## Multimodal Freight Operations Study

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District Commission


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## Introduction

The Middle Peninsula Planning District Commission (MPPDC) is interested in the analysis of existing intermodal and port infrastructure assets on the Middle Peninsula and how to better incorporate these assets to establish a more efficient and reliable transportation system. The MPPDC wants to encourage the development and expansion of public-private partnerships that address current transportation issues and ultimately create new employment centers.

This study provides the framework and analysis that identifies means to an efficient and sustainable transportation system for the shipment of natural resource based freight throughout the Middle Peninsula. Natural resources are the backbone of industry on the Middle Peninsula and comprise a majority of cargo transiting the Middle Peninsula's highways, rail lines, and waterways.

The intent of this analysis is to identify the advantages of utilizing a more effective intermodal system, including:

- Highway traffic reduction
- Economic development
- Opportunities for synergistic development between the port, highway, and land resources
- Increased level of safety
- Better utilization of natural resources

The project is comprised of four tasks. Task 1 involves the collection of cargo data and identification of multimodal transportation facilities. Task 2 will use the data collected in Task 1 to analyze the freight movements and identify regional transportation opportunities and improvements. Task 3 will incorporate the use of a public survey to gain more insight into the region's current transportation issues. Task 4 will be the development of a final product that includes information and analysis from Tasks 1 to 3.

As an explanatory note, during the execution of this project the price of diesel gasoline was averaging $\$ 4.00$ a gallon, an all-time high. This trend had a significant impact on the Middle Peninsula natural resourcesbased freight logistics community and the financial structure of their applicable supply chain. As of March 2009, the average price of diesel has declined to more sustainable levels, averaging about $\$ 2.32$ a gallon. Although the cost of fuel has stabilized and is less of an impact to the financial stability of transportation users, the cost of fuel will continue to rise as will the impacts to supply chain economics. For this reason and others, efforts to maximize the use of alternatives modes for freight transportation must persist.

## 1. Data Collection

### 1.1 Methodology

The first step in providing an analysis of the current transportation infrastructure and freight movements for natural resource based businesses on the Middle Peninsula required the collection of data. The data collection process conducted in Task 1 involved industry research, an analysis of VDOT submitted data, identification of businesses for study participation, and on-site interviews. These efforts encompassed a variety of stakeholders and examined the following issues:

- Truck and load origin and destination, and applicable routes
- Profile of carriers transporting freight
- Characteristics of the freight being hauled (weight, size, volumes, etc.)
- Transportation routes
- Historical daily truck traffic in the Middle Peninsula
- Industry characteristics (seasonality, market areas, strengths, weaknesses, etc.)
- External industry concerns (government, public policy, global economy, fuel, etc.)

A preliminary list of businesses in the agriculture, seafood, and timber industries was generated to identify key players and potential study participants. Table 1-1 identifies these businesses. The businesses were selected by obtaining information through the Middle Peninsula phone book, on-line research, Virginia Seafood Council's website, the Virginia Department of Health's website (Division of Shellfish Sanitation), and Food and Drug Administration's website.

Table 1-1: Potential Participants

| Agriculture Industry | Seafood Industry | Timber Industry |
| :--- | :--- | :--- |
| ASB-Greenworld Inc. | Batley's Seafood | Augusta Wood Products |
| Aylett Sand \& Gravel | Bay Water Oyster Co. | Ball Lumber Co. |
| Bennett Mineral Co. | Benny Belvin Seafood | Canal Wood Corp |
| Brett Aggregates | Bonniville Seafood | Carlton \& Edwards, Inc. |
| Endfield Farms | C.C. Conway Seafood | ClearWater Timber* |
| Ethyl-Old Town Farms | Carino Seafood | Essex Industries Inc. |
| Frog Hollow Sod Farm | Chesapeake Bay Oyster Co. | L.P. Rigsby Lumber |
| Hampstead Farms | Cook's Seafood Co. | LaGrange Resources Inc. |
| Montague Farms | Crabs Express | Mid-Atlantic Tree Harvestors |
| Nestle Purina Petcare Co. | Eastrield Farms | O'Malley Timber Products |
| Old Dominion Grain (Mennel Milling) | Herman Greene \& Sons Seafood | The P.J. Casanave Land Clearing Co. |
| Perdue Grain \& Oilseed | J.W. Hogge Seafood* | Pitts Lumber Co. |
| Philip Minor Farms | J\&W Seafood of Virginia | Smurfit-Stone Containerboard Mill |
| King Wiiliam Sand \& Gravel Co. | King's Seafood | WT Fary Bros Lumber |
|  | Leroy's Seafood* | West Point Chips, Inc. |
|  | Middle Peninsula Aquaculture | William H. Milby Lumber |
|  | Mobjack Bay Seafood | York River Mill Works |
|  | Nelson Seafood* |  |
|  | Rappahannock River Oysters |  |
|  | Sea Farms |  |
|  | Shackelford Seafood |  |
|  | Shores \& Ruark Seafood |  |
|  | The Thalgen Co.* |  |
|  | Walton's Seafood |  |
|  | York River Seafood |  |
|  |  |  |

*     - Indicates businesses not included in project analyses due to inability to contact or locate for the purpose of this study

The list of potential seafood participants was forwarded to Tom Murray, Marine Business Specialist with Virginia Institute of Marine Science in Gloucester, VA. The list of potential agriculture and timber participants was forwarded to David Moore with the Virginia Cooperative Extension in Saluda, VA. The lists were reviewed by these two industry authorities to get valid recommendations for the primary shippers of natural resource based freight on the Middle Peninsula. Once the businesses were refined (Table 1-2), Lewis Lawrence with the MPPDC drafted a letter indicating the intent of the study and that a representative from TranSystems would be contacting them regarding their willingness to participate. All business locations below were located and marked using a GPS device.

Table 1-2: Recommended Businesses

| Agriculture Industry | Seafood Industry | Timber Industry |
| :--- | :--- | :--- |
| Bennett Mineral Co. | Benny Belvin Seafood | Augusta Wood Products |
| Frog Hollow Sod Farm | Bonniville Seafood | Ball Lumber Co. |
| Montague Farms | Chesapeake Bay Oyster Co | Carlton \& Edwards, Inc |
| Old Dominion Grain | Crabs Express | L.P. Rigsby Lumber |
| Perdue Grain \& Oilseed | J\&W Seafood of Virginia | Mid-Atlantic Tree Harvestors |
| Philip Minor Farms | Mobjack Bay Seafood | The P.J. Casanave Land Clearing Co. |
|  | Rappahannock River Oysters | Smurfit-Stone Containerboard Mill |
|  | Sea Farms | West Point Chips, Inc. |
|  | Shackelford Seafood | William H. Milby Lumber |
|  | Shores \& Ruark Seafood, Inc. |  |
|  | York River Seafood |  |

The following chose to participate by agreeing to an on-site interview:

- Crabs Express
- J\&W Seafood
- Mobjack Bay Seafood
- Sea Farms
- Montague Farms

The following businesses opted out of participation:

- Bennie Belvin Seafood
- Bonniville Seafood
- Chesapeake Bay Oyster
- York River Seafood
- Carlton \& Edwards
- William H. Milby Lumber

The following businesses were not available for comment:

- Shackelford Seafood
- Shores \& Ruark Seafood
- Rappahannock River Oysters
- Augusta Wood Products
- Ball Lumber Co.
- L.P. Rigsby Lumber
- West Point Chips
- Bennett Mineral Co.
- Frog Hollow Sod Farm
- Philip Minor Farms
- Old Dominion Grain
- Perdue Grain \& Oilseed
- Mid-Atlantic Tree Harvestors
- The P.J. Casanave Land Clearing Co.


### 1.2 Industry Issues

Discussions with participating businesses provided considerable insight into each industry's operations methods. Transportation plays a vital role in the three industries' operations because it is the sole source for market distribution. Issues impacting each business' transportation mode(s) were discussed during the interviews. Many issues were shared collectively and a summary of each industry is listed below. The areas for concern ultimately affect each business' operations and the amount of traffic transiting the Middle Peninsula.

### 1.2.1 Agriculture Industry

The agriculture industry was represented by three businesses that comprise the majority of multimodal agriculture traffic on the Middle Peninsula. This industry utilizes three transportation modes (ruck, barge, rail) to ship products locally, regionally, nationwide, and internationally. The high price of fuel has increased overhead costs and reduced suppliers' profit margins.

The two grain elevators on the Middle Peninsula are experiencing storage constraints and would like to expand to meet the increase in market demand. The volatility of the commodity markets has resulted in suppliers being hesitant to invest capital in expanded facilities. This results in a supplier selling for a lower cost because there is no storage available or a supplier storing grains until a later date when the price could increase. The agriculture industry is also losing valuable farmland to residential and commercial development which threatens the industry's livelihood.

### 1.2.2 Seafood Industry

The seafood industry shared similar issues among the four companies interviewed. The high price of fuel has increased transportation expenses which impacts profit margins. Processing labor is continually declining due to new government regulations stipulating a decrease in the H 2 B work visa quota this past year. Many seafood companies rely on migrant workers for processing and are challenged to secure enough visas to maintain a stable work force. Diminishing resources and a lack of seafood harvesters are continuing problems.

Watermen are retiring or taking land jobs and the younger generation is hesitant to fill the void. This enables foreign competition to gain market share and could ultimately threaten the livelihood of local companies. The fragile condition of the Chesapeake Bay produces fewer populations of crabs, clams, oysters, and fish. The local seafood industry will be challenged to survive without an adequate supply of resources at hand.

Maintenance dredging of local waterways has also been identified as an emerging constraint to waterman. Some of the regions navigational channels are no longer maintained by the federal government and siltation threatens grounding of fishing boats as well as some recreational vessels.

### 1.2.3 Timber Industry

The timber industry was represented by two land clearing companies that move 100\% of their freight via truck. The high price of fuel has increased operating expenses making projects less profitable. The industry is experiencing a lack of qualified labor to haul freight or operate equipment.

The recent downturn in the economy has decreased the amount of new construction; therefore making the industry more competitive. Larger companies are able to out-bid smaller companies for jobs because the larger company has more resources to absorb the price disparity. The retreating woodlands contribute significantly to the industry's diminishing livelihood.

### 1.3 Interview Summaries

Nine businesses agreed to participate in the study. The following section summarizes each business' operation, cargo movements, transportation infrastructure utilized, and current issues impacting operations. A questionnaire was developed specifically for the interviews and addressed the issues mentioned in the beginning of Section 1.1. The completed questionnaires for each interview can be found in Appendix A.

### 1.3.1 Agriculture Industry

## Montague Farms

Montague Farms is located in Center Cross, VA on Highway 17. Its primary business operation is growing, harvesting, and processing various grains for outbound shipment. Montague Farms exports containerized grains to Japan and also sells grains to local buyers. Montague Farms' cargo originates from farms within a 25 mile radius of Center Cross. Its destination points are Center Cross, Windsor, VA, Norfolk, VA and various end users within a 150 mile radius. In 2007 Montague Farms shipped approximately 3,000 truckloads of product to Norfolk International Terminals (50\%) and to its end users throughout the Middle Peninsula (50\%). Montague Farms' trucks utilize Highway $17,360,33$, and 30 in addition to numerous secondary roads where their farms are located.

The most sensitive issues affecting Montague Farms business operations are:

- The high price of fuel increasing operating expenses
- The need for a safe entrance (including median access) to its Center Cross facility on Highway 17.


## Old Dominion Grain

Old Dominion Grain (ODG) is a division of The Mennel Milling Co. of Virginia and located on Southern Ave. off of Highway 30 in West Point, VA. It has direct access to the Pamunkey River for barge shipments and the Norfolk Southern rail line for rail car shipments. Its primary business operation is purchasing, storing, and shipping of various grains. It is one of two facilities on the Middle Peninsula that utilizes rail, road and water modes of transportation. The origins of grains are within a 75 mile radius from West Point. $80 \%$ of the inbound freight originates on the Middle Peninsula. ODG freight destinations range from Virginia to the east coast to Florida. Locally, ODG's freight is sent to Salisbury, MD and Chesapeake, VA via barge, Roanoke, VA via rail, and Norfolk via truck. In 2007 ODG shipped 6 outbound barges and 1,400 ISO $20^{\prime}$ containers for export. Truck traffic destined for ODG use Highway 360, 33, and 30 in addition to numerous secondary roads where independent farms are located.

The most sensitive issues affecting ODG business operations are:

- The high price of fuel increasing operating expenses
- A limited amount of storage capacity
- Competition narrowing through acquisition (smaller companies being purchased by larger companies. i.e. the purchase of Old Dominion Grain by Mennel Milling Co.)
- The high fluctuation (volatility) of grain prices in the commodity markets
- The need for a more efficient and competitive rail service


## Perdue Grain \& Oilseed

Perdue Grain \& Oilseed is located on Grainery Rd. off of Highway 17 in Tappahannock, VA. It has direct access to the Rappahannock River via Hoskins Creek for barge shipments. Its primary business operation is purchasing, storing, and shipping of various grains. The origins for inbound grains are from various farms located within a 75 mile radius from Tappahannock. The destinations for outbound grains are Salisbury, MD and Chesapeake, VA. 95\% of the outbound grains are shipped to Salisbury by barge and the remaining $5 \%$ are trucked to Chesapeake for international export. In 2007, Perdue shipped approximately 150 outbound barges and received approximately 10,000 inbound truckloads. Trucks destined for Perdue use Highway 17, 360, 30, 3, 33, and 14 in addition to numerous secondary roads where independent farms are located.

The most sensitive issues affecting Perdue Grain \& Oilseed's operations are:

- The high price of fuel increasing operating expenses
- A limited amount of storage capacity
- Handling and turning over a high volume of inbound cargo in a short period of time
- A limited barge size due to Hoskins Creek's channel restrictions
- Crop shortages (due to weather, market prices, less land, etc.)
- Diminishing resources (losing farmland to development)


### 1.3.2 Seafood Industry

## Crabs Express

Crabs Express is located on Highway 14 in Gloucester, VA. Its primary business operation is brokering crabs. This entails purchasing, selling, and distributing. Crabs Express delivers its product via truck throughout the Mid-Atlantic region. The origin points are two to three local landing piers on the Middle Peninsula as well as importing crabs from Louisiana (via truck). The destination points are Richmond, VA, Norfolk, VA, the Eastern Shore of Virginia, Philadelphia, PA, Baltimore, MD, and New York, NY. Crabs Express' tractor trailer ships 5 to 6 truckloads per week and its smaller trucks (14' to $22^{\prime}$ ) ship 10 truckloads per week. Crabs Express' trucks primarily use Highway 14, 17, 33, and 3 on the Middle Peninsula for movement of its products.

The most sensitive issues affecting Crabs Express' business operations are:

- The high price of fuel increasing operating expenses
- The lack of crab harvesters on the Middle Peninsula
- Having to conform to transportation regulations enforced by state agencies (agencies overlap and it requires a great deal of paperwork)


## J\&W Seafood

J\&W Seafood is located on Highway 33 in Deltaville, VA. Its sister company Island Seafood is located off of Highway 223 in Gwynn, VA. J\&W Seafood purchases, processes, packages, wholesales, and distributes shellfish and finfish. Island Seafood processes and packages local shellfish. The shellfish from Island Seafood is trucked to J\&W for value-added services. Island Seafood has direct water access to the Chesapeake Bay with the ability to accept vessels on its 140 ' pier. The origin points for J\&W Seafood's products are within the Middle Peninsula region, the Gulf of Mexico region, and the Caribbean region. The destination points are Richmond, VA (twice per week), Washington DC and Maryland (four times per week), and Norfolk, VA (three times per week). J\&W Seafood uses its truck fleet to haul local and regional cargo and over-the-road trucking companies to haul its non-regional cargo. It ships approximately 500 truckloads annually. Trucks hauling J\&W Seafood's freight primarily use Highway 17, 360, 33,3 , and 14 , and Route 198 and 223 on the Middle Peninsula for movement of its products.

The most sensitive issues affecting J\&W Seafood's business operations are:

- The high price of fuel increasing operating expenses
- A shortage of workers for processing operations
- Diminishing resources and seafood harvesters (watermen)
- Declining market share due to foreign competition (frozen imports)
- Adhering to numerous undue government seafood regulations whose agencies overlap


## Mobjack Bay Seafood

Mobjack Bay Seafood is located on Route 701 in Ware Neck, VA. Its sister company Ward Oyster Co. is located on the same premises. Mobjack Bay Seafood purchases, processes, packages, sells, and distributes shellfish. Ward Oyster Co. grows aquaculture clams and oysters that are sold and distributed by Mobjack Bay. The site has direct water access to Mobjack Bay and has the ability to accept vessels on its 230' pier. Mobjack Bay uses its truck fleet to haul local and regional cargo and over-the-road trucking companies to haul its non-regional cargo. The origins for Mobjack Bay's products range from various points on the Middle Peninsula to states along the east coast
(Connecticut to South Carolina). Its destination points are Hampton, VA (five days per week), the Northern Neck, VA (five days per week), Jessup, MD, Baltimore, MD, and Philadelphia, PA (five to six days per week). Trucks hauling Mobjack Bay Seafood's freight primarily use Highway 17, 360, 33, and 3, and Route 6 and 701 on the Middle Peninsula for movement of its products.

The most sensitive issues affecting Mobjack Bay Seafood's business operations are:

- The high price of fuel increasing operating expenses
- Labor shortages for all seafood operations
- Adhering to numerous regulatory agencies that have jurisdiction over business operations
- Diminishing natural resources
- Diminishing profit margins that affect every aspect of the business
- Residential home owners protesting that oyster cages not be placed in waterways close to their land or home


## Sea Farms

Sea Farms is located off of Route 223 in Hudgins, VA. Sea Farms purchases, processes, packages, sells, and distributes shellfish and finfish. The site has direct water access to the Chesapeake Bay and has the ability to accept vessels. Sea Farms uses its truck fleet to haul local and regional cargo and over-the-road trucking companies to haul its non-regional cargo. The origin points for Sea Farms products are various points through the Middle Peninsula and the Gulf of Mexico region. The destination points are Richmond, VA, Norfolk, VA, and South Carolina. Trucks hauling Sea Farms' freight primarily use Highway 17, 14, 33, and 3, and Route 198, 223, and 669 on the Middle Peninsula for movement of its products.

The most sensitive issues affecting Sea Farms' business operations are:

- The high cost of fuel increasing overhead expenses (doubled fuel expenses in the $1^{\text {st }}$ quarter)
- Labor shortages for seafood processors
- Less consumer demand for seafood (products are being shipped in smaller quantities)
- Less watermen harvesting seafood


### 1.3.3 Timber Industry

## The P.J. Casanave Land Clearing and Grubbing Co.

The P.J. Casanave Land Clearing and Grubbing Co. is located in Shacklefords, VA at the intersection of Highway 33 and Riverview Ave. Its primary business operation is land clearing and grubbing. There is also a recycling facility located on site. The recycling facility grinds lot cleared materials into wood chips which are transported by trucks to the end user in West Point, VA. The origin points for its cargo are Shacklefords and job sites located throughout the Mid-Atlantic region. The destination points are West Point, VA, Hopewell, VA, and the nearest consumer mill to a job site. P.J. Casanave ships 250 to 300 annual truckloads from Shacklefords to West Point. P.J. Casanave's trucks use Highway 33, 360, 17, and 30 when hauling its products and equipment through the Middle Peninsula.

The most sensitive issues affecting P.J. Casanave's business operations are:

- The high price of fuel increasing operating expenses
- The lack of qualified labor
- Larger competitors being able to out-bid smaller companies
- The struggling economy which ultimately results in a lack of work


## Mid-Atlantic Tree Harvesters

Mid-Atlantic Tree Harvesters (MATH) is located in Aylett, VA on Globe Rd. of off Highway 30. Its primary business operation is handling raw forest products (clearing and grubbing). MATH clears land and hauls the timber via truck to the nearest consuming mill. MATH's job sites originate throughout the Middle Peninsula, and truck destinations range from Franklin, VA, to Hopewell to West Point. $75 \%$ of MATH's truckloads haul within a 50 mile (one-way) radius of
the job site and approximately 225 truckloads of product are shipped per week to its end user. MATH's trucks primarily use Highway 17, 360, 30, 33, and 3 when hauling its products and equipment through the Middle Peninsula.

The most sensitive issues affecting Mid-Atlantic Tree Harvesters' business operations are:

- The high price of fuel increasing operating expenses
- The lack of qualified labor
- Undue regulation from government agencies (not being treated fairly)

0 i.e. - VDOT blanket permit for temporary logging entrances

- Regulation needs to be applied fairly to loggers and farmers

0 i.e. - Loggers constantly being singled out for highway problems

- An elevated demand for timber but fewer resources available
- Assuming the risks associated with purchasing harvest tracks up front


### 1.4 Transportation Infrastructure \& Facilities

Alternative transportation methods proposed for the Middle Peninsula will be based on an examination of the area's existing transportation infrastructure and potential port, intermodal, and air facilities. The primary waterways, roads, and rail lines used for the shipment of natural resource based products on the Middle Peninsula are documented in Figures 1-1 through 1-7.

### 1.4.1 Port Facilities

Data obtained through the Army Corp of Engineers Port Series Report No. 11 (Revised 2005) identifies port facilities located on the north side of the York River and its tributaries. It describes the facility's berth accommodations, cargo handling equipment (if applicable), grain elevators, transit sheds, warehouses, and other elements associated with port-and-waterway operations. This information can be found in Appendix C. Port facilities located on Mobjack Bay, the Piankatank River, and the Rappahannock River was not included in Report No. 11. Therefore, existing facilities located on these waters were documented if an interview was granted.

### 1.4.2 Intermodal Rail Facilities

Intermodal transportation for the purpose of this study is defined as is the movement of freight using more than one mode of transportation. Old Dominion Grain, Perdue Grain \& Oilseed, and Smurfit-Stone are the three companies on the Middle Peninsula that have intermodal facilities and currently practice intermodal transportation on a relatively large scale. Many seafood companies throughout the Middle Peninsula practice intermodal transportation on a smaller scale by moving seafood from working boats to trucks for distribution. Potential intermodal facilities using rail would have to be located in King William County along Norfolk Southern's rail line limiting the availability of sites. Potential intermodal sites using water could be located throughout the Middle Peninsula. An analysis of transportation methods will be provided in Task 2. A detailed map provided in Task 4 will illustrate the Middle Peninsula's intermodal facilities.

### 1.4.3 Air Facilities

## Middle Peninsula Regional Airport

The Middle Peninsula Regional Airport is located in Mattaponi, VA and is the largest airport on the Middle Peninsula. Its sole runway, Runway10/28 was extended to 5,000 feet with a new lighting system in January of 2008. Aircraft operations from June of 2005 to July of 2006 were comprised of transient general aviation (39\%), military aviation (31\%), and local aviation (30\%) ${ }^{1}$. The airport primarily serves smaller recreational aircraft. Air freight is not shipped through this airport because of low volume and its proximity to the Richmond International Airport (36 miles), Newport News-Williamsburg International Airport (45 miles), and the Norfolk International Airport ( 69 miles). Its location is shown in Figures 1-1 and 1-5.

## Tappahannock-Essex County Airport

The Tappahannock-Essex County Airport opened in August of 2007 and is located approximately five miles south of Tappahannock. Its sole runway, Runway $10 / 28$ is 4,300 feet and can handle planes up to $30,000 \mathrm{lbs}$. Its location is shown in Figures 1-1 and 1-2.

## Hummel Field Airport

Hummel Field Airport is located six miles east of Saluda. Its sole runway, Runway $1 / 19$ is 2,270 feet. Aircraft operations from June of 2005 to July of 2006 were comprised of local aviation ( $90 \%$ ), transient general aviation (8\%), and military aviation $(2 \%)^{2}$. Its location is shown in Figures 1-1 and 1-7.

[^0]
### 1.5 Traffic Data

Data obtained through the Virginia Department of Transportation determines the Average Annual Daily Traffic (AADT) throughout the Middle Peninsula in 2007. This information was used to determine the average number of trucks transiting the Middle Peninsula's main roads. The data provided a breakdown of truck traffic by four different types of trucks. The trucks are classified as:

- Single unit trucks - 2 axle
- Single unit trucks - 3 axle
- Combination - truck \& 1 trailer
- Combination - truck \& $2+$ trailers

Each type of truck was assigned a percentage of the total traffic for each road segment. The individual truck traffic numbers were calculated from the given percentages and totaled to obtain one truck traffic statistic for each road segment. The road segments are grouped by county and city and subsequently by road number.

An analysis of the truck traffic data indicates Highways $360,17,33$, and 30 have the greatest amount of truck traffic on the Middle Peninsula. They serve as the arterial routes and provide connectivity to the surrounding areas. This information can be found in Appendix B, and was used to create truck traffic density maps, illustrated in Figures 1-8 through 1-14. Each highway's traffic patterns are detailed below.

## Highway 360

Highway 360 is a main gateway into the northern parts of the Middle Peninsula and also serves as the gateway to the Northern Neck. It traverses the western parts of King William, King and Queen, and Essex Counties with a traffic density of approximately 925 daily trucks on the 26 mile stretch. The traffic density increases in the town of Tappahannock to 1,391 daily trucks due to its convergence with Highway 17 (2 miles). Highway 360 has the most truck traffic over an extended stretch of highway on the Middle Peninsula.

## Highway 17

Highway 17 is the sole gateway into the Middle Peninsula from points south. It extends from the Coleman Bridge in Gloucester County and runs north through Middlesex and Essex Counties, totaling 76 miles. The southern half of Gloucester County (Coleman Bridge to the intersection of Business 17, 14 miles) has the highest traffic density on Highway 17 with approximately 650 daily trucks. The traffic density declines significantly to approximately 200 daily trucks from the Business 17 intersection to the town of Tappahannock.

## Highway 33

Highway 33 is a main gateway into the town of West Point. It extends 34 miles from the Eltham Bridge in West Point to Stingray Point, the westernmost point of Middlesex County. The town of West Point has the highest traffic density segment on the Middle Peninsula with 2,000 daily trucks on a third of a mile stretch. This is due to its convergence with Highway 30 and the heavy amount of truck traffic destined for the Smurfit-Stone plant in West Point. The heavy traffic density extends east with approximately 1,100 daily trucks transiting Highway 33 from West Point to the intersection of Highway 14 ( 5 miles). The traffic density decreases to 600 daily trucks from the intersection of Highway 14 to the intersection of Highway 17 ( 5.5 miles). The remaining stretch of Highway 33 has a relatively low traffic density, not exceeding 400 daily trucks.

## Highway 30

Highway 30 shares the western entrance (Eltham Bridge) into West Point with Highway 33. It extends 35 miles from West Point to the westernmost boundary of King William County. It has a high traffic density with approximately 800 daily trucks transiting a 12 mile stretch from King William County line to Highway 360, and approximately 660 daily trucks transiting the remaining 22 mile stretch from Highway 360 to West Point.

## 2. Data Analysis

### 2.1 Methodology

Data collected in Task 1 was analyzed to determine the most feasible opportunities for improving transportation integration of freight traffic on the Middle Peninsula. The three industries analyzed have very different freight characteristics and are summarized below:

- Seafood: extremely perishable; temperature controlled/refrigerated (except live crabs); requires short lead times for delivery; product is palletized; all products are shipped via truck; many products require value added services (i.e. processing); majority of customer base is within a 160 mile radius
- Agriculture: bulk commodity; loose loaded; easy to handle, transfer, and store; utilizes all three modes of transportation; some grains are exported via container
- Timber (wood chips \& round log): bulk commodity; loose loaded; easy to handle, transfer, and store; products are continually harvested at various sites resulting in a non-centralized industry

The freight characteristics of each commodity were considered in the evaluation of each industry and the development of potential transportation models. The transportation model's primary objective was to efficiently link each transportation segment to optimize the use of the Middle Peninsula's infrastructure. The results of the data analysis that merit consideration are listed below and discussed at length throughout the section.

- Seafood Transportation Model
- Intermodal Improvements
- Truck Traffic and Emission Reduction
- Project Funding


### 2.2 Seafood Industry Transportation Model

The seafood industry's transportation model uses inter-transportation and intra-transportation segments to complete the product distribution or supply chain. Inter-transportation combines multiple transportation modes, whereas intratransportation involves the use of a singular transportation mode. The initial segment in the seafood transportation model is "inter" in nature because the product is transloaded from boat to truck. The subsequent segment is "intra" in nature because the product is transloaded from truck to truck.

The seafood transportation model begins by boats hauling products to a public or private landing pier. If the boat arrives at a public landing pier, normally the product is transloaded directly to a truck for further processing, storage, and/or distribution. If the boat arrives at a private landing pier, the product may be processed on-site or sent to storage awaiting final distribution. The type of product being shipped and current season dictates the way it will be handled throughout the supply chain process. For example, crabs and oysters can be processed and packaged for distribution, or shipped in whole (i.e. bushel of crabs or oysters). Seafood is extremely perishable and needs to be in the marketplace as quickly as possible, usually the same day. This paramount characteristic demands short turnaround times and ultimately is the driver determining the mode of transportation.

It is difficult to incorporate new inter-transportation models for the seafood industry because of the products' brief shelf life. Seafood businesses on the Middle Peninsula generally receive and distribute products in less than a day to ensure freshness. This practice virtually eliminates the possibility of shipping seafood in refrigerated containers via ship, barge, or rail. Each alternative mode of inter-transportation incorporates additional freight handling charges and more importantly increases transit times because of indirect routes. For this reason an inter-transportation model for improving supply chain efficiencies for the Middle Peninsula seafood industry is not recommended.

The intra-transportation model produces the most feasible concept for improvement to seafood transport on the Middle Peninsula. Intra-transportation efficiencies could be made by establishing a centralized transloading
refrigerated warehouse where seafood is stored, consolidated, and distributed. Processing would take place at the individual business site. The warehouse should have a fleet of trucks for local, regional, and over-the-road transport, able to service any of the local seafood businesses' transportation needs. The truck fleet's destinations would be based on the shipper's consignees and have a fixed schedule to guarantee on-time deliveries.

The ideal location of the transloading refrigerated warehouse is recommended for three generalized areas, each having a concentrated amount of seafood business within a 10 to 15 mile radius. The three areas are Guinea, New Point, and Lower Deltaville. The ability to establish said service would benefit the local seafood businesses because more resources would be placed on operational aspects (i.e. harvesting, processing, etc.) and fewer resources allocated towards locating and securing reliable transportation. This service could create a more efficient transportation network by consolidating shipments and thereby reducing truck traffic.

### 2.2.1 Waterside Access

One of the challenges facing the Middle Peninsula seafood industry is waterside access. Waterside access in this context means maintaining ample water depths to allow for the safe navigation of commercial fishing vessels. Regular maintenance dredging is required to maintain adequate navigation conditions. With no regular maintenance dredging local waterways on the Middle Peninsula will continue to result in sitting of navigational channels and loss of safe boating depths.

Loss of access and related infrastructure for commercial fishermen leaves waterfront land available for private, nonindustrial development. This same waterside access issue impacts local and transient recreational boaters. Lack of available financing for regular maintenance dredging will continue to challenge the local navigational conditions of the Middle Peninsula's creeks and rivers. Local government should consider what funding mechanisms may be available to address the waterside access issue, including local government and federal and state public grants.

### 2.3 Intermodal Improvements

### 2.3.1 Public Intermodal Facility

The Middle Peninsula's competitiveness in coastal industries could be enhanced by implementing improvements to intermodal segments. A public intermodal facility established on the Middle Peninsula could be a more effective link between transportation modes by providing a centralized point for cargo transfer and allow shippers access to alternative markets. The intermodal facility would need to be classified under the intermodal definition outlined in Section 1.4.2. Therefore the facility would need access to two or more transportation modes. Such a facility should be positioned adjacent to the water, with ingress and egress provided by a primary or secondary road able to accommodate truck traffic carrying heavy loads.

Many locales throughout the Middle Peninsula can satisfy these requirements, but further evaluation is recommended to distinguish the most suitable site. A potential intermodal facility could be located in King William County because of its established transportation infrastructure. Preliminary evaluation supports this locale because it currently accommodates all three modes of transportation, has proximity to major highways, and is in a centralized location. Furthermore, the southeastern section of King William County is surrounded by water and an intermodal facility located in this area could be eligible for public financing to fund construction (discussed in detail in Section 2.5).

The Middle Peninsula's sole rail line is a critical component to the success of any potential intermodal facility because it offers the region the ability to reach out-of-state markets more economically by an alternative mode of transportation. Regional industries dependent on rail transportation would benefit from increased rail traffic as manifest trains could be generated faster. A manifest train is a train comprised of mixed rail cars (tankers, box cars, hoppers, etc.) and cargo (grain, liquids, packaged goods, etc.). Typically Class I railroads require a minimum train length and frequency before initiating service or enhancing existing service to industries served along their rail lines. The Middle Peninsula's ability to consistently satisfy Norfolk Southern Railroad requirements of minimum train
lengths and frequency would enable a scheduled service with the possibility of passing on lower transportation costs to their users. Ultimately, this service could make the region a viable transportation hub.

The conceptual intermodal facility would serve as a transloading site, able to accommodate agriculture and timber industries' commodities such as grains, round log, and wood chips. The Middle Peninsula has a robust agriculture and timber market, as indicated by data obtained from the Virginia Department of Forestry and Virginia Department of Agriculture and Consumer Services. The Middle Peninsula produced approximately 10.5 million bushels of grains and 236,000 cords and 44,311 board feet of pine and hardwoods in 2007. An intermodal facility could be sustained by accommodating a small percentage of these commodities. A further study detailing the facility's return on investment is recommended to gauge its operational and financial feasibility.

As stated in Section 2.2, the seafood industry transportation model relies $100 \%$ on trucking due to the perishable nature of the commodity. Therefore all seafood operations should be handled at a refrigerated warehouse. An intermodal facility in the Middle Peninsula would require the following characteristics and equipment to satisfy the commodities' handling requirements identified in the study:

- Waterfront access: Industrial wharf/pier infrastructure capable of handling barges and heavy-duty equipment for the transshipment of containers and bulk commodities
- Outside storage: Designated areas for stockpiling bulk commodities and storing containers
- Transit Shed: Storage for weather sensitive products (not limited to natural resource based products) and space for maintenance and repair facilities
- Container Handling Equipment:
- Reachstacker: Handles containers for wharf operations
- Top-Pick: Handles containers for yard operations (i.e. stacking)
- Hostler or Yard Tractor: Jockeys containers throughout the terminal
- Bomb Cart: Attached to the hostler and is the chassis for container movements within the terminal

Container handling equipment can have interchangeable attachments for the handling of bulk commodities such as timber. The container handling equipment is illustrated in Figures 2-1 through 2-4.

- Containerization Equipment
- Front-End Loader: Loads the bulk commodity onto the mobile conveyor's hopper
- Mobile Conveyor: Conveys the bulk commodity from the stockpile into the container
- Mobile Container Inverter: Inverts the container to a desired angle for loading. The container inverter has the ability to weigh the container.
- This process is illustrated in Figure 2-5.

Figure 2-1: Reachstacker Loading a Barge


Figure 2-3: Containers on a Bomb Cart


Figure 2-2: Top-Pick Stacking Containers


Figure 2-4: Hostler


Figure 2-5: Container Inverter Loading Process


The public intermodal facility's footprint would require a minimum of 15 acres, and be divided into the following three components:

- Container Storage
- Transit Shed Operations
- Bulk Commodity Storage

The container storage area would encompass four acres and be able to handle and store approximately 150 containers per week for the export of grains. Containers would be stacked two high in five rows of 30 containers per row with room added for truck and container circulation. The acreage calculation is derived from interview data indicating the total amount of export grain shipped in containers ( 3,000 forty foot equivalent units or FEU) during a nine month season. Also, an area would be devoted to container chassis storage.

The area for transit shed operations would require approximately seven acres, including a $100,000 \mathrm{ft}^{2}$ transit shed. The transit shed would be an idealized sized building meeting all the storage and operational requirements
necessary to accommodate present and future breakbulk operations. Breakbulk is a term for generalized cargo that is non-containerized and non-bulk, and are loaded/unloaded individually (i.e. palletized cargo, baled cargo, cased cargo, etc.). Multiple cargo operations could be developed and expand beyond natural resource based cargo (i.e. wood pulp, bagged agricultural products, etc.). The transit shed is sized for a moderate operation that experiences relatively short dwell times and handles a high volume of cargo per square foot. The building would have a section devoted to maintenance and repair of facility equipment, and a section devoted to administrative and other support operations. Cargo transfer would occur on three sides of the building. One side provides access to the wharf/pier, another provides access to truck loading and unloading bays, and a third side provides rail access.

The area used for storing bulk commodities (i.e. wood chips, round log, grain, iron ore, etc.) would be divided into sections to accommodate commodities stored in silos and commodities stored in open stockpiles. The bulk storage area's footprint would be determined by its annual throughput and available land. The area need could range from less than an acre to four acres depending upon operations.

### 2.3.2 Conceptual Intermodal Terminal

The location of the conceptual public intermodal facility described herein is in the southeast section of West Point at the rail line's terminus. It is a potential site in King William where all three transportation modes are served. Figure 26 highlights the designated area required for the public intermodal facility. This location is deemed appropriate because it has the following characteristics:

- Direct access to the Pamukey River and York River
- No navigable obstacles constraining vessel/barge operations
- Proximity to Highway 30 and Highway 33
- Minimal development of the existing outlined area
- On-dock rail access
- 36 acres can easily satisfy the facility's needed footprint

Figure 2-6: Conceptual Public Intermodal Facility


The concept described above is only an example of how a public intermodal facility could be implemented on the Middle Peninsula and not a recommendation. The results of developing such a facility at the location identified above may have undesirable potential impacts to the residents of West Point, noting that the site is on the edge of a registered Historic District and such a facility may introduce substantial new truck traffic to West Point's downtown streets.

Potential sites that could accommodate the public intermodal facility described here may exist further up the Pamunkey River, or potential intermodal sites exclusive of rail transportation may be considered at port sites, identified in section 2.5.3 of this report, for accommodating container-on-barge operations.

### 2.4 Truck Traffic and Emission Reduction

The continued practice of containerizing grain products associated with Old Dominion Grain and Montague Farms operations provides the opportunity to reduce applicable truck traffic on the Middle Peninsula. Both companies currently containerize grain for export via Virginia Port Authority (VPA) marine terminals. In 2007 containerized grain exports originating from the Middle Peninsula accounted for approximately 2,900 total truck trips. By transporting these containers via barge from the Middle Peninsula to a VPA marine terminal, those truck trips could be eliminated from the primary highways connecting the Middle Peninsula to southeastern Virginia.

The advantages of shipping cargo by barge compared to truck and rail has been well documented. The measure of energy efficiency in transportation is the amount of energy expended to move a certain weight of load over a given distance, expressed as British Thermal Units (BTUs) required to move one ton one mile (a ton-mile). As water transport expends 433 BTU per ton-mile versus 696 for rail, it is much more efficient to move cargo through water than over land. Supporting this conclusion is statistical data reflecting the relative distance each mode of transportation can carry one ton of cargo for every gallon of fuel burned.

Figure 2-7: Transportation Modal Comparison


Source: Iowa DOT

Figure 2-7 shows that shallow draft water transportation is almost nine times more economical, thus more efficient, than trucks and over two and one half times more efficient than rail.

The key to this efficiency is the ability of barges to carry large loads of bulk materials up to five times their own weight. The cargo capacity of a barge is 15 times that of one rail car and 60 times greater than one semi-trailer truck. Pollutants expelled into the air by the tremendous number of trucks on the road are a main source of greenhouse gas emissions and hazardous to the environment. Among transportation sources, road traffic is by far the greatest source of those pollutants. In contrast, barges cause far less air pollution than trucks, and less, or comparable amounts, than rail. Exhaust emissions from barges cumulatively produce fewer emissions per ton-mile of freight carried than either rail or truck. Waterway operations are generally away from population centers so the pollutants barges emit are less intrusive than the other modes of transportation. Table 2-1 lists the three modes of transportation's associated hazardous emissions rates.

Table 2-1: Pounds of Emission per Ton-Mile

| Mode | Hydrocarbons | Carbon Monoxide | Nitrogen Oxide |
| :--- | :--- | :--- | :--- |
| Barge | 0.0009 | 0.0020 | 0.0053 |
| Train | 0.0046 | 0.0064 | 0.0183 |
| Truck | 0.0063 | 0.0190 | 0.1017 |

Source: C. Jake Haulk Ph.D. - Inland Waterways as Vital National Infrastructure: Refuting "Corporate Welfare" Attacks
To demonstrate the potential reduction of emissions associated with transporting containerized grain by barge, compared to truck traffic associated with this study, the following assumptions have been used:

- Total trip miles per truck from the Middle Peninsula to the VPA are approximately 70 miles, one-way
- Total trip miles per barge from the Middle Peninsula to the VPA are approximately 62 miles, one-way
- The carrying capacity (container only) for one truck hauling containerized grain is $1-20^{\prime}$ container
- The empty container return is included as a non-productive move
- The carrying capacity for one barge carrying containerized grain is $72-20^{\prime}$ containers
- $1-20^{\prime}$ container loaded with grain weighs approximately 20 tons
- Annual volume of $20^{\prime}$ containers, loaded with grain, to be transported from the Middle Peninsula to VPA is 2,900
- Total number of barge trips required to transport 2,900-20' containers from the Middle Peninsula to the VPA is approximately 40 barges

The annual theoretical, approximate total pounds of emissions resulting from truck transport of containers loaded with grain from the Middle Peninsula to the VPA are:

- Hydrocarbons - 25,578 pounds
- Carbon Monoxide - 77,140 pounds
- Nitrogen Oxide - 412,902 pounds

The annual theoretical, approximate total pounds of emissions resulting from barge transport of container loaded with grain from the Middle Peninsula to the VPA are:

- Hydrocarbons $-3,236$ pounds
- Carbon Monoxide - 7,192 pounds
- Nitrogen Oxide - 19,058 pounds

The annual theoretical, approximate total pounds of emissions eliminated by carrying containerized export of grain via barge service versus truck are:

- Hydrocarbons - 22,342 pounds
- Carbon Monoxide - 69,948 pounds
- Nitrogen Oxide - 393,844 pounds

In addition to the reduction of emissions that can be achieved thru the implementation of a container-on-barge service in the Middle Peninsula, barges moving along isolated waterways generally adhere to natural river channels. Thus, they require minimal modification to the land for support, unlike road or rail, and are less likely to compete with non-transportation uses for that land. Highways and railroad corridors can command large land areas, whereas barges require few connections and waterside terminals. In addition, the reduction in frequency, resulting from the increased carrying capacity of barges, minimizes the impacts the shipping industry can have on the surrounding roadway network and community.

### 2.5 Project Funding

### 2.5.1 Virginia Port Authority - Aid to Local Ports

The Virginia Port Authority (VPA) has a program called Aid to Local Ports (ALP). The program appropriates approximately $\$ 1$ million per year in funds to various Virginia localities. ALP fund grant requests begin in early February each year and are reviewed with legislators whose districts encompass many of the localities that normally submit requests. The following localities submitted requests and have been recommended for 2009 ALP funding:

- Town of Cape Charles (Eastern Shore): $\$ 95,000$ for redevelopment of the Harbor
- Town of Chincoteague (Eastern Shore): $\$ 182,894$ for rehabilitation of the Curtis Merritt Harbor of Refuge
- Town of Tangier: $\$ 110,830$ for a commercial boat ramp
- Town of Wachapreague (Eastern Shore): $\$ 26,250$ for maintenance dredging of the Town Marina berths
- Accomack County (Eastern Shore): \$97,000 for refurbishing portions of Quinby Harbor
- Port of Richmond: $\$ 250,327$ for construction of the Richmond Deepwater Terminal Turning Basin Widening Project
- Town of Onancock (Eastern Shore): $\$ 175,000$ for dredging certain areas of Currituck Creek
- Isle of Wight County and the Town of Saxis (Eastern Shore) submitted requests but no action was taken

Funds will be used to support port capital needs of publicly-owned ocean, river, and tributary ports and their marine facilities within the Commonwealth whose primary purpose is the flow-through of goods for consumption.

For a project to be eligible, VPA, in its sole discretion, must determine that the proposed project is economically feasible based on a preplanning study or current level of business. Potential projects must further the interest of the Commonwealth and not directly place existing publicly-owned port facilities at a competitive disadvantage. Development and presentation of information needed to determine project feasibility are the responsibility of the applicant.

Requests for funding shall be made by the end of February to the beginning of March. Applicants may be required to make an oral presentation at the request of VPA. Funds are allocated at VPA's May Board of Commissioners meeting and available for successful applicants on July $1^{\text {st }}$ of that same year. Preference will be given to those requests accompanied by a six-year development plan, where appropriate, which can be used as a basis for projecting future funding requests.

No monies shall be used to fund studies to determine project feasibility. VPA establishes priorities based on the ability of a project to promote the interests of the Commonwealth as well as the financing needs of the applicant in terms of the amount of the request and ability to pay.

Local share of project costs shall be reduced by an amount equal to the costs incurred by successful applicants to fund studies that determine project feasibility. Local shares of project costs may also be reduced by up to $50 \%$ by contributions of real or personal property necessary for development of the project, as well as out-of-pocket costs for technical evaluation, survey, and engineering. The value of, and extent to allow, such contributions shall be determined solely by VPA.

Any project with potential federal funding interest has a separate list of regulations set forth by VPA. Non-federally funded projects require the locality pay $25 \%$ of total project costs for projects up to $\$ 500,000$ or $50 \%$ of total project costs for projects over $\$ 500,000$.

VPA's ALP program could be utilized by localities or counties on the Middle Peninsula to improve existing waterfront structures (i.e. public boat landings for watermen), dredge local waterways, or develop an intermodal facility. These examples could be partially funded and provide an incentive to better link the region's transportation modes.

### 2.5.2 Maritime Administration (MarAd) - America's Marine Highway Program

MarAd's Marine Highway Program identifies short-sea shipping transportation routes to be designated as Marine Highway Corridors. Currently MarAd is inviting interested parties to recommend short-sea transportation routes and soliciting applications to participate in short-sea transportation projects.

The Marine Highway Corridors will integrate America's Marine Highway into the existing surface transportation system. Marine Highway Corridors will serve as extensions of the surface transportation system and consist of navigable coastal, inland, and intra-coastal waters of the United States. The Marine Highway Corridors will support the movement of passengers and freight between U.S. ports, or between U.S. ports and unloaded either at a port in Canada located in the Great Lakes Saint Lawrence Seaway System; or loaded at a port in Canada located in the Great Lakes Saint Lawrence Seaway System and unloaded at a port in the United States, relieving landside congestion.

Marine Highway Project designations will mitigate landside congestion by designating projects that, if successfully started, expanded, or otherwise enhanced, would provide the greatest benefit to the public in terms of congestion relief, improved air quality, reduced energy consumption, infrastructure construction and maintenance savings, improved safety, and long-term economic viability.

The Energy Independence and Security Act of 2007 states projects will be designated as short-sea if the Secretary of Transportation determines the project may offer a waterborne alternative to available landside transportation services using documented vessels; and provide transportation services for passengers or freight (or both) that may reduce congestion on landside infrastructure using documented vessels. Furthermore, short-sea shipping is defined as "the carriage by vessel of cargo that is contained in intermodal cargo containers and loaded by crane on the vessel or loaded on the vessel by means of wheeled technology; and is loaded at a port in the United States and unloaded either at another port in the United States or at a port in Canada located in the Great Lakes Saint Lawrence Seaway System; or loaded at a port in Canada located in the Great Lakes Saint Lawrence Seaway System and unloaded at a port in the United States."

Many marine highways run parallel to congested highway corridors throughout the United States. An example of a Marine Highway is the container-on-barge service running between Baltimore, MD and Norfolk, VA. It relieves approximately 2,000 trucks on I-95 and I-64 per week. A recommended long-term improvement to the Middle Peninsula's transportation infrastructure could be establishing a port facility that has the capability to handle containers and could be included as a destination point on MarAd's Marine Highway. Federal funds could be allocated for construction and maintenance costs.

### 2.5.3 Other Federal Freight Transportation Funding Mechanisms

The largest source of grant funding for port related infrastructure projects over the past 15 years has been federal grants through the Intermodal Surface and Transportation Efficiency Act (ISTEA) and its successor the Transportation Equity Act for the 21st Century (TEA-21) funding.

ISTEA and TEA-21 limit the types of projects that are eligible to receive Federal-aid funding. Although TEA-21 programs are numerous and the total funding is substantial, there are relatively few programs oriented toward freight transportation in general and rail transportation in particular. Four programs within TEA- 21 were either specifically designed to promote rail freight transportation or have been used for funding port intermodal infrastructure in the past.

- Railroad Rehabilitation and Improvement Financing Program (RRIP)
- Transportation and Community and Systems Preservation Program (TCSP)
- Transportation Infrastructure Finance and Innovation Act of 1998 (TIFIA)
- Congestion Mitigation and Air Quality Improvement Program (CMAQ)

A recent local example of the application of ISTEA/TEA-21 funding includes the James River container-on-barge service, or 64 Express. The new, Virginia-based barge service, sponsored by T. Parker Host received a 3-year, \$2.3million CMAQ Improvement Program grant from the Richmond Regional Planning District. CMAQ is managed by the Federal Highway Administration through regional planning agencies.

The service offers a cost effective, environmentally friendly, congestion relieving, and reliable alternative to all truck freight shipments to and from Hampton Roads and the Port of Richmond. Through the use of a few transshipment ports, there is real potential for millions of tons of cargo in all forms to be moved on small feeder ships to other, smaller, shallow draft "niche" ports.

Figure 2-8: VPA Container-on-Barge Service


Port facilities for handing container-on-barge operations require efficient highway access, and rail if available. Potential port sites for accommodating container-on-barge operations on the Middle Peninsula include:

- West Point
- Deltaville
- Guinea
- New Point
- Tappahannock
- Urbanna

One example of a potential container-on-barge port facility location identified in this analysis is the Middle Peninsula Regional Airport. This property has 1,500 ' of river frontage on the east bank of the York River and direct access to the site of the future Middle Peninsula Regional Industrial Park. The facility pictured below is similar in scope and size to the terminal proposed in New Kent County on the Pamunky River.

A container-on-barge service could create immediate positive impacts to the region by reducing the number of trucks transiting local highways and providing measurable economic impact. Bulk goods, such as grain being containerized by local industry in West Point, are normally not subjected to the same time constraints as containers carrying commercial goods. Barges are popular modes of transportation for this commodity because economies of scale can be achieved and the cargo can be stored in bulk reducing its time sensitivity. This analysis recommends that future container-on-barge service on the Middle Peninsula should be considered for further feasibility, including the potential for developing public-private partnerships.

Figure 2-9: Middle Peninsula Regional Airport and Potential Container-on-Barge Port Site


### 2.5.4 Watermen Tax Break

Watermen in Virginia receive tax exemption on specified items directly related to business operations. This benefit does not enable or contribute to project funding but is identified because it promotes incentives to the seafood industry that could ultimately attract potential participants and create a more robust supplier base. Virginia Tax Administrative Code 23VAC10-210-351 states commercial watermen's purchase of the following items will not be subject to tax if directly used in the commercial fishing operation:

1. Anchors
2. Bait
3. Bilge pump
4. Boat and boat motors
5. Boat rudder and stock
6. Boat steering gear
7. Boat hook
8. Boom and gaff on commercial fishing vessel
9. Compass
10. Crab-pot rope and wire
11. Depth finder
12. Dredge and equipment including all deck and components and repairs thereof
13. Drive shaft and propeller
14. Engines and other equipment
15. Floats for net or crab-pot
16. Foul-weather clothing worn while extracting seafood from waters
17. Fuel
18. Gas tanks
19. Gill net and all types of nets for extracting seafood
20. Hand tools used in extracting seafood
21. Ice for preserving seafood or bait
22. Inboard and outboard motors
23. Nails, screws and bolts used on any seafood extracting equipment except the boat itself
24. Oyster tubs and baskets
25. Nets and twine
26. Paint for boats
27. Poles and stakes used in setting nets and marking ground for seafood
28. Power block and accessories
29. Pulley for deck rig or net rigs
30. Repair parts for exempt equipment
31. Rope or twine, including wire cable, or chain for boat, net or dredge rig used to extract seafood
32. Rudder and shaft zincs
33. Running lights and deck lights
34. Shovels for handling seafood in the catching process
35. Sonar equipment to locate fish, bivalves, or crustaceans
36. Ship-to-shore radios, radar equipment, and other related accessories which are permanently affixed to a boat and become an integral part thereof
37. Tools such as knives, shovels, etc., used directly in a commercial fishing activity
38. Trawl doors
39. Any other tangible personal property purchased for exclusive use in extracting seafood from waters for commercial purposes

## Appendix A - Interview Questionnaires

## MPPDC FREIGHT ANALYSIS QUESTIONNAIRE - AGRICULTURE INDUSTRY

Business \& Interviewee(s): Montague Farms: Center Cross, VA

## Bill Taliaferro: Owner

Phone Number: (804) 443-3536
Date: 9/19/08
Interviewed By: Ray Crews

1. Number of employees: 25
2. What are your hours of operation (days \& hours):

- Varies due to season. During the harvest season Montague runs the grain dryer 24/7
- Harvest season is from September to December

3. What is your primary business operation?

- Farming various grains
- Preparing and storing grains for shipment
- Shipping grains to local consumers and exporting grains overseas

4. Briefly describe your day-to-day operations:

- Managing daily farming operations (crop planting, crop maintenance, harvesting, etc.)
- Ship the grains from the farms to either Center Cross, VA or Windsor, VA for drying and storage
- Loading the grains into a trailer or container for outbound shipment

5. What are your commodities/products? Corn, soybeans, barley, wheat
6. Describe your facilities (warehouse, packaging plant, etc.):

- Center Cross facility
- Office building
- Grain elevator and dryer
- Maintenance building

7. What modes of transportation do you use to ship your product(s)?

- 5 trucks
- 12 trailers

8. What are the origin and destination points for your cargo?

- Origins
- 25 mile radius from Center Cross
- Destinations
- Norfolk, VA
- 150 mile radius to various consuming mills

9. What are the main routes on the Middle Peninsula trucks use for the shipment of your products?

- Highway 17
- Highway 360
- Highway 33

10. Do you import or export goods internationally?

- Yes. Predominantly to Japan.

11. What is the seasonality of the industry and your business?

- Harvest season is the last week of August through the first week of May

12. Do you share truck space with other local businesses?

- Montague hires trucks if needed during the harvest season

13. Annual truck moves (outbound \& inbound):

- Approximately 3,000 ( $50 \%$ to Norfolk and $50 \%$ on Middle Peninsula)

14. Average mileage per move (inbound \& outbound):

- Trucks run from the farm to Center Cross in September through December
- Trucks run from Center Cross and Windsor to Norfolk in December through May

15. Market or service area: 150 mile radius from Center Cross, VA
16. What are the biggest challenges/issues facing your business today?

- 

17. How could these issues be overcome?

- 

18. What is your competitive advantage?

- 

19. What is the biggest threat to your livelihood?

- 


## Notes

Montague would like a median entrance that gives traffic direct access to their business. This would
eliminate trucks from making u-turns a tenth of a mile north of their entrance and create a safer roadway
Interested in the Norfolk region due to their export business and trucks spending a lot of time in traffic
Form a citizen's advisory committee to help the Middle Peninsula address common problems. This would
be an inexpensive way to solve problems.

Business \& Interviewee(s): Old Dominion Grain (The Mennel Milling Co. of Virginia): West Point, VA Linda Smith: Merchandising Manager

Phone Number: (804) 843-2922
Date: 9/24/08
Interviewed By: Ray Crews \& Matt Gehman

1. Number of employees: 11
2. What are your hours of operation (days \& hours):

- Harvest season: 6 days per week, 8:00 AM to 4:30 PM

3. What is your primary business operation?

- Old Dominion Grain purchases, stores, and ships various grains

4. Briefly describe your day-to-day operations:

- Receives inbound trucks loaded with various grains
- Unloads each truck and stores various grains into their specified area
- Loads trucks, rail cars, and barges for outbound shipments

5. What are your commodities/products? Corn, soybeans, barley, wheat
6. Describe your facilities (warehouse, packaging plant, etc.):

- Grain elevator
- Truck lift
- Multiple storage area with a total capacity of 1.9 million bushels
- Approximately a 500 ' pier for barge access

7. What modes of transportation do you use to ship your product(s)?

- 3 trucks
- 60 trailers (dropped in farms)
- Barges (use barges owned by Perdue)
- Rail

8. What are the origin and destination points for your cargo?

- Origins
- 75 mile radius
- Middle Peninsula (80\%)
- Destinations
o Chesapeake, VA
- Roanoke, VA
- East Coast: Virginia to Florida

9. What are the main routes on the Middle Peninsula trucks use for the shipment of your products?

- Highway 17
- Highway 360
- Highway 30
- Highway 33

10. Do you import or export goods internationally?

- Product is sent to Chesapeake, VA or Norfolk, VA then overseas

11. What is the seasonality of the industry and your business?

- Harvest season is June, $1 ⁄ 2$ July, and September through December

12. Do you share truck space with other local businesses? No
13. Annual truck moves (outbound \& inbound):

- 6 barges in 2007
- 1,400 ISO containers in 2007 (40')

14. Average mileage per move (inbound \& outbound): Approximately 75 miles
15. Market or service area: East Coast from Virginia to Florida
16. What are the biggest challenges/issues facing your business today?

- The high price of fuel
- Limited amount of storage capacity
- Narrowing competition by acquisition
- Fluctuation in the commodity markets
- Rail service

17. How could these issues be overcome?

- The price of fuel decreases
- Land becomes available for acquisition / zoning is passed to build larger tanks
- Stricter acquisition regulations are enacted to protect smaller companies
- The global economy stabilizes
- Another rail line is allowed to use Norfolk Southern's track

18. What is your competitive advantage?

- ODG provide trailers to farmers

19. What is the biggest threat to your livelihood?

- Land being sold off to development


## Notes

Majority (80\%) of inbound trucks are from the Middle Peninsula
Outbound shipments: rail $=60 \%$, truck $=30 \%$, barge $=10 \%$
Mennel's Roanoke Mill receives 20\% of outbound rail shipments
The barges used are owned by Perdue
ODG would like the rail rates and service to be more competitive
There is an expensive switch charge in Richmond from Norfolk Southern to CSX

It is tough to figure out the commodity markets because of high daily fluctuation
ODG offers storage for farms and owns approximately 60 trailers that farmers use
Competition is becoming tighter because of acquisitions
It takes approximately 5 minutes to unload a truck at ODG
ODG shipped 1,400 ISO containers (FEU) in 2007
Narrowing competition due to the smaller companies being bought out by the larger companies

Business \& Interviewee(s): Perdue Grain \& Oilseed, LLC: Tappahannock, VA
Mike Newsome: Facility Manager \& Charlie Stubb: Merchandiser
Phone Number: (804) 443-4391
Date: 9/18/08

## Interviewed By: Ray Crews

1. Number of employees: 10 (FT) \& 3 (temps)
2. What are your hours of operation (days \& hours):

- Harvest season: 24/7 (2 shifts) for 5 months
- Non-harvest season: 7:00 AM to 4:00 PM Monday through Friday

3. What is your primary business operation?

- Perdue Grain \& Oilseed purchases, stores, reloads (transloads), and ships various grains

4. Briefly describe your day-to-day operations:

- Receives inbound trucks loaded with various grains
- Unloads each truck and stores various grains into their specified area
- Loads trucks and barges for outbound shipments

5. What are your commodities/products? Corn, soybeans, barley, wheat
6. Describe your facilities (warehouse, packaging plant, etc.):

- Multiple buildings for office operations and maintenance
- Grain elevator
- Truck lift
- Nine storage areas with a total capacity of 3.85 million bushels
- Approximately a $170^{\prime}$ pier for barge access

7. What modes of transportation do you use to ship your product(s)?

- Barges - approximately 150 outbound barge moves per year
- Trucks - approximately 10,800 inbound trucks per year

8. What are the origin and destination points for your cargo?

- Origins
- Middle Peninsula
- Within a 75 mile radius
- Destinations
o Chesapeake, VA
- Salisbury, MD

9. What are the main routes on the Middle Peninsula trucks use for the shipment of your products?

- Highway 17
- Highway 360
- Highway 30
- Highway 3
- Highway 33
- Highway 14
- Many secondary roads due to the location of each farm

10. Do you import or export goods internationally?

- Indirectly. Product is shipped to the Perdue facility in Chesapeake, VA and then shipped internationally.

11. What is the seasonality of the industry and your business?

- Harvest season is June, $1 ⁄ 2$ July, and September through December

12. Do you share truck space with other local businesses?

- Perdue works with Old Dominion Grain occasionally

13. Annual truck moves (outbound \& inbound):

- Perdue averages 165 inbound trucks per week
- Outbound and inbound shipments total approximately 9 million bushels each annually

14. Average mileage per move (inbound \& outbound): Approximately 25 miles (one-way)
15. Market or service area:

- $95 \%$ of the inbound grains are shipped to Salisbury via barge
- $5 \%$ of the inbound grains are shipped to Chesapeake via truck

16. What are the biggest challenges/issues facing your business today?

- The high price of fuel increasing expenses
- Limited amount of storage capacity
- Channel restrictions for barges entering Perdue's facility
- Crop shortages
- Limited amount of farm land (diminishing resources)

17. How could these issues be overcome?

- Economy stabilizes
- Increase the storage capacity
- Dredge the entrance channel
- Markets stabilize or have positive trends so farmers will plant crops

18. What is your competitive advantage?

- Large storage capacity
- Barge capability

19. What is the biggest threat to your livelihood?

- Diminishing of natural resources (reduced farm land)
- Crop shortage (farmers not planting because of low market prices)


## Notes

Export grain has to meet certain grade standards

Farmer's pay is based on the daily commodities market
Problem with infrastructure: bridges (lb. limit), alternate routes on secondary roads

Congestion in downtown Tappahannock: 40 minutes to get to Perdue from the Rappahannock Bridge
(approximately 4 miles away) due to back to back stop lights (possible bypass?)
Trucks $=1,000$ bushels, Barges $=58,000$ bushels
Perdue Grain \& Oilseed has regional facilities in Richmond, Kilmarnock, and Kinsale

2007: experienced a shortfall of crop

Fuel: Causing carriers to go out of business; Perdue increased freight rates (a weekly fuel surcharge is paid based on the net dollar amount. The fuel surcharge is calculated based on the national diesel average)

Inbound trucks are full (gross weight $=82,000 \mathrm{lbs}$; product weight $=50,000$ pounds)
Perdue is running their dryer more efficiently to save costs. Dryer uses 25,000 gallons of propane annually
Barges have been running lighter loads to conserve fuel and watching the tides \& winds more closely
Barges are shut off more often when waiting to be loaded
Tugs in Deltaville: Ward (3) \& Ellsworth (1)
Perdue owns or leases the barges (covered barges); barges with a capacity of 120,000 bushels cannot access the pier in Tappahannock because of channel restrictions (barge is too long)

Perdue would like to dredge to the wetlands to accommodate larger barges
900 bushels $=54,000 \mathrm{lbs}$. most trucks have $5 \%$ over weight permits
Consolidated trucking business probably would not work b/c farmers are becoming diversified and getting
backhauls. Farmers would not like possibility of trucks falling off because the crop is too sensitive to price.
Perdue has 15 drivers that help farmers with no trucks. Perdue has more control over the trucks

Perdue has a strict policy concerning inbound trucks' weight limits. Perdue does not condone overweight trucks

## MPPDC FREIGHT ANALYSIS QUESTIONNAIRE - SEAFOOD INDUSTRY

Business \& Interviewee(s): Crabs Express: Gloucester, VA
Jerome Bonniville: Owner

Phone Number: (804) 694-5030

Date: 9/24/08

Interviewed By: Ray Crews \& Matt Gehman

1. Number of employees: 10 (7 on-site and 3 working the local docks)
2. What are your hours of operation (days \& hours):

- Local pickup runs and reloading operations take place from 9:30 AM to 3:30 PM

3. What is your primary business operation?

- Crabs Express purchases, brokers, wholesales, and distributes crabs

4. Briefly describe your day-to-day operations:

- Purchasing crabs daily at 2 to 3 landing piers in the Middle Peninsula
- Hauling the purchased crabs to their operation site where the crabs will be reloaded on outbound trucks
- Hauling imported crabs to their operation site from the Gulf of Mexico area
- Receiving orders and selling products to wholesale distributors and processing facilities
- Distribution of orders (via truck) within a day

5. What are your commodities/products? Crabs
6. Describe your facilities (warehouse, packaging plant, etc.):

- Crabs Express has multiple buildings on-site that serve their entire operation (offices, product storage for reloading, vehicle maintenance area, etc.)

7. What modes of transportation do you use to ship your product(s)?

- 2 refrigerated tractor trailers (48')
- 2 refrigerated straight trucks (10 wheels)
- 2 refrigerated straight trucks (6 wheels)
- 2 refrigerated pickup trucks
- 2 pickup trucks
- 1 pickup without body

8. What are the origin and destination points for your cargo?

- Origins

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o Middle Peninsula
o Gulf of Mexico area (Louisiana)
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- Destinations
o Richmond, VA: 3 times per week
o Eastern Shore, VA
o Norfolk, VA
o Philadelphia, New York, Baltimore

9. What are the main routes on the Middle Peninsula trucks use for the shipment of your products?

- Highway 17
- Highway 14
- Highway 33
- Highway 3

10. Do you import or export goods internationally? No
11. What is the seasonality of the industry and your business?

- Steady year round but experience downtime in the winter months

12. Do you share truck space with other local businesses? No
13. Annual truck moves (outbound \& inbound):

- Larger trucks (tractor trailers): 5 to 6 moves per week
- Smaller trucks (straight trucks \& pickups): 10 times per week

14. Average mileage per move (inbound \& outbound): Approximately 60 miles (one way)
15. Market or service area: Virginia to New York (East Coast states)
16. What are the biggest challenges/issues facing your business today?

- The high cost of fuel has forced Crabs Express to examine its expenses in further detail and try to be more efficient
- The lack of seafood harvesters on the Middle Peninsula ultimately affects Crabs Express' local supply
- Having to conform to numerous transportation laws

17. How could these issues be overcome?

- The price of fuel decreases
- Persuade younger people to pursue careers as watermen. Revive the industry. Make it lucrative.
- Reducing taxes levied against trucks

18. What is your competitive advantage?

- Found a niche market and took advantage by finding local and out-of-state suppliers
- One of two trucking companies in the local/regional seafood industry that run tractor trailers to haul crabs (able to fill trailer space)
- Steady supply year round and reliable

19. What is the biggest threat to your livelihood?

- Continued reduction in the number of crab harvesters


## Business \& Interviewee(s): J\&W Seafood: Deltaville, VA \& Island Seafood: Gwynn, VA Kevin Wade: Owner

Phone Number: (804) 776-9740
Date: 9/19/08

## Interviewed By: Ray Crews

1. Number of employees: 12 (full time), 30 to 70 (seasonal)
2. What are your hours of operation (days \& hours):

- Processing hours are 5:00 AM to 6:00 PM

3. What is your primary business operation?

- J\&W Seafood purchases, packages, wholesales, and distributes shellfish and fish
- Island Seafood processes and packages local shellfish

4. Briefly describe your day-to-day operations:

- Purchasing and receiving shellfish from local watermen and outside suppliers
- Immediately processing and packaging the shellfish
- Receiving orders and selling products to wholesale distributors
- Distribution of packaged orders (via truck) within a day

5. What are your commodities/products? Local shellfish (crabs and oysters) \& imported fish
6. Describe your facilities (warehouse, packaging plant, etc.):

- Island Seafood has a $7,000 \mathrm{ft}^{2}$ warehouse for processing, packaging, and cold storage of shellfish
- Island Seafood has a $140^{\prime}$ pier accessible from the warehouse for water access
- J\&W Seafood has a $10,000 \mathrm{ft}^{2}$ multipurpose building that houses its retail operations, offices, and core operations (packaging, cold storage, value-added services, product loading capabilities (dock doors))

7. What modes of transportation do you use to ship your product(s)?

- 4 refrigerated straight trucks (14' to $22^{\prime}$ )
- 1 tractor (pulls trailers)
- 2 refrigerated trailers (48')
- 2 refrigerated pickup trucks

8. What are the origin and destination points for your cargo?

- Origins

0 Middle Peninsula

- Gulf of Mexico area
o Overseas
- Destinations

0 Richmond, VA: 2 times per week

- Washington DC \& MD: 4 times per week
o Norfolk, VA: 3 times per week

9. What are the main routes on the Middle Peninsula trucks use for the shipment of your products?

- Highway 17
- Highway 360
- Highway 33
- Highway 3
- Highway 14
- Route 198

10. Do you import or export goods internationally?

- Yes. Crabmeat is imported into Miami and trucked to Virginia for distribution.

11. What is the seasonality of the industry and your business?

- Steady year round but busier during the winter months due to oysters and during the summer months due to crabs.

12. Do you share truck space with other local businesses?

- When shipping small quantities J\&W Seafood uses Mobjack Bay Seafood, Sea Farms, or larger regional trucking companies based outside the Middle Peninsula.

13. Annual truck moves (outbound \& inbound): Approximately 500
14. Average mileage per move (inbound \& outbound): Approximately 60 miles (one-way)
15. Market or service area:

- The Middle Atlantic and entire East Coast. Internet sales can reach anyone.

16. What are the biggest challenges/issues facing your business today?

- Shortage of labor for processing operations
- Diminishing resources and seafood harvesters
- Losing market share to outside/foreign competition
- Adhering to numerous undue government seafood regulations that tend to overlap

17. How could these issues be overcome?

- The U.S. Government amending the H2B visa work program to allow exemptions to workers that have been previously accepted into the program
- Focus on cleaning the Chesapeake Bay to promote a healthier ecosystem for all species
- Having the necessary resources and labor available to produce a good product so wholesalers will not have the incentive to look elsewhere
- Reduce seafood regulation to a fewer agencies (consolidation)

18. What is your competitive advantage?

- Diversity in all aspects of the seafood business (sales, marketing, suppliers, customers, etc.)

19. What is the biggest threat to your livelihood?

- Reduction of processing labor and watermen


## Notes

Very few large boats are working crabs. Trend is towards smaller boats

85\% of crabs are brought to J\&W Seafood's door

Imports have paralyzed the crab market for the past 10 years

Major seafood industry problems: undue regulations from the government and work ethic of Americans,
diminishing resources and harvesters (if seafood industry comes back, watermen will come back)
The increase in fuel has led to using a freight forwarder more often and maximizing their trucks' capacities

State could sponsor a co-op program for the watermen to provide a formed organization that has a
representative who would promote their issues and try to establish benefits for watermen
$70 \%$ of cargo is moved on J\&W Seafood's own trucks

The shipping method is determined by quantity of product (LTL vs. FTL) outside a 225 mile radius

Business \& Interviewee(s): Mobjack Bay Seafood \& Ward Oyster Company: Ware Neck, VA John Vigliotta: Owner

Phone Number: (804) 693-7597
Date: 9/12/08
Interviewed By: Ray Crews and Brady Arthur

1. Number of employees: 21
2. What are your hours of operation (days \& hours)?

- Varies but normal operations occur $51 / 2$ days per week, Monday to Friday, and a half day on Saturday, 8:30 AM to 8:30 PM

3. What is your primary business operation?

- Mobjack Bay Seafood purchases, processes, packages, sells, and distributes shellfish
- Ward Oyster Co. aqua-farms clams and oysters

4. Briefly describe your day-to-day operations:

- Managing daily aquaculture operations (cage maintenance, setting cages, harvesting, cleaning, etc.)
- Purchasing and receiving shellfish from watermen and regional distributors
- Immediately processing and packaging shellfish
- Selling products to wholesale distributors
- Distribution of packaged orders (via truck) within a day
- Hauling customers freight to specified destinations

5. What are your commodities/products? Clams and oysters
6. Describe your facilities (warehouse, packaging plant, etc.):

- One waterfront warehouse adjacent to pier used for aquaculture operations, packaging operations, cold storage, and truck loading
- A second building houses the office and maintenance facilities
- $230^{\prime}$ pier extending into the water and a $50^{\prime}$ dock perpendicular to the pier

7. What modes of transportation do you use to ship your product(s)?

- Refrigerated straight trucks ( $14^{\prime}$ to $22^{\prime}$ )

8. What are the origin and destination points for your cargo?

- Origins
o Middle Peninsula
- Connecticut to South Carolina
- Destinations
- Hampton, VA: 5 days per week
- Northern Neck, VA: 5 days per week
- Jessup, MD: 6 days per week
o Baltimore \& Philadelphia: 5 days per week

9. What are the main routes on the Middle Peninsula trucks use for the shipment of your products?

- Highway 17
- Highway 360
- Route 33
- Route 3
- Route 6
- Route 701

10. Do you import or export goods internationally?

- Yes. Shellfish are shipped to Puerto Rico via the Philadelphia Airport.

11. What is the seasonality of the industry and your business?

- Steady year round but there is a higher demand for shellfish in November and December.

12. Do you share truck space with other local businesses?

- Mobjack Bay Seafood uses Amory Transportation and Shackelford Seafood to transport its shellfish outside of the Middle Atlantic area.

13. Annual truck moves (outbound \& inbound): 1,066 outbound moves (based on \#8's answer)
14. Average mileage per move (inbound \& outbound):

- Philadelphia, Baltimore, and Jessup, MD: 550 miles roundtrip
- Hampton, VA: 74 miles roundtrip
- Northern Neck, VA: 100 miles roundtrip

15. Market or service area: Virginia, Maryland, Pennsylvania, Michigan, Missouri, Iowa, South Carolina, Florida, Georgia, Massachusetts, and New York.
16. What are the biggest challenges/issues facing your business today?

- The rising price of fuel increases expenses and decreases profit margins (highly evident in hauling freight)
- Labor shortages (H2B \& H2A visas) for seafood operations
- Adhering to numerous regulatory agencies (federal, state, and county) that have jurisdiction over business operations
- Diminishing natural resources
- Diminishing profit margins for all aspects of business
- Residential home owners protesting oyster cages placed in local waterways

17. How could these issues be overcome?

- The price of fuel decreases
- The U.S. Government allows a larger number of quotas or renews H2B visas for previous workers
- The U.S. Government allows a larger number of quotas or renews H2A visas and alters its housing requirements
- The ability to place oyster cages in safely in local waterways areas without protests

18. What is your competitive advantage?

- Aquaculture. Growing oysters and clams gives the farmer/seller more control that buying from watermen or wholesalers.

19. What is the biggest threat to your livelihood? See Question \#16

## Notes

1987: Ward Oyster bought 80,000 to 100,000 clams per day and was considered a small to medium buyer
1987: There were 10 to 15 buyers in Newport News purchasing approximately 1,000,000 clams per day
2006: Ward Oyster bought 10,000 to 20,000 clams per day and was the last buyer to leave Newport News
The cost of clams remained relatively flat over the 9 to 10 year span but expenses increased.
Watermen are getting older and there are few young watermen to replace the retirees
Some watermen are switching to land jobs to secure benefits.
Mobjack Bay Seafood had to restructure its business focus from purchasing and selling clams to hauling
seafood. Once the price of fuel drastically increased, Mobjack had to restructure its business focus.
Mobjack began to buy farmed shellfish from Ward Oyster which gave Mr. Vigliotta more control and reliability.

H2B visa: 66,000 quotas given to businesses. Mobjack applied for 14 and the quota was met 3 days
before Mobjack's application was approved.
The H2A visa is agricultural based and growing oysters allows Mobjack to participate. The H2A limits
Mobjack's ability to hire more workers because of housing requirements.
The American workforce Mobjack hires has an extremely high turnover rate
Army Corp oyster restoration program for the Chesapeake Bay did not work

Business \& Interviewee(s): Sea Farms: Hudgins, VA Ron Sopko: Owner

Phone Number: (804) 725-9113
Date: 9/12/08
Interviewed By: Ray Crews and Brady Arthur

1. Number of employees: Varies due to season.
2. What are your hours of operation (days \& hours)?

- Varies but normally 5 days per week, 6:30 AM to 2:00 PM, with the ability to work weekends if needed.

3. What is your primary business operation?

- Sea Farms purchases, processes, packages, sells, and distributes finfish and shellfish.

4. Briefly describe your day-to-day operations:

- Purchasing and receiving finfish and shellfish from watermen and outside suppliers
- Immediately processing and packaging each product
- Selling products to wholesale distributors
- Distribution of packaged orders (via truck) within a day

5. What are your commodities/products?

- Finfish (tuna, salmon, swordfish, spot, etc.) and oysters

6. Describe your facilities (warehouse, packaging plant, etc.):

- One waterfront warehouse with water access $\left(\sim 3,600 \mathrm{ft}^{2}\right)$ used for receiving, processing, packaging, cold storage, and loading operations.
- One warehouse $\left(\sim 5,000 \mathrm{ft}^{2}\right)$ used for receiving, processing, packaging, cold storage, loading, and office operations.

7. What modes of transportation do you use to ship your product(s)?

- Refrigerated straight trucks ( $14^{\prime}$ to $22^{\prime}$ )

8. What are the origin and destination points for your cargo?

- Origins
- Middle Peninsula
- Gulf of Mexico
- Destinations
o Richmond, VA
o Norfolk, VA
- South Carolina

9. What are the main routes on the Middle Peninsula trucks use for the shipment of your products?

- Highway 17
- Highway 14
- Highway 3
- Highway 33
- Route 198
- Route 223
- Route 669

10. Do you import or export goods internationally? No
11. What is the seasonality of the industry and your business?

- Steady year round but there is a higher demand for shellfish in November and December.

12. Do you share truck space with other local businesses?

- Sea Farms uses Amory Transportation and Mobjack Bay to transport its products outside of the Middle Atlantic area.

13. Annual truck moves (outbound \& inbound): 1 to 2 per day
14. Average mileage per move (inbound \& outbound): Approximately 100 miles
15. Market or service area: Virginia, South Carolina
16. What are the biggest challenges/issues facing your business today?

- The rising price of fuel (costs doubled during the $1^{\text {st }}$ quarter)
- Labor shortages for processors (H2B visa)
- Less demand (consumers) for seafood
- Less watermen harvesting shellfish and finfish
- Shipping smaller quantities (1 to 2 pallets) which becomes challenging because some trucking companies needs a larger shipment

17. How could these issues be overcome?

- The price of fuel decreases
- The U.S. Government allows a larger number of quotas for H2B visas
- Market seafood better to attract a larger consumer base

18. What is your competitive advantage?

- One of the last businesses "on the water" that serves watermen directly
- Has been serving the same watermen for years
- Capability to provide on-site ice for fresher products
- Sea Farms' owner lives adjacent to business providing "on-site" availability at all times

19. What is the biggest threat to your livelihood?

- Diminishing resources
- Availability of workers (seafood processors and seafood harvesters)
- Watermen are not fishing as much in years past because it is more expensive but the margins are remaining the same


## Notes

Sea Farms has a 99.9\% fill rate per day
There is little variation in competitor's prices (not a pressing issue)

## MPPDC FREIGHT ANALYSIS QUESTIONNAIRE - TIMBER INDUSTRY

## Business \& Interviewee(s): The P.J. Casanave Land Clearing Company: Shacklefords, VA Jean Casanave: Vice President

Phone Number: (804) 785-2392
Date: 9/18/08
Interviewed By: Ray Crews

1. Number of employees: Approximately 15 depending on site work
2. What are your hours of operation (days \& hours)?

- Office and recycling hours are Monday to Friday, 7:00 AM to 5:30 PM
- Site hours are dependent upon contract specifications

3. What is your primary business operation?

- Land clearing and grubbing

4. Briefly describe your day-to-day operations:

- Site work (land clearing and grubbing)
- Recycling operations
o Receive inbound trucks with lot clearing material (stumps, tree limbs, etc.)
- Separate the soil from the stumps
- Stockpile the by-products: topsoil and mulch
- Grind the lot cleared material into wood chips and stockpile
- Load and deliver wood chips (via truck) to the end user

5. What are your commodities/products? Timber
6. Describe your facilities (warehouse, packaging plant, etc.):

- Office (1 acre)
- Recycling Center and Maintenance Shop (10 acres)

7. What modes of transportation do you use to ship your product(s)?

- Three trucks
- Three equipment trailers
- Five timber trailers

8. What are the origin and destination points for your cargo?

- Origins
- Shacklefords, VA
- Middle Peninsula job sites
- Destinations
- West Point, VA
o Hopewell, VA
- Site material is delivered to the closest consumer

9. What are the main routes on the Middle Peninsula trucks use for the shipment of your products?

- Highway 17
- Highway 360
- Highway 30
- Highway 33

10. Do you import or export goods internationally? No
11. What is the seasonality of the industry and your business? Typically slow in August and January
12. Do you share truck space with other local businesses? No
13. Annual truck moves (outbound \& inbound):

- Shacklefords, VA to West Point, VA: Approximately 250 to 300
- Difficult to quantify with job sites

14. Average mileage per move (inbound \& outbound):

- Shacklefords, VA to West Point, VA: Approximately 16 miles (round trip)
- Difficult to average because of each job site's relation to the end user

15. Market or service area:

- Virginia, West Virginia, Maryland, Delaware, North Carolina, South Carolina, and Georgia

16. What are the biggest challenges/issues facing your business today?

- High fuel prices
- Lack of Work
- Qualified employees

17. How could these issues be overcome?

- The three issues listed above are far larger problems than P.J. Casanave can solve internally

18. What is your competitive advantage?

- P.J. Casanave has over fifty years of experience and believe they are the best in the business

19. What is the biggest threat to your livelihood?

- The industry's environmental ramifications and the economics involved in running the operation


## Notes

Land clearing business is heavily dependent of home building
$\underline{\text { P.J. Casanave has been in business for } 50 \text { years and getting new jobs is a struggle in today's market }}$
Use 12,000 gallons of fuel per job

A bid is good for 60 days: fuel is locked at a certain price and the company has to absorb fuel increases

VDOT has no money to maintain the current infrastructure or build new roads. Bridges are in bad shape,
no funding is in place and nothing is being done to alleviate this problem.
Labor problems: There are no qualified and dependent equipment operators or truck drivers
The overall quality of the workforce is down which creates a smaller pool of applicants
P.J. Casanave has no employees residing/from King \& Queen County

Use the U.S. economic bailout money for new road construction (infrastructure upgrades)
There are no bottlenecks in West Point since the two bridges opened. Wide loads are able to cross.
Fuel issues: Bidding on jobs that are closer to home (VA, MD, NC, SC). Grinder uses 45 gals per hour.

There are few companies left that are dedicated land clearers. Larger companies are taking away
business because they have other departments that can absorb the low priced land clearing contract
Heavily taxed and regulated for having a few trucks

Business \& Interviewee(s): Mid-Atlantic Tree Harvestors \& Fauteux Trucking: Aylett, VA Robert (Bob) Fauteux: Owner

Phone Number: (804) 769-8826
Date: 9/18/08
Interviewed By: Ray Crews

1. Number of employees: Fauteux Trucking: 15
2. What are your hours of operation (days \& hours):

- 7 days per week, 6:00 AM to 6:00 PM

3. What is your primary business operation?

- Handling raw forest products

4. Briefly describe your day-to-day operations:

- Transporting tree harvesting equipment
- Hauling forest products to the end user

5. What are your commodities/products? Timber
6. Describe your facilities (warehouse, packaging plant, etc.):

- Office and maintenance building that supports equipment and trucking operations

7. What modes of transportation do you use to ship your product(s)?

- 14 trucks
- 32 trailers

8. What are the origin and destination points for your cargo?

- Origins
- East of Interstate 95
- North of the James River
- Destinations
- Site products are hauled to the closest mills

9. What are the main routes on the Middle Peninsula trucks use for the shipment of your products?

- Highway 17
- Highway 360
- Highway 30
- Highway 33
- Highway 3

10. Do you import or export goods internationally? No
11. What is the seasonality of the industry and your business? Steady year round
12. Do you share truck space with other local businesses? If other businesses need help
13. Annual truck moves (outbound \& inbound): Approximately 225 per week
14. Average mileage per move (inbound \& outbound):

- $75 \%$ under 50 miles (one-way)
- Seldom have runs over 100 miles (one-way)

15. Market or service area:

- Virginia, Maryland, North Carolina, South Carolina

16. What are the biggest challenges/issues facing your business today?

- The high price of fuel is increasing overhead expenditures
- Labor shortages due to non-qualified and undependable equipment operators and truckers
- Regulation from various government agencies
- VDOT blanket permit for temporary logging entrances

0 Loggers are being singled out for highway problems

- Elevated demand for timber due to urban sprawl but there are less trucks and less timber
- Assuming the risk of purchased harvest tracks (paying up front)

17. How could these issues be overcome?

- The price of fuel decreases
- Driver and equipment operator training classes being offered to build a qualified workforce
- Treating the logging industry in the same respect as the farming industry or other industries which haul natural resources
- Develop and support more tree farms
- Amending contract specifications

18. What is your competitive advantage?

- Mid-Atlantic is the largest tree harvester within a 100 mile radius of Aylett, VA
- Barrier to enter the business is high

19. What is the biggest threat to your livelihood?

- Less natural resources


## Notes

The forest industry is hassled by VDOT to adhere to their highway entrance inspection but do not
enforce the highway entrance regulations equally among loggers and farmers
Mid-Atlantic has in-wood scales to weight trucks/loads
Tax: heavy locally (King William high personal property tax) which increases expenses
Harvest in a timely manner because of the high fluctuation in fuel prices. Once a contract bid has submitted
there are 30 days to accept the offer. Fuel could fluctuation quite a bit during that window. Final contracts are normally good for 18 to 24 months.

Use pilots or escorts for equipment hauling because the load is $8^{\prime} 6$ " to $12^{\prime}$ feet wide
Consuming mills are buying as cheap as possible
Start using GPS to track trucks and optimize routes to cut down on fuel expenses
Barrier to enter the logging industry is high (capital and establishing relationships with mills)
Mills are paying flat prices. Have to make up cost difference in production

Iran Systems

## Appendix B - VDOT Truck Traffic Data

| Route Label | County/Town | Road Length | Starting Point | Stopping Point | 2007 Daily Truck Traffic |
| :---: | :---: | :---: | :---: | :---: | :---: |
| US 17 | Essex | 4.7 | Middlesex County Line | 28-684 Center Cross | 128 |
| US 17 | Essex | 5.6 | 28-684 Center Cross | 28-609 Essex Mill Rd | 110 |
| US 17 | Essex | 3.0 | 28-609 Essex Mill Rd | US 360 Brays Fork | 184 |
| US 17,360 | Essex | 0.2 | US 360 Brays Fork | SCL Tappahannock | 1,391 |
| US 17 | Essex | 2.5 | NCL Tappahannock | 28-703 Gwynnfield Rd | 497 |
| US 17 | Essex | 3.7 | 28-703 Gwynnfield Rd | 28-624 Caret | 404 |
| US 17 | Essex | 9.4 | 28-624 Caret | 28-635 Rose Mount Rd | 378 |
| US 17 | Essex | 4.4 | 28-635 Rose Mount Rd | Caroline County Line | 351 |
| US 360 | Essex | 0.4 | King\&Queen County Line | 28-620 Dunbrooke Rd | 984 |
| US 360 | Essex | 6.4 | 28-620 Dunbrooke Rd | W US 17 | 911 |
| VA 3, 14 | Gloucester | 4.1 | Mathews County Line | 36-623 Ware Neck Rd | 344 |
| VA 3, 14 | Gloucester | 2.2 | 36-623 Ware Neck Rd | US 17 Bus Main S | 467 |
| VA 14 | Gloucester | 1.0 | King \& Queen County Line | US 17 W | 433 |
| US 17 | Gloucester | 1.5 | York County Line | 36-1208 Roper Rd | 466 |
| US 17 | Gloucester | 1.5 | 36-1208 Roper Rd | SR 216 Hayes | 763 |
| US 17 | Gloucester | 2.9 | SR 216 Hayes | 36-636 Brays Point Rd | 830 |
| US 17 | Gloucester | 3.1 | 36-636 Brays Point Rd | 36-628 TC Walker Rd | 763 |
| US 17 | Gloucester | 3.0 | 36-628 TC Walker Rd | Bus US 17 Main St | 673 |
| US 17 | Gloucester | 1.7 | Bus US 17 Main St | Bus US 17 Main St | 426 |
| US 17,14 | Gloucester | 2.5 | Bus US 17 Main St | 36-606 Ark Rd | 359 |
| US 17,14 | Gloucester | 1.6 | 36-606 Ark Rd | 36-615 Willis Rd | 314 |
| US 17,14 | Gloucester | 3.7 | 36-615 Willis Rd | SR 14 Adner Rd | 269 |
| US 17 | Gloucester | 4.8 | SR 14 Adner Rd | SR 33, SR 198 Glenns Rd | 155 |
| US 17,33 | Gloucester | 1.5 | SR 33, SR 198 Glenns Rd | Middlesex County Line | 269 |
| B US 17 | Gloucester | 1.2 | US 17 South of Gloucester | SR 3, SR 14 | 428 |
| B US 17,14 | Gloucester | 0.7 | SR 3 Hwy | 36-1007 | 235 |
| B US 17,14 | Gloucester | 0.6 | 36-1007 | US 17 North of GCH | 134 |
| VA 33 | Gloucester | 2.9 | King \& Queen County Line | US 17, Glenns | 615 |
| VA 198 | Gloucester | 4.4 | US 17, SR 33 | 36-601 Pampa Rd | 106 |
| VA 198 | Gloucester | 2.9 | 36-601 Pampa Rd | 36-606 Harcum Rd | 116 |
| VA 198 | Gloucester | 4.1 | 36-606 Harcum Rd | Mathews County Line | 131 |
| VA 216 | Gloucester | 3.6 | US 17 Hayes | 36-649 Achilles | 183 |
|  |  |  |  |  |  |


|  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| VA 14 | King \& Queen | 6.1 | US 360; St. S Church | 49-629 Walkerton Rd | 67 |
| VA 14 | King \& Queen | 1.8 | 49-629 Walkerton Rd | 49-620 W, Duck Pond Rd | 90 |
| VA 14 | King \& Queen | 9.7 | 49-620 W, Duck Pond Rd | 49-617 Carletons Corner Rd | 56 |
| VA 14 | King \& Queen | 5.6 | 49-617 Carletons Corner Rd | 49-614 Clifton Lane | 138 |
| VA 14 | King \& Queen | 6.8 | 49-614 Clifton Lane | SR 33 Shacklefords | 352 |
| VA 14 | King \& Queen | 4.9 | SR 33 | Gloucester County Line | 368 |
| VA 33 | King \& Queen | 3.3 | King William County Line | 49-678 Riverview Ave | 1,148 |
| VA 33 | King \& Queen | 0.1 | 49-678 Riverview Ave | SR 14 Shackelfords | 1,066 |
| VA 14, 33 | King \& Queen | 1.7 | SR 14 Shackelfords | SR 14 Shackelfords Fork | 1,050 |
| VA 33 | King \& Queen | 2.6 | SR 14 Shacklefords Fork | Gloucester County Line | 607 |
| US 360 | King \& Queen | 2.9 | King William County Line | SR 14 The Trail | 701 |
| US 360 | King \& Queen | 6.3 | SR 14 The Trail | Essex County Line | 942 |
| VA 30 | King William | 7.8 | Caroline County Line | 50-608 Globe Rd | 705 |
| VA 30 | King William | 4.4 | 50-608 Globe Rd | US 360 | 891 |
| VA 30 | King William | 8.4 | US 360 | 50-633 Powhatan Trail | 742 |
| VA 30 | King William | 8.3 | 50-633 Powhatan Trail | 50-632 Mt Olive-Cohoke Rd | 691 |
| VA 30 | King William | 5.6 | 50-632 Mt Olive-Cohoke Rd | WCL West Point | 546 |
| US 360 | King William | 2.3 | Hanover County Line | 50-605 Old Newcastle Rd | 1,084 |
| US 360 | King William | 2.8 | 50-605 Old Newcastle Rd | SR 30 King William Rd | 1,020 |
| US 360 | King William | 3.3 | SR 30 King William Rd | King \& Queen County Line | 829 |
| VA 3 | Mathews | 1.4 | Middlesex County Line | SR 198 East | 197 |
| VA 3, 198 | Mathews | 1.5 | SR 198 East | SR 198 W, Dutton Rd | 229 |
| VA 3 | Mathews | 2.1 | SR 198 W, Dutton Rd | SR 14 | 185 |
| VA 3, 14 | Mathews | 0.1 | SR 14; Windor Rd | Gloucester County Line | 344 |
| VA 14 | Mathews | 2.8 | SR 3 Windsor Rd | 57-617 North River Rd | 148 |
| VA 14 | Mathews | 1.4 | 57-617 North River Rd | 57-660 Philpotts Ave | 137 |
| VA 14 | Mathews | 3.2 | 57-660 Philpotts Ave | SR 198 WEST | 138 |
| VA 14,198 | Mathews | 1.7 | SR 198 WEST | SR 198 E, Buckley Hall Rd | 163 |
| VA 14 | Mathews | 0.6 | SR 198 E, Buckley Hall Rd | 57-611 Tabernacle Rd | 126 |
| VA 14 | Mathews | 4.7 | 57-611 Tabernacle Rd | 57-604 Antioch Rd | 80 |
| VA 14 | Mathews | 1.9 | 57-604 Antioch Rd | 57-602 Sand Bank Rd | 38 |
| VA 14 | Mathews | 1.7 | 57-602 Sand Bank Rd | Bayside Wharf | 13 |
| VA 198 | Mathews | 0.4 | Gloucester County Line | SR 3 W, Winsdor Rd | 116 |
| VA 3,198 | Mathews | 1.5 | SR 3 W, Windsor Rd | SR 3 E | 229 |
| VA 198 | Mathews | 6.2 | SR 3 E | SR 223 Cricket Hill Rd | 114 |
| VA 198 | Mathews | 0.9 | SR 223 Cricket Hill Rd | SR 14 N | 165 |


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| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  |  |  |  |  |
| VA 223 | Mathews | 2.1 | SR 198 Hudgins | 57-633 Old Ferry Rd | 48 |
|  |  |  |  |  |  |
| VA 3 | Middlesex | 5.8 | Lancaster County Line | SR 33 W, Puller Hwy | 359 |
|  |  |  |  |  |  |
| VA 3 | Middlesex | 3.2 | SR 33E Puller Hwy | Mathews County Line | 331 |
|  |  |  |  |  |  |
| US 17, 33 | Middlesex | 0.8 | Gloucester County Line | Bus US 17, S of Saluda | 269 |
| US 17 | Middlesex | 1.0 | Bus US 17, S of Saluda | Bus US 17 Church St | 135 |
| US 17 | Middlesex | 2.8 | Bus US 17 Church St | 59-603 Warner Road | 150 |
| US 17 | Middlesex | 2.4 | 59-603 Warner Road | 59-602 Old Virginia Street | 135 |
| US 17 | Middlesex | 7.5 | 59-602 Old Virginia Street | Essex County Line | 121 |
|  |  |  |  |  |  |
| Bus US 17 | Middlesex | 0.8 | SR 33 Puller Hwy | US 17,West of Saluda | 189 |
|  |  |  |  |  |  |
| B US 17,33 | Middlesex | 0.8 | US 17 S of Saluda | Bus US 17 Saluda | 378 |
| VA 33 | Middlesex | 1.8 | Bus US 17 Saluda | SR 227 Urbanna Rd | 373 |
| VA 33 | Middlesex | 2.9 | SR 227 Urbanna Rd | 59-619 Healys Rd | 386 |
| VA 33 | Middlesex | 2.2 | 59-619 Healys Rd | SR 3 Greys Point Rd | 386 |
|  |  |  |  |  |  |
| VA 3, 33 | Middlesex | 3.5 | SR 3 Harmony Village | SR 3 Near Hartfield | 261 |
| VA 33 | Middlesex | 2.2 | SR 3 Greys Point Rd | 59-628 Mill Creek Rd | 111 |
| VA 33 | Middlesex | 4.3 | 59-628 Mill Creek Rd | 59-636 Timberneck Rd | 141 |
| VA 33 | Middlesex | 2.0 | 59-636 Timberneck Rd | Stingray Point | 30 |
|  |  |  |  |  |  |
| VA 227 | Middlesex | 2.3 | SR 33 Cooks Corner | ECL Urbanna | 82 |
|  |  |  |  |  |  |
| VA 30 | West Point | 2.2 | WCL West Point | SR 33, 14th St | 858 |
| VA 30, 33 | West Point | 0.3 | SR 33 Main St | New Kent County Line | 1,988 |
| VA 30, 33 | West Point | 0.3 | King William County Line | SR 30 Main St | 1,988 |
| VA 33 | West Point | 0.5 | SR 30 Main St | King \& Queen County Line | 1,312 |
| VA 296 | West Point | 0.2 | SR 30, SR 33 | 50-1107; 50-1126, 10th St | 39 |
| VA 296 | West Point | 0.2 | 50-1107 Kirby St; 50-1126 | SR 298 Lee St | 15 |
| VA 298 | West Point | 0.2 | Dead End | 50-1109 Lee St; 50-1128 | 1 |
| VA 298 | West Point | 0.3 | 50-1109; 50-1128, 5th St | SR 296, 10th St | 22 |
| VA 298 | West Point | 0.2 | SR 296 10th St | SR 33 14th St | 29 |
|  |  |  |  |  |  |
| US 17, 360 | Tappahannock | 2.2 | SCL Tappahannock | US 360 Tappahannock | 1,391 |
| US 17 | Tappahannock | 0.6 | US 360 Tappahannock | NCL Tappahannock | 497 |
|  |  |  |  |  |  |
| US 17, 360 | Tappahannock | 2.2 | CL Tappahannock | E US 17 | 1,391 |
| US 360 | Tappahannock | 0.3 | E US 17 | Richmond County Line | 766 |

## Appendix C - Port Facilities

| Name | Old Dominion Grain Corp. (Mennel Milling Co), Port Richmond Elevator <br> Dock |
| :--- | :--- |
| Waterway | Pamunkey River |
| Location | Left bank, Pamunkey River, approximately 1.1 miles above Eltham Bridge <br> (State Highways 30 and 33), West Point |
| Operator | Old Dominion Grain Corp. (Mennel Milling Co) |
| Owner | Old Dominion Grain Corp. (Mennel Milling Co) |
| Address | 3100 Southern Avenue |
| Town | West Point |
| County | King William |
| Railway Connection | One surface track serving loading spout in rear; connects with Norfolk <br> Southern Railway |
| Purpose | Shipment of grain by barge |
| Number of Berths | 1 |
| Depth Alongside (ft) | 10 |
| Total Berthing Space (ft) | 550 |
| Remarks | Grain elevator located at rear has capacity for 1,942,000 bushels. Largest <br> supplier of grain (primarily soft red winter wheat) to a sister milling plant in <br> Roanoke. Moves via NS rail line. |


| Name | Smurfit-Stone Inc., West Point Plant Chip Wharf |
| :--- | :--- |
| Waterway | Pamunkey River |
| Location | Left bank, Pamunkey River, approximately 0.3 mile above Eltham Bridge <br> (State Highways 30 and 33), West Point |
| Operator | Smurfit-Stone Inc. |
| Owner | Smurfit-Stone Inc. |
| Address | 19th and Main Streets |
| Town | West Point |
| County | King William |
| Railway Connection | One platform-level track serving warehouse, and 7 surface tracks serving <br> open storage areas in plant in rear; connect with Norfolk Southern Railway |
| Purpose | Receipt of wood chips by barge |
| Number of Berths | 2 |
| Depth Alongside (ft) | $10 \quad: 10$ |
| Total Berthing Space (ft) | $1,150: ?$ |
| Remarks | Face is in line and contiguous with Paper Wharf (P.W.D. Ref. No. 281), <br> providing 1,700 feet of continuous berthing space. Wood-chip unloading <br> berth occupies 450 feet near center of bulkhead, including 275 feet with <br> solid fill. Rest of bulkhead fronts water-treatment lagoons, and rest of wharf <br> is used for mooring barges 2 abreast. Paper mill and wood-chip storage <br> yards are located at rear. |
| Name | Smurfit-Stone Inc., West Point Plant Fuel Wharf |


| Waterway | Pamunkey River |
| :--- | :--- |
| Location | Left bank, Pamunkey River, approximately 0.6 mile above Eltham Bridge <br> (State Highways 30 and 33), West Point |
| Operator | Smurfit-Stone Inc. |
| Owner | Smurfit-Stone Inc. |
| Address | 19th and Main Streets |
| Town | West Point |
| County | King William |
| Railway Connection | One platform-level and 7 surface tracks serving plant in rear; connect with <br> Norfolk Southern Railway Co. |
| Purpose | Receipt of fuel oil for plant consumption. |
| Number of Berths | 1 |
| Depth Alongside (ft) | 10 |
| Total Berthing Space (ft) | 195 |
| Remarks | One 6-inch, fuel-oil pipeline extends from wharf to one 1,200-barrel, steel <br> storage tank, and one 1 1/2-inch, diesel fuel pipeline extends from 2 <br> metered pumps on wharf to one 400-barrel, steel storage tank located at <br> rear. Wharf is equipped with 2-inch steam line. |


| Name | Smurfit-Stone Inc., West Point Plant Paper Wharf |
| :--- | :--- |
| Waterway | Pamunkey River |
| Location | Left bank, Pamunkey River, approximately 0.1 mile above Eltham Bridge <br> (State Highways 30 and 33), West Point |
| Operator | Smurfit-Stone Inc. |
| Owner | Smurfit-Stone Inc. |
| Address | 19th and Main Streets |
| Town | West Point |
| County | King William |
| Railway Connection | One platform-level track serving warehouse, and 7 surface tracks serving <br> open storage areas at plant in rear; connect with Norfolk Southern Railway |
| Purpose | Receipt of wood chips; shipment of paper and, occasionally, wood pulp; <br> occasional receipt of plant equipment; mooring company-owned tugboats. |
| Number of Berths | 3 |
| Depth Alongside (ft) | $10-20: 10: 10$ |
| Total Berthing Space (ft) | $550: 95: 115$ |
| Remarks | Face is in line and contiguous with Chip Wharf (P.W.D. Ref. No. 280), <br> providing 1,700 feet of continuous berthing space. Cargo-handling berth, <br> with 20-foot depth of water, occupies 300 feet near center of bulkhead. Rest <br> of upper portion is used for mooring barges 2 abreast. Lower portion and <br> side <br> are used for mooring tugboats. Paper mill and open storage areas for wood <br> chips and logs are located at rear of apron. |


| Name | Gloucester County, Aberdeen Creek Public Landing Pier |
| :--- | :--- |
| Waterway | Aberdeen Creek |
| Location | Left bank, Aberdeen Creek, approximately 0.5 mile above conjunction with <br> York River, near Clay Bank. |
| Operator | Gloucester County |
| Owner | Gloucester County |
| Address | End of Aberdeen Creek Road |
| Town | Clay Bank |
| County | Gloucester |
| Railway Connection | None |
| Purpose | Receipt of seafood |
| Number of Berths | 3 |
| Depth Alongside (ft) | $2: 2-3: 2-3$ |
| Total Berthing Space (ft) | $24: 85 \quad: \quad ?$ |
| Remarks | Independent watermen land at piers. Upper side of upper pier forms a 25- <br> to 30-foot-wide slip with face of Gloucester Seafood's, Inc. wharf (P.W.D. <br> Ref. No. 283). |


| Name | Gloucester Seafood, Aberdeen Creek Wharf |
| :--- | :--- |
| Waterway | Aberdeen Creek |
| Location | Left bank, Aberdeen Creek, approximately 0.5 mile above conjunction with <br> York River, near Clay Bank. |
| Operator | Gloucester Seafood, Inc. |
| Owner | Gloucester Seafood, Inc. |
| Address | End of Aberdeen Creek Road |
| Town | Clay Bank |
| County | Gloucester |
| Railway Connection | None |
| Purpose | Receipt of seafood |
| Number of Berths | 3 |
| Depth Alongside (ft) | $3-4: 3-4: 2$ |
| Total Berthing Space (ft) | $205: 32: 40$ |
| Remarks | Wharf is located on lower side and outer end of peninsula. Lower portion of <br> face forms a 25 to 30 footwide slip with upper side of Gloucester County <br> public landing upper pier (P.W.D. Ref. No. 284). Two 1 1/2-inch fuel lines <br> extend to 2 metered pumps at bulkhead from 2 steel storage tanks at rear, <br> total capacity 3,000 gallons. Seafood-processing plant is located at rear of <br> bulkhead. |


| Name | Harbor House Restaurant \& Marina, Seafood Pier |
| :--- | :--- |
| Waterway | Mattaponi River |
| Location | Right bank, Mattaponi River, approximately 0.3 mile below Lord Delaware <br> Bridge (State Highway 33), West Point |
| Operator | Not operated |
| Owner | Harbor House Restaurant \& Marina |
| Address | 7 th and Mattaponi Streets |
| Town | West Point |
| County | King William |
| Railway Connection | None |
| Purpose | Not used |
| Number of Berths | 3 |
| Depth Alongside (ft) | $6-8: 6-8: 6-8$ |
| Total Berthing Space (ft) | $40: 70: \quad 70$ |
| Remarks | Mooring space for small fishing vessels is available at one 90-foot berth and <br> in 31 slips at Fisherman's Wharf Marina, 350 feet below pier. Slips are 40 <br> by 10 to 18 feet, formed by rows of timber breasting piles extending from <br> face and rear of face of a 20+175- by 6 foot, timber walkway extending from <br> the lower side of a timber wharf. A building used as a restaurant is located <br> on wharf. |


| Name | B.R. Marine Service \& Railway Piers |
| :--- | :--- |
| Waterway | Perrin River |
| Location | Right bank, Perrin River, approximately 0.8 mile above conjunction with <br> York River, below mouth of Sages |
| Operator | B.R. Marine Service \& Railway, Inc. |
| Owner | B.R. Marine Service \& Railway, Inc. |
| Address | 9417 Boatyard Lane |
| Town | Bena |
| County | Gloucester |
| Railway Connection | None |
| Purpose | Mooring small vessels for repair. |
| Number of Berths | 3 |
| Depth Alongside (ft) | $4: 4-7: 4-7$ |
| Total Berthing Space (ft) | $40: 150: 175$ |
| Remarks | Piers are 30 feet apart, with one 100-ton marine railway located between <br> them. The timber-frame, metal-roofed boathouse at the upper pier provides <br> two 55- by 16-foot slips in 4-foot depth of water. |


| Name | Benny Belvin Seafood Wharf |
| :--- | :--- |
| Waterway | Perrin River |
| Location | Left bank, Perrin River, approximately 0.33 mile above conjunction with <br> York River, Perrin. |
| Operator | Benny Belvin |
| Owner | Benny Belvin |
| Address | 9602 Ban Road |
| Town | Perrin |
| County | Gloucester |
| Railway Connection | None |
| Purpose | Receipt of seafood; fueling and mooring small fishing vessels. |
| Number of Berths | 3 |
| Depth Alongside (ft) | $6: \quad 6 \quad 6$ |
| Total Berthing Space (ft) | $150: 100: 100$ |
| Remarks | Lower side of wharf and lower pier form a 60-foot-wide slip with upper side <br> of Sedger's Creek Landing Pier (P.W.D. Ref. No. 295). Two 2-inch fuel <br> pipelines extend to 3 metered pumps on wharf from 2 steel storage tanks at <br> rear, total capacity 6,000 gallons. Fish- and seafood-packing plant is <br> located on wharf. |


| Name | Herman Green \& Sons Seafood Wharf |
| :--- | :--- |
| Waterway | Perrin River |
| Location | Left bank, Perrin River, approximately 400 feet above conjunction with York <br> River, Perrin. |
| Operator | Herman Green \& Sons Seafood |
| Owner | Herman Green \& Sons Seafood |
| Address | 9778 York Seafood Lane |
| Town | Perrin |
| County | Gloucester |
| Railway Connection | None |
| Purpose | Receipt of fish and seafood; fueling and mooring small company-owned <br> fishing vessels. |
| Number of Berths | 3 |
| Depth Alongside (ft) | $8: 8 \quad: 8$ |
| Total Berthing Space (ft) | $100: 50: 90$ |
| Remarks | Lower side of pier is not used for mooring. Additional mooring is available at <br> five 50- by 18-foot slips, 2 formed by timber piers above wharf, in 3- and 5- <br> foot depths of water, and 3 at rear of face of pier. Two 1 1/2-inch fuel <br> pipelines extend to 2 metered pumps on wharf from 2 storage tanks at rear, <br> total capacity 2,000 gallons. Fish-packing plant is located on wharf. |


| Name | J.W. Hogge Seafood Pier |
| :--- | :--- |
| Waterway | Perrin River |
| Location | Left bank, Perrin River, above conjunction with York River, Perrin. |
| Operator | J.W. Hogge Seafood, Inc. |
| Owner | J.W. Hogge Seafood, Inc. |
| Address | Foot of State Highway 1102 |
| Town | Perrin |
| County | Gloucester |
| Railway Connection | None |
| Purpose | Receipt of seafood; fueling and mooring small fishing vessels. |
| Number of Berths | 2 |
| Depth Alongside (ft) | $6: 4-6$ |
| Total Berthing Space (ft) | $100: \quad 120$ |
| Remarks | Lower side of pier, 150+200 feet long, is not used for mooring. One 1,000- <br> gallon fuel storage tank and buildings used as seafood-packing plants are <br> located on bulkheaded portion of pier. |


| Name | VDOT, Sedger's Creek Landing Pier |
| :--- | :--- |
| Waterway | Perrin River |
| Location | Left bank, Perrin River, approximately 0.31 mile above conjunction with <br> York River, Perrin. |
| Operator | VDOT |
| Owner | State of Virginia |
| Address | Foot of State Highway 1101 |
| Town | Perrin |
| County | Gloucester |
| Railway Connection | None |
| Purpose | Receipt of seafood; mooring small fishing vessels. |
| Number of Berths | 2 |
| Depth Alongside (ft) | $6: \quad 6$ |
| Total Berthing Space (ft) | $300: 300$ |
| Remarks | Independent watermen moor vessels at pier. Upper side of pier is 60 feet <br> below lower side of Benny Belvin's Seafood wharf and lower pier (P.W.D. <br> Ref. No. 294). Fishing vessel owners perform repairs to their own vessels at <br> Cook's Landing Marina, located below pier, with one 20-ton, diesel, and one <br> 15-ton, gasoline, mobile, vertical boat lifts with 15-foot spans, operating at a <br> bulkheaded slip in 5-foot water depth. |


| Name | York River Seafood Co. Wharf |
| :--- | :--- |
| Waterway | Perrin River |
| Location | Left bank, Perrin River, approximately 800 feet above conjunction with York <br> River, Perrin. |
| Operator | York River Seafood Co. |
| Owner | York River Seafood Co. |
| Address | Foot of York River Seafood Lane |
| Town | Perrin |
| County | Gloucester |
| Railway Connection | None |
| Purpose | Receipt of seafood; fueling and mooring small fishing vessels. |
| Number of Berths | 3 |
| Depth Alongside (ft) | $6-8: 6: 2-3$ |
| Total Berthing Space (ft) | $203: 50: 110$ |
| Remarks | Upper side of outer wharf and a row of timber breasting piles below lower <br> end of walkway provide an additional 50 and 200 feet of mooring, <br> respectively. Two 2-inch diesel fuel pipelines extend to 2 metered pumps on <br> outer wharf from 2 steel storage tanks at rear, total capacity 500 barrels. <br> Three buildings used as seafood-packing plants are located on wharf. |


| Name | Cook's Seafood Inc., Fish Piers |
| :--- | :--- |
| Waterway | Sarah Creek |
| Location | Right bank, Northeast Branch, Sarah Creek, approximately 0.9 mile above <br> conjunction with York River, Bena |
| Operator | Cook's Seafood Inc. |
| Owner | Cook's Seafood Inc. |
| Address | Foot of Yacht Club Rd. |
| Town | Bena |
| County | Gloucester |
| Railway Connection | None |
| Purpose | Receipt of fish; fueling and mooring small fishing vessels |
| Number of Berths | 3 |
| Depth Alongside (ft) | $9: 9 \quad: 0-9$ |
| Total Berthing Space (ft) | $75: 70: \quad 70$ |
| Remarks | Lower side of lower pier is not used for mooring. Both piers are covered by <br> timber-frame, metal-covered canopies. Two $11 / 4-$ inch fuel pipelines extend <br> to 2 metered pumps at outer end of upper pier from 2 underground storage <br> tanks at rear, total capacity 1,500 gallons. |


| Name | Cook's Seafood Inc., Seafood Pier |
| :--- | :--- |
| Waterway | Sarah Creek |
| Location | Right bank, Northeast Branch, Sarah Creek, approximately 0.8 mile above <br> conjunction with York River, Bena |
| Operator | Cook's Seafood Inc. |
| Owner | Cook's Seafood Inc. |
| Address | Foot of Yacht Club Rd. |
| Town | Bena |
| County | Gloucester |
| Railway Connection | None |
| Purpose | Occasional receipt of seafood; mooring small fishing vessels |
| Number of Berths | 1 |
| Depth Alongside (ft) | 8 |
| Total Berthing Space (ft) | 90 |
| Remarks | - |


| Name | York River Yacht Haven, Oyster Wharf |
| :--- | :--- |
| Waterway | Sarah Creek |
| Location | Right bank, Sarah Creek, approximately 750 feet above conjunction with <br> York River, on lower side of peninsula, Gloucester Point |
| Operator | ABR Corp. d.b.a. York River yacht Haven |
| Owner | ABR Corp. |
| Address | 8109 Yacht Haven Road |
| Town | Gloucester Point |
| County | Gloucester |
| Railway Connection | None |
| Purpose | Receipt and shipment of small oysters |
| Number of Berths | 1 |
| Depth Alongside (ft) | 6 |
| Total Berthing Space (ft) | 160 |
| Remarks | Facility supplies small oysters for regional fish farms. Stationary piers are <br> systematically being replaced by floating docks. Floats provide slips for <br> seasonally mooring of fishing fleet and recreational craft and support oyster <br> growing apparatus. |


| Name | VDOT, Timberneck Creek Public Landing Pier |
| :--- | :--- |
| Waterway | Timberneck Creek |
| Location | Left bank, Timberneck Creek, approximately 0.9 mile above confluence with <br> York River. |
| Operator | VDOT |
| Owner | State of Virginia |
| Address | Wicomico County Road 1303 |
| Town | Bridges |
| County | Gloucester |
| Railway Connection | None |
| Purpose | Receipt of seafood; mooring small fishing vessels |
| Number of Berths | 2 |
| Depth Alongside (ft) | $7: 7$ |
| Total Berthing Space (ft) | $?: ?$ |
| Remarks | Independent watermen land at wharf and moor alongside arms of "Y" at <br> face and at rear of face |


[^0]:    ${ }^{1}$ http://www.airnav.com/airport/KFYJ
    ${ }^{2}$ http://www.airnav.com/airport/W75

