,000

[3] Economic impacts were estimated through the use of regional IMPLAN simulation software distributed by MIG, Inc. The study region consisted of Brooke, Hancock, and Ohio Counties. Present Value was calculated over a 20 year time horizon using a real discount rate of 6.125%.

As Table 2 indicates, the largest single cost is the bridge that will connect the island directly to Ohio SR 7. The study team carefully examined the possibility of providing public access via the existing bridge between the island and the West Virginia bank. However, this option was eventually discarded for two reasons. First, it would be extraordinarily difficult to arrange the safe movement of vehicles through the Weirton Steel facility. Second, routing vehicles through the city of Weirton and the steel facility would add significantly to transit times compared to the Ohio SR 7 routing.

Study Recommendations

The proposed development of Browns Island would clearly improve the efficiency of transportation to and from the Weirton area. However, it is almost certainly the case that these efficiency gains, in isolation, would not justify the needed expenditures. Thus, it is unlikely that Weirton Steel would independently undertake the investments necessary to bring about these improvements.[4]

Fortunately for the project's advocates, Browns Island also represents a significant opportunity to advance the region's economy. Preparing the island for industrial use would add measurably to the region's endowment of a scarce resource – flat, developable land. The proposed improvements to the island *are* justified on this basis.

The interests and opportunity shared by Weirton Steel, the region in which Weirton is located, and the State of West Virginia create a fertile setting for a productive public-private partnership. All parties will benefit from the proposed project. Accordingly, all parties must expect to share in the financial responsibility. Weirton Steel has indicated in the past that it

[4] Importantly, the estimated $16 million present value of future transportation savings on existing traffic would more than justify the expenditures necessary by Weirton Steel to create dock, handling, and storage facilities on the island.

would convey ownership of the island to the proper authority. Given the projected cost savings for the steel producer and the necessary costs it would incur to construct dock, handling, and storage facilities, it is probably not appropriate to seek further participation from Weirton Steel. This implies that regional partners and the State would be required to fund the $3 million cleanup and $15 million construction cost. Given the potential gains in regional commerce and based on the criteria developed here, such an expenditure would be justified.

For this reason, the study team makes the following recommendations for further action.

- Browns Island should be developed as an economic development project for Brooke and Hancock Counties
- Weirton Steel and the West Virginia Public Port Authority should move toward resolution of remaining land transfer issues.
- Concerned parties should identify funding for necessary preliminary engineering.
- The local port district should initiate (or continue) efforts to recruit industrial tenants in addition to Weirton Steel.
- To the extent necessary, State development officials should assist Weirton Steel if it seeks the capital resources necessary to utilize a facility on Browns Island.

Public Investment

in

Transportation Infrastructure:

Conceptual Review and Evaluative Standards

By

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1. INTRODUCTION AND BACKGROUND

Public investment in transportation infrastructure is an amazingly complex undertaking. Generally, this investment is a source of government intervention in the marketplace, explainable under two scenarios. First, government intervention in the marketplace results because the market fails to provide outcomes that are socially optimal i.e., the market failure rationale. If accomplished effectively, investment undertaken to correct market failures should add measurably to overall efficiency. Under a second scenario, government intervention in the marketplace results because parties in the market desire intervention to protect their interests i.e., the economic theory of regulation (Stigler).[1] In practice, there is evidence that suggests each of these theories of government intervention affects public investment in transportation infrastructure.

The purpose of the current document is to help policy-makers identify those situations in which public investment in transportation infrastructure is desirable from an economic efficiency perspective and to determine the appropriate apportionment of financial responsibility. Section 2 specifically addresses the issue of efficient market intervention. In Section 3, we provide a theoretical discussion of benefit-cost analysis. Section 4 is devoted to the practical application of the evaluation process. Finally, Section 5 describes issues that extend beyond benefit cost analysis.

[1]The captive theory is strongly aligned with the economic theory of regulation. Following the captive theory, government intervention may have been for the public=s interest, the correction of a market failure, but over time the firms capture the regulators (the government) to serve their interests.

2. EFFICIENT MARKET INTERVENTION

The guiding benchmark against which economic outcomes are measured is that of the competitive model. If economic outcomes do not match those of the competitive model, the market is said to have *failed* to provide the welfare maximizing market outcomes. Generally, markets fail to give competitive outcomes if there is market power present e.g., one or more firms have the ability to affect market outcomes, externalities are present i.e., social costs and benefits do not match up with private costs and benefits, there are information asymmetries between agents in the market. Depending on the form and/or cause of market failure, there are a number of alternative policies governments can follow. For example, if there is market power present the government can use antitrust or economic regulation (i.e., direct control of market outcomes) to Acorrect@ the market failure. If there are widespread externalities, the government can theoretically construct a system of taxes and subsidies to correct the market failure.

Sometimes the market fails to provide a good because it is a Apublic good@ **B** a good that is Anonrivalrous@ and Anonexcludable.@ Because one agents consumption of a good cannot be stopped (excludability) and because that agent's consumption does not impede another agent's consumption (nonrivolous consumption), prices tend to zero and firms do not supply the good. The good can only be provided publicly.

Each of the market failure scenarios may play a rule in explaining the need for public investments in transportation infrastructure. Generally, public investment in transportation facilities rests on the premise of that the market has failed to provide adequate private investments in public infrastructure. However, even so, private interests are very much present and there is a clear threat that these interests will act to manipulate the process for their benefit.

The economic theory of regulation holds that government intervention is explained by private not public interests. A classic example is the use of a regulator to enforce an unstable cartel

agreement. In the context of public investment of transportation infrastructure, it is certainly the case that there are tremendous private benefits that can accrue to firms from public investments. It is also clear that often times, the economic theory of regulation might be a backdrop for the substitution of private capital for public capital **B** a private interest successfully lobbies and obtains public funding for a project that was warranted with private funds. Such successes are a transfer from the public to private interests. While the capture of the public-policy process can very clearly represent an efficient form of firm behavior, it generally does not result in the efficient investment of public resources.

There is one final issue pertinent to the current discussion; this is the matter of "opportunity cost". Within economics, the opportunity cost of any decision is reflected by the value of the best foregone alternative. Within the current context, and presuming some finite limit on the availability of public resources, not every efficient investment in transportation infrastructure may be fundable. Consequently, it may be necessary for policy-makers to choose between a number of worthy projects.

3. THE ROLE OF BENEFIT-COST ANALYSIS

The guiding principle used in making public investments in transportation infrastructure is that such investments will increase public welfare. In practice, this principle often is applied through a case by case benefit-cost analysis. The benefits generally point to the attraction of industry and economic development with associated increases in employment. In some cases, public investment may be required to achieve efficiency, translating into lower private costs, greater output, and, potentially added employment. Costs generally involve the required public investment in dollars as well as an assessment of other social costs e.g., environmental degradation, public safety, or other externalities. If the measured benefits outweigh the measured costs, there is a call for public investment.

Benefit-cost analysis is a seemingly uncontroversial manner to reduce the issue of public investment to a single-monetary dimension. However, the measurement of costs and benefits can be quite complex and becomes uncontroversial only if all decision-makers agree to the measurements. There are a number of complications. First, the Acorrect@ benefits and costs need to be identified. Second, these benefits and costs must then be numerically evaluated. Such numerical evaluations often involve multiple time periods, forecasted values of critical variables and discounting to present values; an arduous process fraught with heroic assumptions. Third, benefits and costs used to rationalize funding often vary with the source of government providing the funding. For example, a local investment accounts for local benefits and costs, while a federal investment accounts for the local benefits and costs along with other locales with the result that benefits and costs at one level may warrant investment while at another level benefits and costs may not warrant investment. Finally, comparisons of benefits and costs are made in terms of aggregates -- the summation of individual benefits and costs. Very often there are winners and

losers in public investments. The result of having winners and losers often rests the result of a proposed project in a highly charged political arena.[2]

A key element of this discussion is the nature of winners in public investments. After all, if there are substantial private benefits accruing to individuals, then there are a number of possibilities. First, the public investment is not necessary. The market has provided an incentive for private investment. If that investment has not occurred, it may simply be a matter of time. Alternatively, while private incentives exist, there may be an impediment to private investments. In such cases, there may be a need for public involvement e.g., underwriting the project, but not for the public investment. Finally, the private incentives may not be large enough to secure all of the public benefits of the proposed investment. In this latter case, there may be a need for partial but not complete public investment in the project.

Critical to these assessments is an explanation of why there is no or inadequate private investment when there are net benefits to public investments. In classic discussions of public goods, there is often a distinction between private and social benefits and costs. While there might be net benefits to society, the investment may not be made by private individuals as there are net losses to individuals.

[2]For a more complete discussion, see Kenneth A. Small, AProject Evaluation,@ in *Essays in Transportation Economics and Policy*, Jose Gomez-Ibanez, William B. Tye and Clifford Winston editors, Brookings Institution, 1999.

Benefit-cost analysis is a logical and seemingly straightforward approach to addressing the need for public investment. Both costs and benefits need be identified and measured. The identification and the measurement of benefits and costs can be difficult. Overlaid in the process of identification and measurement are political forces, attempting to sway the outcomes and uncertainty of often futuristic numbers. Further, once identified and measured, there are also the issues related to public, private, or a combination of public and private funding as well as the source of public funding i.e., whether the funding should be made by local, state, or federal agencies or by some combination of those agencies. Finally, as noted by Nash (1993) and Kornai (1979), it is not clear that a strict benefit-cost approach should even replace the subjective evaluation of a project by policy-makers.[3]

[3]See János Kornai, AAppraisal of Project Appraisal,@ in Economics and Human Welfare: Essays in Honor of Tibor Scitovsky edited by Michael J. Boskin (New York: Academic Press, 1979) and Christopher A. Nash, ACost-Benefit Analysis of Transport Projects,@ in Efficiency in the Public Sector: The Theory and Practice of Cost-Benefit Analysis, edited by Alan Williams and Emilio Giardina (Aldershot, UK: Edward Elgar, 1993).

4. GUIDELINES FOR PUBLIC INVESTMENT IN TRANSPORTATION INFRASTRUCTURE

The complexity of market institutions, the impacts of government policy, and the political process make the issuance of guidelines a tenuous task. However, guidelines are useful in identifying issues and difficulties associated with public investment projects, and ultimately in making good public investment decisions. In this section, we briefly describe some of the guiding principles of public investment decisions given the background developed above surrounding government intervention and benefit-cost analysis.

4.1 IS PUBLIC PARTICIPATION JUSTIFIED?

As the introductory material makes clear, the efficient public participation in the provision of transportation infrastructure is generally a response to some form of market failure – a failure that results in a sub-optimal quantity of transportation capacity. In the absence of such failures, private investors are responsible for evaluating and undertaking transportation investments. Accordingly, the first analytical task is to identify the form of market failure that warrants public intervention. Specifically, policy-makers should ask:

- Is the market that will be served by the proposed project a natural monopoly that can only be served efficiently by a single provider?
- Is the need for the proposed project the result of anti-competitive behavior?
- Are there informational asymmetries that prevent private investors from making an, otherwise efficient, investment?
- Are there external costs or benefits that will be addressed by the proposed project?
- Can consumers be excluded from the consumption of the services that the proposed project will provide or do these services constitute a public good?

If the answer to each of these five questions is no, then it is likely that public participation in the proposed project is unnecessary. Moreover, in the absence of a market failure, if private markets are not providing the facility, it is also likely that overall benefits are less than the project costs.

4.2 IDENTIFICATION OF DIRECT BENEFITS AND COSTS

This is an obvious component of project evaluation. Theoretically, a project should be undertaken if it improves social welfare. That is, a project should be undertaken if the addition in consumer and producer surplus is larger than the incremental costs of undertaking the project. The underlying principle in such an evaluation is purely the goal of maximizing social welfare. Consumer and producer surplus is the total valuation placed on the goods produced from the project in excess of the costs of producing the goods. The costs of undertaking the project are not just the outlays required but also the opportunity cost of the outlays. In particular, the welfare that could have been reached, investing the funds in an alternative project. This suggests the careful consideration of other projects that may be displaced by the proposed project – projects that may have very different investment requirements. Operationally, there are a number of tasks that are critical to the defensible assessment of project benefits and costs? These include:[4]

- Identification of the appropriate temporal vantage (short-run v. long-run)
- The prediction of commodity (or passenger) flows in the absence of the proposed projects.
- The forecast of the demand for project services over the relevant time horizon.
- The assessment of transportation costs if the project is not built, as well as under the scenario wherein construction takes place.
- The development of the parameters necessary to the proper discounting of future project-related benefits.
- The identification of and cost assessment for other infrastructure/operational alternatives that might also facilitate the same services planned under the proposed project.

Because the performance of these tasks is so critical, each is discussed in further depth.

Temporal Vantage Some transportation studies are based on the anticipation of gradual traffic growth. Because shippers or travelers have years to adapt to growing congestion, in such cases the

[4] The process used by the US Army Corps of Engineers in the assessment of project benefits and costs is described in *Economic and Environmental Principles and Guidelines for Waer and Related Land Resources Implementation Studies*, 1983, www.wasc.usace.army.mil/iwr/pdf/p&g.pdf While this process is designed for the evaluation of federal projects, it can be modified for use in state and local project evaluation.

economic analysis must be conducted from a long-run vantage. Accordingly, any estimates of benefits and costs must encompass the widest possible range of options available to shippers, including the ability to relocate or (in the case of shippers) cease production. At the same time, some studies are focused on the economic benefits that may be attributable to improving the reliability of transportation systems. These studies necessarily consider the economic benefits of avoiding both planned and unplanned system failures. Under many such scenarios, passengers shippers, unwilling to make capital adjustments in response to a short-run events, are limited to a much smaller set of transportation alternatives. Thus, in such settings, the effective treatment of benefits and costs requires the estimation of short-run rather than long-run relationships.

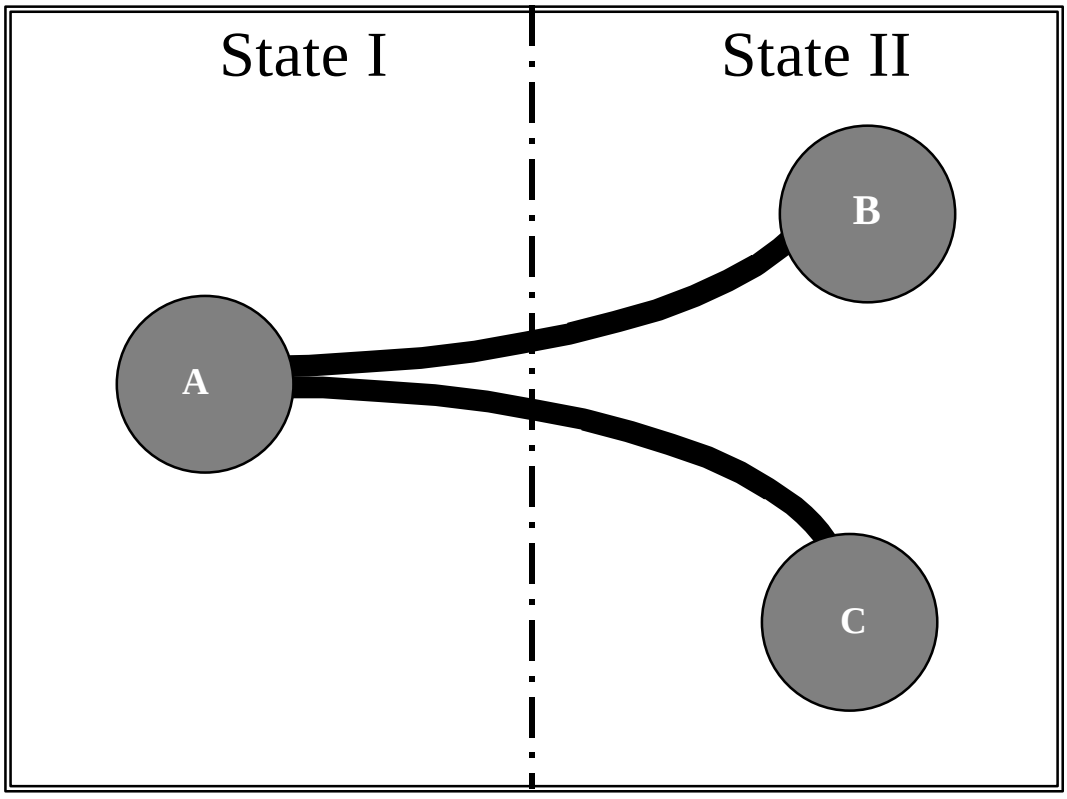
Baseline Traffic Forecasting There is little in economics that is more perilous than forecasting and, certainly, forecasting freight traffic growth is no exception to this conclusion. The simplest approach is to simply rely on observable trends in traffic growth (or declines) and assume that these trends will continue over the relevant time horizon. Unfortunately this approach ignores important linkages between transportation activity and the economic factors that determine the magnitude of that activity. Alternatively, historical data (where available) can be used to identify relationships between both endogenous and exogenous economic factors and the observed level of transportation traffic. However, the extension of the estimated relationships into an unknown future then requires the analyst to invent, assume, or estimate forecast values for the economic factors that drive transportation demand.

Because forecasting future baseline traffic volumes is so difficult it is imperative that analyses consider the widest imaginable range of traffic forecasts. If a proposed project is viable under the most conservative of these, then policy-makers can take some comfort in a positive decision to proceed. If a project is justified under some forecast scenarios, but not justified under others, policy-makers must decide on the amount of risk to which they (and their constituents) wish to be exposed.

Demand Estimation There is, perhaps, no task in the evaluation of transportation projects that is more critical than the effective estimation of forward-looking demands. A simple example will illustrate both the complexity and importance of this topic. Begin with the assumption that an infrastructure improvement at location A reduces transportation costs on some flow (Q_{AB}) between destination (A) and origin (B). This scenario is illustrated graphically in Figure 1. The first source of project benefits is the cost savings on the existing traffic flow. The magnitude of this benefit is simply the value of the per-unit cost reduction multiplied by Q_{AB}.

Next, the project-related reduction in transportation costs should be expected to increase the flow between A and B by ΔQ_{AB}. ΔQ_{AB} may have a number of component parts. First, existing users may increase their usage in response to the lower transportation cost. It is also possible that agents at A and B that have used another form of transportation will respond to the lower cost by now using the mode(s) supported by the infrastructure.

Figure 1



Finally suppose that agents located at A had been purchasing inputs from both location B and location C. The reduction in the transportation cost between A and B should cause the Q_{AC} flow to decline and the Q_{AB} flow to increase as agents located at A purchase more inputs from location B and fewer from location C.

Assessing Transportation Costs Any project-related changes in traffic flows occur as a direct result of incremental changes in the vector of available transportation prices. Consequently, accurately assessing how the proposed project will affect costs is an integral part of the evaluative process.

As the text above makes clear, in some settings a short-run temporal perspective is appropriate. In other cases, it is the long-run perspective that should be used. Accordingly, analysts may sometimes be required to develop either short-run or long-run cost estimates, depending on project-specific circumstances. Other than this distinction, however, the standards that should be used to develop cost estimates are very similar. First, project-related cost differentials must be demonstrably incremental to the proposed project. Clear causation must be established. Second, estimated costs should reflect forward-looking traffic estimates that reflect expected demand levels both if the project is pursued and if it is not. In this way, the effects of any available economies of scale will be reflected in the estimated cost differentials. Finally, estimated costs should be based on the efficient use of the best foreseeable technology. This assures that the resulting analysis will reflect the project benefits and costs that would be observed under conditions of competitive supply.

In practice, strictly adhering to these costing standards is sometimes very difficult. As a consequence, observed prices are sometimes used as proxies for both short-run and long-run costs.[5] This practice, while not uncommon, can introduce considerable error into the estimation process. It should, therefore, be avoided if possible.

[5] For example, the US Army Corps of Engineers allows transportation rates to be used as proxies for transportation rates in navigation infrastructure studies. *Ibid.*

Proper Discounting Because construction expenditures occur almost immediately, while benefit streams of stretch over decades, it is generally necessary to discount future benefits so that project benefits and costs can be reasonably compared. The effect of the discounting process depends on three facets – the length of the time horizon over which project-related benefits can be expected, the intertemporal bath over which benefits accrue (sooner versus later), and the rate at which future benefits are discounted. Generally, the time horizon is consistent with the expected life of the project. The intertemporal path of the benefits stream will depend on a number of factors, including traffic forecasts, the speed with which the project is brought into operation, and the capacity of the project under consideration. The rate at which future benefits are discounted should reflect the opportunity cost of the resources used in project construction and is, therefore, often a subject of discussion. The federal government typically establishes a statutory discount rate (currently, in the area of 6.3%) for use in conjunction with federal projects. This rate is very often used as a default when further investigation is not warranted.[6]

4.3 INTEGRATION OF RELEVANT EXTERNALITIES

Externalities, themselves, may serve as a basis for public intervention in transportation markets. However, even when a proposed project is motivated by some other form of market failure, there is a need to account for the existence of external benefits and costs. Transportation infrastructures are built in every conceivable economic, demographic, and environmental setting. Thus, the nature of the externalities encountered in association with specific projects can vary widely. However, common areas of investigation include:

- The relationship between transportation infrastructures and environmental outcomes such as air quality, water quality, fish and wildlife habitat.

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[6] Most benefit-cost analyses are conducted in real terms, so that the effects of inflation are accounted for. Accordingly, the discount rate should reflect the real opportunity cost of funds.

- The relationship between transportation infrastructures and public safety.
- External costs associated with traffic congestion and congestion-related delays.

To the extent that proposed projects may materially affect outcomes in any of these areas, it is essential that these foreseeable impacts be quantified. If the proposed infrastructure project will provide improved outcomes, then these improvements should be included as project benefits. Alternatively, if the proposed project is expected to yield negative impacts, these impacts must be counted as costs. Historically, the external costs or benefits associated with proposed projects have been treated outside the formal benefit-cost calculation process. However, this sort of segregation is entirely inappropriate. In all but the rarest cases, defensible methods exist for quantifying external impacts. They should, therefore, be integrated into the overall project assessment process.

4.4 EVALUATION OF FUNDING ALTERNATIVES

From an efficiency standpoint, who funds public transportation infrastructure matters little. Funding is more a matter of equity – a topic which economics has historically treated poorly. Presumably, however, if responsibility for funding is to be apportioned equitably, identifying the group or groups that actually benefit from transportation projects is an important issue.

Generally, there are four economic groups that may benefit from a proposed transportation project and each may be considered as a *potential* source of project support. These include:

- Transportation users and providers who are able to retain some or all of the project-related user savings.
- A much broader set of economic agents who receive the benefits of user savings in the form of lower commodity prices.
- Localized interests who receive benefits through the transfer of economic activity to their area or region from another area or region.

- Economic agents for whom the infrastructure project will reduce the magnitude of negative external costs.

As Section 4.2 suggests, transportation infrastructure projects may be expected to generate user savings, both to current users and to new patrons who are attracted by the project-related reductions in transportation costs. If these savings are retained by the users, then equity would suggest that the users may be called on to contribute to the overall project costs. Thus, for example, local riders might be asked to help pay for a transit project that reduces commute times and / or the operating cost of the transit system.

In the case of freight transportation (or potentially, even business travel), the matter of retained savings becomes more complicated. Shippers and carriers are presumed to compete for customers based on price. If the level of competition in the downstream markets is sufficiently high, any project-related shipper savings will be passed on to downstream customers in the form of lower transportation/product prices. This suggests that the benefits associated with shipper savings are dispersed among a very broad set of economic agents. Thus, it matters little whether the project is funded with contributions from shippers and carriers or the public as a whole.[7]

To the extent that transportation providers or users change their transportation practices based on a project-related variation in transport rates, there may also be economic transfers in addition to the welfare-enhancing shipper savings. For example, a municipality that becomes home to a new transload facility will certainly gain jobs and income during the construction of the facility. It is also likely, that manufacturers and other users may be attracted to the new facility and will, therefore, choose to relocate their operations to the municipality. Because these impacts largely (though not completely) reflect the simple relocation of existing economic activity they are not generally considered to be benefits to the overall economy. After all, if economic activity is simply relocated, then there must be a corresponding loss of activity elsewhere. Still, for the

[7] Critics of public investment in transportation infrastructure often refer to infrastructure project expenditures as "corporate welfare". However, to the extent that shipper savings are passed through in the form of lower prices, this

municipality that is on the positive end of the transfer, the project-related benefits are very real. Thus, the definition of the geographic unit over which benefits are calculated may affect the degree to which economic transfers can be treated as benefits and the degree of fiscal participation that can be justified within a given jurisdiction. Generally speaking, the more narrowly defined the geographic unit, the more likely it is that economic transfers will constitute some sort of local economic benefit.

It is worth noting that the placement of a transportation infrastructure may have very little (if any) economic impact on the local community. If local residents are not among the set of users, then clearly they will not benefit through user savings. Moreover, if the local community is not proximate to the affected users, then it is unlikely they will benefit from transfers. Thus, it is not unusual to see communities that are, at best, indifferent to the location of transportation facilities within their area.

Finally, Section 4.3 describes the importance of externalities within the benefit calculation process. Transportation infrastructure projects clearly have the potential to impose costs or confer benefits to economic agents who are not a party to the transportation transaction. To the extent that the proposed project results in negative externalities, those who wish to undertake it will almost certainly be called upon to either mitigate the negative outcome or compensate those who are harmed. Accordingly, it does not seen unreasonable to ask those outside the transaction who may benefit from the new infrastructure to contribute toward that infrastructure. In this way the "internalization" of external benefits and costs will be symmetrical.

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characterization is inaccurate.

5. BEYOND BENEFIT-COST ANALYSIS: CONCLUDING COMMENTS

Increasingly, economists are coming to reconsider the role of benefit-cost analysis in the evaluative process. Within the economics literature, there are numerous criticisms of the benefit-cost framework. These include the realization that some relevant costs or benefits cannot be effectively expressed in monetary terms and the awareness that, beyond any question of efficiency, the application of benefit-cost analysis creates identifiable winners and losers.8 On the topic, Kenneth Small writes:[9]

> Decisions about public investments are made in a political process, and the value of any particular evaluation technique such as cost-benefit analysis, depends on how it informs that process…Cost benefit analysis is not a substitute for political decisions, but it makes their implications more transparent.

This is not to say that the proper treatment of demands and accurate calculation of project benefits is unimportant. The extent to which navigation projects enhance economic efficiency should be critical to the decision making process. Nonetheless, the public interest dictates that the focus on efficiency-related benefits should not be so intense that it excludes the consideration of other economic and social outcomes.

Clearly, there at least two specific settings in which traditional benefit-cost analyses must be considered along side non-traditional project impacts. First, if there are significant regional transfers that benefit local or regional constituencies and if these constituencies are willing to contribute locally-derived financial support, then the regional benefits may rightfully enter the

[8] For example, in the illustration provided in Section 4, the economic transfers that resulted from the infrastructure placement reduced economic activity in one location. Economic efficiency embraces policy changes that occur so that those who benefit *could* compensate those who are harmed and still, on net, be better off. It does not require that the compensation actually take place. In practice, losers are very rarely considered.

[9] *Supra*, Note No. 2.

decision-making process.[10] Second, when there are clearly identifiable environmental (or other social) impacts, these impacts must enter the decision-making process even if it is not possible to monetize them for inclusion in a traditionally developed benefit-cost ratio.

[10] This is only true if the local or regional funding is locally or regionally derived. The conclusion does not hold if local or regional contributions are comprised of funds obtained from federal sources.

ENVIRONMENTAL RECONNAISSANCE REPORT (ERR)

BROWNS ISLAND SITE

Prepared for:

WEST VIRGINIA PUBLIC PORT AUTHORITY
WEIRTON PORT AND INDUSTRIAL CENTER

Prepared by:

MARSHALL UNIVERSITY
NICK J. RAHALL, II APPALACHIAN TRANSPORTATION INSTITUTE

October 2001

Environmental Reconnaissance Report for the Weirton Port and Industrial Centre Public Port District, Browns Island Site

October 2001

Prepared for the

West Virginia Department of Transportation,
West Virginia Public Port Authority
Charleston, WV

Abstract: The Nick J. Rahall, II Appalachian Transportation Institute, at Marshall University, in support of the West Virginia Public Port Authority and the Weirton Port and Industrial Certre District, has prepared this Environmental Reconnaissance Report for the above named site, under consideration for development as a public port. The site is the currently owned by Weirton Steel Corporation, which currently has limited operations on the 244 acre island. The island is located in Weirton, WV. This report is deemed preliminary since final construction and facility operational data is incomplete. This report identifies baseline environmental conditions and provides an analysis of potential impacts that construction and operation of the port facility may have. Issues of environmental concern are also identified.

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COVER

Cover photograph provided by the Nick J. Rahall, II Appalachian Transportation Institute
Photograph by Lance Tully

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Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

TABLE OF CONTENTS

SECTION/TITLE

LIST OF FIGURES

Figures:

LIST OF APPENDIXES

Appendixes:

1.0 EXECUTIVE SUMMARY

This Environmental Reconnaissance Report has been developed by Marshall University's Nick J. Rahall, II Appalachian Transportation Institute (ATI) to identify and evaluate the potential impacts of construction and operation of a public port on Browns Island, located on the Ohio River, at Weirton, WV. The information contained in the Environmental Reconnaissance Report will be used as a factor in determining the selectability of this site as a port site, and in developing possible mitigation plans to avoid or reduce potential impacts. As part of the Environmental Reconnaissance Report, a preliminary determination of environmental compliance requirements is made. Also, issues of environmental concern related to the site are identified.

1.1 Introduction

Browns Island has been identified as a potential location for a public port facility. The West Virginia Public Port Authority and the Weirton Port District (the Brook and Hancock Counties local port district) in cooperation with Weirton Steel Corporation, via a contract with the ATI, are determining the feasibility of developing Browns Island into a public port facility. A study has been completed to establish the general feasibility of an inland public port on Browns Island and to identify the types of port facilities, which would have the greatest benefit to the surrounding counties by improving transportation links for existing businesses and by attracting new businesses. This Environmental Reconnaissance is intended to be the environmental component of the Browns Island Developed Plan, and will be included as an appendix to the final document.

1.2 Purpose of the Project

The purposes of the proposed Browns Island project are: (1) to expand the industrial base of the State of West Virginia; (2) to expand the employment opportunities of Hancock and Brook Counties in West Virginia and the neighboring counties in Ohio and Pennsylvania; and (3) to promote industrial and commercial use of cost-effective and efficient inter-modal transportation facilities such as rail, highway, river and air for shipping commodities into and out of West Virginia.

1.3 Alternatives

A site has been identified as a potential location for a public port facility. The proposed action is to construct and operate a public port facility on Browns Island, located on the Ohio River, in Weirton, West Virginia. The port site would be an inter-modal transfer point for various types of bulk, container and packaged products. New industries, most probably those that would use the products of, or

meet raw material needs of nearby industries such as Weirton Steel, Wheeling Pittsburgh Steel, etc. may elect to locate at the site to take advantage of transportation opportunities. Potential uses of the Browns Island Port site include: coal consolidation/distribution; coke making; steel service center/steel fabrication; nonferrous foundry/mill; and warehousing/foreign trade zone.

Alternatives currently considered are:

- Construction and operation of a public port facility at the Browns Island Site.
- No action, that is, no public port facility would be constructed or operated.

1.4 Adverse Environmental Impacts of Selected Alternative and Mitigation Actions

Browns Island has several active operations being conducted and has been the site of an operating Coke Plant. As an industrial facility, the island has been disturbed by general construction, construction and reinforcement of shoreline and embankment, and filling of low areas with industrial waste/debris. Planning is in early stages and the type of port facility and the industries to be supported by the port facility have yet to be determined. Until such information is available, it is difficult to assess all impacts of construction and operation. Some adverse environmental impacts may occur regardless of the type of facility constructed, even though the site is already disturbed by past use.

- Aquatic habitats may be impacted by construction and by operation. During construction, sediment runoff is detrimental to aquatic organisms. During operation, runoff of chemicals and organic materials, loss of materials from barge shipments, increased barge traffic, propeller scour, and altered sedimentation patterns negatively impact aquatic organisms and habitat. The installation of bulkheads for barge moorings or possible bridge piers may further degrade the near-shore habitat. Dredging to increase depths of mooring facilities and navigation paths modifies aquatic habitats. Water quality degradation due to runoff can be controlled by conventional design techniques and standard industrial operating practices.

- Terrestrial habitat may be impacted by construction and operation. Site development has the potential to involve the remaining quality riparian vegetation at the southern end of the island and along the western side of the island. At this time, the great blue heron is known to have established a rookery on the southern end of Browns Island. In addition, several rare, threatened, and endangered species (Bald Eagle, Indiana Bat) may have a transient presence on the island.

- Although a majority of the island has been previously disturbed, the U.S. Fish and Wildlife Service does take issue to the high quality habitat on the southern end of the island. Any potential development involving the southern region of the island must be done so in accordance with Fish and Wildlife guidance, which may preclude any development of this high quality riparian environment

Clearly, some potential uses have more significant potential impacts than others on the local environment. Coke making has long been known to have adverse impacts to air and water quality, and to generate hazardous and toxic by-products and waste products, as demonstrated by the current RFA/RFI at the former Coke Plant on Browns Island. However, changes in the process have led to the development of much cleaner coking operations than those in the past. Newer plants often avoid producing by-products by burning waste gases at a cogeneration facility where they are used as fuel for the production of electricity. While air pollution control equipment, such as scrubbers is required to clean the gas after burning, the process generates much less wastewater, or toxic hazardous materials than does conventional coke making.

Steel mini-mills and non-ferrous metal foundries may create adverse impacts to air and water quality, and produce hazardous materials. Steel fabricators may adversely impact water quality and create hazardous materials. However, pollution control technologies exist to adequately treat waste streams prior to discharge. Warehousing has the least potential environmental impact of all potential site uses under consideration, other than impacts resulting from improper storage and handling of materials.

1.5 Current Site Conditions and Background

The site is currently owned by Weirton Steel Corporation, which primarily utilizes the island as a coke storage and transfer area. A slagging operation is also operated on the island, crushing mill slag from the steel operation on the mainland into aggregates for sale. Three permitted river side loading/off-loading facilities are located on the island. Two of the facilities are active and one is inactive.

The Browns Island Coke Plant was constructed in the early 1970's and was operational between 1973 and 1982, by National Steel. As a result of difficulties in obtaining air emissions permits, the coke plant ceased operations in 1982. Weirton Steel Corporation purchased the assets of National Steel, including the Browns Island Coke Plant, in 1984.

The primary structures located on Browns Island are primarily related to the inactive Coke Plant facilities. Existing operations on the island, in addition to the coke stock piling and slag milling operations mentioned earlier, include office and locker rooms, a mechanical/electrical shop, plant salvage areas, and

construction/demolition debris storage areas. The locations of existing active, inactive, and former facilities/operations on Browns Island are shown on the map enclosed as Appendix A.

Weirton Steel Corporation, the Environmental Protection Agency (USEPA), and the West Virginia Division of Environmental Protection (WVDEP) have entered into agreement(s) under which current (or pending) environmental investigations are conducted. Groundwater monitoring activities are ongoing on Browns Island (WVDEP). Browns Island is designated as Area III of Weirton Steel's Resource Conservation and Recovery Act (RCRA) site. A RCRA Facility Assessment (RFA) has been conducted on Browns Island. A RCRA Facility Investigation (RFI) work plan has been submitted by Weirton Steel to the USEPA and the RFI is pending.

1.6 Potential Issues of Environmental Concern

The Browns Island site requires a thorough review relating to the scope and detail of the current RCRA Facility Investigation (RFI) relating to its former use as a coke plant and associated industrial processes. A review should be conducted to confirm:

- That the current RFI is appropriate in scope and depth to characterize and quantify environmental hazards associated with the past operations conducted on Browns Island.
- That the site is safe for the intended industrial use(s) as a port site.
- That the liability for remediation of the existing identified or potential contaminants left on-site by the current owners does not extend to the West Virginia Public Port Authority, the Weirton Port District, or to industries operating or locating at the port site.

Since early-1970s the site has been an industrial site, being utilized in some industrial capacity for approximately 31 years. A coke plant was in operation on the site between 1973 and 1982, for a period of 9 years. As a result of difficulties in obtaining air emissions permits, the coke plant ceased operations in 1982. The plant has not been operational since 1982. Various processes, waste streams, treatment facilities, etc. have been deactivated, removed, or otherwise mitigated to preclude any additional environmental degradation from the facility. However, the primary structures of the Coke Plant are still located on the site. Currently, slag milling operations are conducted at the site, and a coke storage area is maintained on the site. According to interviews with West Virginia Division of Environmental Protection (WVDEP) personnel, there have only been two very minor issues of non-compliance (both minor spillage of fuel/waste) on Browns Island in recent years.

Potential participants in the public port facility, such as those considering constructions of warehouses or manufacturing facilities, may be discouraged from developing facilities at the site due to concerns about potential environmental

liability issues. It may benefit the West Virginia Public Port Authority in conjunction with the Weirton Port District to establish model agreements with potential participants, which will hold them harmless from future liabilities stemming from past practices. A "covenant not to sue" is an example that has been referenced in similar situations.

In addition to the environmental concerns related to the previous operations on Browns Island, there are other environmental regulatory requirements related to the development of a port facility on the island. Until specific site use is determined and subjected to a permitting review, it is difficult to identify all environmental issues and associated regulatory requirements, which may make development of the island or a particular port operation more costly or cumbersome. Federal law requires that a port which is developed by a Federal agency, with Federal funding, or is subject to Federal authorizations, must undergo a more complex review process than a port developed by private investors without Federal involvement.

1.7 Conclusions

The island has been highly disturbed by industrial activity. However, an island, by its nature, is a unique environment and any high quality environment on Browns Island will likely be scrutinized carefully by Federal agencies. Due to the disturbed nature of the majority of the project area, it is anticipated that development of this portion of the site for a public port would have minimal impact upon migratory birds, federally listed threatened and endangered species or species of concern, wetlands, or mussels. It must be noted that the southern tip of the island does contain a largely intact woodlot, comprising approximately 29 acres and that migratory birds or federally listed threatened and endangered species or species of concern may potentially be affected if development of this area occurs. Not enough information about future use is available to determine impacts from operation of the site as a public port. However, a preliminary Flood Hazard Analysis and Regulatory Permit Analysis are presented as Attachments to this document. Due to the sites' past as the location of a Coke plant, its status as a RCRA site, and the ongoing site characterization being conducted by Weirton Steel, contamination by hazardous materials is known. It is recommended that, prior to taking further steps to develop the site as a public port, West Virginia Public Port Authority have a clear understanding of the presence and extent of contamination at the site; understand and agree with the extent of planned cleanup to industrial versus residential standards; and to confirm that there is an agreement among responsible parties apportioning costs of cleanup. The State is the ultimate authority in determining what is considered safe or adequate. If the Port Authority were to proceed with site development without first establishing cleanup objectives among the responsible parties, there might be future liability for the State.

2.0 PURPOSE AND NEED FOR PROPOSED ACTION

In this section of the Environmental Reconnaissance Report the proposed site is described. Also, objectives of the project are discussed.

2.1 Objectives of Environmental Reconnaissance Report

Browns Island in Weirton, WV, is being proposed for possible development as a public port facility. Purposes of this report are to identify existing site resources, and to determine the impact of construction and operation of a public port facility at the site. Also, a determination of environmental regulatory requirements is made. The environmental considerations addressed in the Environmental Reconnaissance Report include analysis of potential impacts in key issue areas:

- federally listed endangered and threatened species or species of concern;
- botanical resources;
- zoological/wildlife resources;
- aquatic resources
- wetlands and floodplains;
- geological resources and soils;
- cultural resources;
- socioeconomic resources; and,
- air and water quality resources and industrial wastes.

2.2 Purpose of Proposed Action

The purpose of the Weirton Port District's Browns Island public port project are: (1) to expand the industrial base of the State of West Virginia; (2) to expand the employment opportunities of counties of the northern panhandle in West Virginia and also the neighboring counties in Ohio and Pennsylvania; and, (3) to encourage industrial and commercial use of cost-efficient inter-modal transportation facilities such as rail, highway, river and air for shipping commodities into and out of West Virginia.

2.3 Project History

The Browns Island Public Port Study is an effort by the West Virginia Public Port Authority, the Weirton Port District, and Weirton Steel Corporation to determine the feasibility of developing a public port facility on Browns Island, at Weirton, West Virginia. The Nick J. Rahall, II Appalachian Transportation Institute is working as a technical advisor to the port authority on the Browns Island project. The Huntington and Pittsburgh Districts of the U.S. Army Corps of Engineers are providing technical assistance in areas of navigation and floodplain development. The Browns Island project site is located in the Pittsburgh District's area of jurisdiction. The West Virginia Public Port Authority is the project sponsor and is

funding 25 percent of the cost of the studies. The location of the Browns Island site, in a regional context, is shown in Figure 2-1.

Figure 2.1 Brown's Island in a regional context. Top image: mid-Atlantic region. Bottom left: Northern Panhandle of West Virginia, Eastern Ohio and South Western Pennsylvania. Bottom right: Brown's Island at Weirton, W.Va..

The Nick J. Rahall, II Appalachian Transportation Institute does not anticipate the U.S. Army Corps of Engineers or any other Federal Agency being involved in either the funding for or construction, or operation and maintenance funding of the Browns Island public port. The West Virginia Public Port Authority is seeking private investment development capital and long-term operation and maintenance funding from the private sector for any public port development on Browns Island. This approach has already been successful in Jackson County, WV, where a private developer constructed and now operates a public port/industrial park facility.

2.4 Need for the Project

The proposed Browns Island public port would be served by roadway, railway, and river shipping facilities, and would serve as an inter-modal transfer point for various types of bulk, container or packaged products. The public port would enhance opportunities for existing industries as many needs of key industries in West Virginia and surrounding counties in Ohio and Pennsylvania can be met with the Browns Island public port facilities. Inland port development acts as a catalyst for the development of new industries, which will be able to take advantage of new transportation opportunities. The Browns Island port may capture, or redirect through Weirton, some of the regional commodity flow, which currently bypasses the Weirton and the northern panhandle counties.

According to the Browns Island Port Development Study, of which this document is a part of, nearly 4,000 companies deal with bulk commodities and depend on the river for transport. Most economic activity involves bulk products shipped by barge. The heart of the river-based economy is barge transportation. Barge traffic has increased 50 percent during the last decade. In 1993, 235 million tons of commodities were transported on the Ohio River, including petrochemicals, sand, gravel, grains, chemicals and coal. In contrast, 30 millions tons of commodities were transported on the entire Great Lakes system. There are more than 35,000 people employed in more than 600 businesses whose jobs directly depend upon the Ohio River.

2.5 Brief Summary of the Proposed Site

The potential Browns Island public port site is located on Browns Island, on the Ohio River between river miles 61.0 and 63.5, adjacent to Weirton, Hancock County, West Virginia. Figure 2-2 shows the location of the site as located on the Weirton WV-Penn-OH 7.5 minute quadrangle. The approximate center of the island, represented by the former coke battery ovens is located at longitude 80°36.537' West and latitude 40°25.602' North. The site contains approximately 244 acres in one parcel, which is owned by Weirton Steel Corporation (recorded in Deed Book 100, Page 218, Office of the County Clerk, County of Hancock, State of West Virginia). The site is approximately 13,590 feet long, and approximately 1,257 feet wide at its widest point. The island can best be described as "ship" shaped and is located in a north-south flowing section of the Ohio River channel. The upstream and downstream ends of the site are referred to as the north and south ends, respectively. The island is located slightly off-center in the Ohio River channel. On the west side, the narrower, navigable channel flows between the island and the western shore of the Ohio River (eastern land border of Ohio). On the east side of the island is located the navigable channel of the Ohio River and the eastern shore of the Ohio River. Located in the non-navigable channel on the east side and near the southern (downstream) end of Browns Island are two small islands, known as the Griffen Islands. The two islands are not developed or owned by Weirton Steel Corporation.

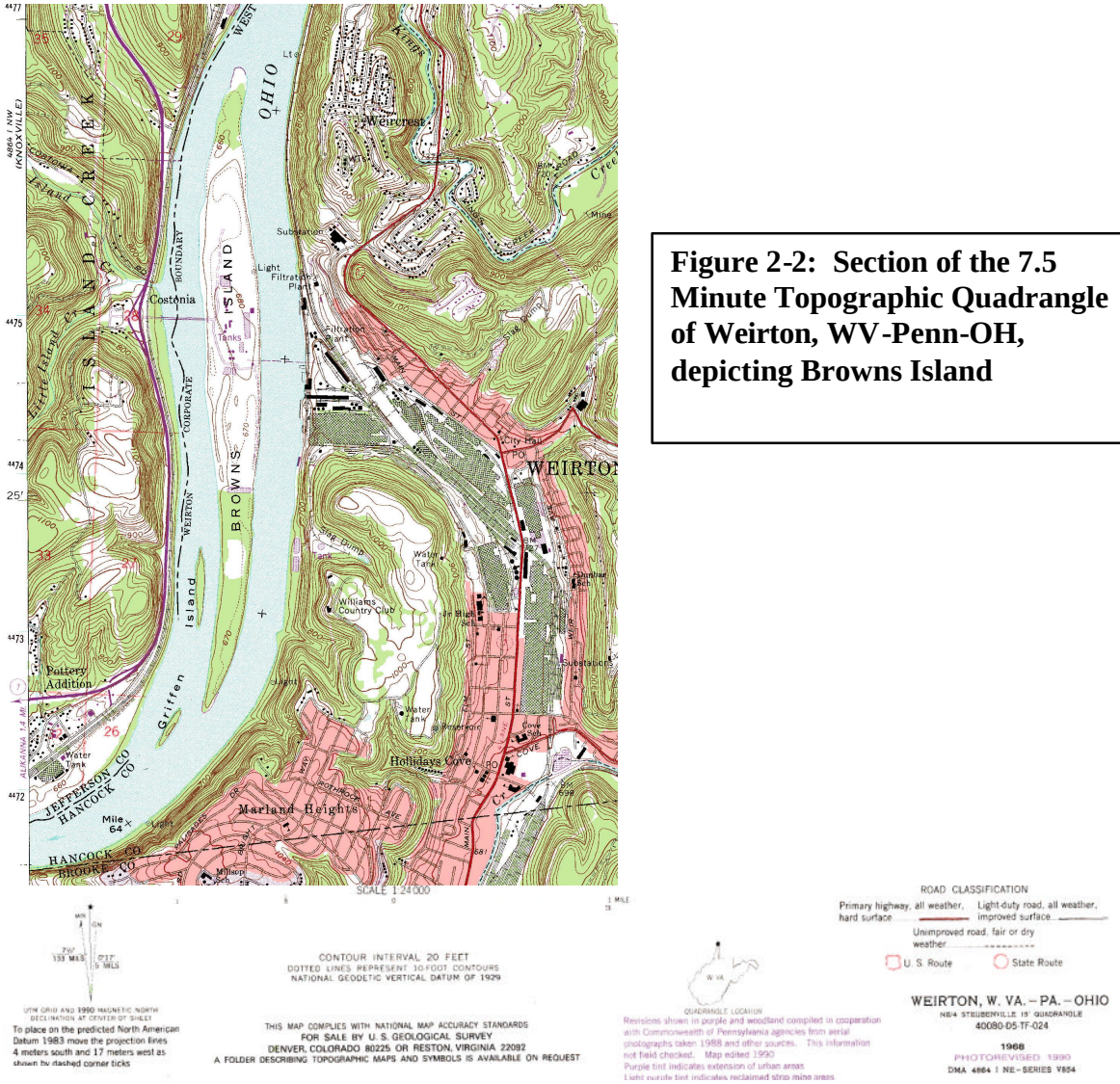

Figure 2-2: Section of the 7.5 Minute Topographic Quadrangle of Weirton, WV-Penn-OH, depicting Browns Island

Typical shoreline elevation of Browns Island is approximately 644 feet above sea level (normal pool elevation of the Ohio River). The elevation at the top of the riverbank at the northern (upstream) end of the island is approximately 660 feet

and the elevation at the top of the river bank at the southern (downstream) end of the island is approximately 660 feet. The highest point on the island is located near the center of the island, in the vicinity of the coke plant, and is approximately 785 feet in elevation.

The property is currently owned by Weirton Steel Corporation and is used mainly as a coke offloading and storage area and slag processing and storage area. Many of the structures and facilities relating to the operation of the former coke plant are still present on the island. Some minor operations are located on the island. These are operation offices and support facilities, electrical equipment and substations, and material storage areas. Most roadways areas on the island are graded but unpaved gravel and slag access roads. Some of the island perimeter road, particularly that on the west, downstream side of the island, is just an earthen track. Only limited areas near the roadway bridges leading to the West Virginia and Ohio mainland consists of hard surface road. Most of the island not covered by structures or utilized as material storage and processing areas is covered by graded fill and demolition debris. Plant growth is mainly weeds and in many areas, grasses. Mature growth trees, mainly Water Maple, are present in relative abundance in some areas, although it does appear that fill material has been placed around the trees on the north end of the island. Exposed surface is mostly miscellaneous fill (brick, slag, gravel). The southern end of the island remains largely unaffected by development and contains a large number of mature growth trees. Undergrowth in this area is mainly weedy with limited growth of small trees. The size of this area is estimated at approximately 29 acres.

The upstream end, the eastern shoreline along the navigable portion of the Ohio River, and the downstream end of the island are built up with slag or other types of rock based fill to prevent erosion of the stream bank. The western shoreline remains in a largely natural state. The island contains a total of approximately 27,000 feet of shoreline with the Ohio River. The normal pool elevation of the Ohio River at the island is 644 feet.

Browns Island is connected to the West Virginia mainland by a large two lane steel truss bridge and connected to Ohio by a smaller two lane steel girder bridge. No barge docking facilities are located on the island, however, barges do tie off to the bank and load and offload material in that manner. There is no railroad access to the island. Railroad lines operate on both banks of the Ohio River. The site is served by utilities including water and sewage, provided by Weirton Steel. Electricity is provided by Allegheny Power Company. An electric transmission line crosses the island. American Electric Power holds the easement across the island. Gas service to the island is provided by Allegheny Power Company.

2.6 Statement of Authorization

Marshall University's Appalachian Transportation Institute is conducting the port study under contract with the West Virginia Public Port Authority.

2.7 Jurisdiction

The West Virginia Public Port Authority was established by the West Virginia Legislature in 1989 to promote and develop public ports within West Virginia. To that end, the State legislature enabled the Port Authority to establish local port districts throughout the State and to direct and fund planning and engineering studies and construction of public ports.

3.0 COORDINATION WITH PUBLIC AND RESOURCE AGENCIES

In this section of the Environmental Reconnaissance Report, plans for public and interagency cooperation are outlined. Pertinent laws are reviewed as they relate to the current project and issues of environmental concern are addressed from a regulatory perspective.

3.1 Public Involvement Process

Throughout the project feasibility study, there have been several opportunities for public involvement, including a series of interviews and meetings held with representatives of industry, state and local communities and members of the development community. However, as is traditional at the conceptual phase of project development, public involvement for review of environmental issues has not been solicited. This Environmental Reconnaissance Report has been developed by Marshall University's Appalachian Transportation Institute to identify and evaluate potential impacts of construction and operation of the public port. This information is needed for project planning, to contribute to evaluation of the suitability, and for development of cost estimates.

3.2 Coordination with Other Agencies

At the request of the Appalachian Transportation Institute, the U.S. Fish and Wildlife Service provided comment on the existing resources within the project area, and the potential impacts of the project on those resources. The comment letter(s) was provided in accordance with the Fish and Wildlife Coordination Act, 16 U.S.C. et seq. U.S. Fish and Wildlife Service correspondence are presented in Appendix B-1 of this document.

The West Virginia Division of Culture and History, Historic Preservation Office, was requested to provide comment on the potential presence and archeological significance of resources on Browns Island, in accordance with Section 106 of the National Historic Preservation Act and its implementing regulations. Correspondence is presented in Appendix B-2 of this document.

A RCRA facility assessment (RFA) has been conducted on Browns Island by Weirton Steel Corporation and a RCRA facility investigation (RFI) work plan for the site has been submitted. The RFA was conducted in 1988. The RFI work plan is awaiting comment by USEPA. The RFI will be contracted by WSC and monitored by USEPA and WVDEP. The RFA and RFI documents are available for review by contacting the public information office at the WVDEP or USEPA (region 3). Since these documents are maintained by the WVDEP and USEPA, copies of these documents will not be included as attachments to this report. Contact information for the file information is also provided in the Reference Section (Section 8) of this report.

The West Virginia Public Port Authority is a cost-sharing sponsor in the master plan study being conducted by the Appalachian Transportation Institute. The U. S. Army Corps of Engineers is the only Federal agency that may be involved in funding and preliminary infrastructure design of the Browns Island public port. Neither the U.S. Army Corps of Engineers nor any other Federal agency anticipates being involved in funding of, or in the construction, operation or maintenance of the Browns Island public port, other than as identified above. The West Virginia Public Port Authority is seeking private investment capital.

3.3 Applicable Regulations

3.3.1 Background

To determine the applicability of Federal and State environmental regulations related to construction and operations of public ports, a preliminary review of regulations was performed based upon proposed activities. The Browns Island site has been and is still largely utilized by industrial processes and being such, has existing regulatory requirements and permits. Until the type of port facilities to be located at the site and the industries to be supported by these facilities are determined, it is difficult to assess all regulatory implications and additional requirements.

3.3.2 Environmental Regulatory Requirements

The applicability of the degree of environmental regulatory review is largely determined by the responsible principals. Federal law requires that a port which is developed by a Federal agency, with Federal funding, or subject to Federal authorizations, must undergo a more complex review process than a port developed by private investors without any Federal involvement.

- If the project is selected for Federal funding, or developed by a Federal agency, or if the project required Federal authorization, National Environmental Policy Act review will be initiated. The aspects of the project regulated by the National Environmental Policy Act will be determined by the degree of Federal involvement. At that time public input related to environmental issues will be solicited. The National Environmental Policy Act sets forth a comprehensive Federal environmental policy and a process for environmental review of all major Federal actions in light of environmental goals and needs. The overall objective of the National Environmental Policy Act process is to ensure that adequate consideration is given to environmental factors in carrying out Federal actions. The consideration is given to environmental factors in caring out Federal actions. The elements of the process include consideration of these factors early in the planning effort, use of a systematic interdisciplinary approach to environmental analyses, development and evaluation of alternatives to ensure mitigation of adverse

impacts, and involvement of the public, as well as governmental officials, in the review and decision-making process. The National Environmental Policy Act process includes a review of other requirements for Federal actions including, but not limited to, the Archeological, Historic, and Scientific Preservation Act; the Endangered Species Act; the Fish and Wildlife Coordination Act; and Protection of Wetlands – 40 CFR Part 6, Appendix A. In addition to National Environmental Policy Act review, environmental regulatory requirements include permit applications and compliance with State and Federal regulations including the Clean Air Act, the Clean Water Act and the Resource Conservation and Recovery Act.

- If the project is developed by a State agency, National Environmental Policy Act review may be required under some circumstances and not in others. If the state has a National Environmental Policy Act process, National Environmental Policy Act review is required; West Virginia does not have a National Environmental Policy Act process. If the project has a "Federal handle", i.e., the Federal government exercises supervision, oversight or authorization, National Environmental Policy Act review is required. For development of the Browns Island into a port facility, a Federal handle exists: a floodplain fill permit, as well as other environmental permits, would be required. A floodplain fill permit would be required to place fill on areas now on the island that are below the baseline flood elevation (BFE). The floodplain fill permit is issued by the U.S. Army Corps of Engineers, a Federal agency, in conjunction with the West Virginia Division of Environmental Protection. The floodplain fill permit and issues are well established Federal handles as confirmed under a number of court cases.

- If a project is developed by the private sector, environmental regulatory requirements include permit applications and compliance with State and Federal environmental regulations including the Clean Water Act, the Clean Air Act, and the Resource Conservation and Recovery Act, among others. However, some of the other review processes associated with Federal actions, such as the National Environmental Policy Act process, are generally not required. However, for the development of the Browns Island Public Port, several Federal handles exist: a floodplain fill permit would be required, and road or transportation infrastructure improvements using Federal funds is planned. As a result, National Environmental Policy Act review is required for this project even if developed by private investors. The appropriate level of National Environmental Policy Act review will be determined by the individual Federal agency from which permits are sought, and by the cumulative degree of Federal involvement.

A summary explanation of portions of regulations which frequently apply to projects like public port development include:

- Archaeological, Historic, and Scientific Preservation Act – Under the Archaeological, Historic, and Scientific Preservation Act of 1974, the Department of the Interior established procedures for preservation of historic and archeological data that might be destroyed through alteration of terrain as a result of a Federal construction project or an activity under Federal license or program (16 U.S.C. §469).

- Endangered Species Act (16 U.S.C. §1531 et seq.). – In accordance with the Endangered Species Act, Federal agencies are required to ensure that actions that they carry out, fund, or authorize, are not likely to jeopardize the continued existence of federally listed threatened and endangered species or result in destruction of or adverse modification to critical habitat of such species. If a Federal agency determines that its proposed action may affect federally listed species or critical habitat, it must consult with the U.S. Fish and Wildlife Service. Also, Federal agencies must give consideration to State listed species of concern by reviewing proposed actions to assure adverse impacts are avoided when possible.

- Fish and Wildlife Coordination Act (16 U.S. C. §661 et seq.) – The Fish and Wildlife Coordination Act requires that actions be taken to protect fish and wildlife that may be impacted by diversion, channeling, or other activities that Modify a river or stream (16 U.S. C. §662). Specifically, the Fish and Wildlife Coordination Act, along with the Resource Conservation and Recovery Act and other advisories, requires Federal agencies issuing a permit to modify any off-site body of water to consult with Federal and State wildlife agencies to ensure that resources are appropriately protected. Consultation is strongly recommended for on-site remedial activities. Coordination with a number of State and Federal agencies would be necessary for those alternatives which may impact area water bodies to prevent, mitigate, or compensate for project-related losses of fish or wildlife.

- Protection of Wetlands – 40 CFR Part 6, Appendix A – U.S. Environmental Protection Agency policy for carrying out the provisions of Executive Order 11990 (Protection of Wetlands) is set forth in 40 CFR Part 6, Appendix A. The policy directs Federal agencies to take actions to minimize the destruction, loss or degradation of wetlands. To preserve and enhance the natural and beneficial values of remediation, potential wetlands in the area must be evaluated. Wetland protection requirements include assessing the impacts of any proposed actions on the wetlands, evaluating alternatives and their potential harm to the wetlands, and identifying mitigation measures to minimize potential harm to the wetlands. Wetlands are defined as, “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of

vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (33 CFR §323.2).

- The National Environmental Policy Act – The National Environmental Policy Act (NEPA) signed into law on January 1, 1970, established a national policy to strive for benefitial use and improvement of the environment without degradation. The Act set forth a comprehensive Federal environmental policy and a process for environmental review of all major Federal actions in light of environmental goals and needs. Section 102C of the Act calls for the preparation of a detailed Environmental Impact Statement as a major part of this process whenever it is determined that the action has a potential to cause significant adverse impact on the quality of the human environment. The overall objective of the NEPA process is to ensure that adequate consideration is given to environmental factors in carrying out Federal actions. The elements of the process include consideration of these factors early in the planning effort, use of a systematic interdisciplinary approach to environmental analyses, development and evaluation of alternatives to ensure mitigation of adverse impacts, and involvement of the public, as well as governmental officials, in the review and decision-making process.

- Laws governing remediation: Resource Conservation and Recovery Act / Toxic Substance Control Act / Clean Water Act – The Resource Conservation and Recovery Act, promulgated in 1976, establishes requirements for control, storage, transport and disposal of many substances considered potentially harmful. The Clean Water Act, promulgated in 1972, has broad provisions aimed at protecting the quality of surface and groundwater. The Clean Water Act, Section 404(b)(1), requires review and approval by the U.S. Army Corps of Engineers, as defined by issuance of a permit to modify navigable waters.

4.0 PROPOSED ACTION AND ALTERNATIVES

In this section of the Environmental Reconnaissance Report, all alternatives are addressed so that reviewers may evaluate their comparative merits. A detailed description of the proposed action is included later in this section. The proposed action is to construct and operate a public port in the Weirton Port and Industrial Center District.

4.1 Discussion of Alternatives

Alternatives currently considered include:

- Alternative 1 – construction and operation of a public port on Browns Island, on the Ohio River, in Weirton, West Virginia;
- Alternative 2 – No Action; no public port facility would be constructed or operated in the Weirton Port District.

4.1.1 Discussion of Discarded Alternatives

In 1993, the U.S. Army Corps of Engineers, Huntington District, completed the "West Virginia Inland Port Study, Phase I Final Report: Background on Port Development Opportunities" and the "West Virginia Inland Port Study, Phase II Final Report: Detailed Reconnaissance Analysis". The main foci of these reports were to assess the potential feasibility of intermodal port development sites along the Ohio River bordering West Virginia.

In 1995, the Huntington District provided funding to further study port sites in the jurisdiction of three port districts of the West Virginia Public Port Authority. From this funding, a "Master Plan" was completed in 1997 for this area, the Weirton Port District, on the potential site known as the Half Moon River Terminal or the Starvaggi Site.

Of the many physical, environmental, and economic criteria used in the previous commissioned reports, many previously studied sites, and all studied sites in the Weirton Port District (including the Half Moon Site) were not considered for further study. Discussion between Weirton Steel Corporation (current owner of Browns Island), the City of Weirton, and the West Virginia Public Port Authority lead to a tentative offering of property by Weirton Steel Corporation for consideration of a port facility. In 2000, the Weirton Port District identified one site in Hancock County, located on the Ohio River in West Virginia to study for its potential development as a port facility.

The potential site, known as Browns Island, is located between river miles 61.0 and 62.5 on the Ohio River, on and adjacent to lands on the West Virginia mainland, currently owned by Weirton Steel Corporation, in the City of Weirton,

West Virginia. Browns Island has several good characteristics needed for an intermodal port facility, including its obvious river access which includes two permitted load-outs, size (240+ acres), nearby rail access (CSX and Norfolk Southern) via two road bridges, good interstate highway access via both West Virginia and Ohio, flat terrain that includes substantial land above the 100-year base flood elevation (BFE) and the possibility of raising more acreage above the 100-year BFE with a relatively modest investment of engineering and funds.

Since other alternative sites in this area (1993 Phase I and II Study, 1997 Master Plan) were unavailable for development (Follansbee North – ownership), contained undefined potential contaminants (Beech Bottom), or were otherwise deemed unsuitable for a port facility (location, size, etc.), the previously considered sites were dropped from further consideration in this master plan study.

4.2 Reasonable Alternatives Not Within the Jurisdiction of the Reviewing Agency

There are many alternative sites for port development along the waterways of West Virginia. Many of those potential sites were identified in Phase I and II of the West Virginia Inland Port Study. In addition and not included in the analysis is the option to purchase existing private port sites for conversion to public ports. Any of these are reasonable alternatives. However, in the event that a different site is considered, criteria for evaluation of acceptability are presented as Exhibit 4-1.

EXHIBIT 4-1
Criteria for Evaluation of Acceptability as a Public Port

• existing waterfront facility	• available water depths
• river congestion	• cultural resource constraints
• navigational hazards	• availability of land for development
• flood hazards	• site accessibility

4.3 Impact of the "No Action" Alternative

If the project is not implemented, several events and impacts are likely to occur:

- Development will continue within the river corridors being studied, but not necessarily at the site discussed and not likely with the public oversight that the development of a public port would involve.
- The limited uses of the island by Weirton Steel will continue, although diminishing use is likely due to just in time delivery of coke via railway, eliminating the coke piles currently on the island. Weirton Steel will

likely retain the property and additional industries will not locate to Browns Island. If any additional construction is conducted on Browns Island, by Weirton Steel, it will be done without public over site.

- In general, water quality should continue to improve in the Ohio River due to increased sewage treatment, improved sewage treatment techniques, and new pollution prevention technologies for industry. Populations of fish, mussels, other aquatic species, and species dependent on these aquatic species should benefit from these changes, as has been seen over the last 25 years.

4.4 Appropriate Mitigation Measures Not Already Included in the Proposed Action.

Specific site use and detailed work plans for construction or operation have not yet been developed. Therefore, mitigation plans have yet to be identified. Based upon a preliminary review, the U.S. Fish and Wildlife Service acknowledges that the island has been highly industrialized and that terrestrial habitats on the main portion of the island have been restricted. However, the U.S. Fish and Wildlife Service does identify riparian habitats along the back channel and habitats towards the tow (south-end) of the island as intact. The Fish and Wildlife Service has also indicated that Browns Island supports a great blue heron (*Ardea herodias*) rookery at its toe near river mile (RM) 63.5. Islands and their back channels have been classified as Resource Category 1, in accordance with the Service's mitigation policy (Federal Register, Volume 46, No. 15, January 23, 1981). The Services stated mitigations goal is to allow no loss of existing habitat value. Accordingly, development that would increase navigation traffic along the islands back channel or reduce the terrestrial or aquatic habitat values value of the island should be avoided. As this project progresses, further coordination with the Fish and Wildlife Service should be conducted. Specific coordination is required by the Clean Water Act (33 U.S.C. 1344); the Fish and Wildlife Coordination Act (16 U.S.C. *et seq*); the Rivers and Harbors Act (33U.S.C. 425); and the Migratory Bird Treaty Act (16 U.S. C. 703-712).

Correspondences prepared by the U.S. Fish and Wildlife Service with regard to the preparation of this report and relating to the potential development of Browns Island are included in Attachment 1.

5.0 AFFECTED ENVIRONMENT (Description of Affected Areas)

In this section of the Environmental Reconnaissance Report, the Browns Island Site is described in the detail necessary to allow the reviewer to understand the impacts of the alternatives. Resources addressed include:

- federally listed threatened and endangered species or species of concern;
- botanical;
- zoological/wildlife;
- aquatic;
- wetlands and floodplains;
- geological resources and soils;
- cultural;
- socioeconomic and;
- air and water quality and industrial waste.

5.1 Investigative Methods and Resources

The investigation conducted in preparing this Environmental Reconnaissance Report consisted of a review of existing literature and regulatory file information and interviews with technical specialists. Also, several site visits were conducted with technical specialists, biologists, and engineers to establish site-specific baseline conditions and to determine potential regulatory issues. Field studies were not conducted; all data sources which were reviewed are listed in References, Section 8.0.

5.2 Description of the Study Area: Browns Island

Browns Island is located on the Ohio River, between river miles 61.0 and 63.5, in Weirton, Hancock County, West Virginia. The northern (upstream) end of the island is located at nearly longitude 80°36.537' West and latitude 40°25.602' North and the southern (downstream) end or toe is located at nearly longitude 80°36.711' West and latitude 40°24.265' North.

The site contains approximately 244 acres and is approximately 13,490 feet long, and approximately 1257 feet wide at its widest point. The island can best be described as "ship" shaped and is located in a north-south flowing section of the Ohio River channel. The upstream and downstream ends of the site are referred to as the north and south ends, respectively. The island is located near center in the Ohio River channel. On the west side, a non-navigable channel flows between the island and the western shore of the Ohio River (eastern land border of Ohio). On the east side of the island is located the navigable channel of the Ohio River and the eastern shore of the Ohio River. Located in the non-navigable channel on the east side and near the southern (downstream) end of Browns Island are two small islands, known as the Griffen Islands. The two islands are not developed, and are not owned by Weirton Steel.

Typical shoreline elevation of Browns Island is approximately 644 feet above sea level (normal pool elevation of the Ohio River). The elevation at the top of the river bank at the northern (upstream) end of the island is approximately 660 feet and the elevation at the top of the river bank at the southern (downstream) end of the island is also approximately 660 feet. The highest point on the island is located near the center of the island, in the vicinity of the coke plant, and is approximately 785 feet in elevation.

The property is currently owned by Weirton Steel Corporation and is used mainly as a coke off loading and storage area and slag processing and storage area. Many of the structures and facilities relating to the operation of the former coke plant are still present on the island. Some minor operations are located on the island. These operations include office and support facilities, electrical equipment and substations, and material storage areas. Most roadway areas on the island are graded, but unimproved, gravel and slag access roads. Some of the island perimeter road, particularly that on the west, downstream side of the island, is just an earthen track. Only limited areas near the roadway bridges leading to the West Virginia and Ohio mainland consist of hard surface road. A plan view of the site is presented as Figure 2-3. Most of the island not covered by structures or utilized as material storage and processing areas is covered by graded fill and demolition debris. This fill material presents an uneven topography to the island.

Most of the central and northern portion of the island is open with only scattered trees and other vegetation. Some areas are undergoing secondary succession. Plant growth is mainly weeds and in many areas, grasses. Where mature growth trees are present, it does appear that fill material has been placed around the trees. Exposed surface is mostly miscellaneous fill (brick, slag, gravel). The southern end of the island remains largely unaffected by development and contains a large number of mature growth trees. Undergrowth in this area is mainly common herbaceous species. The size of this area is estimated at approximately 40 acres.

The upstream end, the eastern shoreline along the navigable portion of the Ohio River, and the downstream end of the island have been built up with slag or other types of rock based fill to prevent erosion of the stream bank. The western shoreline remains in a largely natural state. The island contains a total of approximately 27,000 feet of shoreline with the Ohio River. The normal pool elevation of the Ohio River at the island is 644 feet.

Browns Island is connected to the West Virginia mainland by a large, two lane steel truss bridge and connected to Ohio by a smaller, two lane steel girder bridge. No barge docking facilities are located on the island; however, barges do tie off to the bank and load and offload material in that manner. There is no railroad access to the island. Railroad lines operate on both banks of the Ohio River. The site is served by utilities including water and sewage, provided by Weirton Steel. Electricity is provided by Allegheny Power Company. An electric transmission

line crosses the island. American Electric Power holds the easement across the island. Gas service to the island is provided by Allegheny Power Company.

There are several industrial activities currently conducted on the island, including steel slag crushing and screening operations and coke stockpiling and loading operations. Weirton Steel, which owns the island, is the largest industrial operation in the vicinity, located adjacent to Browns Island, on the eastern shore of the Ohio River. A barge dock with active loading/unloading facilities is located on the eastern shore as well (Figure?).

5.2.1 Inventory of Federally Listed Threatened and Endangered Species or Species of Concern

In addition to potential transient species, such as the threatened bald eagle, Haliaeetus leucocephalus, one federally listed species, the Indiana bat, Myotis sodalis, may occur on the island. Also, the island supports a great blue heron, Ardea herodias, rookery at its southern end. The Ohio River mussel database has no record of any mussel surveys conducted within the immediate area of Browns Island. The Service recommends that a mussel survey be conducted around the island to determine if any mussel beds are located near the project area. No threatened, endangered, or sensitive plant species were observed on the Island. No West Virginia listed sensitive species or special habitats were documented on the site.

Species of concern, formerly known as Category 2 candidate species, are those species for which the U.S. Fish and Wildlife Service has information indicating that protection under the Endangered Species Act may be warranted, but for which it lacks sufficient information on status and threats to proceed with preparation of a proposed listing. Although lacking formal recognition as candidates for listing under the Endangered Species Act, species of concern remain a "concern" to both Federal and State wildlife agencies. The continued consideration of these species in environmental planning is encouraged. Additional coordination on this project should be conducted and maintained with the U.S. Fish and Wildlife Service as planning and execution of this project progresses.

A listing of Federally listed endangered and threatened species in West Virginia and species of concern are located in Appendix D.

5.2.2 Inventory of Botanical Resources

The island is currently the location of the in-active Coke plant, a coke stockpile which supplies Weirton Steel's plant on the West Virginia mainland, a slag crushing and milling operation, and outside storage areas. A large portion of the island is covered by exposed slag, dredge fill, or graded brick and concrete

demolition material with early succession vegetation growth dominated by species that typically occupy disturbed soil (Figure 5.1).

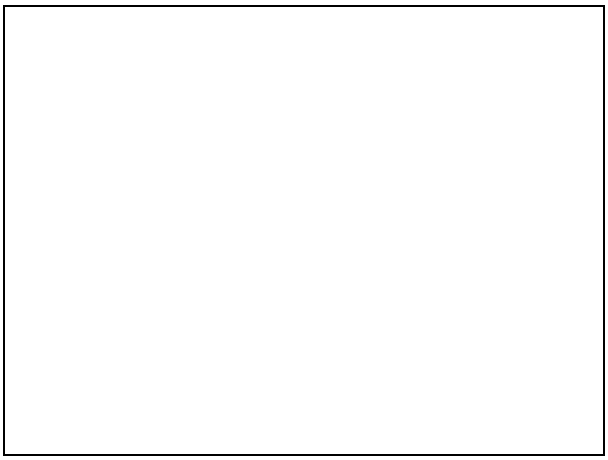

Figure 5.1 Typical weedy growth covering disturbed soils.

This area includes most of the island from south-central to the northern most point of the island and includes all of the eastern shore of the island. Some low-quality riparian habitat occupies portions of this highly disturbed and built on area. Most of the mature species include sycamore and maple. For most of the length of the eastern shoreline, from the northern to the southern tip of the island, there is placed slag fill to prevent shoreline erosion. Portions of the western shoreline of the island appear to be natural, with trees in this area providing protection against riverbank erosion. There are some areas of the western shoreline that slag fill is apparent.

The south-central, northern portion and perimeter of the island is dominated by woody species including:

Silver Maple (Acer saccharinum)
Sycamore (Platanus occidentalis)
Catalpa (Catalpa sp.)
Tree of Heaven (Ailanthus altissima)
Black Locust (Robinia pseudoacacia)
Paw Paw (Asimina triloba)
Hackberry (Celtis occidentalis)

Minor woody species include:
Black Cherry (Prunus serotina)
Staghorn Sumac (Rhus typhina)
Slippery Elm (Ulmus rubra)
Black Willow (Salix nigra)

Common **herbaceous** species include:
Ground Ivy (Glecoma hederacea)
Nettle (Urtica dioica)
Wingstem (Verbesina alternifolia)
Common Muellin (Verbascum thapsis)
Butter and Eggs (Linum sulcatum)
Vervain (Verbena stricta)
Eupatorium (Eupatorium rugosum)
Eupatorium (Eupatorium serotinum)

Approximately the southern one-fifth of the island supports a medium quality habitat, dominated by mature growth species, common elements along much of the Ohio River shoreline (Figure 5.2).

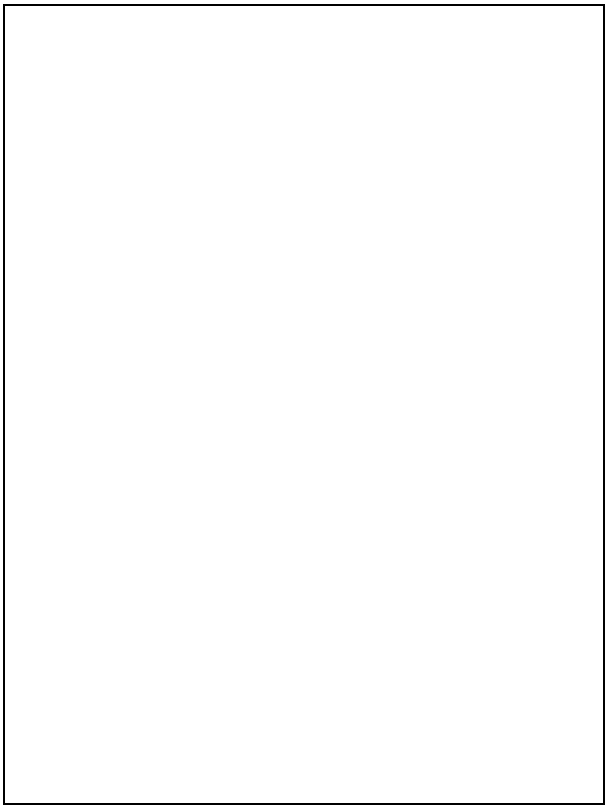

Figure 5.2 Mature growth, medium quality habitat common to southern and western parts of the island.

The southern end of the island is dominated by the following woody species:

Silver Maple (Acer saccharinum)
Sycamore (Platanus occidentalis)
Buckeye (Aesculus glabra)
Black Locust (Robinia pseudoacacia)

Occasional woody elements include:
Black Walnut (Juglans nigra)
Sassafras (Sassafras albidum)
Sugar Maple (Acer saccharum)
Beech (Fagus grandifolia)
Black Willow (Salix nigra)

Common herbaceous species are:
Nettle (Urtica dioica)
Eupatorium (Eupatorium rugosum)
Wingstem (Actinomeris alternifolia)
Ground Ivy (Glecoma hederacea)
Water Hemlock (Cuscuta maculata)

The vegetation of the island including the southern portion is characterized by common riparian species. No sensitive or rare species were observed on the

island. The area can be classified as a low diversity, bottomland hardwood forest of moderate quality. Silver Maple and Sycamore dominate the canopy with other elements occurring only occasionally. A thick, low-diversity herbaceous layer covered the ground. Little re-generation of canopy trees was observed. Wide-spaced trees of Silver Maple, Sycamore and Hackberry were commonly 36 inches to 46 inches dbh. Large sizes in these species are frequently observed along much of the Ohio River shoreline.

Vegetation composition and hydrology indicate that wetlands are not currently present on the island. Fill, deposited years ago to increased island elevation, may have eliminated wetlands of an earlier time.

5.2.3 Inventory of Zoological/Wildlife Resources

The island is located on the Ohio River, a busy commercial shipping corridor. Approximately three-fourth of the island is highly disturbed, portions active at times and over-all it is not conducive as a wildlife habitat. Approximately one-fourth of the island is largely undisturbed, contains a mature riparian habitat, and is conductive for wildlife habitat. As the entire site is an island, the site is isolated and relatively protected from the highly industrialized, active, and noisy mainland environment. The southern one-fourth of the island is considered to have value as a wildlife habitat. Although not observed, a great blue heron rookery is reported to be present on the islands south end. Wild turkey and whitetail deer were observed over the entire island, but certainly in greater numbers in the southern riparian environment. A groundhog was also observed in the southern riparian environment. Songbirds were observed in the narrow stretch of riparian habitat along the western shoreline of the island and in the islands larger southern riparian habitat.

Although the southern riparian environment is relatively restricted in size and is isolated from the West Virginia and Ohio mainland by the Ohio River, these same attributes make the existing southern riparian environment a unique and significant habitat of riparian species.

5.2.4 Inventory of Aquatic Resources

Browns Island is located on the Ohio River, between river miles 61.2 and 63.4, in the Pike Island Pool. The Ohio River is a series of pools created by U.S. Army Corps of Engineers' lock and dam structures. The normal pool elevation of the Ohio River at the island is 644 feet above sea level.

Most nearly all of the eastern shoreline, the northern head, and southern toe of the island (approximately 13,500 feet) is rip-rapped with slag or concrete debris in order to protect it against erosion. The western shoreline (also approximately 13,500 feet) remains largely intact or original in condition. On both sides of the

island, the bank is steeply sloping with a 30-foot drop to the river. To accommodate barge traffic and near shore tie-off at the permitted load outs, the navigable channel of the Ohio River has been dredged in past years and the steep slope continues underwater. These alterations have destroyed or severely limited the riparian and near-shore underwater habitat on the eastern side of the island.

On the back (western) side of the island is the non-navigable channel of the river. This channel has not been dredged and it not subject to river traffic. A low water dam is located in the back channel of the Ohio River. Shoreline riparian and the underwater aquatic habitat should remain intact in this back channel of the Ohio River at the island.

According to studies conducted by the Ohio River Valley Sanitation Commission and industries located along the Ohio River, water quality in the Ohio River has continued to improve since the early 1970's with the advent of water pollution control legislation. According to the West Virginia Division of Environmental Protection, the Ohio River stretch in which Browns Island is located fully supports aquatic life. A West Virginia Department of Natural Resources stream survey conducted in 1994 indicated a representative sample of fish species found in the upper Ohio River basin. Weirton Steel Corporation also commissioned a Ohio River Aquatic Survey on the Ohio River between river mile 60.5 and 67.5, which includes the waters adjacent to Browns Island. Both reports indicate a diversity of species, although populations' lag behind those found in the lower Ohio River. The upper Ohio River is highly industrialized, with active industries including chemicals, steel, and coke making. As a result, fish habitat is less than optimal (Ref. 1, Appendix E)..

The upper Ohio River also has heavy barge traffic. Habitat is also less than optimum for freshwater mussels, as populations are impacted by propeller scour, dredging, sedimentation, and material spills into the river. A study to determine species distribution in the area has not been conducted; however, due to the high level of activity on the upper Ohio River, it is anticipated that populations have been negatively impacted. This may not be the case in the protected back channel of Browns Island. A mussel survey of the waters around Browns Island will be requested from U.S. Fish and Wildlife Service as this project progresses.

5.2.5 Inventory of Wetlands and Floodplains

Browns Island is 2.55 miles long with a total shoreline of approximately 27,000 feet. The island is located in a north-south portion of the Ohio River and is approximately 1257 feet wide at its widest point. The island is best described as "ship shaped". According to U.S. Geological Survey topographical maps, portions of the island, particularly the northern and southern ends, are located within the 100-year floodplain elevation of the Ohio River. Executive Order

11988 requires Federal agencies to avoid taking actions that alter floodplains, and to mitigate impacts of floodplain development.

The topography of the site is considered flat, with strongly sloping banks at the rivers edge. The highest elevation on the island is approximately 685 feet above sea level near the center of the island at the former coke batteries. There are some slag stockpiles which reach elevations of approximately 720 feet, but these are not included in the general elevation of the island. The lowest elevation occurs at approximately 640 feet which is the shoreline elevation on the Ohio River. The site drains into the Ohio River. Other than some man-made diversion ditches, there are no streams or ponds on the island.

There are no wetland areas on the property. The island has no wetlands mapped on the National Wetlands Inventory 7.5-minute map. An indication of a "wet spot" was located on the official soil survey of Brooke, Hancock, and Ohio Counties, WV, published in 1974. The soil survey map did indicate a general location of the "wet spot" but the site could not be located or otherwise identified during recent site visits**.** Fill, deposited years ago to increase island elevation, may have eliminated wetlands of an earlier period.

5.2.6 Inventory of Geological Resources and Soils

The official soil survey of Brooke, Hancock, and Ohio Counties, WV, published in 1974, indicates three classifications of soil on the island; Cg, Ch, and Ma. Table 5.1 contains a description of the surveyed soil.

Table 5.1 - Official Soil Survey, Browns Island

Symbol	Name	Description
Cg	Chagrin fine sandy loam	Nearly level soil, subject to flooding, the soils are generally silty throughout (to a depth of 52 inches or more).
Ch	Chavies fine sandy loam	Deep, well drained soil, mainly on ridge-like flood plains. 0 to 5 percent slope.
Ma	Made land	Consists of ashes, other industrial wastes and usable stockpile. (The soil survey was conducted prior to construction of the Coke Plant, however preparations were likely being made to build the bridge span to develop the island).

Site geology has been investigated for various geo-technical and environmental engineering studies. Most recent data is reported in the RCRA Facility Assessment, prepared by Almes & Associates, Inc. (now known as Civil and Environmental Consultants, Inc. (CEC). From monitoring well construction data and other subsurface boring data, much of the site consist of fill underlain by approximately 60 feet of alluvium, which overlies the Ohio River Valley bedrock.

The facility is located within the Ohio River Valley of the Appalachian Plateau Physiographic Province. Test borings drilled on the site have shown 5 to 20 feet of fill underlain by 50 to 60 feet sands and silt, and gravels. The bedrock elevation is in the range of 600 feet above sea level. The bedrock is reported to be the Freeport Formation of the Allegheny Group of Pennsylvanian Age. The Freeport Formation is composed of alternating sandstone, coal, underclay, claystone or limestone, and includes the Upper Freeport and Lower Freeport coal seams.

The alluvial material underlying the site is an excellent aquifer. Weirton Steel Corporation has six water wells located on the island; all of which are no longer in use. Four groundwater monitoring wells have also been installed on the island in the immediate area of the former coke plant. Groundwater elevations (1994 – 1996 data) have ranged between 644 and 651 feet. Groundwater elevations at the island are very dependant upon, and closely parallel that of the Ohio River.

According to the West Virginia Geological and Economic Survey, there are shaft mines to the Lower Freeport seam across the Ohio River. There is no record of mines extending under the river or the island.

5.2.7 Inventory of Cultural Resources

As required by Section 106 of the National Historic Preservation Act, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties", the West Virginia State Historic Preservation Office reviewed the project and conducted a site visit to determine its effects to cultural resources. The West Virginia State Historic Preservation Office has comments, which are included in Appendix B-2.

There is record of one archaeological site on Browns Island; however, after a survey of the site, West Virginia State Historic Preservation Office determined that the site was disturbed and most likely buried by past industrial activity. Due to the disturbed nature of most of the island, which was caused by the prior industrial construction and placement of fill, there are no known archeological sites that will be affected by the potential development project. However, the West Virginia State Historic Preservation Office does state that if cultural materials are encountered during project activities, all activities shall cease and the office shall be contacted immediately.

There are no known intact architectural resources on Browns Island and there was no road infrastructure know on or to the island prior to the early 1970's. In a 1938 aerial photograph reviewed for this report, there are several buildings located on the island. These buildings were not available in the next aerial photograph (1954). The buildings were located near the present location of the Coke Plant and any remnants of the building have likely been destroyed by

construction. Buildings or structures are eligible for consideration as an architectural resource if they are fifty years or older. No further cultural resources investigations, except as noted above during construction, were advised by the West Virginia State Historic Preservation Office.

5.2.8 Inventory of Socioeconomic Resources

Browns Island is located within the Stubenville-Weirton OH-WV Metropolitan Statistical Area, as defined by the U.S. Department of Commerce. The Metropolitan Statistical Area consists of Jefferson County, Oh, and Hancock and Brook Counties, WV.

Jefferson County, OH, is a large (410 sq. mi.) county. Its population area (Stubenville, OH) is along its eastern border, the Ohio River. Most of Jefferson County is largely rural with small widely scattered communities. The two counties in West Virginia are much smaller: Brooke covers 92.5 sq. mi. and Hancock, 88.55 sq. mi. Most of Weirton, WV (including Browns Island), the most populous area of the Metropolitan Area is located in Hancock County. Both counties in West Virginia are oriented in a north-south direction in the state's northern panhandle. Population and industrial development in both counties is mostly along the western boundaries, along the Ohio River and WV Rt. 2, which parallels the river.

Total population in the Metropolitan Statistical Area in 2000 was 132,008 persons. Jefferson County (OH) was the most populous with 73,894 (65%), followed by Hancock with 32,667 (35%) and Brooke with 25,447 (19%). Population declined within the Metropolitan Statistical Area by 7.4 percent during the decade between 1990 and 2000. Over the last two decades, 1980 – 2000, the population in this same area has declined by 19 percent. The rate of population declines in the three county area has been about proportionally equal.

Hancock County had the highest per capita personal income in 1990, $16,900, followed by Jefferson County, $14,800, and Brooke County, $14,000. Almost one-half of personal earnings in Jefferson County came from the manufacturing sector (25%) and wholesale and retail trade (22.5%). Manufacturing (petroleum and coal products and fabricated metal products) accounted for 47 percent of personnel income earnings in Hancock County. Manufacturing was also the largest contributor (30%) to personal income in Brooke County.

In addition to direct access to the Ohio River, the Browns Island site is connected by two roadway bridges to the highway transportation network. On the Ohio side, Browns Island is serviced by a roadway bridge which connects, via an interchange, to Ohio Route 7 (north-south), which connects to I-70 (east-west) about 15 miles south and thence I-77 (north-south) about 35 miles west. On the West Virginia side, Browns Island is serviced by a roadway bridge that exits onto

Weirton Steel owned property. Roadways within the Weirton Steel plant thence provide access to nearby U.S. Route 22 (east-west) and WV Route 2 (north-south). I-79 (north-south) is approximately 30 miles to the east. Pittsburgh International Airport, with major cargo handling facilities, is less than 30 miles to the east on improved highways.

5.2.9 Inventory of Air and Water Quality Resources and Industrial Wastes

Air Quality

Standards for air quality were established in the Clean Air Act. The Environmental Protection Agency promulgated National Ambient Air Quality Standards for six atmospheric pollutants: carbon monoxide, ozone, nitrous oxides, sulfur oxides, particulate matter, and lead. Ambient air monitoring is performed by the State of West Virginia, within each of eight air quality control regions. The Browns Island site is in Region III. The area is classified as a non-attainment area for pollutants including sulfur dioxide and particulate matter. The area is classified as an attainment area for carbon monoxide. According to engineers with the Office of Air Quality (OAC) at the West Virginia Division of Environmental Protection, AOC will be resubmitting the State Implementation Plan (SIP) to change the designation of the area to attainment for sulfur dioxide and particulate matter. This revised SIP designation should be submitted within 2 years. The area has not had an exceedance of standards for three consecutive years. (An area is not in attainment if a pollutant exceeds standards more that once per year).

Weirton Steel has no air permits isssued to its facilities on Browns Island. IMS, the operator of the slag crushing and screening operation conducted on the island has one minor air permit issued to its operation. Typically, active port facilities, minus any active manufacturing facilities, are required to regulate particulate emissions and may be required to control fugitive dust, which entails applying water or other dust control liquids to roads.

Water Quality

Much of the area along the upper Ohio River consists of industrial developments. Various industries are found within the study area including chemical manufactures, sand and gravel operations, coal transport, and steel making. The river is used by recreationists as well, who engage in such activities as pleasure boating, bird watching, hunting and fishing.

The Ohio River and its tributaries near to and immediately downstream of the island are designated for uses including: habitat to support a diverse aquatic community; public and industrial water supply; boating; swimming, and other

contact recreation; and for fish fit for human consumption. Each designated use has certain water quality requirements that must be met to ensure the river's suitability for that use. Use is classified as fully supporting, partially supporting, or not supporting.

A summary of use support is shown in Table 5-2.

Table 5-2

Use Supported by the Ohio River at/near Browns Island				
Category	Aquatic Life	Water Supply	Contact Recreation	Fish Consumption
Full support				
Partial Support				
Non-support				

Source: Ohio River Valley Sanitation Commission, Years 1993 through 1996.

According to the Ohio River Valley Sanitation Commission, the water quality of the Ohio River and its tributaries has improved significantly over the past 30 years. This is due mainly to progress made in construction and operation of wastewater treatment plants and limits placed on discharges to the Ohio River. Qualitative and quantitative data are collected at points throughout the watershed by federal and State agencies including: the U.S. Army Corps of Engineers, the U.S. Geological Survey, and the West Virginia Division of Environmental Protection. Parameters most frequently measured include: pH, temperature, dissolved oxygen, nitrate, total residue, and fecal coliform. Most stream quality data collected by Federal State agencies are stored in the Environmental Protection Agency "STORET" computerized water quality STOrage and RETrieval system. Water quality in the vicinity of Browns Island has improved over the past several years, and has been characterized as "good" by the West Virginia Division of Environmental Protection; however, it is important to note that water criteria are not met for all pollutants.

No sedimentation or retention ponds are present on the island, however, some areas contained diversionary structures (small earthen or gravel dikes) to divert surface rainwater runoff from entering the Ohio River. These structures were mainly located at the materials handling locations. In many other areas, surface runoff drains directly into the Ohio River. The present drainage has not been reviewed to determine if adequate control and/or treatment is in-effect.

Browns Island has a National Pollution Discharge Elimination System Permit for discharge of stormwater produced during material handling events. The permit is issued by the West Virginia Division of Environmental Protection.

There is one diesel above-ground storage tank on Browns Island. Testing for contamination from this source has been conducted for the RFI, The data reviewed does not indicate that petroleum hydrocarbon contamination is present.

This should be verified prior to any making any use determinations for the potential port facilities.

Industrial Wastes

Browns Island is currently the location of several material processing operations which involve the operation and maintenance of heavy equipment. This equipment includes trucks, bulldozers, and loaders, as well as machinery at the materials processing unit. Waste streams resulting from vehicle maintenance, such as solvents, oils, fluids, and batteries, are shipped off-site for subsequent treatment, reuse, or disposal. Although Weirton Steel Corporation is a registered waste generator and Browns Island is currently being investigated under the Resource Conservation and Recovery Act, due to past operations conducted on the island, the Browns Island facilities are not registered waste generators.

There are several transformer sets present and in use on the island. Some transformers were seen to contain the Environmental Protection Agency – designated markings indicating no polychlorinated biphenyls (PCBs) content (blue stickers). Weirton Steels' Environmental Administrators stated that the transformers do not contain PCBs.

6.0 ENVIRONMENTAL CONSEQUENCE OF PROPOSED ACTION

This section of the Environmental Reconnaissance Report forms the scientific and analytic bases for the comparison alternatives. It includes a discussion of significant impacts of the alternatives; any adverse environmental effects that cannot be avoided should the project be implemented; the relationship between short-term use of man's environment and the maintenance of long-term productivity; and any irreversible commitment of resources and means to mitigate adverse impacts.

The proposed site will be impacted by both construction and operation of a port facility. Construction impacts are both direct and indirect; proven mitigation techniques can be followed to reduce the temporary construction impacts. Operational impacts cannot be quantified until a specific facility use is identified, and without further study of aquatic populations. For example, the potential impact of a power generating facility would be greater than that of a sand/aggregate storage facility. It is anticipated that the former facility would have direct and indirect impacts, and mitigation would be required, whereas the latter would have fewer impacts. Positive impacts include the potential for economic growth for the area and environmental risk would be reduced if site remediation were expedited to allow for development of a public port.

Based upon general information available at this time, an analysis of potential impacts is discussed in the following sections. The guidelines for mitigation provided by the U.S. Fish and Wildlife Service in its letter regarding this proposed project have been included in the discussion of mitigation requirements and techniques. Also based upon the preliminary data available at this time, a Flood Hazard Analysis and a Regulatory Permit Analysis are included as Attachments to this report.

6.1 Alternative 1 – Construction and Operation of a Public Port at Browns Island; Direct and Indirect Effects and Their Significance

Topics identified and discussed include:

- Federally listed endangered and threatened species or species of concern;
- Botanical resources;
- Zoological/wildlife resources;
- Aquatic resources;
- Wetlands and floodplains resources;
- Geological resources and soils;
- Cultural resources;
- Socioeconomic resources; and,
- Air and water quality resources and industrial waste.

For this discussion, it is assumed that site remediation, if deemed desirable or necessary, will be completed prior to construction or operation of a port facility. It is also assumed that facilities developed at the site would employ the best available technologies for pollution prevention and treatment of waste streams. Proposed uses and waste streams include:

- Coal consolidation/distribution—Coal preparation is commonly included in consolidation and distribution facilities. Coal is mixed to achieve proper characteristics (percent sulfur, ash content, BTU value, etc.), then cleaned to remove contaminants (called ash by the industry), then sized. Waste streams include wastewater runoff from coal storage piles and wastewater generated during washing operations. Adequate technology exists to treat wastewater generated by this activity. There are no air or solid waste streams.
- Coal coke plant—Although Browns Island is already the location of a former coke plant, the possibility exists that a new coke plant, built to comply with emission standards, may be built. Many new coke plants use a modified process to make coke. Fewer by-products and contaminants are created. Coke is made by buring coal in an oven with a limited supply or air so that the coal does not burn completely. As part of the coke-making process, a coke gas (rich in coal tar, ammonia and coal gas) is produced along with the coke. To stop combustion, coal is sprayed with cool water. This quench water contains the same products as found in coke gas, but in lesser concentrations. In the older processes, fleshing liquors used to drive off coke gas were treated to remove usable by-products, then treated and discharged as wastewater. The liquor was difficult to treat, and as a result many pollution problems were tied to coke production. Newer plants often combine coke making with cogeneration plants, burning the coke gas to make electricity. Less wastewater is created. Air emissions and solid waste streams are created by coke making, but adequate technology exists to treat all waste streams.
- Electric generation—Due to the growing demand for electric generation and the high energy usage of steel facilities, a peak demand electric generating facility may be considered for the site. Typical facilities may utilize coal, natural gas, or natural gas and co generating with a coal gas (mentioned above). Air emissions and solid waste are generated from both types of facility, although the gas fired plants produce considerably less solid waste. Adequate technology exists to treat all waste streams.
- Steel service center / steel fabricator—These processes use steel created by nearby steel producers (Weirton Steel, Wheeling Pittsburgh Steel) to make end products, or furnish materials to steel mills. Waste streams created include wastewater used primarily for cooling, as well as solvents, oils, and other chemicals. Air emissions are created by heat sources. Adequate technology exists to treat all waste streams.
- Nonferrous foundry/mill—Mills create solid, liquid, and gaseous waste streams. New plants create less wastewater as recycling of process and cooling water streams is common. Adequate technology exists to treat all

wastes generated; however, treatment is more complex than for the other processes considered for the site other than coke making.

- Warehousing/foreign trade zone—Materials properly stored in containers or on impervious slabs have no contact with the environment. Such a facility should have no waste streams, other than those created in the event of a spill, or by routine maintenance of equipment used at the warehouse.

6.1.1 Federally Listed Threatened and Endangered Species or Species of Concern

Potentially affected by development of Browns Island within this range of construction, particularly the southern portion of the island, are several threatened or endangered species or species of concern. In general, any island on the Ohio River is considered a special habitat, however, due to the degree of past development that has taken place on the island, only the southern portion of the island has been identified as a potentially listed special habitat. The potentially affected species and habitat are identified in Table 6.1.

Table 6.1 -- Rare, Threatened and Endangered Species, Potentially Affected by Development

Species	Habitat/Concern
Great Blue Heron	The Great Blue Heron has a rookery in the southern mature growth forested section of the island.
Indiana Bat	The Indiana Bat is a federally listed RTE that may roost in certain shaggy bark trees on the island.
American Eagle	Migratory in the area, but may utilize the southern woodland area of the island in transit.
Mussel	May be present in the channels on both sides of the island.

6.1.2 Botanical Resources

Plans and construction specifications of the port facility have not been developed, therefore, specific impacts to botanical sources cannot be addressed. A large portion of the site has previously been disturbed by industrial activity and contains low-value vegetative cover or exposed mineral soil. The most high value riparian vegetation found at the southern end of the island, and along areas of the western bank of the island could potentially be disturbed or otherwise affected by clearing for construction of onshore facilities, riverfront, or mooring facilities**.** To minimize impact to these old-growth species, removal of vegetation should be limited the areas necessary and permitted. Erosion during construction can be controlled through the use of silt fences and straw bales until new growth is established.

6.1.3 Zoological/Wildlife Resources

Potential impacts to bird species would occur with the removal of trees at the southern end of the island and along the western bank of the island. Cumulative impacts are difficult to quantify. In view of the high quality of the habitat, particularly the southern riparian habitat, the uniqueness of the island as a whole, and the reported presence of the Great Blue Heron rookery, the loss of nesting sites in the southern habitat would likely have a major, but likely temporary impact on these particular avian species. It is recommended that any proposed impact with the high quality riparian habitat be discussed with the U.S. Fish and Wildlife Service and further, that the riparian habitat be avoided if possible. Other observed wildlife species that would be affected by development of the island include; deer, turkey, groundhogs, squirrel, etc. These species have been observed on the entire island, however their greatest number is observed in the southern riparian habitat. The overall effects on these species on the island would be permanent, in that development will further reduce the available area on the island. Although the island is a unique environment, it is not the only location that theses species are found in the area. These species are quite numerous in the urban land on the nearby West Virginia and Ohio mainland.

6.1.4 Aquatic Resources

Port facilities require docking and mooring facilities. An existing permitted river terminal is located at the site, on the east side of the island, but the terminal has no docking and mooring facilities associated with it. When used, the barges are only temporarily tied off to on-shore anchors. This facility would be inadequate for a port facility. Additional facilities will be required. Depending upon the river depth at the shoreline, a sheet pile bulkhead or river mooring cells might be constructed. Dredging may be required. Barge embedment, sheet pile walls and dredging impact aquatic resources significantly more than do mooring cells.

Aquatic impacts of shoreline development are of concern, because the stretch of river on the east side of the island where facilities would be located has little riparian habitat and the banks are steep. Potential for impact remains from increased river traffic, sheet pile wall construction, dredging, and/or additional mooring cell construction. The western side of the island borders the non-navigable channel of the Ohio River. It is assumed that no facilities will be built on the bank slope or in the channel itself on this side of the island.

Sedimentation runoff from the site into the Ohio River is a concern during construction. It is important that the site design incorporate drainage patterns which divert surface runoff for appropriate containment and treatment prior to discharge. If adequate collection and treatment of surface water does not occur and runoff enters the Ohio River, there is potential for water degradation from process chemicals and maintenance products such as pesticides and herbicides, as

well as by spills. If appropriate pollution control, containment, and treatment schemes are implemented, construction and operational activities are not expected to significantly affect fish populations in the Pike Island Pool. Any impact would be temporary.

The benthic populations may be impacted by prop scour, dredging, sedimentation and material spills. The type of facility eventually proposed will be important in determining impacts; impacts to aquatic resources will especially depend on the amount of activity in the river associated with the port and the potential for material spillage.

6.1.5 Wetlands and Floodplains Resources

No wetlands are located at the site; therefore, construction and operation of a port site would have no impact on any wetlands.

Impacts to floodplains must be addressed after specific use of the site is determined. Issues of most concern include the use of fill material to modify site elevations and siting of potential liquid storage facilities. Potential spills of chemicals could impact floodplains. Activities and materials should be located at higher elevations, outside of the floodplain. Petrochemicals used to fuel construction equipment should be limited by work procedures to staging areas. The contractor should have on hand absorbent materials to promptly contain spills prior to ground and surface water contamination. The disposal of contaminated materials should be away from any stream banks or floodplains.

6.1.6 Geological Resources and Soils

There will be no impact on geological resources. Soils have been disturbed by previous site development activities; no additional adverse impacts would be expected. Erosion will be controlled through the use of silt fences and straw bales until new growth is established.

6.1.7 Cultural Resources

There are potential sites of historic interest on Browns Island. Most of the island has been impacted by past development and placement of fill on the island. In addition, parts of the island are identified as being impacted by subsurface contamination. However, there is the question as to whether disturbance(s) on the island have destroyed or otherwise eliminated the information potential of any potential archeological site on the island.

The West Virginia State Historic Preservation Office has conducted a site visit on Browns Island and has determined that due to the extensive development, the placement of fill, and the potential subsurface contamination issues located on the island, the potential of locating intact archeological resources is small. However,

they did state that if during development of the facilities, that archeologically significant resources were discovered that all work cease and their office be notified immediately.

6.1.8 Socioeconomic Resources

Development of Browns Island as a public port should enhance industrial development and contribute to an improved economy within the immediate area and the Stubenville-Weirton OH-WV Metropolitan Statistical Area. This area has experienced a progressive decline in population over the past years; introduction of new or expanded industry located on the island would be a positive impact.

6.1.9 Air and Water Quality Resources and Industrial Wastes and Noise

During construction, air pollution will be limited to emissions from construction equipment, and fugitive dust. It is not anticipated that they will exceed limits. No adverse impacts would be expected. During operations, air emissions generated will be a function of the type of facility. Impact should be assessed after any specific site use is defined. Permits will be required for new sources. As a result of the non-attainment status of West Virginia Air Quality Control Region I, new emitting sources in the region must undergo a significant level of scrutiny by regulatory agencies, including permit review and modeling of emissions, and they must meet more rigorous pollution control equipment requirements. Lowest Achievable Technology requirements are imposed in non-attainment areas as opposed to Best Available Technology requirements that apply to attainment areas. The permitting process for a new source would also include a review of State Implementation Plan requirements as well.

Water pollution can be controlled during construction and operation by using proven mitigation techniques including erosion control; appropriate storage and containment facilities for fuels, products, raw materials, and equipment; and through wastewater treatment. The island is currently the site of a RCRA investigation and pending cleanup action. Therefore, it is necessary to develop a drainage plan and a surface water collection system, and to determine if treatment of surface runoff is necessary.

Depending on the type of facilities developed at the site, National Pollution Discharge Elimination System wastewater guidelines will be used to determine treatment requirements. Impacts related to operation of new facilities at the site should be assessed after any specific site use is defined. Permits may be required. Pending appropriate collection and treatment of surface water and wastewater generated on-site, no adverse impact is anticipated.

6.2 No Action Alternative—No Facility Would Be Constructed or Operated; Direct and Indirect Effects and Their Significance

If the project is not implemented the following events and impacts are likely to occur:

- Development will continue within the river corridors being studied, but not necessarily at Browns Island, and not likely in a manner which would tie together all the benefits of a port facility at one location.
- Loading and storage facilities currently being used for coke at Browns Island will cease operation due to shipments currently being conducted by rail, new or continued utilization of the facilities by Weirton Steel is not likely.
- Industry such as a modern coke plant, steel fabrication facility, or nonferrous foundry, will not be developed on Browns Island to support Weirton Steel.
- Riverine impacts caused by maintenance dredging and traffic on the Ohio River will continue.
- In general, water quality should continue to improve in the Ohio River due to increased sewage treatment, improved sewage treatment techniques, and new pollution prevention technologies for industry. Populations of fish, mussels, other aquatic species, and species dependent on these aquatic species should benefit from these changes, as has been seen over the last 30 years.
- The high quality terrestrial habitat on the southern end of Browns Island will continue but may be put in danger because federal or state over-site and protective mandates involving the habitat would be lost. The low quality terrestrial habitat will continue as such, and Browns Island will continue to support limited populations of flora and fauna.

6.2.1 Federally Listed Threatened and Endangered Species or Species of Concern

The Great Blue Heron has established a rookery on the southern end of the island and the American Bald Eagle and Indiana Bat may frequent the island or have established nesting sites. The high quality habitat on the southern end of the island is considered special in that it exists upon an island. Continued operation of Browns Island in a limited capacity as it currently is would have no impact on the species. However, expansion of facilities on the island, if not conducted under federal or state over-site may threaten the species and their habitat.

6.2.2 Botanical Resources

Botanical resources are limited, as most of the island is highly disturbed. In the high quality habitat on the southern end of the island, a low diversity of species were present. It is anticipated that these vegetation communities will continue with little additional diversity to populate the site.

6.2.3 Zoological/Wildlife Resources

The site is an island, with the major portion of the island disturbed by industrial development, therefore the wildlife habitat is limited. The limited size of suitable habitat, the disturbed nature of the remaining habitat, and the river channels located on both sides of the island limit significant habitation by wildlife.

6.2.4 Aquatic Resources

Browns Island has no constructed docking and mooring facilities. Barges which have loaded and off loaded from the island have typically tied off to on shore anchors. In order for barges to load and off load to/from the bank, dredging has been conducted close to shore. This dredging has impacted aquatic resources significantly on the eastern shore of the island. Aquatic impacts of shoreline development are of concern since the eastern bank is steep and has little riparian habitat. The potential for impacts will increase from increased river traffic, sheet pile wall construction, dredging, and/or mooring cell construction.

Sediment runoff from the site into the Ohio River is a concern. If appropriate pollution control, containment, and treatment schemes are implemented, continued and expanded operations on Browns Island are not expected to significantly affect fish populations in the Pike Island Pool. However, if adequate collection and treatment of surface water does not occur and runoff enters the Ohio River, there is potential for water degradation from stored materials and maintenance products. The benthic populations may be impacted by propeller scour, dredging, sedimentation and material spills.

6.2.5 Wetlands and Floodplains Resources

No wetlands are located on the island; therefore, continued use of facilities on Browns Island would have no impact to any wetland resources.

Potential spills of chemicals could impact the floodplain. Activities which utilize petrochemicals, chemicals or other hazardous materials should be located at higher elevations outside the floodplain. Petrochemicals used to fuel construction equipment should be limited by work procedures to staging areas. The site operators should have on hand absorbent materials to promptly contain spills prior to ground or surface water contamination. The disposal of contaminated materials should be away from any riverbank or floodplain.

6.2.6 Geological Resources and Soils

There will be no impact on geological resources. Soils on most of the island have been disturbed by previous site development activities; no additional adverse impacts would be expected in this area. Portions of the southern end of the island remain largely intact. Current site activities do no impact this area, no additional adverse impacts would be expected.

6.2.7 Cultural Resources

There are potential sites of historic interest on Browns Island. Most parts of Browns Island, and therefore the potential sites, have been impacted by development of the island. In addition, parts of the island are identified as being impacted by subsurface contamination. However, there is the question as to whether disturbance(s) on the island have destroyed or otherwise eliminated the information potential of any potential archeological site on the island, since some deposits may be deep.

The West Virginia State Historic Preservation Office has conducted a site visit on Browns Island and has determined that due to the extensive development, the placement of fill, and the potential subsurface contamination issues located on the island, the potential of locating intact archeological resources is small.

Continued industrial activity on Browns Island could impact potential unknown archeological sites. If intact deposits are located under fill or in previously undisturbed areas, they could be destroyed by additional construction, storage, or landfilling activities.

6.2.8 Socioeconomic Resources

If Browns Island is not developed into a public port facility, river transportation and activities associated with the island may continue as at the present. It is quite possible that no additional services would be developed by the present owners. Activities on the island, as witnessed by the closing of the coke plant and the cessation of coke pile storage on the island, may decline.

6.2.9 Air and Water Quality Resources, Industrial Wastes, and Noise

Current operations on Browns Island do not require air permits. West Virginia Division of Environmental Protection officials have conducted inspections of Browns Island facilities and have issued no Notices of Violation. Continued use of proper environmental control and pollution prevention practices should allow the current operations to have no adverse impact on air or water quality.

6.3 Conclusions

Weirton Steel currently conducts industrial activities on Browns Island. It has been the site of industrial activities since industrial development of the island began in 1970-71, a period of 30 years. Currently the 244 acre island is under utilized as an industrial site. The coke plant is still located on the island, but it is inactive and is scheduled to be demolished. Several service type shops, in support of Weirton Steel's mainland plant, are run from buildings of the former coke plant. There is an active slag crushing and milling operation on the island. A coke stockpile is located on the island, however it will not be renewed as Weirton Steel is going to just-in-time delivery of coke via plant side railroad delivery.

As planning for use as a public port is in the early stages, the type of facility and industries to be supported has yet to be determined. Until such information is available, it is difficult to assess all construction and operational impacts. However, based on the disturbed nature of most of Browns Island (excepting the southern 40 acres of land), it is anticipated that construction and operation of a port facility, in accordance with federal, state, and local regulations, would have minimal impact on migratory birds, federally listed threatened or endangered species or species of concern, wetlands or mussels. As more information about future use becomes available, potential operational impacts can and should be addressed.

Due to the on-going RCRA facility assessment and investigation being conducted on Browns Island by Weirton Steel Corporation, an environmental risk assessment of the site is not complete. It is recommended that prior to taking further steps to develop the island as a public port, the West Virginia Public Port Authority have a clear understanding of the presence and extent of contamination on the island; understand and agree with the extent of planned cleanup to industrial versus residential standards; and confirm that there is an agreement among responsible parties apportioning costs of cleanup.

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Fernando Pascual	Technical Editor

8.0 REFERENCES

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9.0 ATTACHMENTS

Attachment 1: Flood Hazard Analysis

1.0 Project Description:

The proposed Browns Island port site in the Weirton Public Port Master Plan is located on the Ohio River, at the City of Weirton, in Hancock County, West Virginia. The island is located within the navigation pool of the Pike Island Locks and Dam. The port site would be used as an intermodal industrial development site incorporating rail, truck and barge transportation facilities for in-bound shipment and storage of raw materials and component parts, commodity production, commodity storage and out-bound shipment of various commodities. A portion of the island may be included in a foreign trade zone (FTZ).

2.0 Project Authority:

The port site is being studied by the Appalachian Transportation Institute (ATI) under a contract executed between the Appalachian Transportation Institute and the West Virginia Public Port Authority. The West Virginia Public Port Authority was established by the West Virginia Legislature in 1989 to promote the development of public ports within the state. To that end, the Port Authority has granted official public port status to the Weirton Port District for the purpose of investigating the potential of the site described above and for the development of the site. There is no intent or plan for Federal funds to be used in the construction or operation and maintenance of the proposed port site. It is anticipated that the public port will be constructed and operated and maintained through a combination of public (State of West Virginia) and private investments.

3.0 Project Area:

The proposed port site is located within Hancock County, West Virginia on the Ohio River between river miles 61 and 63.5 and is situated adjacent to Weirton Steel Corporation, located on the West Virginia mainland. The site is located within the incorporated limits of the City of Weirton, WV. The site is surrounded by waters of the Ohio River.

4.0 Site Characteristics:

The site is located in the river channel of the Ohio River and is bordered to the west by land of the State of Ohio and on the east by the West Virginia mainland. The site comprises approximately 244 acres and is accessed from both the Ohio and West Virginia mainland via private roadway bridges, providing access to nearby State and Federal highway systems. Railroad track (Norfolk Southern, West Virginia side and CSXT on the Ohio side), runs on both banks of the Ohio River. The island is currently owned by Weirton Steel Corporation, which

currently has or leases several operations on the Island. The existing port facilities are limited to on-shore tie off anchors for barges loading or of loading materials to or from the island.

Much of the island has been cleared of its riparian vegetation, but some riparian and bottomland species exist at the southern end and along the western shore of the island. A major portion of the island, excepting the central area where the coke plant facilities are located, are affected by the BFE (Base Flood Elevation). The BFE at river mile 61 of the Ohio River is 675 and the BFE at river mile 63.5 is 674. The regulatory floodway zone affects approximately the first 800 feet of the island, measured from its toe, and affects a small strip of land along the banks of the Ohio River.

5.0 Proposed Developments

Any proposed port development will likely include the construction and operation of bulk loading facilities, general cargo and container loading and unloading and storage may occur on the site. Any development proposal would require some filling of the floodplain area along the Ohio River inside of the floodway limits. Fill would be placed to an elevation above the BFE (675 - 674). Final plans for the floodplain-fill construction would have to be coordinated with the local flood plain officer in Weirton, WV during the permit request process. Any fill placed in the Ohio River as a result of river terminal construction or mooring cells would require application for a 404(b)(1) permit from the Corps of Engineers under the Clean Water Act.

6.0 Flood Hazard Analysis:

The City of Weirton, WV is in the regular Flood Insurance Program and has adopted floodplain management ordinances. Flood Insurance Rate Maps (FIRM) are available for the site being studied (see Table 1 below). Portions of the site affected by the proposed construction are located below the Base Flood Elevation (BFE) as shown on the FIRM for the City of Weirton, WV. As such, the site would require a floodplain development permit issued by the City of Weirton, WV for those facilities to be constructed below the BFE. The appropriate FIRM panel number(s) is shown below for the City of Weirton.

A port developed on the Ohio River is affected by the regulatory floodway as shown on the FIRM. It is highly likely that any port development of the island would involve placement of fill to raise topography above the BFE and would include construction of mooring cells within the regulatory floodway shown on the FIRM. The placement of the fill and cells would have to be in accordance with the applicable floodplain management ordinance with appropriate engineering calculations completed to support placement of any fill material or constructed facilities within the floodway zone. Exact locations and placement of the fill and cells would have to be closely coordinated with the City of Weirton

floodplain officer and fully described on the site development drawings when the floodplain permits are requested.

Table No. 1
FIRM Panel Number – Weirton Port Site

FIRM Identification	Location	Panel Number
City of Weirton, West Virginia (Brooke and Hancock Counties)	Weirton, WV (Browns Island)	Community Panel Number 540014 0001 D and 540014 0003 D (revised date: Sept. 14, 1990)

7.0 Contacts:

Additional information on the floodplain permit process and required information can be obtained from the following sources:

Floodplain Permit Officer
City of Weirton
Weirton, West Virginia

Floodplain Management Services
U.S. Army Corps of Engineers
Pittsburgh District Office
Pittsburgh, PA

Attachment 2: Regulatory Permit Analysis

1.0 Background Information:

Corps of Engineers permits are required under Section 10 of the Rivers and Harbors Act of 1899 for any work accomplished at or below the ordinary high water line (OHL) at locations on the Ohio River and its navigable tributaries. Water quality certification under Section 404 of the Clean Water Act will be required for the discharge of dredged of fill material into waters of the United States, including wetlands. The State of West Virginia did not certify the Nationwide Permit for structural fills.

The existing facilities located on Browns Island were authorized in the early 1970's. All of the facilities on site which the Corps has regulatory jurisdiction are currently authorized. The OHL at Browns Island is 655.5 feet at river mile 61 and 654.2 at river mile 63. The proposed port would require construction and operation of terminal facilities at or below the OHL, and therefore would require application for a Section 10 permit. In addition, sheetpile cells, a likely requirement for port development, would result in the discharge of dredged or fill material into waters of the United States. This action would require the application for a Section 404(b)(1) permit from the U.S. Army Corps of Engineers (Pittsburgh District). The construction of sheetpile mooring cells in the Ohio River (within the jurisdictional boundary of West Virginia) would therefore constitute an action requiring both Section 10 and 404 permits.

2.0 Permit Process:

The port applicant must submit an application (ENG Form 4345) for both a Department of the Army Section 10 permit and the Section 404(b)(1) permit. A copy of the permit application materials is attached to this analysis document. The application and any supporting materials will be forwarded to the State of West Virginia and a public notice will be issued to notify Federal, State, and Local agencies, adjacent property owners, and the general public of the proposal. This public review period allows the opportunity for review and comment or to request a public hearing on the permit request. The State of West Virginia has 60 days from the date of the public notice to issue or deny Water Quality Certification for the public port facility. If the State does not act, the Certification is considered to be waived.

The State and Corps will consider all comments received in response to the public notice. The project will be evaluated on the environmental impacts of the project, the findings of the public interest review process, and any special evaluation required by the type of activity such as wetlands, endangered species, HTRW materials, and cultural resources. After all these actions have been completed, the

District Engineer or his designee will determine in accordance with the public record and applicable regulations whether or not the Section 10 Permit should be issued.

3.0 Permit Review Assistance:

To assist the permit applicant, the Corps will review the port master plan materials. Upon review of the draft port master plan materials, the Corps will offer findings and comments to the potential permit applicant. The Corps does not guarantee successful permit issuance based solely upon these findings. A key element to aid the review and permit process is to include drawings showing the site location with a plan view and sections. Both the plan view and sections must contain the maximum number of barges expected to be moored at the site.

3.0.1. Corps review findings are based solely upon their review of the materials submitted as a part of the draft port master plan. There is no expressed or implied assurance in this analysis that other issues regarding adjacent property owners or heretofore unknown natural resource conflicts that may or may not surface during the public review for either permit.

4.0 Corps Contact:

For further information on the Section 10 and Section 404(b)(1) permit application process and requirements contact the Regulatory Permits Office of the Pittsburgh District at Phone No. 412-395-7155.

Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

APPENDICES

Appendixes

A	**Survey Map of Browns Island**
B-1	**Correspondence of U.S. Fish and Wildlife Service**
B-2	**Correspondence of W.Va. Division of Culture and History**
B-3	**Correspondence of U.S. Department of Agriculture, Natural Resources Conservation Service**
C	**Federal Listing of Threatened and Endangered Species (as maintained by WVDNR)**
D	**U.S. Census Bureau Data, Weirton, WV/OH (2000 Census Data)**

Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

Appendix A: Survey Map of Browns Island

Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

Appendix B-1: Correspondence of U.S. Fish and Wildlife Service

Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

United States Department of the Interior

FISH AND WILDLIFE SERVICE

West Virginia Field Office
694 Beverly Pike
Elkins, West Virginia 26241

APR,17 2001

Mr. John E. Ball
Appalachian Transportation Institute
Marshall University
400 Hal Greer Boulevard Huntington,
WV 25755-2195

Dear Mr. Ball

This responds to your information request of March 12,2001 regarding federally listed endangered and threatened species and species of concern. The area of interest is Brown's Island, located at river mile 62.0, adjacent to Weirton, Hancock County, West Virginia. In September, 2000, our office provided preliminary comments to the West Virginia Department of Transportation, Division of Highways (WVDOH) regarding this project (copy attached). These comments were provided in order to aid the WVDOH in planning and to outline some of our initial concerns. Further coordination with this office as required by the Clean Water Act (33 U.S.C. 1344); the Fish and Wildlife Coordination Act (16 U.S.C. *et seq);* the Rivers and Harbors Act (33 U.S.C. 425); the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.); and the Migratory Bird Treaty Act (16 U.S.C. 703-712) should be conducted as this project develops.

In addition to transient species, such as the threatened bald eagle, Haliaeetus leucocephalus, one federally listed species, the Indiana bat, M~otis sodalis, may occur in the project area. This species may use the project area for foraging and roosting between April1 and November 14. Indiana bat summer foraging habitats are generally defined as riparian, bottomland, or upland forest, and old fields or pastures with scattered trees. Roosting/maternity habitat consists primarily of live or dead hardwood tree species such as shagbark hickory , which have exfoliating bark that provides space for bats to roost between the bark and the bole of the tree. Tree cavities, crevices, splits, or hollow portions of tree boles and limbs also provide roost sites.

The Service has determined the number of acres of suitable foraging and roosting habitat on the West Virginia landscape available to each Indiana bat known to occur there. On that basis, we have determined that small projects, generally affecting 17 acres or less of suitable foraging and roosting habitat, will have an infinitesimally small chance (at the 98% confidence level) of

resulting in direct or indirect take. Therefore, if tree removal associated with this project is 17 acres or greater, you should contact the Service for further consultation on the Indiana bat. If less than 17 acres of suitable habitat will be disturbed, the Service considers that action discountable and unlikely to adversely affect the endangered Indiana bat at any season of the year .

Because distributional data on native mussels in the Ohio River is incomplete, it is not possible to provide a definitive finding relative to federally listed mussels in the project area. Therefore, further Section 7 consultation under the is required with the Service regarding this project. A biologist, knowledgeable in mussel biology and taxonomy, should survey the areas surrounding Brown's Island. A list of potential mussel survey contractors has been included. A survey plan should be submitted to the Service and the West Virginia Division of Natural Resources (WVDNR) for concurrence prior to conducting the work. A West Virginia Scientific Collecting Permit is required to survey for mussels. A permit application may be obtained from the WVDNR.

Please notify this office with the results of any surveys so that we may determine whether there may be any impacts to any of these species. A compilation of federally listed endangered and threatened species in West Virginia is enclosed for your information.

If you have any questions regarding this letter, please contact Mr. Shane Jones of my staff at (3O4) 636-6586, or at the letterhead address.

Sincerely,

Jeffrey K. Towner

Field Supervisor

Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

United States Department of the Interior

FISH AND WILDLIFE SERVICE

West Virginia Field Office
Post Office Box 1278
Elkins, West Virginia 26241

SEP 2 5 2000

READER

James E. Sothen, P.E., Director
West Virginia Department of
Transportation Division of Highways
1900 Kanawha Blvd. East
Bldg Five, Room 110
Charleston, WV 25305-0430

Dear Mr.
Sothen:

The u.s. Fish and Wildlife Service has received your letter regarding efforts by the West Virginia Port Authority and the Weirton Port and Industrial Center District to develop a proposed River Port on Browns Island. No specific information on the scope or the exact location of the proposed port facility beyond a general area map was provided in your package. We are therefore, unable to fully evaluate this project. However, we are providing these preliminary comments in: order to aid you in your planning and to outline some of our initial concerns.

Further coordination with this office as required by the Clean Water Act (33 U.S.C. 1344); the Fish and Wildlife Coordination Act (16 U.S.C. *et seq);* the Rjvers and Harbors Act (33 U.S.C. 425); and the Migratory Bird Treaty Act (16 U.S.C. 703-712) should be conducted as this project develops.

Browns Island is the largest island within the Pike Island Pool. The island has been highly industrialized, and terrestrial habitats on the main portion of the island have been restricted. However riparian habitats along the back channel and habitats towards the tow of the island remain intact. Two other islands, the Griffen Islands, are located just off the tow of Browns Island and total 7.0 acres in size. Combined acreage of backwater habitat for the three islands totals 255.6. There are a total of 3 acres of mature bottomland hardwoods and 0.6 acres of palustrine emergent, scrub-shrub wetlands on the two Griffen Islands.

Browns Island supports a great blue heron *(Ardea herodias)* rookery at its tow near RM 63.5. Great blue herons nest in large congregations and return to successful rookeries in succeeding years. Disturbance to established rookeries can result in severe impacts on reproduction and nesting success for the colony's population. Very few heron rookeries are known along this portion of the Ohio River, and available habitat for additional rookeries is limited. Therefore the Service strongly recommends that no clearing occur in this area and that disturbance to the

rookery be avoided. Great blue herons and their nests are protected under the Migratory Bird Treaty Act. This act makes it illegal to pursue, hunt, take, capture, kill, or attempt to take, capture, or kill, in any manner, any migratory bird as defined by the act, or any part, nest, or egg of such bird.

The terrestrial and aquatic habitat associated with the river islands and their back channels are extremely important to fish and wildlife resources of the Ohio River. The effects of high water, navigation, etc., are buffered in these riverine habitats. The riverine, wetland, and bottomland habitats and their associated fish and wildlife species (migrating and resident waterfowl, shorebirds, songbirds, wam1water game and forage fish, and freshwater mussels) associated with the island and their back channels comprise less than one percent of the open water acreage of the Ohio River and only 2.5 percent of the shoreline between river miles 0.0 and 580.0. Since the locks and dams were constructed on the river, the river flow characteristics under which the islands were formed no longer exist. New islands will not likely be created nor will any significant natural maintenance of existing islands occur; they are irreplaceable.

Islands and their back channels have been classified as Resource Category 1, in accordance with the Service's mitigation policy (Federal Register, Volume 46, No.15, January 23, 1981). Resource Category 1 is defined as habitat of high value for evaluation species and unique and irreplaceable on a national basis or in the ecoregion section. The Service's mitigation goal is to allow no loss of existing habitat value. Accordingly, development that would increase navigation traffic along the island back channels or reduce the terrestrial or aquatic habitat values of the islands should be avoided.

We have reviewed the Ohio River mussel database and have no records of any mussel surveys that have been conducted within the immediate project area. However, recent data from nearby areas suggest that native mussels have recently recolonized selected locations of Pike Island pool, and recruitment in these areas is apparent. Islands and their back channels are typically prime habitat areas for these species. Additionally side-scan sonar data show that substrates around the island contain high percentages of sand and gravel. This substrate type is typical of areas that support native mussel beds and may also provide spawning and foraging habitat for many fish species. The Service therefore, recommends that a mussel survey be conducted to determine if any mussel beds are located near the proposed project area. A survey plan should be submitted to the Service for concurrence prior to conducting the work. The survey should be conducted by a qualified malacologist satisfactory to the Service, WVDNR, and the ODNR. A suggested list of qualified mussel contractors is enclosed.

This constitutes a preliminary report of the U.S. Fish and Wildlife Service on the proposed should be project. Additional coordination on this project conducted as planning for this project District should progresses. The Corps of Engineers, Pittsburgh be contacted regarding permitting requirements. Please have your staff to direct any questions regarding these comments to Barbara Douglas of my staff, or contact me directly by mail at the letterhead address or by phone at (304) 636-6586.

Sincerely

Jeffrey K. Towner
Field Supervisor

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Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

Appendix B-2: Correspondence of W.Va. Division of Culture and History

Environmental Reconnaissance Report
for the West Virginia Public [illegible]thority, Browns Island Site

WEST VIRGINIA DIVISION
OF CULTURE AND HISTORY

April 6,2001

Mr. John Ball
Appalachian Transportation Institute
Marshall University
400 Hal Greer Boulevard Huntington,
WV 25755

RE: Weirton **Port and Industrial Center Browns Island Site**

FR#: **01-702-HK**

Dear Mr. Ball'

We have reviewed the above mentioned project to determine its effects to cultural resources. As required by Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

Architectural Resources:
A preliminary search of our office files and site maps indicates that there are no architectural resources listed in or eligible for the National Register of Historic Places located on Browns Island. However, our survey information for Browns Island is limited and further inventory work is necessary .One structure, the company railroad bridge connecting the iron mill and coke plant, is potentially eligible for the National Register, but additional information on the bridge is required before a determination can be made.

Since specifics regarding the project are unknown at this early stage, it is difficult for us to evaluate the undertaking's impact to historic architectural resources at this time. Information necessary for our review include a draft design of the facility and a boundary for the construction work. To assist us in assessing architectural resources for inclusion in the National Register, please complete West Virginia Historic Property Inventory forms for structures and buildings fifty years old or older located within the project area. Of particular interest is the railroad bridge discussed above. For your convenience we have enclosed an **HPI** form, continuation sheet, and instructions for completing the form. Please submit inventory forms to us for our review and comment.

Archaeological Resources:
Thank you for submitting information concerning the proposed public port located on Browns Island. However, we are unable to provide comment regarding the effects of this project upon archaeological resources until design details for the project have been developed. Once these are submitted, we will be happy to continue with the review process.

Please be aware, though, that there is a known archaeological site on Browns Island and that we are of the opinion that the Island as a whole has great potential for archaeological deposits.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section* 106 *process, please call me or Rachel Black, Staff Archaeologist at* (304) 558-0220.

Marc Holma
Senior Structural Historian for Review and Compliance

mh/reb

Enclosures (3)

Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

WEST VIRGINIA DIVISION OF CULTURE AND HISTORY

April 11,2001

Mr. John Ball
Appalachian Transportation Institute
Marshall University
400 Hal Greer Boulevard Huntington, WV 25755

RE: Weirton **Port and Industrial Center Browns Island Site**
FR#: **01-702-HK-l**

Dear Mr. Ball:

We have reviewed the above mentioned project to determine its effects to cultural resources. As required by Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

Archaeological Resources:

Stated below are the conclusions agreed upon during a telephone conversation on 27 March, 2001 between Joanna Wilson, WV SHPO Senior Archaeologist and John Ball, Appalachian Transportation Institute. Due to the geographic nature of the project area, we are of the opinion that the Island as a whole has great potential for archaeological deposits. Therefore, we cannot provide comment regarding the effects of this project upon archaeological resources until the results of a Phase I archaeological survey are submitted. The area to be surveyed includes the following: entire project area. For your convenience we are enclosing an archaeological consultants list from which you may select a qualified consultant. If you have questions regarding archaeological surveyor bids you may receive for this process, please do not hesitate to contact this office.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section 106 process, please call me or Rachel Black, Staff Archaeologist at* (304) 558-0220.

Sincerely,

Joanna Wilson
Senior Archaeologist

reb

Enclosure

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Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

WEST VIRGINIA DIVISION OF CUL TURE AND HISTORY

May 21,2001

Mr. John Ball
Appalachian Transportation
Institute Marshall University
400 Hal Greer Boulevard
Huntington, West Virginia 25755

Weirton port and Industrial
Center Browns Island Site
OI-702-HK-2

Dear Mr.
Ball:
We have reviewed the above mentioned project to determine its effects to cultural resources. As required by Section 106 of the National Historic Preservation Act, as amended, and its implementing regulations, 36 CFR 800: "Protection of Historic Properties," we submit our comments.

Archaeolol!ical Resources:

Thank you for setting up the 91h May 200 1 meeting and subsequent site visit to Browns Island at Weirton Steel. As a result of this site visit, we are of the opinion that, due to the prior construction and fill activities on the Island, there is little possibility for intact archaeological deposits within the area of potential effect of reclamation and development type projects. Therefore, we have determined that no known archaeological sites listed on or eligible for inclusion in the National Register will be affected by this project. If, however, cultural materials are encountered during project activities, all such activities shall cease and our office shall be contacted immediately.

We appreciate the opportunity to consult with you on the project and thank you for your time and patience. If we can be of any further assistance, please do not hesitate to contact this office.

We appreciate the opportunity to be of service. *If you have questions regarding our comments or the Section* 106 *process, please call me or Rachel Black, Staff Archaeologist at* (304) 558-0220.

Sincerely, C~~

Joanna Wilson

Senior Archaeologist

reb

cc: Mark Vignovic, Weirton Steel

Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

Appendix B-3: Correspondence of U.S. Department of Agriculture, Natural Resources Conservation Service

Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
530 Freedom Road
Ripley, WV **25271**

May 17, 2001

John E. **Ball, Project Engineer**
Appalachian Transportation Institute
Marshall University
Huntington, West **Virginia**

Dear Mr. **Ball:**

We have reviewed the potential impact to Farmlands that future development would have on Browns Island Site for the Weirton Port and Industrial Center. Myself, and Greg Stone, NRCS District Conservationist reviewed the possible impact to farmlands by using Aerial Photo's of the area and viewed the Island from the Ohio side of Browns Island. According to the Hancock County Soil Survey, the soils on the Island are considered as Prime Farmland, if land use is not urban type land use. The northern part of the Island would be considered as urban and the southern part would be considered as Prime Farmland (the natural area that is mostly in trees, with some grass areas). The 40 acres you talked about in the southern end of the Island that is forested and appears to be largely unaffected by development would be considered as the Prime Farmland.

If you need a Farmland Conversion Impact Rating (Form AD-1006) completed on your project please let us known. We will complete our part of the AD-l 006 form used for federally fund projects.

If you have any questions about this information or need more soils information please let me know at 304-372-6351.

Sincerely,

Carlos Cole
Resource Soil
Scientist
cc: Greg Stone, NRCS District Conservationist

Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

Appendix C: Federal listing of Threatened and Endangered Species

Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

Appendix D: U.S. Census Bureau Data, Weirton, WV/OH (2000 Census Data)

Environmental Reconnaissance Report
for the West Virginia Public Port Authority, Browns Island Site

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Brown's Island Market Assessment

in

Weirton, West Virginia

for the

Appalachian Transportation Institute

Marshall University

Huntington, West Virginia

March 30, 2001

W. R. Coles and Associates

615 327 1576

TABLE OF CONTENTS

LIST OF EXHIBITS

1. Purpose and Introduction

The Weirton Port District (WPD), in association with the West Virginia Public Port Authority (WVPPA) is investigating the feasibility of developing public river port facilities on Brown's Island. Major components of the work include:

- a market assessment,
- a site plan for long term development,
- a program for phased implementation of the long range plan,
- an environmental assessment and
- an assessment of economic impact.

Another important component of the project is a study of the appropriate role for public sector financing in the development of river ports. The WVPPA has entered into a contract with the Appalachian Transportation Institute (ATI) at Marshall University to manage and produce the Brown's Island Port Development Study.

In addition to managing the project, the ATI will conduct the environmental assessment, the assessment of economic impact as well as the research related to the role of the public sector in port development. The ATI has retained W. R. Coles and Associates (WRCA) as a subcontractor for the market assessment and site planning tasks. WRCA is providing technical data to the ATI for consideration and integration by the ATI into a comprehensive report.

This Market Assessment is a portion of the overall effort provided by WRCA under its agreement with the ATI. The scope of work for the WRCA portion of the Market Assessment encompasses the following tasks.

- Reviewing prior studies, reports and other relevant published data.

- Identifying a short list of up to eight (8) key industries presently located in the region which are most likely to use and benefit from the proposed facilities, and obtaining the concurrence of ATI prior to proceeding with detailed interviews.

- Meeting with key industries to determine (to the extent each industry will share the information) primary and secondary needs of each industry, current freight movement patterns to the extent they are pertinent to the feasibility of this project, anticipated usage of a public riverport, potential cost savings, information relevant to the type of facility to be provided, new markets and opportunities which may be opened if the facilities were available.

- Surveying other river terminals and stevedores in the upper Ohio Valley region to determine the typical market price for steel handing.

- Obtaining data on key movements of steel and/or raw materials for three local steel companies, along with representative cost data to the extent the companies will share the information.

- Comparing the current rates with rates which are expected to be representative of rates if the proposed port facilities were available today and determining the general order of magnitude for potential transportation cost savings, if any.

- Summarizing the results for use in long range and short range planning for physical facilities.

The Physical Facilities Planning Report will be provided by WRCA to the ATI as a separate deliverable item. This report contains the deliverables provided by WRCA to the ATI for the Market Assessment.

2. Goals and Objectives of the Weirton Port District

During the course of gathering information for the Market Assessment, WRCA representatives have met with the Weirton Port District on several occasions, both at formal Port District Board of Directors meetings, as well as with individual Port District Board members. At this time, WRCA understands the goals and objectives of the Weirton Port District to be as follows.

Primary Goals

- Support existing industries and existing jobs
- Stimulate creation of new jobs in the Weirton tri-state area
- Promote diversification of employment base
- Enhance and add to the existing tax base

Strategies for accomplishing the primary goals include:

- Lower freight transportation costs by promoting and providing improved transportation infrastructure including a public port and related improvements
- Develop and provide additional sites for expansion of existing industries and attraction of new industries
- Market and promote the Port as a stimulus for regional economic development

Tactics identified by Weirton Port District officials for implementing the strategies include:

- Work with local, state and federal authorities as well as private entities for the development of the Weirton Port
- Evaluate potential markets
- Identify site or sites for the port complex
- Define areas that may be used for industrial sites or an industrial park
- Develop a physical facilities plan for short term and long term implementation
- Define a long term plan for marketing and operations of port complex
- Identify entity or entities that will own the land and facilities (to the extent possible obtain ownership and control of the facilities)
- Identify funding sources, funding recipients and other requirements such as permit requirements, environmental requirements, etc.

This study of the potential for development of Brown's Island is in the context of accomplishing the overall goals of the Weirton Port District and will help in positioning the Port District (and WVPPA) to respond to a unique opportunity. The Port District or WVPPA may have the potential to acquire all or parts of Brown's Island, as well as some portions of land and cargo handling facilities on the West Virginia mainland across from Brown's Island. The site is presently owned and used by Weirton Steel Corporation. Acquisition or transfer of ownership of parts of this property and facilities have been discussed in general terms but there is nothing definitive at this time.

Considering the time required to obtain vital information needed to make an informed decision, the WVPPA is providing the Brown's Island Port Development Study, including this Market Assessment, to the Weirton Port District as one element in the process of being prepared to react to future opportunities. While the scope of this effort is focused on Brown's Island, prior studies have examined other sites in more detail. A review of relevant data from previous studies is contained in the following chapter of this report.

3. Previous Studies

Various prior studies relative to the greater Weirton area were reviewed and considered in preparing this market assessment for Brown's Island. These reports included:

- Weirton Port & Industrial Centre (August 1995)
- Waterfront Facility and Landside Infrastructure Report Starvaggi Site (November 1997)
- Master Plan for Weirton Port and Industrial Centre (December 1997)
- City of Weirton 2000 Comprehensive Plan Update (2000)
- Weirton Intermodal Port Study (May 2000)

In addition, various agencies provided data for review, including the Weirton Port District, the West Virginia Public Port Authority, the City of Weirton, the Brooke-Hancock-Jefferson Metropolitan Planning Commission and the U.S. Army Corps of Engineers. The review of available information was important to provide background data and understanding of previous studies related to proposed port sites.

The studies done in 1995 and 1997 primarily focused attention on the Starvaggi site, downstream from Brown's Island. The work done in 2000 included a comprehensive plan for the City as well as a study by the University of Virginia which contained interesting observations on the future of the upper Ohio Valley steel industry, and scenarios under which it may thrive or decline, including discussions of potential for transforming the process used to make steel from an integrated mill to a mini-mill concept. This potential transformation to the mini-mill concept could alter the types and sources of raw materials and could increase the need for enhanced river terminal capabilities.

One example would be the much larger quantities of scrap steel and enrichment products (DRI or HBI) which would be required for a mini-mill electric arc furnace operation. Another scenario discussed was the potential for importing steel slabs or billets for final finishing at the existing mills. Depending on the source location, this scenario could also have a profound impact on potential barge shipments. For example, if the slabs were imported from a Latin American country, a logical point of entry would be a Gulf Coast port, which would place the cargo on a trade path parallel to the natural run of the inland river system.

These potential changes in the fundamental methods of producing steel in the Weirton area could therefore impact barge transportation (and port development) in two ways: first the quantities of barge-compatible materials would increase greatly, and second, there are substantial sources which are south of the United States, making the trade path amenable to barge transportation.

4. Characterization of Existing Waterborne Commerce

The portions of our nation's inland waterway system relevant to Weirton are shown on ***Exhibit 1***, including a network of natural rivers and man-made impoundments, with a system of locks and dams constructed and maintained by the U.S. Army Corps of Engineers to provide a minimum nine-foot-deep channel for commercial navigation and linking the Weirton area to deep water ports at New Orleans, Louisiana (via the Ohio and Mississippi Rivers - 1872 miles), and Mobile, Alabama (via the Ohio and Tennessee Rivers and the Tennessee-Tombigbee Waterway - 1535 miles).

In the United States, locations on rivers are designated by river mile, with mile zero at the downstream end of all rivers except the Ohio River. River miles on the Ohio begin at mile zero in Pittsburgh where the confluence of the Monongohela and Allegheny Rivers form the Ohio, and end at mile 981 where the Ohio joins the Mississippi River near Cairo, Illinois. The Brown's Island site is located near Ohio River Mile 62, or 62 river miles downstream from Pittsburgh.

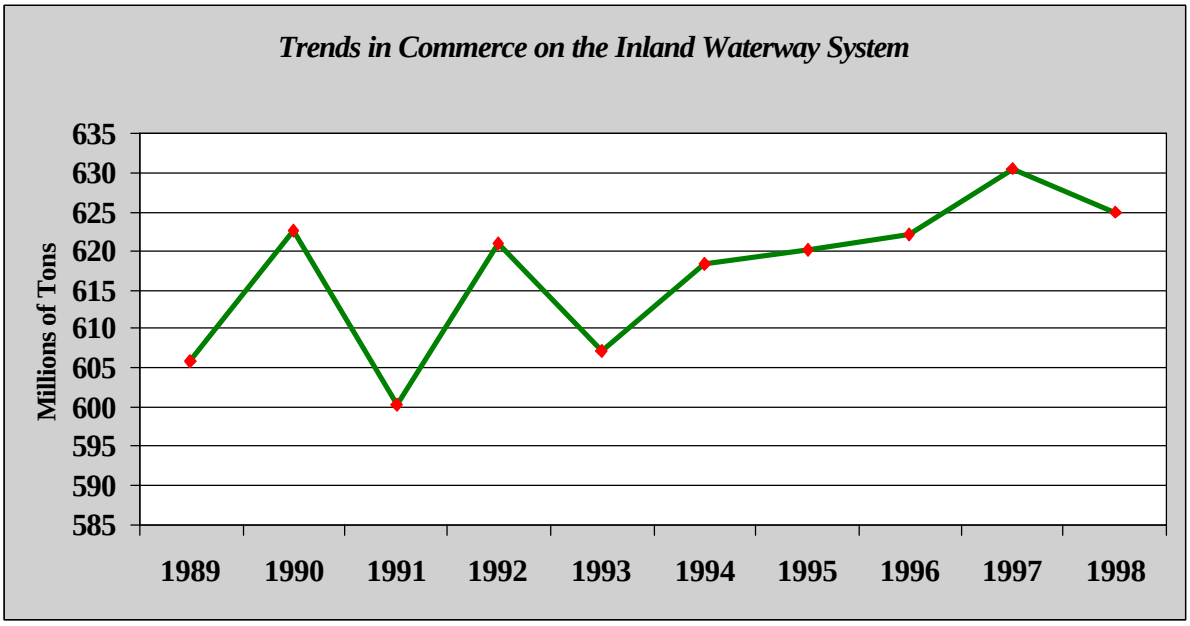
4.1. General Characteristics of Inland Waterway Transportation

A standard jumbo barge (195 feet long x 35 feet wide) carries the equivalent of 15 to 20 railroad cars or 50 to 60 trucks depending on the density of the cargo or commodity. On the Ohio River, barges typically move in fifteen barge tows. A single fifteen barge tow carries the equivalent of 225 to 300 railroad cars or 750 to 900 large trucks. The movement of commerce on our nation's waterways greatly reduces the wear and tear on public highways and bridges. Statistics also show it significantly reduces the number of traffic accidents, by reducing the number of vehicles on our highways and the number of vehicles at railroad grade crossings.

In 1998, over 625 million tons of commerce moved on our nation's inland waterway system. ***Exhibit 2*** shows the trend in commerce on our nation's inland waterway system, as well as the characteristics of the goods and commodities moved.

On the Ohio River, waterborne commerce in 1998 amounted to over 278 million tons, with the majority of the tonnage consisting of coal, petroleum and petroleum products, chemicals, crude materials, primary manufactured goods, and food and farm products, as depicted in ***Exhibit 3.***
The traditional unit of measurement for waterborne commerce is tons. For example, in 1999, over 75 million tons of goods and commodities were moved into or out of the State of West Virginia by barge. With respect to economic development and economic impact, it may be more relevant to quantify the value of such cargo. In 1999, the value of goods and commodities moving into or out of West Virginia by inland river barge exceeded $5.1 billion.

Exhibit 1. Inland Waterway System



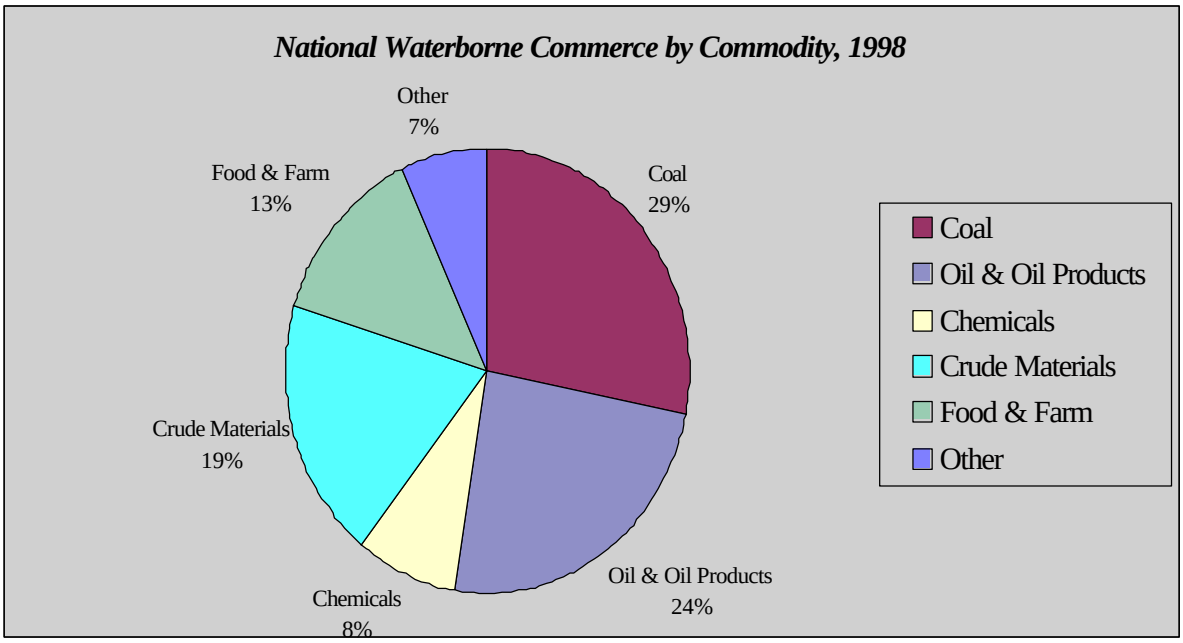
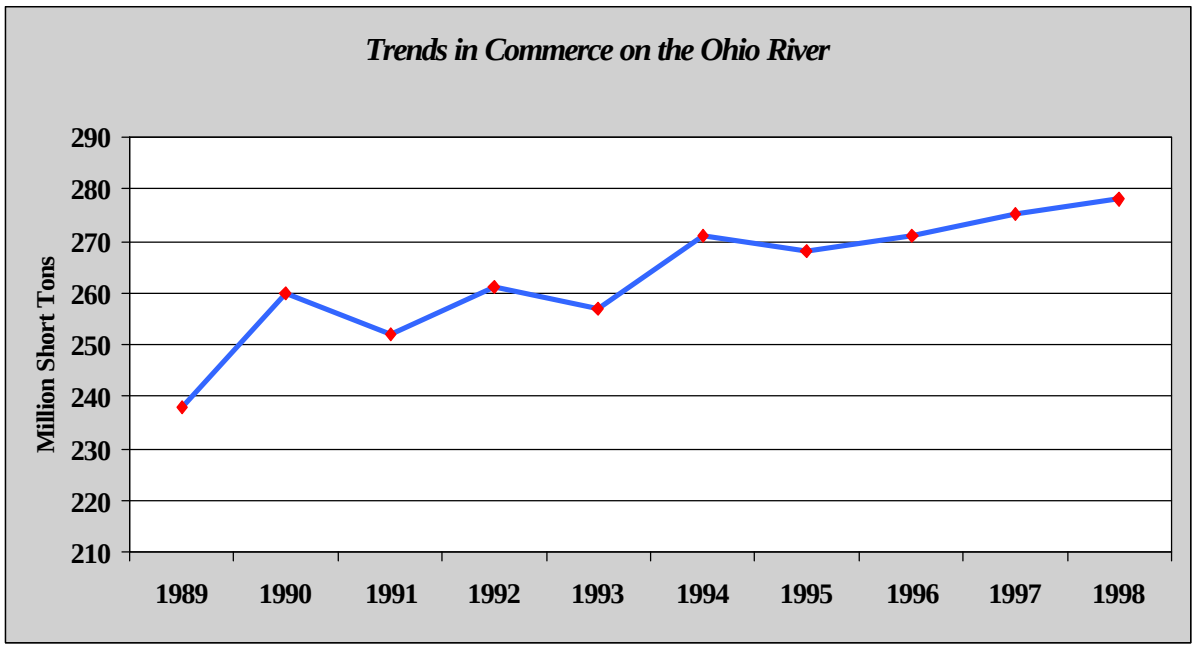


Exhibit 2. Characteristics of Inland Waterway Commerce



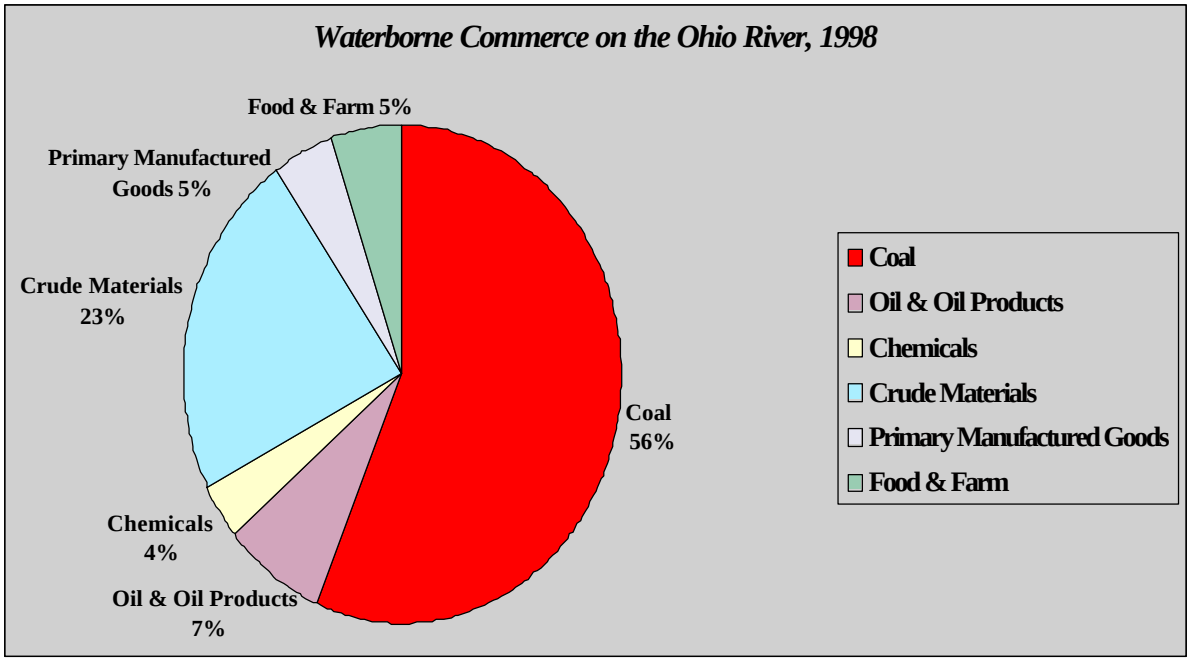


Exhibit 3. Characteristics of Commerce on the Ohio River

As shown in ***Exhibits 4 and 5***, coal is by far the largest commodity classification, accounting for approximately 76% of West Virginia's waterborne tonnage. It is important to also note the value of goods shipped by water, with some categories being especially relevant to Weirton. For example, the category for iron and steel accounts for only 2% of the tons shipped, but accounts for 13% of the value shipped.

The presence of waterborne transportation also has an impact on rail rates. Throughout the country, where barge transportation is available, rail rates are generally close to the barge freight rates. Where barge transportation is not available, rail rates can be just under truck freight rates and still be competitive. This has a significant impact on the cost of doing business for industries in which the cost of transportation for raw materials and/or finished products is a significant percentage of the cost of goods sold.

4.2. Waterborne Freight and Commodity Movements Near Weirton

The Ohio River navigation system includes a series of locks and dams. The U.S. Army Corps of Engineers operates these locks and dams and is responsible for maintaining the navigable channel. Pike Island Lock and Dam is located at Ohio River Mile (ORM) 84.2. Brown's Island is situated on the right descending bank of the Ohio River navigation channel between ORM 60.8 and 63.5. ***Exhibit 6***, an excerpt from the Ohio River navigation charts, shows the relative positions of the navigation channel and Brown's Island. Note that the right descending bank of the Ohio River, on the Ohio side of Brown's Island, is not navigable for commercial vessels. In addition to shallow water and rock projections, there is a submerged dam near ORM 61.3.

Once a barge tow has passed through a lock on the upper Ohio River, transit time within a pool and the related cost of moving the goods therein is typically nominal. Time spent in the process of locking through, however, can be significant. Barge terminals on the Pike Island Pool enjoy the advantage of access to the greater Pittsburgh market via a four lane divided highway, US 22, and avoid the time consuming process of navigating through four additional locks required to travel by River from Weirton to Pittsburgh.

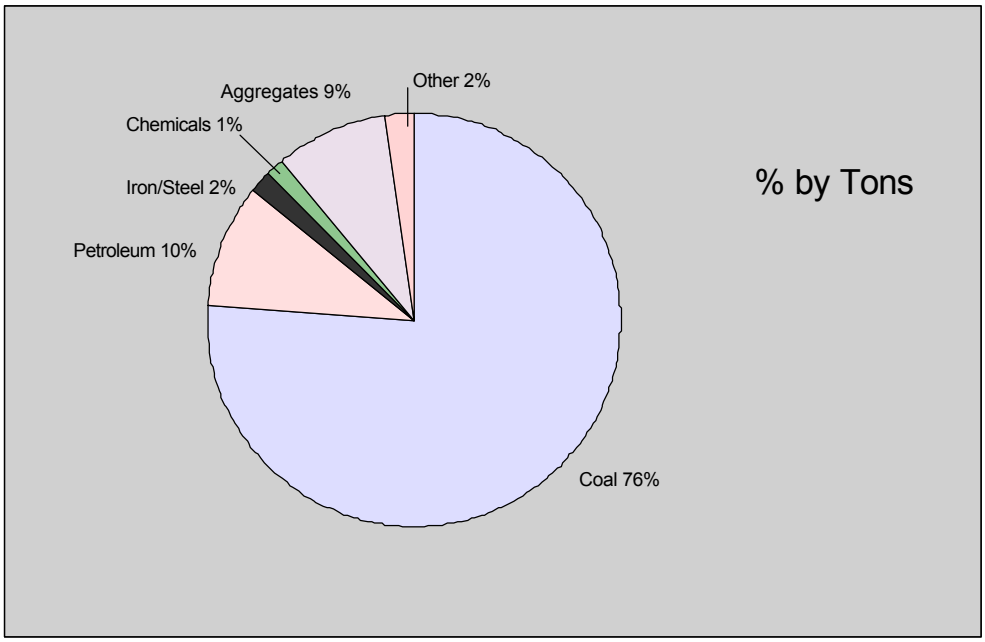
On the Pike Island Pool (ORM 54.4 to 84.2) primary upbound tonnage consists of coal and coke--showing an very slight upward trend during the past five years and comprising 34% of total commodities moving up river toward Pittsburgh in 1999, as illustrated in ***Exhibit 7***. Ores, slag and scrap (23% in 1999), as well as petroleum and chemicals (22% in 1999) also showed a slight upward trend over the past five years. Over 2 million tons of iron and steel moved up river each of the past three years.

Primary downbound tonnage on the Pike Island Pool also consists of coal and coke, comprising

Exhibit 4. Waterways Commerce - to, from, and within West Virginia, 1999

Commodity	Shipped	Received	Intrastate	Total	Value
	(Tons x1000)	*(Tons x1000)*	*(Tons x1000)*	*(Tons x1000)*	*(Millions of $)*
Coal	38,869	6,123	12,441	57,433	$2,194
Petroleum	5,275	881	1,243	7,399	$1,066
Iron/Steel	408	948	**	1,355	$661
Aggregates	398	6,026	323	6,747	$367
Chemicals	228	771	36	1,035	$556
Ores/Minerals	**	605	0	605	$47
Grain	**	0	0	0	$0
Other	89	883	28	1,000	$237
Total	**45,268**	**16,236**	**14,071**	**75,574**	**5,128**

** Insufficient barge operators to release this tonnage - included in "Other Commodities"



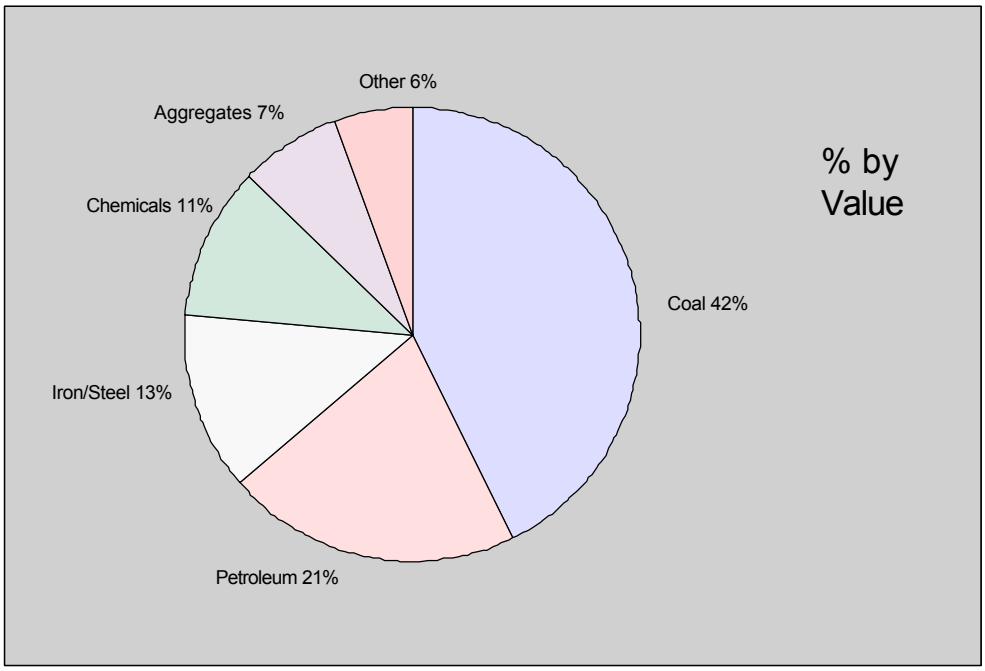


Exhibit 5. Characteristics of West Virginia Waterborne Commerce in 1999

Echibit 6. Location of Brown's Island on the Ohio River Navigation Charts

	1995	1996	1997	1998	1999
Coal & Coke	14742	14480	13185	16011	15540
Ores, Slag, Scrap	9039	9196	8033	8218	10687
Petro-Chem	8588	8909	9483	9310	10099
Iron & Steel Products	1954	1999	2169	2306	2133
Other Total	6099	6106	6386	6984	7542
Total	40422	40690	39256	42829	46001

Coal & Coke fluctuated from 1995 - 1999 ending with a 5% increase in 1999. Ores, Slag, Scrap and Petro-Chem were s
wlath Ores, Slag, Scrap increasing 14% over 1995, and Petro-Chem with a 15% increase in 1999. Iron & Steel Product
increased 10% over 1995. Other commodities in Other Total were stable and increased 15% from 1995 to 1999.

Petro-Chem: Petroleum Products
Other Total: Construction Materials, Plastics, Wood, Fertilizers, Paper
Aluminum, Food & Farm, Machine & Equipment, Other, Lime & cement

Exhibit 7. Upbound Commerce on the Pike Island Pool

approximately 60% in 1999, but declining by 28% during the period from 1995 to 1999, as shown on ***Exhibit 8***. Over 1.5 million tons of iron and steel moved downbound, away from Pittsburgh, in 1999. Inbound and outbound data for the Pike Island Pool is not available because there are too few industries is certain categories, and disclosing the data would violate confidentiality agreements.

When the segment of the Ohio River from the Point at ORM 0.0 (downtown Pittsburgh) to Pike Island Lock and Dam at ORM 84.2 is examined, upbound tonnage is somewhat more evenly distributed as shown on ***Exhibit 9***. Coal and coke (28%), petroleum and chemicals (24%), ores-slag-scrap (21%) are dominant commodity categories moving upbound in 1999. Over 3 million tons of iron and steel products (5% of all tons) also moved up river within this segment in 1999.
Downbound tonnage between ORM 0.0 and 84.2 is dominated by coal and coke, but this commodity category has declined from 39.9 million tons in 1995 to 30.1 million tons in 1999. Iron and steel products made up just 1.8 million tons, or 3% of the total tons, in 1999 as shown on ***Exhibit 10***.

Statistics for inbound and outbound cargo are also available for the 0.0 to 84.2 segment. Inbound is defined as cargo which is unloaded from a barge within the river segment. Outbound is material which is loaded onto a barge for shipment (either upbound or downbound). Inbound tonnage on this river segment decreased by 36% between 1995 and 1999, with a decline of 89% in coal and coke and an increase of 232% in construction materials as shown in ***Exhibit 11.*** A change in a major coal contract changed the dynamics of river commerce, and coal was delivered via rail rather than barge which accounted for most of the lost tonnage. Construction materials increased due to major projects in the Pittsburgh area. ***Exhibit 12*** shows relatively steady tonnage outbound, increasing from 22.5 million tons in 1995 to 24.4 million tons in 1999, an increase of 9%.

This characterization of waterborne commerce in the Weirton area implies a mature river environment, providing certain advantages. For example, long haul barge towing service is provided by several barge lines, including Ingram Barge Company, American Commercial Barge Lines, The Ohio River Company, and others.

4.3. Overview of Public Port Development and the Competitive Environment for a Public River Port in Weirton

The definitions of a *river port* and a *river terminal* are important within the context of this Market Study. A *river port* is typically designated as an area contiguous with a navigable river delineated by river miles, and may encompass not only the river frontage but also the “hinterlands” or area

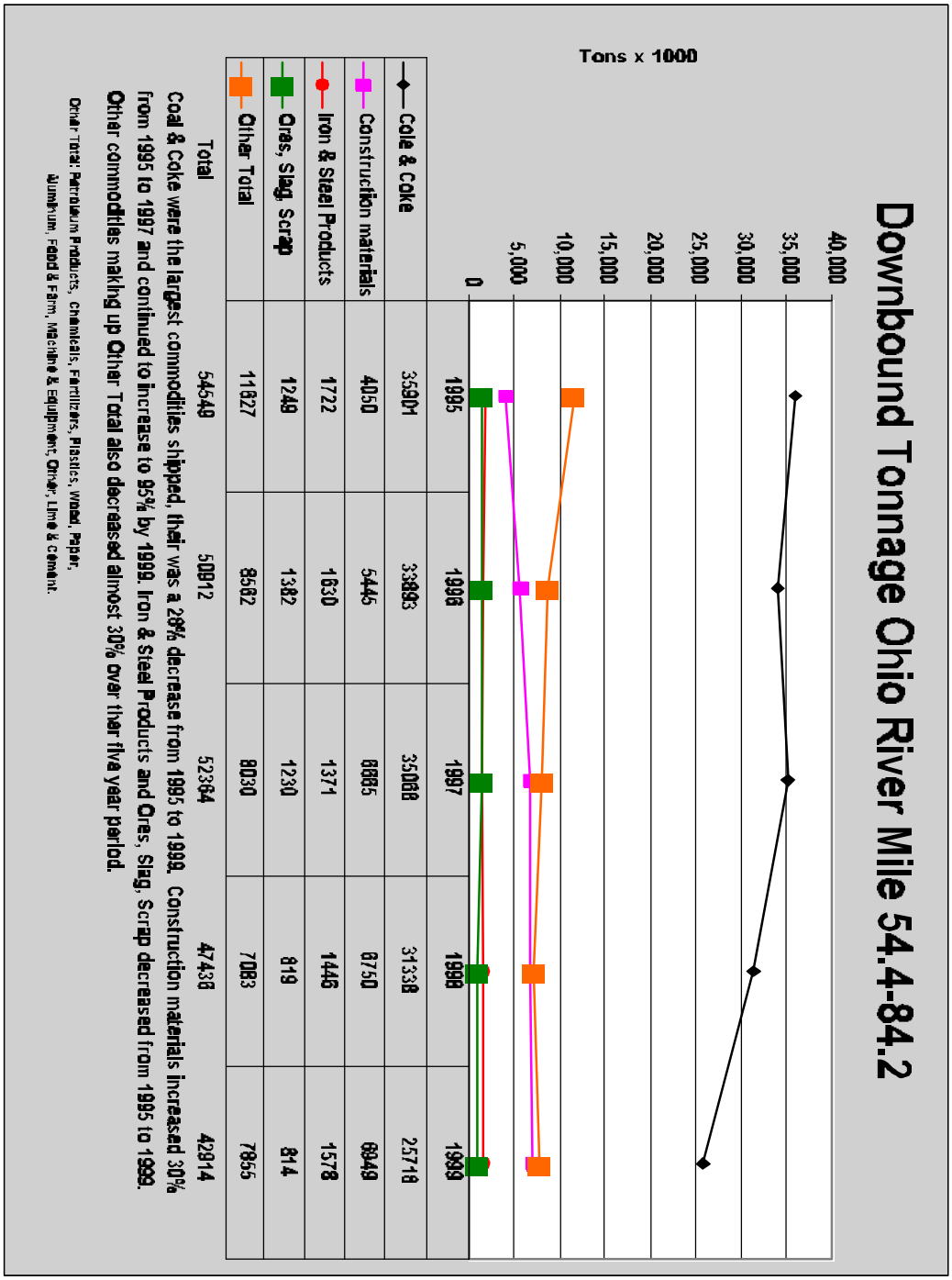


Exhibit 8. Downbound Commerce on the Pike Island Pool

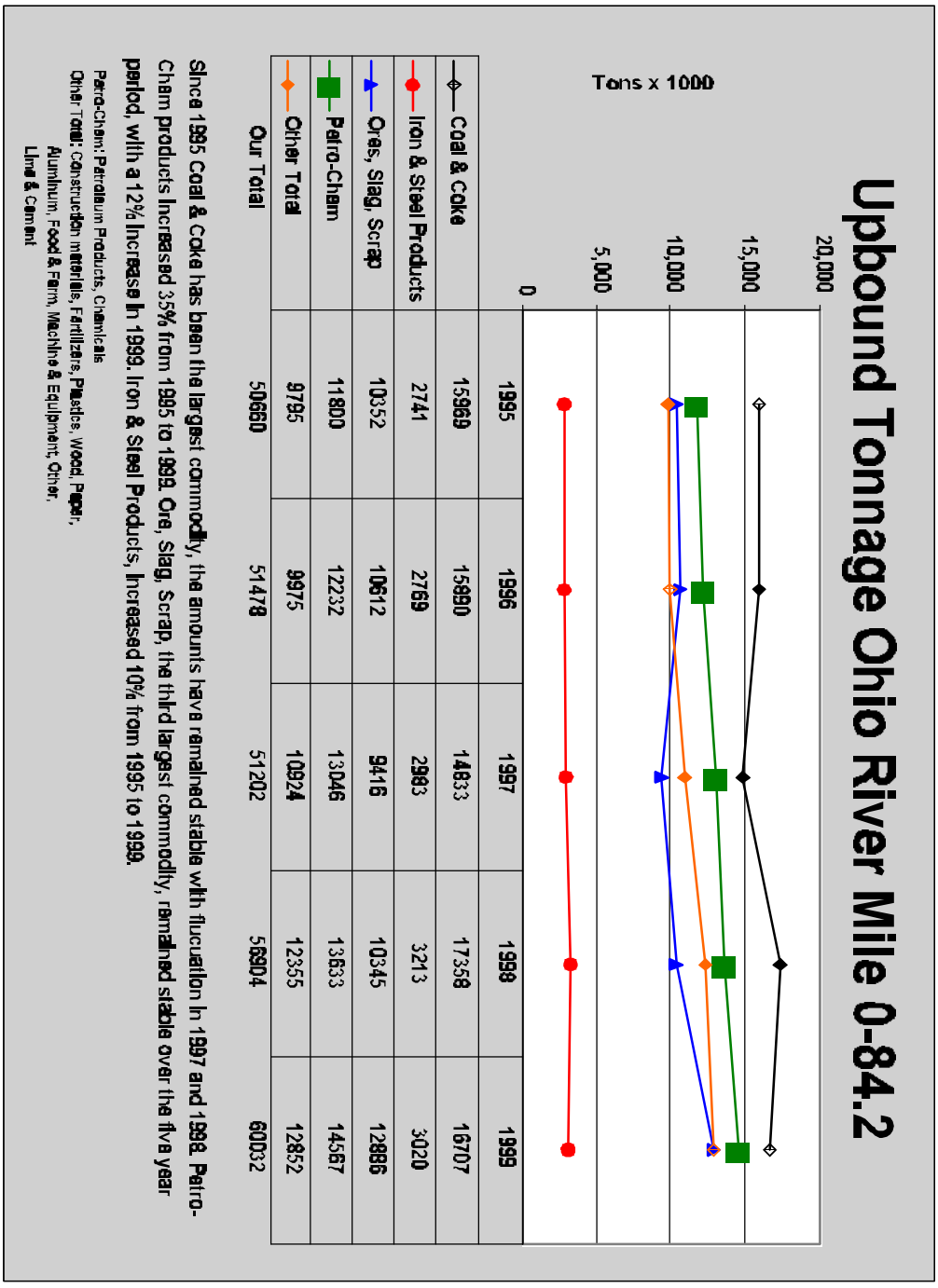


Exhibit 9. Upbound Commerce - Pike Island Lock and Dam to Pittsburgh

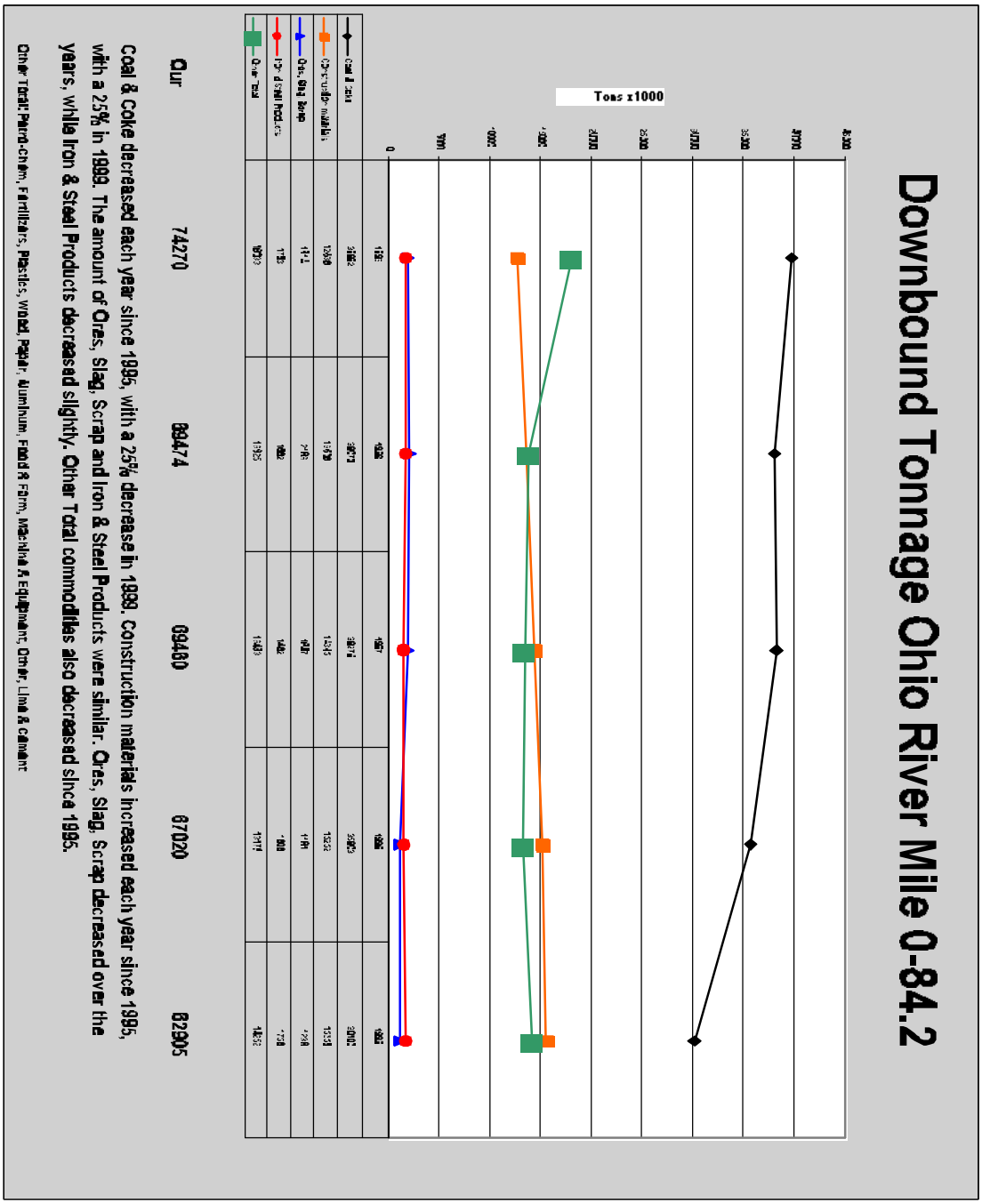
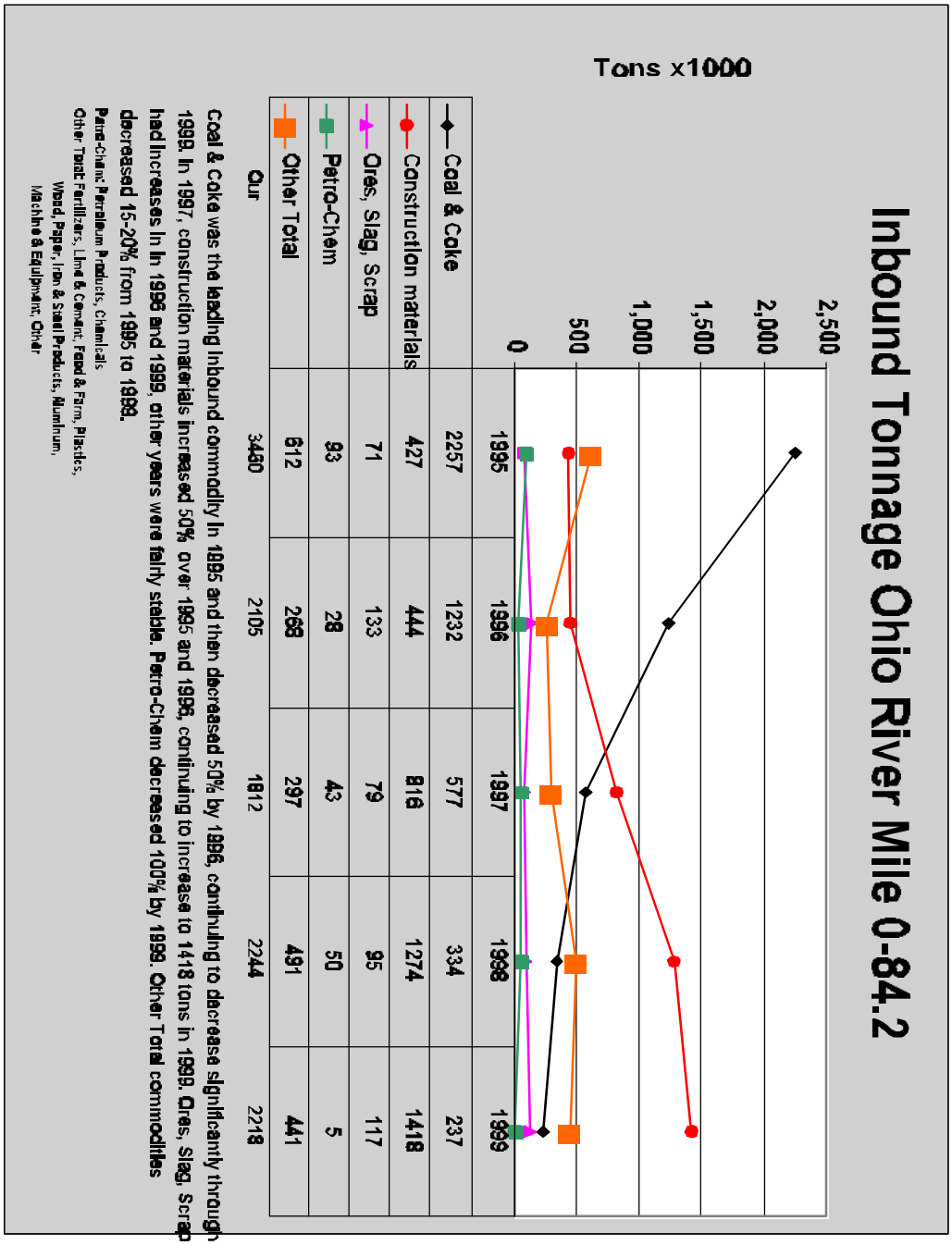


Exhibit 10. Downbound Commerce - Pittsburgh to Pike Island Lock and Dam



	1995	1996	1997	1998	1999
Coal & Coke	2257	1232	577	334	237
Construction materials	427	444	816	1274	1418
Ores, Slag, Scrap	71	133	79	95	117
Petro-Chem	93	28	43	50	5
Other Total	612	268	297	491	441

Exhibit 11. Inbound Barge Tonnage - Pittsburgh to Pike Island Lock and Dam

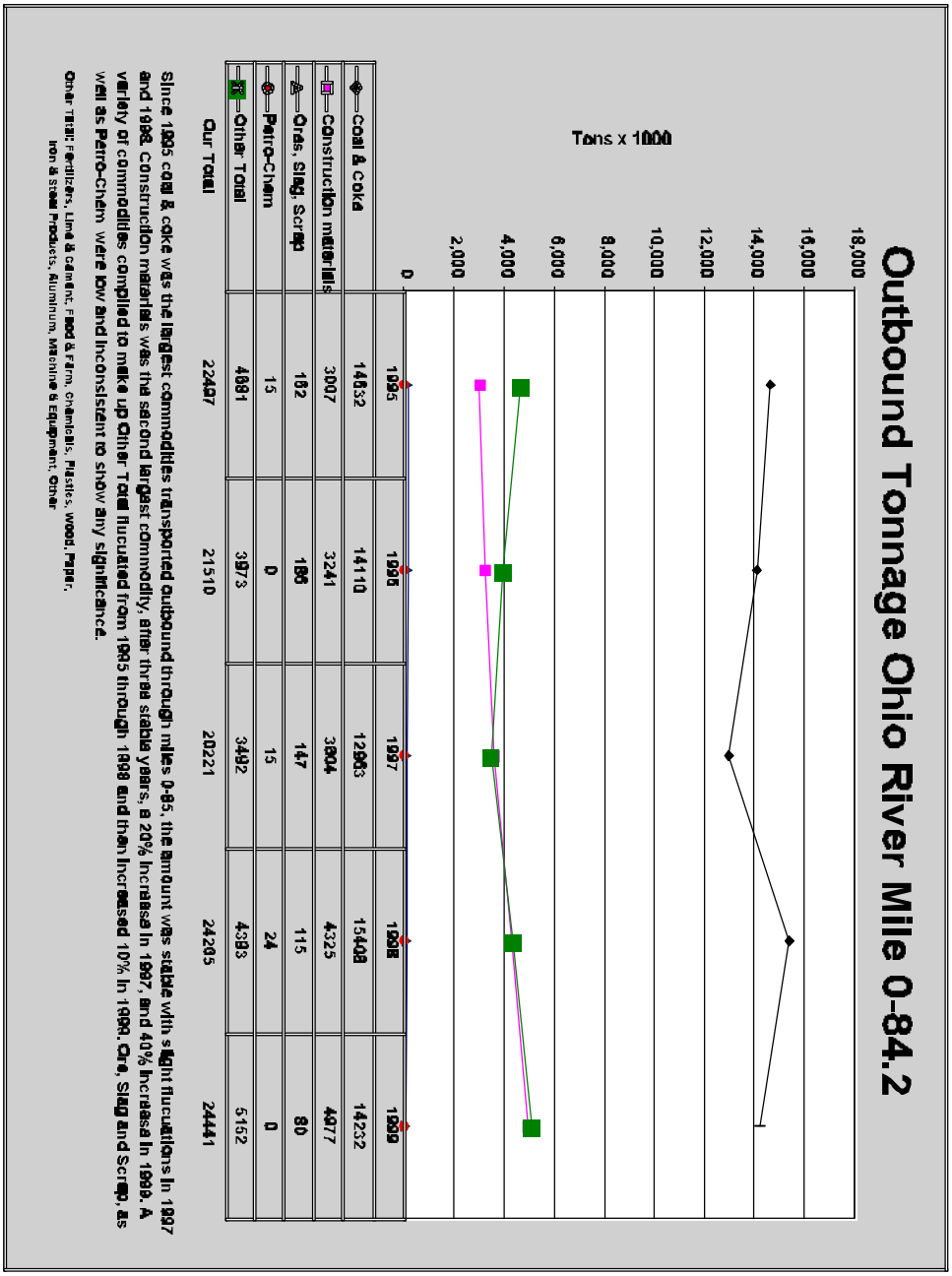


Exhibit 12. Outbound Barge Tonnage - Pittsburgh to Pike Island Lock and Dam

of market penetration. The river port may include industries, an industrial park, railroad lines, roads and utilities as well as one or more river terminals. A *river terminal* is defined as a facility at which goods or commodities are loaded or unloaded to/from a barge.

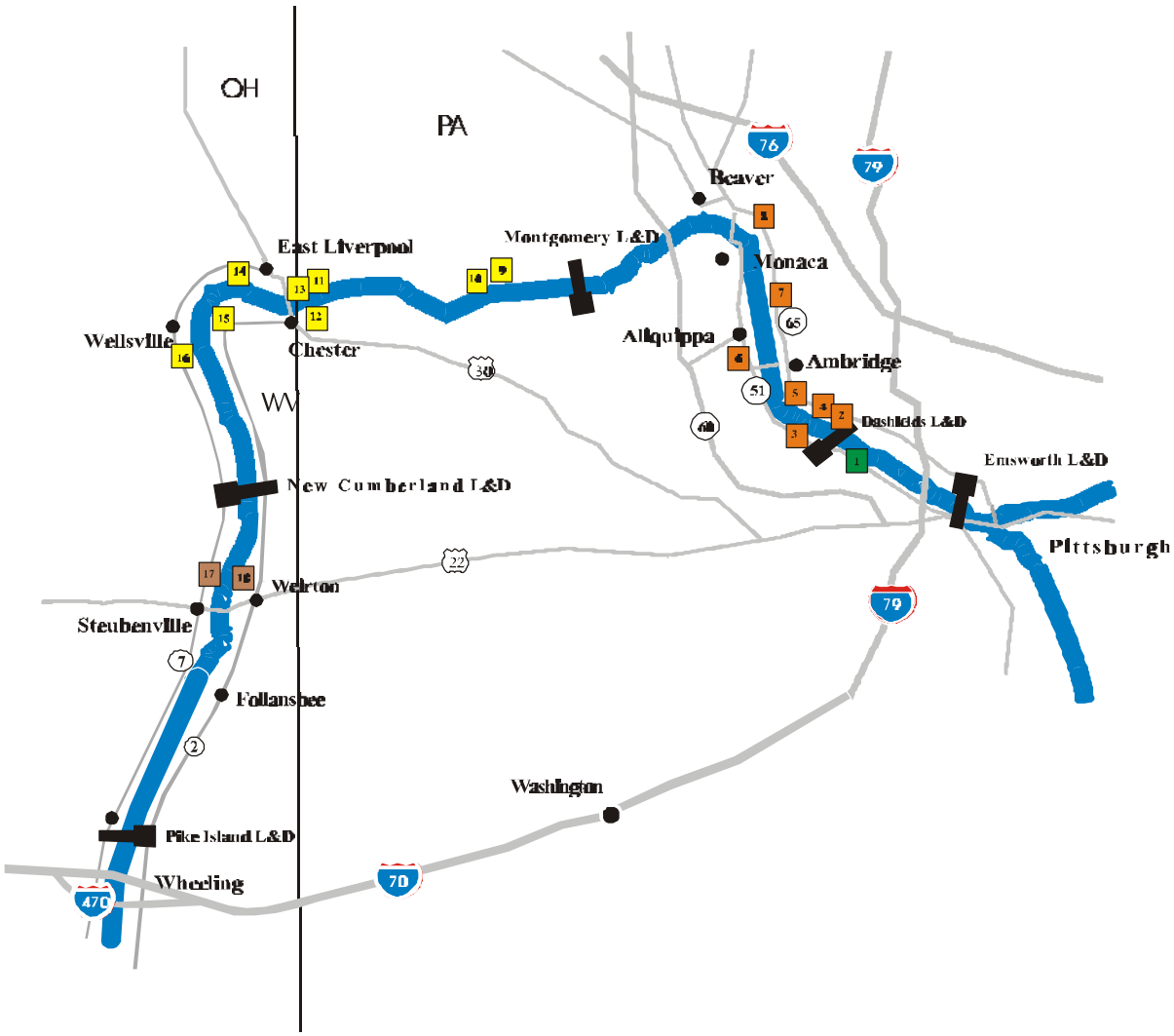
River terminals fall into two broad categories by ownership and two broad categories by use. River terminals may be owned by a public entity (such as a port authority, unit of local government or a state) or by a private corporation. By use, river terminals are categorized as special purpose or general purpose.

Special purpose facilities are typically designed to be very efficient for moving a specific cargo either inbound or outbound, but usually not both. For example, pneumatic unloading systems for cement, bucket unloaders for coal, special pipelines for liquids, and special cranes for specific steel products are common types of single purpose terminals. While these systems may not be versatile, they are normally designed to be very efficient for the handling and movement of their specific cargo, and in their specific direction (i.e., inbound or outbound). Further, a special purpose terminal may be located within a manufacturing plant with restricted access for security reasons.

General purpose facilities are usually versatile and can be used for a wide variety of applications such as loading or unloading steel coils, slabs, wood, scrap, pipe, ores or bulk materials. Equipment may include, for example, a crawler crane which can be rigged with a bucket, spreader bar, hook, clamp, magnet or other device depending on cargo handling requirements, and fork lift trucks or other machines for moving the commodities from the dock to short-term storage.
To enhance the transportation advantages of river front industrial sites, a public port authority may market some sites with direct river access for industries which require a private, special purpose terminal as part of their facility, and the port authority may also develop a public general purpose terminal for industries which may want to take advantage of the economics of waterborne transportation, but which do not generate sufficient tonnage to justify construction of their own private terminal.

There are a number of general purpose terminals between Weirton and Pittsburgh as shown in ***Exhibit 13.*** The geometry of the River provides Weirton the opportunity to participate in the Southwest Pennsylvania market area, as well as Ohio and, of course, West Virginia markets.

A brief survey of general purpose terminals in the area indicates that inside storage for higher value commodities is in demand. The primary purpose of the Brown's Island project is to stimulate economic development in the Weirton area. Sites could be developed and land could be made available on Brown's Island both for industries which require their own private special



General Purpose Terminals Between ORM 6.2 and ORM 84.2

Dashields Pool

1. Burrell

Montgomery Pool

2. Buncher
3. Three Rivers
4. Logistic Services
5. Pittsburgh Intermodal
6. Aliquippa Terminals
7. General Materials
8. W. I. Snyder

New Cumberland Pool

9. Industry
10. Arrow
11. S. H. Bell
12. Congo
13. D. W. Dickey
14. Parsons
15. Congo (Hofstetter)
16. Wellsville

Pike Island Pool

17. L & J Bowers
18. Starvaggi Industries

purpose terminals as well as for industries which need to be near a general purpose river/rail terminal.

One advantage the potential Brown's Island development could have is the availability of potential industrial sites near a general purpose terminal. The general purpose terminals shown in Exhibit 13 typically are in mature, developed areas with little or no room for contiguous industrial development. Some have room for expansion of their own facilities but others seem to be using most or all of their available acreage. Another perhaps more significant advantage is the potential to provide industrial sites with developable river frontage, allowing each industry to construct its own special purpose terminal. Land on the river, above the 100 year flood elevation, with good access to roads and utilities is extremely difficult to find between Weirton and Pittsburgh.

Since there are a number of existing general purpose terminals, but very little, if any, good industrial sites on the river near Weirton, one strategy to be considered would be to focus on development of industrial sites with river access rather than build another general purpose river terminal. On the other hand, development of a publicly owned general purpose terminal which provides services not readily available elsewhere could potentially succeed. Moreover, the decision is a matter of priorities rather than an "either-or" scenario.

Justification for a public general purpose terminal (stimulate economic development) is quantified differently than for a private general purpose terminal (make a profit as a profit center). The goals and types of benefits considered legitimate returns are much broader for a public sector development. The public sector can sometimes undertake a project which has definitive economic development benefits, but with the benefits accruing to the area economy rather than directly to the terminal as a profit center.

The business of a public river port includes providing multi-modal transportation opportunities and material handling facilities to promote existing industries within the geographic region. In addition, the public rive river port should provide property and infrastructure to allow for the development of industrial sites, warehouse facilities and terminal facilities for new manufacturing and distribution industries. Throughout this initial Market Assessment of the proposed public river port facilities on Brown's Island, this concept for a public river port was utilized.

5. Local Industry Data

A primary task in the Market Assessment has been to identify and interview key industries located in the geographic region which could have the potential to use facilities on Brown's Island. A total of ten industries were chosen for the assessment, and the list was reviewed with ATI officials. Information relative to each industry was obtained utilizing a combination of personal interviews, site visits and studies of published and unpublished data. These industries included the three steel related industries which dominate the industrial climate for the region. Data for individual industries is confidential. The market Assessment includes aggregates of the results compiled from all industries surveyed, presented with the intent of preserving confidentiality.

Each industry was analyzed to determine the following:

(1) types of products produced/processed;
(2) types of raw materials required for operations;
(3) current freight movement patterns for all commodities consumed and produced which are pertinent to the feasibility of this project;
(4) primary and secondary needs of the industry related to the handling or storage of commodities;
(5) anticipated benefits of a new public port facility on Brown's Island;
(6) potential facilities at a new port which would benefit the industry;
(7) new or expanded markets that could be created with availability of a new port; (8) forecast of potential cost savings following completion of the new port facilities.

Listings of area industries were obtained and reviewed to identify those industries most likely to have greatest potential for using waterway transportation. The best candidates were steel producers or steel related industries. As a result, all of the industries interviewed during this market assessment were directly related to the steel industry, the dominant industry for the region. Six of the industries were directly involved with production or processing of steel, with the other four involved with the processing of raw materials or byproducts of the steel industries. Discussions with the industries identified the types of products produced and the major raw materials required during the production process, with primary emphasis to identify commodities and tonnage that move by barge or could move by barge.

Based upon the business fluctuations experienced by the steel industry, commodity tonnage can vary tremendously from year to year. Some of the industries interviewed provided specific tonnage by commodity, with others only offering a range of tonnage. ***Exhibit 14*** is a compilation of types of commodities, direction of movement (inbound/outbound), range of net tons per year

Exhibit 14. Potential Shipments by Barge

COMMODITY	DIRECTION OF MOVEMENT	ESTIMATED NET TONS PER YEAR (tons x 1000)	MAJOR ORIGINS OR DESTINATIONS
Steel Coils	Outbound	450 - 850	New Orleans, LA Memphis, TN Chicago, IL Jeffersonville, IN
Steel Coils	Inbound	35 - 70	New Orleans, LA
Pig Iron / HBI	Inbound	210 - 310	New Orleans, LA
Coke	Inbound	200 - 450	Chicago, IL
Steel Slabs	Inbound	135 - 650	New Orleans, LA
Lime	Inbound	85 - 175	Varies
Scrap Steel	Inbound	24 - 90	Varies
Processed Slag	Outbound	10 - 25	Varies
Ferromanganese	Inbound	12 - 28	New Orleans, LA
Flurospar	Inbound	12 - 28	New Orleans, LA
Zinc	Inbound	6 - 16	Clarksville, TN

and major origin and destination points identified in the survey. This Exhibit is included to illustrate representative types of commodities and range of tonnages that move through the greater Weirton area via barge (or which have potential to move by barge) to serve existing industries. The totals include commodities now moving by barge as well as commodities moving by rail or truck to locations and in quantities that imply potential for moving by barge. We would not expect all of this tonnage to move through a new facility on Brown's Island, but the numbers indicate the range of potential for various commodities.

There are advantages and disadvantages to steel related industries being dominant for the region. The primary advantage is the handling of similar commodities for a variety of area industries, resulting in better utilization of equipment, warehousing and personnel due to the repetitive nature of commodity flow. This advantage remains valid during periods of a healthy steel economy for area industries. The major disadvantage for steel being the dominant industry for the area is obviously related to periods when the regional and U.S. steel markets are depressed based upon domestic and international economic conditions. During such depressed market periods, a port and material handling facility would need diversification of commodities and operations to sustain financial viability. The most successful inland port and material handling facilities in the U.S. enjoy a diversification that provides some insulation during depressed economic conditions for specific industries and commodities.

This market assessment study included discussions with existing industries relative to their current material handling operations, plus discussions with existing private port/material handling facilities throughout the region. The major commodities produced or consumed by area industries as outlined on Exhibit 13 are primarily handled by two methods: (1) handling by industry personnel and equipment at existing plant locations and (2) handling by existing port and material handling facilities in the geographic region.

Discussions with existing industries that handle their own commodities included the question: *What incentive could be offered by a new port facility to make it cost advantageous to transfer commodity handling the new port?* Potential reasons provided by industry representatives included:

(1) centralized handling of major inbound and outbound commodities for various industries;
(2) modern handling equipment offering more cost effective operations;
(3) modern, centralized warehouse for consolidation of outbound steel coil shipments;
(4) an opportunity to cease operating old plant material handling facilities, reducing maintenance costs and capital replacement costs;
(5) an opportunity to make more efficient use of personnel currently utilized for operations of in-house existing material handling facilities.

Based upon the reasons above, a new port operation would need to offer modern facilities and competitive rates to attract the commodities that are currently handled by existing industries. These initial discussions during the market assessment study explored potential use of the proposed new facilities by existing industries. More definitive discussions could explore the potential for "take-or-pay" agreements between existing industries and the new port facilities, but until there is more certainty on what will be built, where it will be located and what rates will be charged, it is unlikely that better data will become available. Even when facilities are in place, "take-or-pay" agreements are not common. The WVPPA and Weirton Port District will, at some point, make a go or no-go decision based on best available data but with no guarantees.

To evaluate the competitive environment for general purpose river terminal services, visits were made to various existing port and material handling facilities throughout the region. These existing facilities offer equipment, warehousing and personnel to handle commodities used by the industries in the region. Even though many of the facilities are aging, service appears adequate to handle current tonnage offered by existing industries. Some of the existing port facilities offer cost advantages to specific existing industries due to the close proximity to plant operations.

It is important to note that industries consider a variety of complex factors in making decisions on whether to use in-house services or to ship through a third party provider, and if shipping through an independent river terminal, which one to use. One major consideration is the total door-to-door cost which can include local delivery on each end of the move, handling costs, and long-haul transportation costs. For example, costs for a barge move can include loading a truck at the plant, transloading to a barge at a river terminal, the cost of the barge haul, unloading the barge and loading a truck for final delivery, and unloading the truck at the destination. The costs incurred by a customer at a new facility on Brown's Island is but one component of the total cost for the overall move. There are external factors, outside the control of any public or private terminal operator, that can greatly impact business volumes.

Discussions with representatives from existing port operations included the considerations regarding potential for a new port and material handling facility to be constructed on Brown's Island. The consensus of opinion indicated that commodity handling at these existing port facilities could be dramatically affected if the new port offered modern facilities at competitive rates. The continuing feasibility studies for a port facility on Brown's Island could include consideration for use of existing area facilities as commodity handling terminals, with development on Brown's Island primarily for attraction of new industry.

From a marketing perspective, a new multi-modal port facility on Brown's Island would be designed and constructed based upon the strengths of existing industries, plus the design would

include facilities to attract new industries to the area. The proximity of Weirton to major industrial cities and population centers offers the opportunity to explore the location of various types of companies that could utilize all modes of transportation. Based upon observations, discussions and experience, the following is a list of major requirements for a full service multi-modal facility:

- Class I steel warehouse, with covered bridge crane
- Warehousing for non-steel commodities
- Outside storage for various commodities
- Crane for handling commodities other than coils
- Adequate access by road
- Adequate access by rail
- Adequate access by barge
- Industrial sites with infrastructure
- Tanks or silos for storage of bulk commodities
- Accessory equipment including forklifts, scales, loaders

Based upon discussions with the major steel companies in the area, the primary support facility lacking in the region is a Class I steel warehouse. Such a facility would provide a covered barge loading/unloading crane, climate controlled warehouse space and modern truck and rail handling facilities. With the addition of such a facility in the area, companies would have the opportunity to consolidate steel coil shipments for best utilization of freight carriers, thus obtaining the most economic rates for shipments. In addition, a modern steel warehouse would provide ample space for storage of production as dictated by market conditions within the industry. Representatives from the major steel companies in the area indicated that they have a lack of available warehouse space to provide storage of production awaiting shipment and a severe storage problem when production remains constant and sales experience a downturn.

6. Freight Rate Comparisons

During the last calendar quarter of 2000, information was obtained for the cost of moving steel coils from the Weirton area to various locations. These locations include customers of Weirton area steel producers. The data was obtained by personal contacts with barge lines, rail freight carriers and trucking companies, using the origin-destination pairs defined below, and reasonable quantities for various materials.

As shown below, significant cost savings are available if the steel is moved by barge. According to the shippers, one factor in the decision to ship by barge or a land based mode is the quantity moving to a given destination on a given day. A barge can carry 1500 tons, or the equivalent of 20 to 30 rail cars or 50 to 60 trucks, depending on the size of the coils being shipped. Consolidating shipments at a common location would enable the local steel producers to combine their loads. In many cases, the larger consolidated load quantities would enable local shippers to take advantage of savings available by using barge transportation.

The destination points used in this comparison are all accessible by barge. There are other inland destination points that are accessible only by rail or truck, but for which part of the long move could be made by barge. In some instances, the transit time by barge is an issue. It is usually quickest to ship by truck. Truck is nearly always the most expensive mode. Rail can be an economical alternative, offering some savings over truck and requiring less quantity for a full load than barge. Truck and rail can also deliver more directly to customers, although at a premium price. It would be best for a new commodity handling facility in the Weirton area to have easy inbound and outbound access to all three major modes: barge, rail and truck.

Freight Rate Comparisons for Shipping Steel Coils to Representative Destinations

Destination	Barge Rate (per net ton)	Rail	Truck
Jeffersonville, IN	$6.00	$24.00	$25.80
Nashville, TN	$7.50	$31.00	$32.40
Memphis, TN	$9.00	$36.00	$49.40
New Orleans, LA	$9.50	$44.00	$65.20
Chicago, IL	$10.00	$24.00	$26.80
Little Rock, AR	$12.00	$42.00	$56.20

7. Implications for Physical Facilities

A review of the various commodities currently used by existing industries indicated the need for storage facilities adaptable for specific commodity requirements. ***Exhibit 15*** lists commodities with high potential for a new Brown's Island facility and indicates the type of storage typically required for each. The physical facilities plan will use this data, along with estimated quantities, to determine the types and sizes of warehouses, hardstand for outside storage areas, tanks or bins, and operations areas.

Advantages and disadvantages for the location of a multi-modal facility on Brown's Island will be addressed in the physical facilities plan from an engineering, construction and economic perspective. However, during the marketing study of the proposed project, it was imperative to review the proposed site from market related perspectives. The items addressed in this section are based upon observations and discussions of both opportunities and constraints relative to Brown's Island.

7.1. Size

Brown's Island includes a total of 242 acres. Quantifying the total acres useable for port and industrial park development is important for calculating potential benefits. Approximately 120 - 140 acres are below the 100 year flood elevation, with the balance of the Island above the 100 year flood elevation. The Island includes land built up over the years with fill material from a variety of sources including plant operations, by-products, scrap and construction materials. Further hydraulic, geotechnical and environmental studies will be required to determine the exact acreage that should be available for material handling facilities or industrial sites.

7.2. Accessibility

By definition, a multi-modal material handling facility has access to barge, rail and truck transportation. The Brown's Island site offers some physical and administrative challenges for the construction of access to rail and truck traffic.

At present there is no rail access to Brown's Island. Alternative construction methods and related costs are being reviewed but preliminary opinions indicate costs for a new railroad bridge may be prohibitive. As an alternative, preliminary discussions have been held regarding access to rail from the West Virginia main land side of the Island on land and trackage now owned by Weirton Steel. The goal is to have access to rail sidings such that loading and unloading operations provide cost effective rail access for the Port district and do not hinder Weirton Steel activities.

Exhibit 15. Typical Storage Requirements

Commodity	Type of Storage Typically Required	Comments
Hot Rolled Steel Coils	Outside Hardstand	Commonly shipped by barge
Cold Rolled Steel Coils	Inside Climate Controlled Warehouse	Sometimes shipped by barge but often by other modes
Steel Slabs	Outside Hardstand	Could see increase
Special Steel Slabs	Inside Warehouse	
Pig Iron / HBI	Outside	Large volume could grow if there is shift to mini-mill
Coke	Outside or Inside	Depends on type and grade
Scrap Steel	Outside	Adjacent to rail siding
Slag Products	Outside	Processing and storage area required
Lime	Tanks / Silos	In proximity to barge discharge area
Ferromanganese	Inside or Covered	Truck loadout
Flurospar	Inside or Covered	Truck loadout
Zinc	Inside Warehouse	Bundled or Palletized
Containers	Outside Hardstand or Special Pavement	Potential for future. Storage area surface depends on handling equipment

Regarding truck traffic, there are two existing bridges to Brown's Island, one to Ohio and the other to West Virginia. The bridge connecting to the Ohio side of the river appears to be inadequate for heavy truck traffic associated with a port operation and would most likely have to be replaced. The bridge to Ohio does connect to an existing diamond interchange on State Route 7, a four lane highway which runs parallel to the Ohio River.

Structurally, the bridge connecting to the West Virginia side of the river appears to be very substantial, but it is located on Weirton Steel property and owned by the company. Further, traffic must pass through the steel mill site to connect with the public road system. Preliminary discussions are underway regarding alternatives for providing access to a public port development Brown's Island, passing through but minimizing disruption to the steel making operation.

The Island offers adequate opportunity for barge transportation facilities, with a navigable channel on the east (West Virginia) side. The back chute on the Ohio or west side of the Island is not navigable for commercial waterways transportation. Based on our experience, it would be very expensive, and probably very difficult from an environmental perspective, to dredge a new channel, remove the remnants of a submerged dam and make the back chute navigable. Benefits would also be questionable since Brown's Island is relatively narrow.

7.3. Location

The geographic location of efficient river terminal facilities on Brown's Island would be most convenient for two industries: Weirton Steel and International Mill Service. Both were interviewed during the market assessment phase of the project. The location on Brown's Island offers little or no geographic advantage for the other industries in the area when compared to existing material handling facilities. Assuming bridge work is done and access issues are adequately addressed, the location of the Island offers good linkage to area highways, with connectors to local and regional truck routes and major Interstates. The location relative to rail traffic would require access on the West Virginia or Ohio mainland unless a railroad bridge is built.

7.4. Availability

Based upon current information, the demolition of the coke plant on Brown's Island will not commence before the first quarter of calendar year 2002. Weirton Steel officials estimate at least the project duration will be in the range of 12 to 15 months. Following complete demolition of the coke facility, environmental assessments will require additional time for completion. Based upon this data, it would be at least 2003 or 2004 before any assurance could be provided that the

Brown's Island site is environmentally safe for a significant investment in design, construction and operation of a river port and industrial park. The total time required for design and construction would be determined by the facilities to be considered, but based upon information available at this time, it is not likely that a new port facility on Brown's Island would be available for operation before the 2005 - 2006 time frame.

In the short term, it will be difficult to market port services to potential customers, considering the time frame for providing services at the proposed Brown's Island facility. Promoting the idea of the Port, however, is timely and necessary to keep the objectives of the Weirton Port District highly visible in the business community as well as at local, state and federal levels, and to place the Weirton Port District in position to obtain adequate funding and political support required for successful implementation of the project.

8. Summary, Conclusions and Next Steps in the Process

The WVPPA and Weirton Port District are accumulating information which is needed to be in position to make decisions regarding the future direction for a new public port. Considering the time required to plan, design and build new port facilities, these actions are much needed and timely. The dominant industry in the area is steel production, finishing and distribution. The steel producers are facing stiff competition from foreign imports as well as from domestic mini-mills.

The current market conditions for the existing area steel production companies is variable and the economic atmosphere for the region is therefore somewhat uncertain. One facility that could assist these existing steel production companies is a modern Class I steel warehouse. The warehouse could become a focal point for consolidation of products from various manufacturers, and could facilitate combining shipments and create additional opportunities for using more efficient modes of transportation.

The short term utilization of Brown's Island for the multi-modal transportation facility and industrial complex does not appear to be feasible because the property is not going to become available until after the coke plant demolition and environmental remediation projects are completed. Consideration should be given to the long term utilization of Brown's Island as an industrial complex, with movement of commodities by truck and barge only.

With steel related industries dominating the area economy, some major factors require consideration relative to future construction and marketing of the multi-modal transportation facility and industrial complex.

(1) If one or both of the major steel producers in the area discontinue part or all of their current operations, what would be the supply line for steel products required for operation of the various coil processing and finishing companies in the area? Could the port facilities or Class I warehouse be used for imported coils?

(2) If the major steel producers dramatically alter their method of operation and convert to a "mini-mill" concept, what changes in the commodity flow would occur and how would the facility requirements at the proposed port facility be altered?

(3) If the two major steel producers should merge into one operating company, what inbound commodities and outbound production could be centralized for more efficient handling/storage?

The Port Authority should have an experienced representative either on staff or retained on a contract basis to coordinate promotion and project development efforts for the proposed public riverport. Initial responsibilities to be addressed include the following:

- Develop a working relationship with the existing area industries to remain informed about present operations and future plans as they would affect the proposed port development.

- Work with area economic development organizations relative to prospective new industries that could locate at the proposed port.

- Attend meetings of the Weirton Port Authority, West Virginia Public Port Authority and Weirton Port Project Workshops to remain informed about design plans, project timetables and funding for the project.

- Utilize port related marketing experience to identify commodity movement on all transportation modes that could potentially move through the proposed port, or through existing general purpose river terminals in the Weirton area. These would include commodities for existing Weirton area industries, plus additional commodities that currently move through other facilities within a reasonable distance from Weirton (typically 100 miles).

- Utilize existing relationships with other port operations (ocean and inland ports), stevedoring companies, barge lines, ocean steamship companies, rail companies and trucking companies to remain informed about current and future commodity movement, transportation related issues and regulatory changes related to the proposed port.

The next steps in the study being conducted by ATI include preparation of:

- a physical facilities plan by WRCA
- a phased plan for development by WRCA
- order-of-magnitude opinion of construction cost by WRCA
- environmental assessment by ATI
- hydraulic analysis of fill on Brown's Island by ATI
- assessment of economic impact by ATI
- report on the role of the public sector in port development by ATI
- integration of the task reports into a comprehensive final report by ATI

This Market Assessment is an important intermediate product in the context of the overall study.

Physical Facilities Plan for Development of Brown's Island in Weirton, West Virginia

for the

Appalachian Transportation Institute

Marshall University

Huntington, West Virginia

March 8, 2002

W. R. Coles and Associates

615 327 1576

TABLE OF CONTENTS

LIST OF EXHIBITS

1. Purpose and Introduction

The Weirton Port Authority (WPA), in association with the West Virginia Public Port Authority (WVPPA) is investigating the feasibility of developing public river port facilities on Brown's Island. Major components of the work include:

- a market assessment,
- a site plan for long term development,
- a program for phased implementation of the long range plan,
- an environmental assessment and
- an assessment of economic impact.

Another important component of the project is a study of the appropriate role for public sector financing in the development of river ports. The WVPPA has entered into a contract with the Appalachian Transportation Institute (ATI) at Marshall University to manage and produce the Brown's Island Port Development Study.

In addition to managing the project, the ATI will conduct the environmental assessment, the assessment of economic impact as well as the research related to the role of the public sector in port development. The ATI has retained W. R. Coles and Associates (WRCA) as a subcontractor for the market assessment and site planning tasks. WRCA is providing technical data to the ATI for consideration and integration by the ATI into a comprehensive report.

The Market Assessment has been provided by WRCA to the ATI as a separate deliverable item. This report contains the deliverables provided by WRCA to the ATI for Physical Facilities Planning.

2. Goals and Objectives of the Weirton Port Authority

During the course of gathering information for Physical Facilities Planning, WRCA representatives have met with the WPA on several occasions, both at formal Board of Directors meetings, as well as with individual Port Authority Board members. At this time, WRCA understands the goals and objectives of the WPA to be as follows.

Primary Goals

- Support existing industries and existing jobs
- Stimulate creation of new jobs in the Weirton tri-state area
- Promote diversification of employment base
- Enhance and add to the existing tax base

Strategies for accomplishing the primary goals include:

- Lower freight transportation costs by promoting and providing improved transportation infrastructure including a public port and related improvements
- Develop and provide additional sites for expansion of existing industries and attraction of new industries
- Market and promote the Port as a stimulus for regional economic development

Tactics identified by WPA officials for implementing the strategies include:

- Work with local, state and federal authorities as well as private entities for the development of WPA facilities
- Evaluate potential markets
- Identify site or sites for the port complex
- Define areas that may be used for industrial sites or an industrial park
- Develop a physical facilities plan for short term and long term implementation
- Define a long term plan for marketing and operations of port complex
- Identify entity or entities that will own the land and facilities (to the extent possible obtain ownership and control of the facilities)
- Identify funding sources, funding recipients and other requirements such as permit requirements, environmental requirements, etc.

This study of the potential for development of Brown's Island is in the context of accomplishing the overall goals of the WPA and will help in positioning the WPA (and WVPPA) to respond to a unique opportunity. The WPA or WVPPA may have the potential to acquire all or parts of Brown's Island. The site is presently owned and used by Weirton Steel Corporation. Acquisition or transfer of ownership of parts of this property and facilities have been discussed in general terms but there is nothing definitive at this time.

Considering the time required to obtain vital information needed to make an informed decision, the WVPPA is providing the Brown's Island Port Development Study, including this Physical Facilities Plan, to the WPA as one element in the process of being prepared to react to future opportunities.

3. Previous Studies

Various prior studies relative to the greater Weirton area were reviewed and considered in preparing this Physical Facilities Plan for Brown's Island. Some focused on Brown's Island, others focused on other port sites or on the general Weirton area. These reports included:

- Weirton Port & Industrial Centre (August 1995)
- Waterfront Facility and Landside Infrastructure Report Starvaggi Site (November 1997)
- Master Plan for Weirton Port and Industrial Centre (December 1997)
- City of Weirton 2000 Comprehensive Plan Update (2000)
- Weirton Intermodal Port Study (May 2000)
- Browns Island: Proposed Port Access to West Virginia Route 2 (Draft Sept 2000)
- Browns Island: Proposed Port Access to Ohio Route 7 (Draft Sept 2000)
- Brown's Island Market Assessment (Draft March 2001)
- Environmental Reconnaissance Report for the Brown's Island Site (October 2001)

In addition, various agencies provided data for review, including the WPA, the WVPPA, WVDOT, ATI, the City of Weirton, the Brooke-Hancock-Jefferson Metropolitan Planning Commission and the U.S. Army Corps of Engineers. The review of available information was important to provide background data and understanding of previous studies related to proposed port sites.

The studies done in 1995 and 1997 primarily focused attention on the Starvaggi site, downstream from Brown's Island. Two of the reports done in 2000 included a comprehensive plan for the City as well as a study by the University of Virginia which contained interesting observations on the future of the upper Ohio Valley steel industry, and scenarios under which it may thrive or decline, including discussions of potential for transforming the process used to make steel from an integrated mill to a mini-mill concept. This potential transformation to the mini-mill concept could alter the types and sources of raw materials and could increase the need for enhanced river terminal capabilities.

Efforts specific to Brown's Island include the two Brown's Island access studies done by the WVDOT in 2000, as well as the Market Assessment (March 2001) and the Environmental Reconnaissance Report for the Brown's Island Site (October 2001).

The two WVDOT access reports provide preliminary information on the technical challenges and potential costs for construction of new bridges to Brown's Island. There are physical as well as administrative, security and safety issues on the plan to link the Island to WV Route 2. The bridge to link the island to Ohio Route 7 would be much simpler and less costly to build.

The Market Assessment provides an inventory of other general purpose river terminals available for public use in the Weirton market area and evaluates the competitive environment. The Market Study notes changes in market demand which could occur if there are changes in the productivity rates or processes used in the existing integrated steel mills in the Weirton area.

One example would be the much larger quantities of scrap steel and enrichment products (DRI or HBI) which would be required for a mini-mill electric arc furnace operation. Another scenario discussed was the potential for importing steel slabs or billets for final finishing at the existing mills. Depending on the source location, this scenario could also have a profound impact on potential barge shipments. For example, if the slabs were imported from a Latin American country, a logical point of entry would be a Gulf Coast port, which would place the cargo on a trade path parallel to the natural run of the inland river system.

These potential changes in the fundamental methods of producing steel in the Weirton area could therefore impact barge transportation (and port development) in two ways: first the quantities of barge-compatible materials would increase greatly, and second, there are substantial sources which are south of the United States, making the trade path amenable to barge transportation. These market factors impact the nature of physical facilities required for development.

Another very important factor is the scarcity of relatively level land, free of environmental constraints, above the floodplain, with access to various modes of transportation and utilities, available for industrial development. The inventory of available river front sites with these amenities in Brooke and Hancock Counties is very small. Such sites are needed to facilitate development and attraction of new jobs.

The Environmental Reconnaissance Report (ERR) contains much information useful in developing a practical plan for development of physical facilities. Examples of information which is pertinent to the facilities development plan include the following.

- Brown's Island encompasses approximately 244 acres.
- The Island is approximately 13, 590 feet long and 1,257 feet wide at its widest point.
- US Fish and Wildlife Service is interested in preservation of habitat at the southern end of the island.
- There is an ongoing RCRA Facility Investigation (RFI) relating to former use as a coke plant and related industrial processes.
- Elevations of land near the northern and southern extremities of the island are approximately 660 feet above mean sea level.
- Elevations of the highest portion of the Island are near 685 feet above mean sea level.
- Normal pool elevation on the Ohio River between miles 61.0 and 63.5 is 644.

- Ordinary High Water (OHW) elevations vary from 645.5 to 645.2 going from upstream to downstream end of the Island.
- The Base Flood Elevation (BFE) varies from 675 feet above mean sea level at the upstream end of the island to 674 at its downstream end.
- Permission to place fill in the floodplain portions of Brown's Island will require a local floodplain development permit issued by the City of Weirton.

Further detail on existing site conditions is contained in the October 2001 ERR.

4. Overview of Public Port Development and the Competitive Environment for a Public River Port in Weirton

The portions of our nation's inland waterway system relevant to Weirton are shown on ***Exhibit 1***, including a network of natural rivers and man-made impoundments, with a system of locks and dams constructed and maintained by the U.S. Army Corps of Engineers to provide a minimum nine-foot-deep channel for commercial navigation and linking the Weirton area to deep water ports at New Orleans, Louisiana (via the Ohio and Mississippi Rivers - 1872 miles), and Mobile, Alabama (via the Ohio and Tennessee Rivers and the Tennessee-Tombigbee Waterway - 1535 miles).

In the United States, locations on rivers are designated by river mile, with mile zero at the downstream end of all rivers except the Ohio River. River miles on the Ohio begin at mile zero in Pittsburgh where the confluence of the Monongohela and Allegheny Rivers form the Ohio, and end at mile 981 where the Ohio joins the Mississippi River near Cairo, Illinois. The Brown's Island site exists between Ohio River Mile 61 and 63.5.

The definitions of a *river port* and a *river terminal* are important within the context of this Physical Facilities Plan. A *river port* is typically designated as an area contiguous with a navigable river delineated by river miles, and may encompass not only the river frontage but also the "hinterlands" or area of market penetration. The river port may include industries, an industrial park, railroad lines, roads and utilities as well as one or more river terminals. A *river terminal* is defined as a facility at which goods or commodities are loaded or unloaded to/from a barge.

River terminals fall into two broad categories by ownership and two broad categories by use. River terminals may be owned by a public entity (such as a port authority, unit of local government or a state) or by a private corporation. By use, river terminals are categorized as special purpose or general purpose.

Special purpose facilities are typically designed to be very efficient for moving a specific cargo either inbound or outbound, but usually not both. For example, pneumatic unloading systems for cement, bucket unloaders for coal, special pipelines for liquids, conveyors and gravity chutes for loading bulk materials, and special cranes for handling specific steel products are common features of single purpose terminals. While these systems may not be versatile, they are normally designed to be very efficient for the handling and movement of their specific cargo, and in their specific direction (i.e., inbound or outbound). Further, a special purpose terminal may be located within a manufacturing plant with restricted access for security reasons.

Exhibit 1. Inland Waterway System

General purpose facilities are usually versatile and can be used for a wide variety of applications such as loading or unloading steel coils, slabs, wood, scrap, pipe, ores or bulk materials. Equipment may include, for example, a crawler crane which can be rigged with a bucket, spreader bar, hook, clamp, magnet or other device depending on cargo handling requirements, and fork lift trucks or other machines for moving the commodities from the dock to short-term storage.

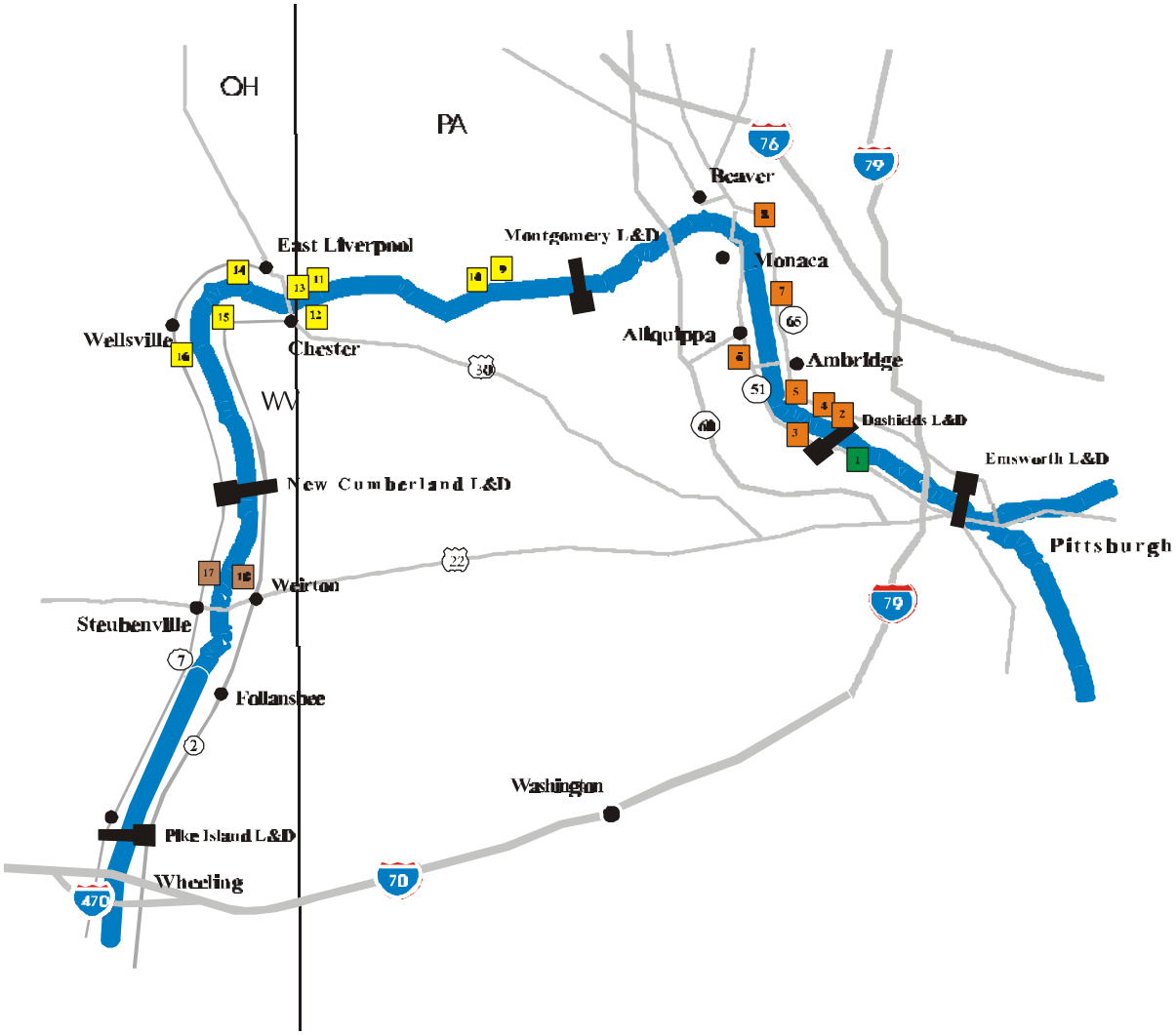
To enhance the transportation advantages of river front industrial sites, a public port authority may market some sites with direct river access for industries which require a private, special purpose terminal as part of their facility, and the port authority may also develop a public general purpose terminal for industries which may want to take advantage of the economics of waterborne transportation, but which do not generate sufficient tonnage to justify construction of their own private terminal.

There are a number of general purpose terminals between Weirton and Pittsburgh as shown in ***Exhibit 2.*** The geometry of the River provides Weirton the opportunity to participate in the Southwest Pennsylvania market area, as well as Ohio and, of course, West Virginia markets.

A brief survey of general purpose terminals in the area indicates that inside storage for higher value commodities is in demand. The primary purpose of the Brown's Island project is to stimulate economic development in the Weirton area. Sites could be developed and land could be made available on Brown's Island both for industries which require their own private special purpose terminals as well as for industries which need to be near a general purpose river/rail terminal.

One advantage the potential Brown's Island development could have is the availability of potential industrial sites near a general purpose terminal. The general purpose terminals shown in ***Exhibit 2*** typically are in mature, developed areas with little or no room for contiguous industrial development. Some have room for expansion of their own facilities but others seem to be using most or all of their available acreage. Another perhaps more significant advantage is the potential to provide industrial sites with developable river frontage, allowing each firm to construct its own special purpose terminal. Land on the river, above the 100 year flood elevation, with good access to roads and utilities is extremely difficult to find between Weirton and Pittsburgh.

Since there are a number of existing general purpose terminals, but very little, if any, good industrial sites on the river near Weirton, one strategy to be considered would be to focus on development of industrial sites with river access rather than build another general purpose river terminal. On the other hand, development of a publicly owned general purpose terminal which provides services not readily available elsewhere could potentially succeed. Moreover, the



General Purpose Terminals Between ORM 6.2 and ORM 84.2

Dashields Pool

1. Burrell

Montgomery Pool

2. Buncher
3. Three Rivers
4. Logistic Services
5. Pittsburgh Intermodal
6. Aliquippa Terminals
7. General Materials
8. W. I. Snyder

New Cumberland Pool

9. Industry
10. Arrow
11. S. H. Bell
12. Congo
13. D. W. Dickey
14. Parsons
15. Congo (Hofstetter)
16. Wellsville

Pike Island Pool

17. L & J Bowers
18. Starvaggi Industries

Exhibit 2. General Purpose Terminals Near Weirton

decision is a matter of priorities rather than an “either-or” scenario.

Justification for a public general purpose terminal (stimulate economic development) is quantified differently than for a private general purpose terminal (make a profit as a profit center). The goals for a public sector port development are much broader than the goals for a private sector river terminal. The public sector can sometimes undertake a project which has definitive economic development benefits, but with the benefits accruing to the area economy rather than directly to the terminal as a profit center.

The business of a public river port includes providing multi-modal transportation opportunities and material handling facilities to promote existing industries within the geographic region. In addition, the public river port should provide property and infrastructure to allow for the development of industrial sites, warehouse facilities and terminal facilities for new manufacturing and distribution industries.

5. Characterization of Existing Conditions

Availability of existing transportation access and existing physical conditions on Brown's Island have direct impacts on the feasibility of and cost for development.

5.1. Existing Transportation Access to Brown's Island

The Ohio River navigation system includes a series of locks and dams. The U.S. Army Corps of Engineers operates these locks and dams and is responsible for maintaining the navigable channel. Pike Island Lock and Dam is located at Ohio River Mile (ORM) 84.2. Brown's Island is situated on the right descending bank of the Ohio River navigation channel between ORM 61 and 63.5. ***Exhibit 3***, an excerpt from the Ohio River navigation charts, shows the relative positions of the navigation channel and Brown's Island. Note that the right descending bank of the Ohio River, on the Ohio side of Brown's Island, is not navigable for commercial vessels. In addition to shallow water and rock projections, there is a submerged dam near ORM 61.3.

Once a barge tow has passed through a lock on the upper Ohio River, transit time within a pool and the related cost of moving the goods therein is typically nominal. Time spent in the process of locking through, however, can be significant. Barge terminals on the Pike Island Pool enjoy the advantage of access to the greater Pittsburgh market via a four lane divided highway, US 22, and avoid the time consuming process of navigating through four additional locks required to travel by River from Weirton to Pittsburgh.

Rail service is provided to Weirton Steel by the Norfolk Southern (NS RR). As shown in the aerial photo of Brown's Island, ***Exhibit 4***, the NS RR has trackage along the West Virginia shoreline opposite Brown's Island and on the Ohio shoreline opposite Brown's Island, but there is no rail on Brown's Island. The NS RR has no plans to construct a railroad bridge to the Island.

Truck access to Brown's Island is via a private bridge from within the Weirton Steel property on the West Virginia side, and via a private bridge owned by Weirton Steel from the Ohio side as shown in ***Exhibit 4***. The bridge from the Island to West Virginia links in-plant roadways from Weirton Steel to industrial facilities on the Island. Access to public roadways, including West Virginia Route 2, requires traversing busy areas of the Weirton Steel mill. The bridge from the Island to Ohio provides a direct link to public roads via an existing diamond interchange in Ohio State Route 7, a four-lane limited access highway.

5.2. Existing Development and Topography

The general uses of the Island are described below, beginning at the north, or upstream end of

Exhibit 3. Location of Brown's Island on the Ohio River Navigation Charts

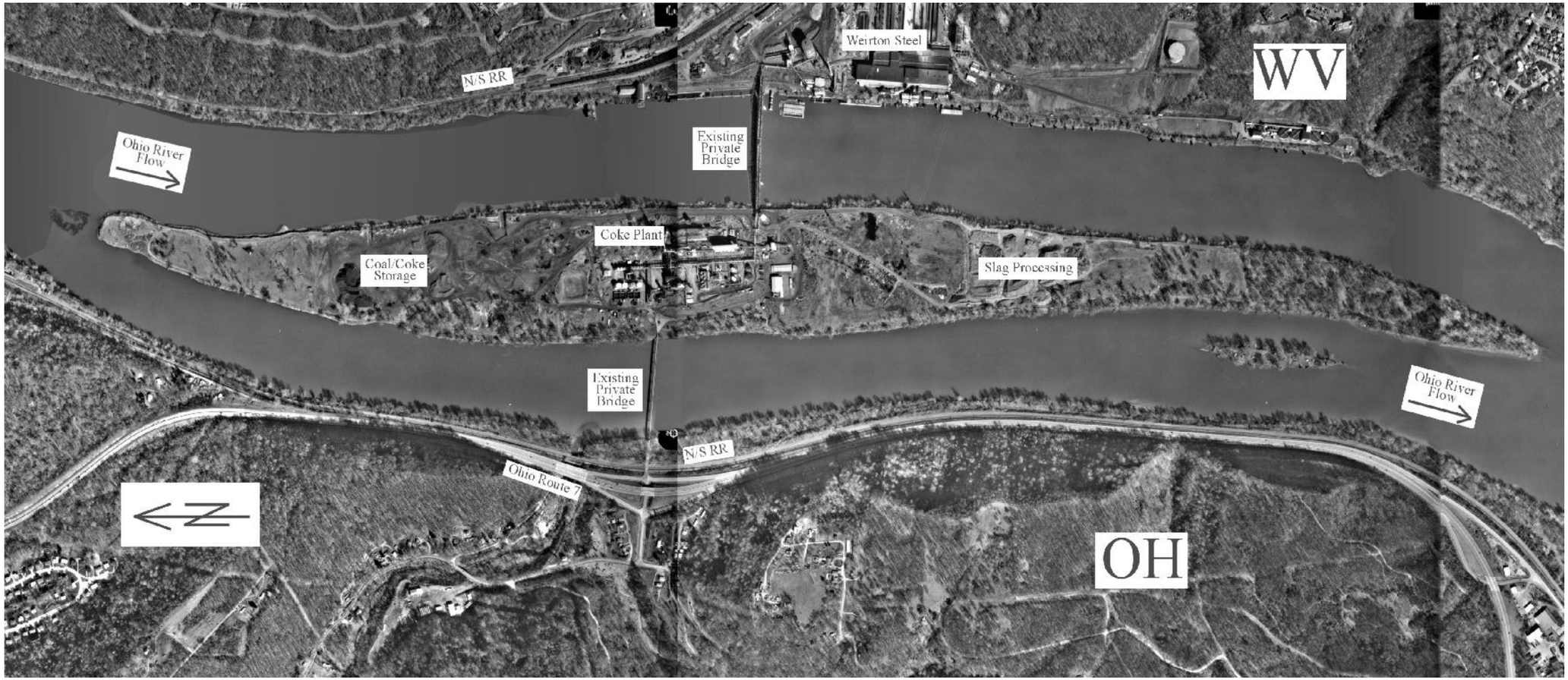


Exhibit 4. Aerial Photo of Brown's Island

the Island.

The northern end of the Island includes areas showing evidence of coal and coke stockpiles interspersed with rough scrub brush and sparse grass.

The area south of the northern tip of the island is actively used today for coke storage and transfer operations. Coke is shipped to the Weirton area via river or rail, transloaded to trucks at a local river terminal and delivered to the Island for storage. Stored material is reclaimed, loaded into trucks and delivered to the steel making process as required.

The Brown's Island Coke plant is located to the south of the coke storage and transfer area, and just north of the bridge from the Weirton Steel mill. The Coke Plant was constructed in the early 1970's, was operated by National Steel between 1973 and 1982, and ceased operation in 1982 due to difficulties in obtaining air emission permits. Weirton Steel Corporation purchased the assets of National Steel in 1984.

Just south of the Coke Plant is an area which includes an east-west connector road, as well as active maintenance and storage buildings. South of these buildings, the area has been used for storage of construction and demolition debris.

Further south is an active slag processing operation. The slag processing takes place on land owned by Weirton Steel and leased to International Mill Services (IMS). IMS receives waste slag from the mill, processes the slag, and ships out the finished product by truck and by barge primarily for use in the construction industry. The barge loading facility at IMS is an example of a privately owned special purpose terminal, useful for loading processed slag into barges.

South of IMS, the Island consists of some disturbed and graded areas, but primarily open grassland and a few trees.

Noteworthy elevation data obtained from the October 2001 ERR is as follows.

- Elevations of land near the northern and southern extremities of the island are approximately 660 feet above mean sea level.
- Elevations of the highest portion of the Island are near 685 feet above mean sea level.
- Normal pool elevation on the Ohio River between miles 61.0 and 63.5 is 644.
- Ordinary High Water (OHW) elevations vary from 645.5 to 645.2 going from upstream to downstream end of the Island.
- The Base Flood Elevation (BFE) varies from 675 feet above mean sea level at the upstream end of the island to 674 at its downstream end.

Paved roadways generally exist in the vicinity of the bridges near the middle of the Island. Cinder, slag, stone surfaced or unsurfaced roadways and trails run from one end of the Island to the other, and across the Island at various intervals.

Utilities such as water, sewer, and steam are carried to Brown's Island on the private bridge linking the Island to the Weirton Steel mill on the West Virginia mainland. Electrical power is carried to Brown's Island via an aerial crossing downstream from the bridge. The utilities generally run to the vicinity of the coke plant and the maintenance buildings south of the coke plant. The utilities are owned by Weirton Steel.

6. Market Study Implications for Physical Facility Development

The Market Study quantifies movements of materials by barge to and from the Weirton area based on existing conditions of the steel industry. Transportation needs will vary with the health and nature of area steel industries. If an existing integrated mill changes to a finishing mill, for example, the requirements for coke and other raw materials will decrease and the requirement for steel slabs will increase significantly. If an integrated steel mill were to convert to a mini-mill, the requirement for scrap steel and iron rich supplements such as HBI or DRI will increase dramatically.

Exhibit 5 shows the general requirements for storage facilities for a range of products. The product mix will dictate whether there is a need for inside climate controlled storage or whether outside hard stand is adequate. The product mix in the Weirton area will be driven to a large extent by the direction of the steel industry.

One goal of the WPA is to support and strengthen existing industries. Another goal is to diversify the economic base. Diversification goals can be achieved in a variety of ways. One path is by marketing the Weirton area as a logistics hub for the greater Pittsburgh market area. U.S. Route 22 is a direct link to the Pittsburgh market. Certain high-value materials which are now shipped by barge, offloaded and stored at Pittsburgh area terminals, and then transhipped to the final user could become targets of opportunity for the Weirton logistics hub. The farther the material moves from the Pittsburgh river terminal by truck, the more likely Weirton could be competitive.

Another means of diversification is to attract new industrial development to the Weirton area. This requires sites for these new firms and industries. Brown's Island has potential for development as a multi-modal industrial center. The preparation of sites for future industries would not preclude development of some of these sites as public general cargo river terminals and materials distribution centers. The work required to acquire the property in an environmentally clean condition, to provide improved access to the Island, and to raise the sites to acceptable elevations is basically the same for use as a river terminal or use as an industrial site.

Considering the potential expense involved in these basic preparatory tasks, and considering the lack of readily developable industrial sites in the area, we recommend the WPA focus its efforts on acquisition of the property in an environmentally acceptable condition, improvement of access and improvement of sites to extent needed to attract private sector investment in industrial plants, river terminals or other facilities consistent with the goals of the WPA.

To the extent possible, the WPA should then lease, not sell, the sites to the private sector entities, thereby retaining long-term control of this valuable property once it is developed.

Exhibit 5. Typical Commodity Storage Requirements

Commodity	Type of Storage Typically Required	Comments
Hot Rolled Steel Coils	Outside Hardstand	Commonly shipped by barge
Cold Rolled Steel Coils	Inside Climate Controlled Warehouse	Sometimes shipped by barge but often by other modes
Steel Slabs	Outside Hardstand	Could see increase
Special Steel Slabs	Inside Warehouse	
Pig Iron / HBI	Outside	Large volume could grow if there is shift to mini-mill
Coke	Outside or Inside	Depends on type and grade
Scrap Steel	Outside	Adjacent to rail siding
Slag Products	Outside	Processing and storage area required
Lime	Tanks / Silos	In proximity to barge discharge area
Ferromanganese	Inside or Covered	Truck loadout
Flurospar	Inside or Covered	Truck loadout
Zinc	Inside Warehouse	Bundled or Palletized
Containers	Outside Hardstand or Special Pavement	Potential for future. Storage area surface depends on handling equipment

7. Alternatives for Access

Access to Brown's Island has been evaluated for river, rail and truck transportation. Various options have been considered. A brief discussion and summary are presented below.

7.1. River

The navigable channel for the Ohio River is on the east, or West Virginia, side of Brown's Island. The Ohio River on the west, or Ohio, side of Brown's Island is not maintained for navigation. The remains of an old dam are submerged near Ohio River mile 61.3 on the west side of the Island.

Barge loading/unloading and fleeting facilities exist on the West Virginia shoreline, or left descending bank, of the Ohio River from mile 61.7 to mile 63.1. These facilities are owned and operated by Weirton Steel. IMS loads processed slag onto river barges near mile 62.5 on the east shoreline of Brown's Island (the right descending bank of the navigation channel).

Future barge loading/unloading operations on Brown's Island may be planned and developed along the navigable channel. There are environmental as well as practical concerns which prohibit development of any navigation facilities on the non-navigable side of the Island. Alternatives which include development of barge loading/unloading operations on the non-navigable side of the island have therefore been eliminated.

Most inland river barge loading/unloading operations involve moving the barge past the loading/unloading point. Considering the length of a standard jumbo hopper barge, 195 feet, and allowing room for a switch boat to maneuver in the swift current along the navigable side of the Island, it is recommended that terminals be at least 500 feet apart, center-to-center, with 600 feet being better.

Otherwise, the entire navigable channel side of the Island is available for development of public general purpose river terminals or private special purpose river terminals.

7.2. Rail

Industries which ship by barge often ship by rail as well. There is no rail bridge to Brown's Island. There is, however, adequate land for construction of a rail siding along the NS RR main line on the Ohio side of the Ohio River. From a practical perspective, the option of providing a rail siding on the mainland is much more feasible than providing a rail bridge to Brown's Island. Earlier discussions with the NS RR indicated that a rail bridge could cost at least $12 to $14

million, not including the cost of rail trackage on the Island. The preliminary cost data is intended only to provide a rough order-of-magnitude opinion.

The rail car loading/unloading facilities on the rail siding could be operated by the WPA, or an operator under contract to WPA, for the benefit of all industries in the area. A meeting has been held at the site with NS RR officials to affirm their understanding and consent with this general plan.

If bulk materials are being offloaded from rail cars, it may be feasible to construct a dump pit under the siding on the Ohio shore and a conveyor system to move materials from the dump pit directly to the recipient on Brown's Island. This would require means of supporting the conveyor either on its own bridge or on the new vehicle bridge discussed in the following section.

For cargo and other items such as steel slabs or steel coils, it will be necessary to use trucks or other rubber tired conveyances to shuttle the materials between the Island and the rail siding. Even so, this system will provide industries and distribution centers on the Island with access to rail transportation at a cost much less than construction of a rail bridge.

7.3. Truck

Truck access is now available to Brown's Island from both West Virginia and Ohio across private bridges developed, owned and maintained by Weirton Steel. Access from public roads in West Virginia is not direct. Traffic must pass through the security gates at Weirton Steel and meander through the mill to reach the approach to the existing bridge. The bridge itself is a substantial structure designed for private use by the mill, supporting two-way truck traffic as well as piping and conveyors. The bridge from West Virginia spans the navigation channel of the Ohio River.

Public access to the existing bridge via the existing Weirton Steel plant raises serious safety, security and liability issues. Alternative for access directly to WV Route 2 were examined by the WVDOT. All options involve traversing the Weirton Steel plant site with some form of bridges or viaducts to provide access to the existing bridge or to a new bridge built near the existing bridge.

On the Ohio side, access to the Island is via a single lane bridge used daily by heavy trucks. The bridge connects the Island to an existing diamond interchange on Ohio Route 7, a four-lane highway. The WVDOT reports the elevation of the existing bridge to be approximately four feet below the 100 year flood elevation. The cost to construct a new, wider bridge with an elevation above the 100 year flood elevation is estimated by the WVDOT to cost approximately $5.3 million. This opinion of cost is qualified by the WVDOT as very preliminary and based upon

a cursory evaluation only.

The two WVDOT studies favor the bridge to Ohio Route 7 due to cost, safety and administrative factors. The bridge should have two 12 foot wide traffic lanes and six foot wide shoulders. The bridge structure and foundations should be designed with capacity to support pipelines and a conveyor in the future. Some attention should also be given to facilitating attachments and supports for pipelines and a conveyor when the bridge is initially designed.

7.4. Utilities

The utilities which exist on Brown's Island at this time are owned by Weirton Steel. There are policy, technical and regulatory issues involved in the feasibility of Weirton Steel providing utility service to industries which could locate on Brown's island. First, the company may or may not elect not to provide utility service to others from a policy perspective. Next, the capacity of the utilities may not be adequate to serve a speculative development, and would need to be evaluated on a case-by-case basis as specific needs are quantified. For example, the water demand requirements for a cargo transfer and storage operation would be different from a wet-process industry. Finally, regulations may require establishment of a utility district to provide these services.

Other alternative sources of utility service include the City of Weirton, Village of Toronto, and City of Steubenville, as well as the option of the WPA or WVPPA developing and operating water and wastewater treatment and distribution facilities for the Brown's Island Intermodal Industrial Center.

The alternative of building, owning and operating water and wastewater facilities on the Island has been considered and ruled out because the administrative, regulatory and technical challenges seem to outweigh the potential advantages. Utilities will be owned and operated by entities now in the business of providing service rather than by the WPA or WVPPA.

Utilities from the City of Weirton could be provided to the island via a new underwater or aerial crossing, or via utility easements through the Weirton Steel plant. Utilities from Toronto or Steubenville could be provided from the respective source, along the Route 7 corridor, and across the proposed access bridge.

These issues require further attention which is beyond the scope of this study. The issue is raised in this study as one which requires resolution prior to development of the Brown's Island Intermodal Industrial Center.

8. Alternatives for Development

Alternatives for development include acquisition and preparation of Brown's Island for industrial sites as well as for a public river terminal operation.

8.1. Industrial Sites

Brown's Island provides a unique opportunity to develop a multi-modal industrial park with access to river, rail and truck transportation. It is difficult to find relatively level land above the floodplain with access to these modes of transportation and to utilities in the Weirton area.

The overall concept for development is to spend public funds only as needed to make the sites attractive to private sector investors. Major elements of public investment include land acquisition, resolution of environmental issues, improvement of truck access, provision of utility service, and placement of engineered fill to raise the site elevations to above the Base Flood Elevation. Anticipated private sector development includes buildings, docks, barge loading/unloading facilities, and site improvements for transporting, transloading, and storing cargoes and materials as well as value added processing facilities and equipment.

Brown's Island is presently owned by Weirton Steel. There is an ongoing RCRA Facility Investigation (RFI) relating to former use as a coke plant and related industrial processes. Past discussions with Weirton Steel regarding transfer of the property have been based on transfer to an appropriate public entity such as the WVPPA or WPA, after the coke plant demolition and environmental cleanup are complete. The time required for demolition of the coke plant is estimated by Weirton Steel to be 12 to 15 months after a contractor is selected and given a notice to proceed. Discussions continue regarding transfer of ownership and the details of the transaction, but no final agreement has been reached. Developing a letter of intent which outlines the general principles of the agreement should be a top priority for the WVPPA and WPA.

Once the property is transferred and is in an environmentally acceptable condition, the focus can shift to improving access to Brown's Island and improving sites for development.

Access improvements include a new bridge connecting the Island to Ohio Route 7, an access road on Brown's Island, and a rail siding on the Ohio shoreline. The bridge may require construction on a speculative basis, due to the critical nature of this amenity and the lead time required for implementation. The access road, on the other hand, can be staged to meet demand. The rail siding can also be constructed when needed. A preliminary layout for the access road and for the industrial tracts is in ***Exhibit 6*** (the large drawing in the pocket at the end of this report).

The access road alignment is generally parallel to the western river bank on Brown's Island. The roadway is positioned near the river bank so that it does not bisect any of the tracts. The Island is relatively narrow, and the road located along one side or the other provides maximum width for each tract. The road is not located on the eastern side of the Island because a public road on the east side would separate the tracts from access to the navigable channel of the Ohio River. The Ohio River is not navigable on the west side of the Island and therefore locating a road on the west side of the Island does not restrict access to river frontage which is potentially useful for barge transportation access.

The width of the tracts is approximately 600 feet. This would allow a river terminal to be constructed on any tract, and for barge operations on one tract to not conflict with barge operations on an adjacent tract.

The ATI report notes that the Base Flood Elevation (BFE) is 675 at the upstream end of Brown's Island and 674 at the downstream end of the Island. Buildings must have a finished floor elevation above the BFE. The approximate size (in acres) for each tract is shown on ***Exhibit 6***. The acreages are approximate only, as a field survey is needed to be more precise. The tract acreage information, however, should be useful in preliminary planning, marketing and development of the industrial sites. An individual tenant industry could occupy an individual tract or a series of contiguous tracts. The tracts also facilitate occupation by existing Weirton Steel activities at the maintenance building area, and by IMS at the slag processing area.

Approximately 822,000 cubic yards of fill will be required to bring Tracts 1 through 16 to above the BFE. At this time, no fill is planned during the initial phases of development for Tract 17. Fill per tract is shown in ***Exhibit 6***, not to imply that fill will be done on a tract-by-tract basis, but to provide an idea of the relative cost of filling the tracts. One implication could be to market those tracts on the north end, such as Tract 1 and Tract 2, to industries or other users which may be able to utilize land which is below the BFE for operations or storage activities which are compatible with the lower elevations and proximity to the normal pool elevation of the Ohio River.

Development of the roadway and utility corridor can generally proceed with demand, but some work will need to be done to create the critical mass needed for credibility and to generate momentum in the marketplace.

Exhibit 6 also shows the general plan for phased development. The general purpose of Phase 1 is to provide the critical mass of elements needed to begin marketing and operation of the Brown's Island Intermodal Industrial Center. Phase 1 development includes the access bridge to Ohio Route 7 as well as a new paved access road from the north edge of Tract 3 to the south

edge of Tract 12 (+/- 6000 linear feet). The proposed roadway has two twelve foot wide traffic lanes and a six foot shoulder on each side, with a guard rail along the River side of the road as needed. This public access corridor will also be used to provide utility service to the tracts. A roadway (+/- 800 linear feet) and new approach to the existing private bridge to the Weirton Steel facility in West Virginia are also proposed in Phase 1.

Phase 1 development also includes preparation and rough grading of Tracts 3 through 12. Tracts 3,4,5 and 6 are proposed for fill, and Tracts 7,8,9,10,11 and 12 are already above the BFE elevation. Approximately 257,000 cubic yards of fill are required for Phase 1, along with approximately one mile of paved access roadway. The Phase 1 project will create approximately 129 acres of marketable industrial property. (Some of this property is now occupied by the Weirton Steel maintenance and locker room buildings.)

The precise definition of Phase 2 development will depend on market demand, but for purposes of this report, Phase 2 is defined as extending the utility corridor and paved access roadway northward to Tract 1 and southward to Tract 17 (+/- 3500 linear feet). Fill for Tracts 2, 13, 14, 15 and 16 will require approximately 320,000 cubic yards of material, and will produce another 43 acres of marketable property.

Phase 3 development includes filling Tract 1 and creating approximately 11 acres of land. Filling Tract 1 is estimated to require over 245,000 cubic yards of material. A marketing strategy will be to target Tract 1 for industries which may have some of their operations on land which is below the BFE. This can reduce the quantity of fill, and development cost, required for the ultimate development.

At this time there are no plans to develop Tract 17, but this could change, subject to market demand.

Construction of the rail siding can proceed upon demand. It will be important to maintain open channels of communications with the NS RR so that the developer and the railroad can coordinate development plans and be in position to respond to the needs of a prospective user in a timely manner. Cost for the rail siding is shown as part of the Phase 2 cost, but rail could be needed earlier, depending on demand. A siding length of 2000 linear feet, connected on the south end to the main line NS RR track is used as the basis of the cost for Phase 2 rail construction.

Exhibit 7 contains an opinion of budget needed for Phase 1, Phase 2 and Phase 3 development. Cost for Phase 3 can be reduced by finding a user for the low land on Tract 1.

ibit 7. Preliminary Opinion of Budget Required for Construction

Item	Estimated Quantity	Estimated Units	Estimated Unit Price	Opinion of Cost for Line I
Bridge to Ohio Route 7	1	ls	$5,750,000	$5,750,
Roadway Corridor	6800	lf	$100	$680,
Engineered Fill	257000	cy	$8	$2,056,
Grading and Site Prep	1	ls	$160,000	$160,
Utility Allowance	1	ls	$1,250,000	$1,250,
Modify Approach to Bridge to WV	1	ls	$450,000	$450,
Subtotal				$10,346,
Engineering, Surveying, Geotechnical				$1,750,
Project Contingencies				$2,400,
Opinion of Budget Required for Phase 1				$14,496,
Roadway Corridor	3500	lf	$100	$350,
Engineered Fill	320000	cy	$8	$2,560,
Grading and Site Prep	1	ls	$80,000	$80,
Utility Allowance	1	ls	$200,000	$200,
Rail Siding	2000	lf	$110	$220,
Subtotal				$3,410,
Engineering, Surveying, Geotechnical				$400,
Project Contingencies				$700,
Opinion of Budget Required for Phase 2				$4,510,
Engineered Fill	245000	cy	$8	$1,960,
Grading and Site Prep	1	ls	$15,000	$15,
Engineering, Surveying, Geotechnical				$175,
Project Contingencies				$400,
Opinion of Budget Required for Phase 3				$2,550,

8.2. Public River Terminal

Sites developed according to the plan described above provide good opportunity to attract a private sector company to operate, and perhaps to construct, barge loading/unloading facilities and accompanying facilities for transloading, handling and storage. Specific facilities provided will be dependant upon market demand. For example, a facility to receive steel slabs by barge and rail and store them for just-in-time delivery to Weirton Steel would require construction of a basic cargo handling dock, mooring structures and outside hard stand area for storing the slabs. It would also require construction of the rail spur. A finished steel products warehouse would require a higher level of investment. The tract layout is conducive to multiple facilities and to making productive use of Brown's Island.

Speculative public investment in barge loading/unloading facilities is not proposed at this time. The public port authority should, however, be open to specific opportunities to develop such facilities in cooperation with a willing investor from the private sector.

9. Summary

The WVPPA is providing information to the WPA to encourage development of Brown's Island. The 244 acre island is owned by Weirton Steel. Discussions have been initiated regarding the potential transfer of ownership to the WPA or WVPPA.

With set asides for public road and utility corridors, as well as an undeveloped area at the south end of the Island, over 170 acres of prime industrial sites can be developed on Brown's Island and marketed to private sector industries. There is no existing contiguous industrial park acreage of this size in Brooke County or Hancock County, with sites above the Base Flood Elevation, access to river, rail and highway transportation, and access to major utilities.

Tasks required to implement the development plan are listed below.

- Acquire the property from Weirton Steel in an environmentally acceptable condition (or acquire the property and do what is needed to make it environmentally acceptable).

- Construct a new bridge to connect the Island to Ohio Route 7.

- Raise sites with engineered fill to an elevation above the Base Flood Elevation.

- Bring utility service to the Island so that it can be extended along a roadway/public utility corridor.

- Construct an access roadway along the western edge of the Island.

- Construct a rail siding adjacent to the Norfolk Southern railway main line track on the west, or Ohio, side of the Ohio River. The siding is for common use by Brown's Island tenants, with loading/unloading services provided by the WPA (or a contractor to the WPA).

- Lease, rather than sell, tracts to private sector industries.

A program for dividing the Island into 17 tracts is included in this report. The width of each tract is adequate for operation of a barge terminal. A phased development plan is proposed, with the initial phase including the bridge, utilities to the Island, approximately one mile of access roadway, and fill to create approximately 134 acres (beginning with those sites which require the least fill).

Assessing the Probable Economic Impacts of Public Infrastructure Developments on Browns Island

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August 2002

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1. Introduction and Motivation

Browns Island lies in the Ohio River adjacent to Brooke and Handcock Counties in West Virginia. It is a brown-field site currently owned by Weirton Steel (WS). The island is currently accessible from both Ohio and West Virginia via two roadway bridges that are also owned by WS. An Environmental Reconnaissance (also prepared by RTI) and a Market Analysis prepared by W. R. Coles and Associates indicate that there are nearly 200 developable acres on the island that are (or can be brought) out of the one hundred-year flood plane. The cost of necessary grading work, the construction of a new bridge, the extension of utilities to the island, and other necessary improvements is estimated to be approximately $15 million. Additionally, industrial tenants of a physically developed Brows Island would need to make significant investments in production facilities, transportation infrastructure, etc.

The purpose of the current analysis is to develop theoretically appropriate economic measures of the benefits that may be expected to accrue to various constituencies in order to determine (1) whether the aggregate benefits justify the proposed investment in Browns Island and (2) the appropriate division of financial responsibility among these constituencies. Toward this end, the analysis first provides a general discussion of probable project benefits. It then

continues to provide estimates of benefits likely to accrue to Weirton Steel, northern West Virginia, and the nation as a whole.

2. Benefit Calculations – Revisiting the Theory

The introduction of a new investment in transportation infrastructure can unleash a wide array of immediate economic changes. Transportation users, facing a new set of available alternatives, can be expected to respond by re-evaluating their behaviors and making the changes that they believe will improve their utility or profitability. The collective response to the new infrastructure by current (and new) users may further alter the cost and availability of transport alternatives, so that numerous iterations may be necessary before a new equilibrium is achieved. At the end of the adjustment process, some users will be better off than before the infrastructure was introduced, some users will be worse off, and finally, some will have been unaffected. Predicting the magnitude of these gains and losses is at the heart of the benefit calculation process.

To the extent that aggregate gains are greater than aggregated losses, the new infrastructure is judged to have yielded a net benefit in terms of overall system efficiency. The present value of the stream of such efficiency gains has traditionally served as the project benefit that is weighed against similarly discounted cost measures to determine whether or not a project is desirable. Thus, in the case of Browns Island, after all adjustments are made, if the net winners are able to compensate the net losers, the efficiency gains would be measured by the magnitude of the compensation the winners *could* reasonably offer.[1] If the present value of current and future benefits identified in this fashion exceeds the project cost, then it is clearly in the national interest and should be pursued as a federal project.

Profit or utility-maximizing agents may often significantly modify their behaviors in response to small incremental changes in relative costs. Thus, specific regions may witness sizable changes in the level of economic activity that are attributable to relatively small changes in overall transportation efficiency. For example, suppose that a firm that employees 200

[1] Note, there is no requirement that winners actually compensate losers, only the requirement that winners must be able to do so.

workers at $40,000 per year each moves from region **A** to region **B** in response to a transportation efficiency enhancement with a net present value of $1 million. The $8 million in wages that the firm will now pay to workers in region **B** has not traditionally been viewed as a project benefit because these wages would have been paid in region **A** if the project had not been pursued. Still, to policy-makers in region **B**, the infusion of new economic activity may be very important. To the extent that regional leaders are willing to support the infrastructure project with regionally-derived funds, these transfers (often referred to as *regional benefits*) should not be ignored in the decision making process.

3. Browns Island: Measuring Efficiency Gains

As section 2 suggests, the traditional source of project benefits has been measured as the cost-reducing efficiency gains the project will generate. Certainly, the proposed efficiency gains at Browns Island will yield such benefits. Based on the site development plan (Binder Item 5), the island would be home to Weirton Steel and a number of other industrial users. In the case of Both WS and the other tenants, any decision to relocate activities to the island would necessarily rest on the ability to reduce costs by doing so. Thus, there is no doubt that developing the island for industrial use will produce traditionally important project benefits. The difficulty is that, with the exception of WS, too little is known about the cost savings to prospective tenants to defensibly estimate the magnitude of benefits incremental to the proposed project. Thus, while clearly understating project benefits, the current analysis is forced to focus on the cost savings to Weirton Steel as a lone source of traditionally defined project benefits.

WS transports significant volumes of inbound inputs and outbound finished projects. Inputs (ore, ore products, intermediate steel, coke, and other chemical compounds arrive primarily by barge and by rail. Outputs (largely coil steel) leave the steel making facility by barge, rail, and truck. For the purpose of the current analysis, WS provided extremely sensitive data describing specific commodity volumes, handling costs, and line-haul transportation costs. The study team then compared these costs with the costs attainable by relocating some aspects of current transportation, storage, and handling operations to an improved Browns Island. Calculations based on this comparison suggest an annual transportation cost saving of $1.4

million or, based on 6.125% discount rate, and a 20-year time horizon, a present value of $16.2 million.

While $16.2 million present value exceeds the costs outlined in Binder Item 5, those costs exclude the approximately $3 million necessary for site cleanup and the approximately $15 million that WS would need to invest in dock facilities, conveyors, etc. Thus, whether privately or publicly funded, it appears that the proposed improvements are not justified on the basis of the cost savings they will generate for Weirton Steel.

4. Calculating Regional Economic Benefits

The site development plan will make available 12 – 15 tracts of land, each having access to the navigation channel, each having access to utilities, and each directly connected via an access road and new bridge to Ohio State Route 7. Some portion of this developable property will be needed for Weirton Steel operations. Still, approximately two-thirds of the island will be available for altogether new economic activity. In an area characterized by rugged terrain and existing development, the nearly 200 acres on Browns Island represent a very scarce resource. Even though the project is in its most preliminary stage, potential tenants have voiced an interest in these tracts to Weirton's Local Port Development District.

As Section 2 indicates, too little is known about the cost savings that might induce producers to relocate industrial activity to Browns Island. Hence, calculating efficiency gains based on these savings is impossible at this time. It is, however, possible to estimate the magnitude of *regional* benefits based on the inquiries received by the Local Port District. While such inquiries are generally treated as confidential, the Port District has been willing to reveal that one to two firms employing between 300 and 500 workers are interested in relocating to the island to engage in the manufacturing of metal products. Table 1 provides relatively conservative estimates of the economic impact that this additional activity would have on the region which for purposes of these estimates was defined as Brooke, Handcock, and Ohio Counties in West Virginia.[2]

[2] The definition of the study region necessarily excludes any impacts in either Ohio or Pennsylvania. Also, the analysis does not include the transient, but potentially substantial economic impacts that would be expected during

Table 1 provides information describing expected impacts on employment incomes and regional output. It also provides study region totals for comparison purposes. The column labeled "Percent Increase" indicates the percentage change in regional values that would be expected if Browns Island is developed and the expected economic activity is, in fact, realized. All figures are regional totals that reflect the full range of direct, indirect, and induced economic activity. When annual income and output streams are extended over a 20-year time horizon and discounted using the same real discount of 6.125% used in Section 3, the resulting present values for these streams are $409 million and $1.4 billion respectively.

Table 1
Regional Economic Impacts

	Annual Value	*Study Area (1999)*	*Percent Increase*
Employment	950	47,717	2.0%
Income	$35 M	$1.4 B	2.5%
Output	$120 M	$3.2 B	3.7%

5. Fiscal Implications for West Virginia

The development of Browns Island will clearly require both local and State funding. However, by adding measurably to the magnitude of regional economic activity the development of Browns Island will also improve the region's ability to generate tax revenues. For example, workers will pay Personal Income Tax on new incomes, as well as Sales and Use Tax on increased purchases of final goods and services. Firms will pay Corporate Net Income Tax on new earnings and Business Franchise Tax on newly created firm value. There are, in fact, a large number of State and local revenue streams that should be positively affected by the development of Browns Island. Carefully estimating and documenting these probable outcomes is well beyond the scope of the current investigation. However, using a "rule-of-thumb" methodology

the construction of new facilities. Impacts were estimated through the use of IMPLAN regional simulation software.

applied elsewhere, it is not unreasonable to expect that the development of Browns Island and resulting increase in economic activity would increase total State and local revenue collections by approximately $5 million annually as activities on the island mature. Even if necessary expenditures are made immediately and no related tax revenues are realized for the first 10 years of the project's life, the discounted stream of future tax revenues may be sufficient to justify the proposed new infrastructure.

6. Summary and Conclusions

Browns Island represents a significant potential resource to residents of West Virginia's Northern panhandle. It's nearly 200 acres of developable property are readily accessible by commercial navigation, rail, and highway. It is relatively close to a number of important markets and it presents very few, if any, environmental obstacles. Weirton Steel, the island's current owner could measurably reduce its transportation costs by relocating certain transportation, handling, and storage functions to Browns Island. It is doubtful, however, that the benefits from doing so could, in themselves, justify the private and / or public expenditures necessary to develop the required facilities. Thus, for Weirton Steel and the broader community to capture the benefits that Browns Island promises, it will be necessary for all concerned constituencies to form and maintain a partnership for that purpose. Accordingly, the study team offers the following recommendations:

1. Browns Island should be developed primarily as an economic development project for Brooke and Handcock Counties based on the site plan provided herein. However, this development should be executed in a way that will maximize the transportation savings achievable by Weirton Steel.

2. Weirton Steel and the West Virginia Public Port Authority (WVPPA) should move to carefully but deliberately to address issues of land ownership and environmental cleanup.

3. Local and State officials, in cooperation with the WVPPA, should explore available funding for project development, including but not limited to Tax Increment Financing.[3]

4. The local Weirton Port District should continue efforts to identify potential tenants for Browns Island.

[3] Tax Increment Financing is a program whereby future tax revenues specifically attributable to an economic development project are used to finance the project's construction.