

USAWC STRATEGY RESEARCH PROJECT

**THE GREAT LAKES OF THE UNITED STATES,
NATIONAL SECURITY AND THE BUDGET**

by

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ABSTRACT

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Over the past 30 years, the civil works general construction account has declined from a high of approximately \$4 billion in 1960 to \$1.4 billion in 2005. One result of this is a construction backlog of approximately 500 active and authorized water resource projects with an estimated completion cost of \$44 billion. The President's FY 2005 budget provides civil works discretionary funding of \$4.2 billion which includes \$1.4 billion for construction. For FY 2002 through FY 2003, the total civil works appropriation averaged \$4.6 billion. For FY 2005, this equates to 10% less purchasing power compared to FY 2003; this figure is not indexed for inflation.

Because of this, the infrastructure and navigation features that enable and facilitate the transport of goods and services on the Great Lakes is literally falling apart or is woefully inadequate to meet the demands of the 21st Century global business environment. The lack of adequate congressionally appropriated funds for the last 20 years to support maintenance and repair, and replacement of antiquated facilities and structures is impacting the flow of commerce on the Great Lakes; specifically Lake Superior, Lake Michigan, and Lake Huron. For fiscal year 2005 and beyond, this brings into question whether or not the United States Army Corps of Engineers (USACE) can continue to adequately maintain federally mandated programs (dredging, structures, navigation features) to make certain that shipping companies will continue to transport cargo efficiently amongst Great Lakes harbors and ports, and out to the Saint Lawrence Seaway.

This Strategy Research Project (SRP) will examine in detail the linkage between national security, economic security, and the budget for Civil Works as appropriated by the Congress of the USA. This SRP will outline and highlight the historical perspective on the budget; the mission of the USACE as the congressionally appointed federal agency responsible for maintaining facilities, structures and programs on the Great Lakes; the economic impact of the shipping industry on the region; and the national security impact of the loss of critical infrastructure and the subsequent effect on the economic health of the region.

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PREFACE

For the past 20 years I have had the opportunity to work for the United States Army Corps of Engineers (USACE) both as an Army Reserve Officer and as a Civil Service employee. In that capacity I have served in various positions and have had the opportunity to observe and participate in the engineering-construction-budget process.

The nation is at war and tough budget decisions are being made to fight and win the war on terrorism. This paper in no way represents the views and perspective of the leadership of the USACE. What follows are my personal observations and conclusions based upon managing the civil works budget for the Detroit District, USACE. The USACE is the congressionally mandated federal agency responsible for executing the navigation mission on the Great Lakes. The Detroit District has been delegated the authority by USACE to execute a portion of this mission.

It is my desire to present information, identify the economic and national security implications of not fully funding the civil works budget, and contrast that against the USACE navigation mission on the Great Lakes. My hope is that this information will assist the Commander, USACE in justifying future civil works budget requests for the Great Lakes region.

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THE GREAT LAKES OF THE UNITED STATES, NATIONAL SECURITY AND THE BUDGET

Over the past 30 years, the civil works general construction account has declined from a high of approximately \$4 billion in 1960 to \$1.4 billion in 2005. One result of this is a construction backlog of approximately 500 active and authorized water resource projects with an estimated completion cost of \$44 billion. The President's FY 2005 budget provides civil works discretionary funding of \$4.2 billion which includes \$1.4 billion for construction. For FY 2002 through FY 2003, the total civil works appropriation averaged \$4.6 billion. For FY 2005, this equates to 10% less purchasing power compared to FY 2003 (this figure is not indexed for inflation).¹

Because of this, the infrastructure and navigation features that enable and facilitate the transport of goods and services on the Great Lakes is literally falling apart or is woefully inadequate to meet the demands of the 21st Century global business environment. Specific examples include degradation of the system of dredged channels, canals, locks, harbors and supporting features.

This Strategy Research Project (SRP) will examine in detail the linkage between national security, economic security, and the budget for Civil Works as appropriated by the Congress of the United States of America (USA). This SRP will outline and highlight the historical perspective on the budget; the mission of the United States Army Corps of Engineers (USACE) as the congressionally appointed federal agency responsible for maintaining facilities, structures and programs on the Great Lakes; the economic impact of the shipping industry on the region; and the national security impact of the loss of critical infrastructure and the subsequent effect on the economic health of the region.

NAVIGATION INFRASTRUCTURE AND THE GREAT LAKES

The Great Lakes of the USA are composed of five main lakes. They are Lake Superior, Lake Michigan, Lake Huron, Lake Erie, and Lake Ontario. Together they comprise 20% of the world's fresh water supply. The total area encompasses more than 94,000 square miles of water. This is larger than the landmass of the states of New York, New Jersey, Connecticut, Rhode Island, Massachusetts, Vermont, and New Hampshire combined. Michigan's Great Lakes coastline by itself totals 3,288 miles.²

Investment in public infrastructure has declined. In 1960, investment amounted to roughly 1.1% of the federal budget for inter-coastal waterway systems. As recent as 2000 this figure had declined to .2% of the federal budget. The USA Society of Civil Engineers rated the USA's waterway infrastructure aD(+) in 2001. According to the Director of Civil Works, USACE, 49%

of the inland waterway locks and dams are at least 50 years old and loss of service due to system failure has more than doubled since 1990. That equates to roughly 550,000 hours of lost service annually, nation wide and represents on the average \$385 million in additional operating costs that are passed on to consumers by shippers.³

In addition, the aging navigation infrastructure is of concern from the aspect of maintenance. Half of the lock and dam installations have now outlived their design lives, and investment in waterways maintenance and rehabilitation is not sufficient to insure that the system can easily absorb additional traffic in the future. A systems failure that could result from the deferral of maintenance could have a disastrous impact on the movement of commerce in all modes (truck, rail, ship) and on the nation's economy. For example, with the present infrastructure, neither rail nor truck could handle the massive quantities of grain, coal, and iron ore that move out of the Upper Midwest each year. And with increased demand, freight rates in the other modes would rise, and producer incomes would be impacted. Not only do the other modes consume more fuel and generally create more emissions, but the resulting gridlock in the transportation system would be a significant problem.⁴

The maintenance backlog currently has been calculated at roughly \$1 billion nationwide. This includes dredging of federally mandated harbors and channels, the repair of waterway and harbor protection features, and the maintenance of locks and dams. A different way to look at this is that the USACE currently has a construction backlog of roughly \$42 billion. This is due principally to the lack of adequate funding for the past 10-20 years. Assuming a normal budget year, USACE can expect approximately \$2 billion annually for construction. That equates to a 21 year recovery period, in order to replace aging and failed navigation infrastructure.⁵

A critical choke point for inter-lake transport between Lake Superior, Lake Michigan, and Lake Huron is the lock and dam system located in Sault Ste. Marie, Michigan. The Poe Lock is the only lock within the system that can pass the 1000 foot lake freighters along the St. Mary's River. Construction was completed in 1968. There have been no recent engineering upgrades completed, nor does any other capability exist that can provide an alternate means if the Poe Lock were to become unserviceable. A second lock exists, the Mac Arthur Lock, completed in 1943 and is used to pass ships up to 800 feet in length. On average the locks will pass approximately 7,500 ships during a shipping season.⁶ This varies from small passenger boats to freighters carrying over 72,000 tons in cargo.

This situation is further complicated by historically low lake levels due to a recent five year drought in the Great Lakes region, and the subsequent reduction of the water column. In some

places in the Great Lakes a reduction of five feet since 1999 has occurred. Figure 1 shows the Great Lakes and the major ports and lock systems currently in existence.

The lack of adequate congressionally appropriated funds for the last 10 years to support maintenance and repair, and replacement of antiquated facilities and structures is also starting to impact the flow of commerce on the Great Lakes; specifically Lake Superior, Lake Michigan, and Lake Huron. This is evidenced by recent (2004) ship groundings caused by the lack of



FIGURE 1, MAP OF THE GREAT LAKES.⁷

adequate dredging dollars to fully remove sediment from the federally mandated shipping channels. The diagram above helps to explain the complexity and size of the system. Canadian locks are numbered 1,2,3,4,7, and 8 respectively, and USA locks are numbered 5,6, and 9.

For fiscal year 2005 and beyond, this brings into question whether or not the USACE can continue to adequately maintain federally mandated programs (dredging, structures, navigation features) to make certain that shipping companies will continue to transport cargo efficiently amongst Great Lakes harbors and ports, and out to the Saint Lawrence Seaway.

ECONOMIC IMPACT ON THE REGION

In today's global economy, USA's sea lines of communication are essential to the nation's economic growth and prosperity. The Civil Works Navigation Program administered by USACE plays a critical role in promoting USA's economic strength, and in turn supports our national

security. Global trade has stimulated the free movement of capital, paved the way for companies to expand around the world, increased wealth and raised living standards, brought national borders closer together, and fused national markets. It is projected that foreign trade is expected to double over the next two decades; inland traffic is projected to grow by as much as 37% over the next 20 years; and freight demand will increase by nearly 70% by 2020.⁸

The system of inter-costal harbors found on the Great Lakes, and the connecting inter-costal waterways remain one of the most important parts of our Nation's transportation system. The Great Lakes are connected to the Mississippi River and the Gulf of Mexico by the Chicago Sanitary and Ship Canal. The Great Lakes are also connected to the Atlantic Ocean by the Saint Lawrence Seaway. The Michigan Department of Transportation (MDOT) recently estimated that 50-100 million metric tons of freight is transported annually on the Great Lakes during the period of March 26 to January 14 each year.⁹ Shipping stops for the balance of the year due to ice blockage on the lakes and maintenance of the Soo Locks located at Sault Ste. Marie, Michigan.

The bulk of the tonnage shipped on the Great Lakes is raw materials used for manufacturing. MDOT estimated in 2000 that this breaks out roughly as 26% iron ore, 7% cement, 18% coal, 43% sand and stone, 3% petroleum product and 3% other.¹⁰ In most cases these commodities are heavy and therefore it is economically justified that they be moved by a mode of transport that has a low value to weight ratio such as water.

The best way to explain this is to refer to the truck traffic congestion found in and around the Port of New York or the Port of New Jersey. Within the last couple of years, principally because of truck traffic congestion on the roads surrounding these ports, air quality issues, and a steep increase in fuel cost, port authorities have begun cross loading containers directly from super container ships to smaller, "ship and drop" inter-costal freighters. Previously, these goods and commodities were transported by truck to the point of consumption on the Great Lakes. One may conclude that the truckers unions and companies would balk at doing this. To the contrary, the trucking companies and unions support this simply because once the ship borne container arrives at the destination port, a truck is still normally required to transport the commodity or container to the point of final consumption.

For example, the Port of Duluth-Superior located on the far northwestern portion of Lake Superior is a major hub for cross loading taconite pellets from rail to ship transport. Taconite pellets are shipped to the Duluth-Superior harbor from mines located in the upper peninsula of Michigan, Minnesota, northwest Ontario and northern Ontario. Therefore mining activities take place on both USA and Canadian shores and have a commensurate international economic

impact. Taconite is the principal feed-stock material used in all steel production. “Lakers” transport this material to steel mills located in and around the lower Great Lakes. “Lakers” is the industry term used to identify the 600-1000 foot lake freighters that transport cargo on the Great Lakes.

For geographic reference, some but not all steel producing plants are located in Chicago, Detroit, Cleveland, Erie-Pennsylvania, and Hamilton-Ontario. Additionally, approximately 10-20% of the taconite pellets are also transported by ships referred to in the industry as “salties” through the Saint Lawrence Seaway. Ports of call include ports located as far east as China and specialty steel makers located predominately in the Scandinavian countries. “Salties” are medium ocean going ships that are capable of navigating through the Saint Lawrence Seaway. The Saint Lawrence Seaway connects the Great Lakes with the Atlantic Ocean. It is common practice for “salties” to transport taconite pellets to ports located in and around Helsinki, Finland, and then return to Detroit with finished steel product to supply the auto industry, and then back to Duluth-Superior for more taconite pellets.

Another example of this daily, global commerce phenomena takes place at the Port of Green Bay. This harbor is located on the central, eastern shore of Wisconsin on Lake Michigan, and is a predominant shipping location for coal mined from the western states. The port also facilitates transport of corn, grain, soybean, limestone, petroleum products and other general cargo. For the most part the coal is used for fuel by both USA and Canadian power plants. Again, this is another example of the complexity and international impact of this issue. The limestone is used in concrete production, and the corn and soybean exports move by inland waterways to deep water harbors for export.

As such the mission of the USACE is to sustain the ability of the inland waterways, ports and harbors to keep commerce moving. The USACE spends about \$500 million annually to operate and maintain the inland waterway system, nationwide. Statistically, 98% of USA's international trade moves through USA's ports, and 20% of USA's jobs depend on some extent on this trade.¹¹

Navigation infrastructure saves approximately \$7 billion annually in transportation costs by providing a more energy-efficient and environmentally friendly form of conveyance than road and rail transportation modes (see figure 2). For example, a barge that carries 1,500 tons of cargo delivers the equivalent of 15 jumbo rail hopper cars with less adverse pollution impacts. This is equivalent to using 58 large semi-trucks for over the road service.

External Costs of Emissions in Dollars

Mode	CO ₂	NO _x	VOCs	SO ₂	CO	PM	Total
Intercity Truck	.39	1.39	.10	.14	--	.05	2.08
Intercity Rail	.07	.30	.01	.02	--	.01	.41
Intercity Marine	.05	.03	.02	.05	--	.00	.16

CO₂
NO_x
VOCs

Carbon Dioxide
Nitrogen Oxides
Volatile Organic Compounds

SO₂
CO
PM

Sulphur Dioxide
Carbon Monoxide
Particulate Matter

Energy Efficiency: One litre of fuel will carry one tonne of cargo over a distance (km) of



FIGURE 2. COMPARISON OF EFFICIENCY AND EMISSIONS FOR TRANSPORT.¹²

Another way of stating the efficiencies gained is to compare ton-miles per gallon. Utilizing a barge or ship, the transporter can move 500 ton-miles compared to the 400 ton-miles per gallon that rail transportation achieves. Additionally, it has been proven that moving large quantities of hazardous materials and cargo by water is statistically safer and poses less of a security threat to the general population.¹³

ECONOMIC SECURITY AS A FUNCTION OF NATIONAL SECURITY

The USA economy is currently the world's largest in terms of GDP; approximately \$10.9 trillion for 2003. The USA's economy is impacted by a variety of factors. These include domestic and international security, domestic and international politics, globalization and even the weather. The ability of the USA to sustain this advantage is dependent upon a number of conditions and activities that may be beyond the control of the traditionally minded bureaucrat to manage and influence. Some conditions may depend purely on domestic economic decisions such as monetary policy. Other considerations are more complex and involve other countries or international trade bodies such as the World Trade Organization. Potential outcomes to the

USA may include the outsourcing of domestic jobs and manufacturing capability, as well as adding to an already disproportionate trade imbalance.¹⁴

Economic considerations have had a role in grand strategy probably since the advent of grand strategy and, as a result, economic goals have become appropriate as national security objectives. For example, in the 20th Century economic goals became part of USA's national security strategy in large part as a result of the 1973 Organization of Petroleum Exporting Countries (OPEC) oil embargo and the resulting economic challenges of that decade. A more recent example illustrating national objectives (ends), strategic concepts (ways) and national power (means) is reflected in the USA response to the invasion of Kuwait by Iraq. The ensuing USA response in the form of Operation Desert Shield and Desert Storm represents the Means. Ends are represented in part by the desire to secure long-term access to affordable Persian Gulf regional oil for the USA. Ways are illustrated by the blending of political, economic and military diplomacy by the USA in the Persian Gulf region. As the USA enters the 21st Century, there continues to be constant pressure, partially due to globalization, to further add economic objectives to the National Security Policy.

ECONOMIC GOALS DEFINED

The National Security Strategy of the USA, dated September 2002, addresses economic goals. President George Bush states, "a strong world economy enhances our national security by advancing prosperity and freedom in the rest of the world. Economic growth supported by free trade and free markets creates new jobs and higher incomes. It allows people to lift their lives out of poverty, spurs economic and legal reform, and supports the fight against corruption, and it reinforces the habits of liberty".¹⁵

Before defining the economic goals of the USA, and addressing the implications, it is important to define what the term economics means in the traditional sense. Economics simply understood deals with the problem of matching demand for scarce resources with a limited supply of that resource. This may be for the finished product itself or the raw materials to produce that product. The implications for the USA are overwhelming. Especially when one considers globalization of markets and suppliers, and the impact on the USA domestic economy; just in time inventory management; outsourcing; world-wide suppliers and manufacturers; specialty materials; and limited supply of feedstock and raw materials.

For most of the 20th Century the USA has had a negative trade balance and early indications are that the 21st Century will be no different. A recent example helps illustrate this. In August, 2004, the Port of Long Beach, California advertised the need for 3,000 long-shore

men to help off-load container ships docking at the port. This was good news in the sense that California has lost a sizable number of jobs recently due in part to the 2001-2003 recession. These jobs on average paid approximately twenty dollars an hour. However, this was bad news in the sense that these positions were considered part-time employment and would not pay benefits.¹⁶ Approximately 500,000 applications for employment were received from all across the USA. Additionally, it is important to realize that the jobs were advertised in the first place because the net increase of container ships arriving at the port in the last three years increased enough to warrant hiring an additional 3,000 employees to assist in the off-loading process. Clearly, the trade balance continues to tip in favor of the importer.

Each and every day the media runs stories about another plant closing and the outsourcing of USA jobs to foreign competitors. USA companies are not immune and are caught up in this latest round of outsourcing, claiming the need for cheaper manufacturing labor and sources of raw materials in order to be competitive in the global business environment. The price paid for this is that previously known cottage industries and suppliers for goods and services in the USA cannot compete and are closing their doors.

Another victim of globalization is USA's manufacturing sector. The USA is quickly losing control over monopolies that were previously considered domestically based manufacturing industries, enterprises and technologies. The implications for national security are immense when considering shipbuilding, aircraft production, and mainstream production activities that support the military industrial complex.

NATIONAL SECURITY STRATEGY DEFINED

Generally speaking, strategy is defined as the calculated relationship between ends, ways, and means. The grand strategy of the USA is defined by the U.S. Army War College as the use of all U.S. national power in peace and in war to support a strategic vision of America's role in the world that will best achieve the nation's core grand strategic objectives. For the USA, the three core interests are: preserve USA security, bolster economic prosperity and promote USA values. The national values are the core philosophical, legal and moral principles from which our political system and social order derive their uniquely USA character.¹⁷

Another crucial component in developing a national security strategy is to determine the intensity of our objectives. The objectives are rated as vital, important or peripheral. Vital interests are defined as when serious harm to the security of the nation will result if action is not taken immediately. Important interests are defined as when potential harm could come to the security of the nation if action is not take. Peripheral interests do not have significant impact on

the security of the nation. Determining interest intensity requires a regional or geographic approach in order to accomplish a credible analysis. The available resources to protect USA interests are the military, information, diplomatic, legal, intelligence, finance and economic tools of national security policy.

ANALYSIS OF ECONOMIC GOALS AS A COMPONENT OF NATIONAL SECURITY STRATEGY

The world in which we live today is a more complex and sophisticated environment than the one leaders had to deal with twenty years ago. Economic power, now more than ever, has risen to become a significant element of national power. As the world markets continue to globalize, the common language of economics (banking and trade) becomes more of a common thread for all nations to contend with and to integrate into their domestic and foreign policy. Questions arise on how to wield this new sword of power in the global world environment, because this sword cuts both ways. Stated differently, economic engagement is clearly of great benefit to the nation. Trade not only provides a financial gain for countries, but also is a major consideration in making foreign policy. The Clinton administration trumpeted economics as a means to strengthen the post-Cold War international system through democratization, open markets, free trade, and sustainable development.¹⁸

But how is this effect measured given the fact that this nation does not have a consolidated, integrated economic strategy to begin with? While various governmental organizations and agencies are chartered to track and provide statistical information concerning the health and progress of the economy, there is no consolidated national economic strategy. The nation does not have a consolidated economic strategy because no one governmental agency is specifically responsible for developing such a document.

The Bush administration has continued with the philosophy of economic engagement as demonstrated by the National Security Strategy of the USA, dated September 2002. The use of economics as an element of power has also been integrated into foreign policy. Former Secretary of State Powell has stated that economic engagement helps to secure the global environment.¹⁹ This occurs because international trade and international investment provide opportunities for USA businesses to prosper. As it relates to foreign policy, international trade and investment creates markets and open economies not only for the USA, but also for other countries. This generates income which, if disbursed amongst the populus, will improve standards of living and should produce more stable and peaceful societies. An example of this is starting to emerge in the Peoples Republic of China. China has set up free trade zones where booming economies are being created. A bi-product of this phenomena is individual

ownership of land and property. Previously this was not possible given the communist system in China, but is a reality today.

Globalization is here to stay. Globalization is not merely a buzzword, but a global force that is transforming everything global leaders thought they knew about politics, foreign policy and war. Coming to grips with this phenomena will force USA leaders and policy makers to think asymmetrically (cultural, religious, military, financial, political, technology) when developing a national security policy. "The overarching goal of such a globalization-infused strategy should be to shape the emerging world order in a way that protects U.S. interests and promotes USA and allied values".²⁰

The most notable recent use of USA economic power has been the use of sanctions. Sanctions usually involve some reduction in the form of trade or financing. They can target imports or exports. Sanctions can be used unilaterally or as part of a coalition or voting block such as the World Trade Organization. If a nation can manage to isolate the target nation then the sanctions may have a reasonable chance of working. However, the reality in a globalized economy is that sanctions are not very successful. Most recently the USA attempted to create a coalition and introduce into the United Nations a measure to sanction the Sudanese government because of human right abuses and genocide against a rival Sudanese segment of the population. China as a member of the permanent Security Council did not agree with this measure.²¹ Furthermore, China publicly stated that they will not support any form of economic sanction regardless of the perceived abuse or infraction. In essence, regardless of what the USA does, if China undermines the efforts of the USA, the sanctions will not work. Another recent example of why the effectiveness of sanctions is questionable in today's environment has to do with Iraq. Clearly in this situation a coalition of countries represented by the United Nations and led by the USA imposed sanctions on Iraq. While it is clear that sanctions affected the quality of life of the normal Iraqi citizen, Saddam Hussein was not undermined by the sanctions. Additionally, it is questionable whether or not geographically contiguous Arab nations secretly traded with Iraq, as well as some European nations. Because of this the sanctions were not very effective against the target audience which was the Hussein regime.

Economic security is vital to the USA, for without it the USA would face difficulty supporting or influencing events around the globe. The USA needs to ensure its economy not only maintains its superpower status, but also has the capacity to increase and grow faster than any of its global competitors. Because of globalization, the use of soft power in the form of an economic lever is becoming the more appropriate and effective use of force in order to influence political outcomes. Stated otherwise, the USA is gradually using the economic element of

national power to supplement or replace other elements of power as the preferred application of national power. Global forums such as the G-8 helps to substantiate and support this. Global access, a worldwide expansion of free markets, and technology also are enablers to help shape political and military decisions.²²

Because the USA leads the world as an economic power house, it is able to support a large, technologically advanced military that provides for the security of the USA. As an adjunct, the USA's military capability for a world-wide presence helps to shape and influence foreign policy around the world. Similarly, for a developing country, a growing economy can affect national security by producing goods and services for domestic consumption and trade, support the development of new technology to enhance security, and provide for the education, health and welfare of the populus. As such, it could be argued that buying goods made in China instead of the USA could lead to undermining USA economic power.

A vital component to achieving USA's economic objectives is long term, supportable growth and prosperity. But this requires being able to bring goods and services to market. Only then is economic value realized. The importance of a robust and efficient transportation infrastructure in order to support commerce can be seen by getting on the roads and highways today and counting the number of truck and trailer combinations versus the number of passenger cars traveling our highway systems. What would happen if this transport of goods and services were interrupted? Recently a major oil and gas pipeline ruptured in Texas. A fire ensued and the pipeline was taken out of service. Immediately upon this event hitting the major news headlines of the nation, the spot price for gasoline started to increase in the southwestern USA. Consumers in Texas, New Mexico, Arizona and portions of California were now paying a premium to purchase gasoline at the pump. Retailers cited loss of gasoline supply as the reason for a price increase. The pipeline was ultimately repaired in about two months, at which point gasoline prices returned to pre-pipeline explosion costs.

As recent as December 2004, suppliers of steel are now charging on the average a 17% surcharge on the purchase of raw steel stocks, citing lack of supply and global demand for the product.²³ In essence, manufacturers and consumers of raw steel now have to make a decision on whether to pass that cost on to product consumers or absorb this cost against profits. Imagine if the supply of taconite trafficking on the Great Lakes were to be interrupted due to the loss of one of the critical navigation features located at Sault Saint Marie. The price would obviously increase due to the supply and demand relationship and a cascading impact on the economy of the nation would ensue.

Another example where national security relates to economic security is found by studying the former Soviet Union. At one point during the Cold War the USSR was spending as much as 45% of their GDP on defense. The resources of the USSR were focused and directed at producing weapons and products to provide for the national defense. As history shows this is not sustainable since the general populus at large cannot eat tanks, ships, and airplanes. Consumers want choices and vote with their dollars. Since production was primarily military focused few if any domestic products were produced beyond utilitarian value. As such consumers spent very little and a tax base did not exist. Ultimately, the regime crumbled from within.

Related to the USA, we must continue to support all those components of the system that enable the point of purchase of goods and services. Transportation of raw and finished goods supports the point of purchase of goods and services. Producers will continue to produce as long as there is feed stock from which to produce. Finished goods however must be shipped to consumers in order to generate value. Value as it relates to economic security and national security is in the form of tax revenues generated. Taxes are required to pay for the defense of the common good.

SUMMARY AND POLICY RECOMMENDATION

Currently there are two options available to the President and the Congress of the USA. They are: (1) Maintain status quo for the levels of funding provided to maintain, repair and replace the navigational infrastructure of the Great Lakes and to take risk; and (2) Provide funding at a greater level than historical levels for the last 20 years in order to recapitalize the navigational infrastructure of the Great Lakes and reduce risk. My recommendation is Option two.

Option one entails that no additional funding is provided above and beyond historical levels for the last 20 years. It requires maintenance and repair by replacement of failed structures. This is the least desirable option because risk is maximized, since it is a known fact that critical infrastructure has reached known engineering design life, and failure is imminent.

Option two requires that the USA Senate provide immediate funding in the amount of \$8 Million for a comprehensive, risk based assessment to fully base line the state of all critical infrastructure located on the Great Lakes. This study should be completed near term in twelve months or less and the work product must be provided to the Energy and Water, and Transportation appropriations committees of the USA Senate. A critical study element needs to demonstrate the monetary impact of the interruption of commerce on the Great Lakes due to the

loss of critical infrastructure and the resulting, cascading impact to national economic security. This is not an insurmountable task and many of the study elements already exists individually. The challenge is in pulling the pieces together into a comprehensive picture, and then to engage the appropriate decision making bodies for the nation in order to allocate precious resources in the form of finance to maintain, repair, or replace critical seaway infrastructure on the Great Lakes. A similar study is currently underway by the Saint Lawrence Seaway Commission and is scoped to encompass the capital infrastructure along the Saint Lawrence Seaway. The study is controversial in that regional congressional interest is relegated to protecting the Port of New York City and regional environmentalists are concerned that the study may result in a recommendation to enlarge the seaway which is feared to result in a introduction of invasive species.

To fully understand why a study of this nature has not been done before is to be able to understand the politics of this paradigm and others that fall into this category. The nation is prosecuting the Global War on Terrorism. Competition for precious resources is furious and will continue to be so for the near and foreseeable future. The President of the USA has published his budget priorities for fiscal year 2005 and beyond for his administration. They are: (1) Fight and win the war on terrorism; (2) Fund programs that support education for the nation; and (3) reduce the deficit.²⁴ The Executive Branch as well as the House of Representative and now the Senate is controlled by the Republican party. The Republican party historically has stood for fiscal conservatism and smaller government, generally speaking. All committees responsible for oversight of waterborne infrastructure are chaired by the Republican party leadership. As a result, those areas for spending outside of the purview of the President's budget priorities currently receive minimal or limited attention for critical resources.

The infrastructure and navigation features that enable and facilitate the transport of goods and services on the Great Lakes is literally falling apart, or is woefully inadequate to meet the demands of the 21st Century global business environment. The lack of adequate congressionally appropriated funds for the last ten years to support maintenance, repair, and replacement of antiquated facilities and structures is impacting the flow of commerce on the Great Lakes; specifically Lake Superior, Lake Michigan, and Lake Huron. Currently, the USACE has a \$42 billion infrastructure maintenance and repair back log, nation wide. At the historical and current budget levels of about \$2 billion a year, that is a 21 year back log of work to be performed.

The USA today faces national security challenges like never before found in our history. The 21st century threat to the nation is pandemic, trans-national, and asymmetric in nature. The

terrorist attack on the homeland on September 11, 2001 is only part of the total threat picture. Included is also globalization of the production of goods and services, competition for limited natural resources and commodities, availability and access of global markets, and the state and ability of nations to continue to be able to provide for the financial well being of the state. Clearly, a key to well being and defense of our nation is economic security.

The National Security Strategy of September 2002 states that a strong world economy enhances our national security by advancing prosperity and freedom in the rest of the world. The National Security Strategy of 1994 has been promoted as the watershed event for ensuring USA economic success and national security by promoting economic development through the pursuit of open markets and free and fair trade. Economic security can be viewed as one of the first lines of defense in protecting the homeland from outside threats.

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ENDNOTES

¹George V. Voinovich, United States Senator: Hearing on the Corps of Engineer Mission and Construction Backlog, Statement presented to the Senate Environment and Public Works Subcommittee on Transportation and Infrastructure, May 16, 2000, (Washington, D.C.)

²US Army Corps of Engineers, Detroit District Home Page; available from <<http://www.usace.lre.army.mil>>; Internet; accessed November 10, 2004.

³US Army Corps of Engineers, Director of Civil Works Home Page; Internet; accessed November 11, 2004.

⁴Craig E. Philip, Chairman of the National Waterways Conference, Inc.: Joint Hearing, Subcommittees on Water Resources and Environment and the Coast Guard and Maritime Transportation, Posture Statement presented to the House Transportation and Infrastructure Committee, May 23, 2001, (Washington, D.C.).

⁵ Ibid.

⁶US Army Corps of Engineers, Detroit District Home Page; Internet; accessed November 11, 2004.

⁷ Ibid.

⁸Department of the Army, Corps of Engineers, Civil Works Strategic Plan FY2004-FY2009, (Washington, D.C.: U.S. Department of the Army, March 2004), 47.

⁹Michigan Department of Transportation, Planning Division Home Page; Internet; accessed November 9, 2004.

¹⁰ Ibid.

¹¹Department of the Army, Corps of Engineers, Civil Works Strategic Plan FY2004-FY2009, 4.

¹²Transport Canada Discussion Paper, Inclusion of Environmental Costs, (1996): 3.

¹³Department of the Army, Corps of Engineers, Civil Works Strategic Plan FY2004-FY2009, 40.

¹⁴Department of National Security and Strategy, Readings, Volume II, The Power of Economics in National Security, Clayton K.S. Chun, (Carlisle Barracks, P.A.): U.S. Army War College, August 25, 2004, pg 351.

¹⁵The White House, The National Security Strategy of the United States of America, (Washington, D.C.), September 17, 2002, pg 17.

¹⁶Port of Long Beach, Home Page; Internet; accessed August 8, 2004.

¹⁷Department of National Security and Strategy, USAWC Course Directive Academic Year 2005, pg 43.

¹⁸Chun, pg 352.

¹⁹Colin L. Powell, Secretary of State: Remarks presented to the National Association of Manufacturers, October 31, 2004, (Monarch Hotel, Washington, D.C.)

²⁰Department of National Security and Strategy, Readings, Volume I, Globalization and National Security: A Strategic Agenda, (Carlisle Barracks, P.A.): U.S. Army War College, August 25, 2004, pg 224.

²¹BBC News World Edition, BBC World News Home Page; Internet; accessed July 8, 2004.

²²Chun, pg 342.

²³PR News Wire, News Home Page; Internet; accessed November 16, 2004.

²⁴President of the United States, White House Home Page; available from <<http://www.whitehouse.gov>>; Internet; accessed November 10, 2004.

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