

WHITE PAPER
COMMENTS ON PASSAIC RIVER LOWER 8 MILE
FOCUSED FEASIBILITY STUDY

DISCOUNT RATE ANALYSIS
AND
NAVIGATIONAL DREDGING DISPROPORTIONATE COST VS. BENEFIT
DISCUSSION

Prepared by

JOSEPH J. EGAN

A handwritten signature in black ink that reads "Joseph J. Egan". The signature is written in a cursive style with a horizontal line underneath it.

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I. SUMMARY OF COMMENTS

This white paper was prepared by Joseph J. Egan of Davis & Hosfield Consulting LLC. My curriculum vitae is included as **Attachment A** to this white paper along with a listing of my publications in the last 10 years. This white paper addresses two areas of the 2014 Focused Feasibility Study (“FFS”) for the Lower Eight Miles of the Lower Passaic River (“Lower Passaic River Site”) prepared for U.S. Environmental Agency and U.S. Army Corps of Engineers. The areas addressed are the discount rate used to discount future costs back to a single point in time and the lack of analyses related to the cost/benefit of proposed deeper navigational dredging for Alternative 3.

The FFS uses a 7% real discount rate to develop the present value cost estimate for remedial alternatives and makes references to using a 3% and 10% discount rate for a cost sensitivity analysis.¹ For this site, a discount rate significantly less than a 7% real discount rate is warranted for a number of reasons, including the following:

- 2000 EPA guidance document recognizes times when a discount rate other than 7% is appropriate.
- The Securities & Exchange Commission and the Financial Accounting Standards Board state that the discount rate for reporting environmental liabilities should not exceed the 20-year U.S. Treasury Bond Rate.
- EPA has used discount rates of less than 7% in feasibility studies and proposed cleanup plans for other sites.
- The 20-year Treasury bond nominal rate, the rate of corporate bonds with a 20-year maturity, and the inflation rate have decreased from 1992 to 2013. In contrast, the EPA’s real discount rate has remained constant at 7%.
- The investment options for PRP group funds are typically very limited and do not reflect the EPA presumption of a “return on an average investment in the private sector.” Current rates of return on funds held by PRP groups are less than 1%.
- The 7% real discount rate used in this FFS is no longer appropriate and is significantly overstated.

¹ FFS for the Lower Eight Miles of the Passaic River, p. 5-70.

Alternative 3 of the FFS results in increased volumes of material to be dredged related to the deepening of the navigational channel. The additional costs associated with this navigational dredging are approximately \$850 million.² The FFS does not include an analysis or quantification demonstrating the potential benefits of dredging deeper at a cost of an additional \$850 million. The potential benefits are limited and the number of parties who may benefit are limited as summarized below:

- The potential future use benefits are not quantified.
- Only 7 commercial users of 22 active berths responded to inquiry concerning potential future uses. Responses were all qualitative in nature.
- 97% of material transported along Lower Passaic River by only 7 parties.
- Commercial transportation use has decreased by 36% since 2006.
- Transport on the Lower Passaic River is constrained by certain man-made and natural elements that would remain after the proposed deepening of the navigational channel.
- The potential future use benefits accrue to a few companies that should share in the costs and potentially the Army Corps of Engineers.
- Many factors left unanalyzed related to potential future uses.
- The significant additional cost of deepening the navigational channel is disproportionate to any potential future use benefits.
- The study of the navigational uses is dated and insufficient to support the conclusions.
- Potential recreational future uses are not quantified.

II. DISCOUNT RATE ANALYSIS

A. *Focused Feasibility Study Approach for Discounting Future Costs*

The FFS report for the Lower Eight Miles of the Passaic River converts the estimated future remedial costs to a present value “which represents the project’s monetary value at a single point in time regardless of the actual date of each expenditure. Future costs are discounted back to the present using a standard discount rate ...calculated based on a seven percent discount rate ...

² Discussions with Integral Consulting, Inc.

[using] [c]onstant dollar (no inflation) valuations.”³ In other words, the EPA uses a 7%⁴ real discount rate, a rate excluding inflation, which is derived using the following formula:

$$\text{Real Rate} = [1 + \text{Nominal}] / [1 + \text{Inflation}] - 1.^5$$

The EPA states that it uses the 7% real discount rate in the FFS “as recommended in guidance.”⁶

B. *EPA’s Use of a 7% Discount Rate*

The preamble to the National Oil and Hazardous Substance Contingency Plan (March 1990) states that the EPA will follow the Office of Management and Budget (OMB) Circular A-94 and to the extent OMB revised Circular A-94, then EPA would address the matter in program guidance to ensure consistency with revisions to Circular A-94.⁷ OMB Circular A-94 is a memorandum that provides guidelines and discount rates for benefit-cost analysis of federal programs. Appendix C of OMB Circular A-94 is titled “Discount Rates for Cost-effectiveness, Lease Purchase, And Related Analyses.”⁸

OMB Circular A-94 was last revised on October 29, 1992 and contained a real discount rate of 7%.⁹ In 1993, the EPA issued OSWER Directive No. 9355.3-20 which states the October 29, 1992 OMB Circular ... “directs [federal] agencies to use a 7% discount rate,” and that the 7% discount rate “should be used in estimating the present worth value for potential alternatives in the remedial investigation/ feasibility study and for remedial actions.”¹⁰

In July 2000, the EPA issued OSWER 9355.0-75, “A Guide to Developing and Documenting Cost Estimates During the Feasibility Study,” which provides a chapter on present value analysis and discount rate selection.¹¹ This guidance document references the revised 1993 OSWER Directive No. 9355.3-20 stating:

³ FFS for the Lower Eight Miles of the Passaic River, p. 5-9.

⁴ FFS also references on p. 5-70 a 10% and 3% discount rate.

⁵ Ibbotson SBBI 2013 Valuation Yearbook, p. 23.

⁶ FFS for the Lower Eight Miles of the Passaic River, p. 5-9.

⁷ <http://www.epa.gov/superfund/policy/remedy/sfremedy/pdfs/ncppreamble61.pdf> (55 FR 8722- 55 FR 8723).

⁸ http://www.whitehouse.gov/omb/circulars_a094/a94_appx-c.

⁹ OMB Circular A-94, "Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs" (10/29/1992).

¹⁰ OSWER Directive No. 9355.3-20 dated June 25, 1993.

¹¹ OSWER 9355.0-75, A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, dated July 2000, pp. 4-4-4-5.

[b]ased on the NCP and this directive, a discount rate of 7% should be used in developing present value cost estimates for remedial action alternatives during the FS. This specified rate of 7% represents a ‘real’ discount rate in that it approximates the marginal pretax rate of return on an average investment in the private sector in recent years and has been adjusted to eliminate the effect of expected inflation. Therefore, this rate should be used with ‘constant’ or ‘real’ dollars that have not been adjusted for inflation (i.e. a dollar spent in future years is worth the same as a dollar spent in the present year, which is the typical situation for RI/FS cost analyses.¹²

However, the 2000 EPA guide goes on to state:

[t]here may be circumstances in which it would be appropriate to consider the use of a lower or higher discount rate than 7% for the FS present value analysis. If a different discount rate is selected for the analysis, a specific explanation should be provided. For cost estimates that have large future year expenditures or where the discount rate assumption is a sensitive cost factor, a sensitivity analysis can be performed to evaluate the impacts of the discount rate assumption on the present value cost.¹³

For this site, a discount rate other than a 7% real discount rate is warranted for a number of reasons as discussed below.

C. *Securities & Exchange Commission (“SEC”) & Accounting Guidance for Disclosing Environmental Liabilities*

Staff Accounting Bulletin (“SAB”) 5.Y: Accounting and Disclosures Related to Loss Contingencies issued by the SEC addresses recognition of environmental remediation liabilities by public companies in their financial statements. In addition, the Financial Accounting Standards Board (“FASB”) refers to SAB 5.Y in its Accounting Standards Codification¹⁴ sections 410-30-S30 and S35: Appropriate Discount Rate to be Applied to a Product or Environmental Remediation

¹² OSWER 9355.0-75, A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, dated July 2000, pp. 4-4-4-5.

¹³ OSWER 9355.0-75, A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, dated July 2000, p. 4-5.

¹⁴ The FASB Codification is intended to simplify user access to all authoritative U.S. generally accepted accounting principles (GAAP) by providing all the authoritative literature related to a particular topic in one place. (<http://asc.fasb.org/home>).

Liability. Those sections refer to “SEC Staff views on the discount rate to be used in measuring...environmental liabilities.”¹⁵ SEC SAB 5.Y states that for recognition of an environmental liability on a discounted basis,

[t]he rate used to discount the cash payments should be the rate that will produce an amount at which the environmental or product liability could be settled in an arm’s length transaction with a third party” and that “the discount rate used to discount the cash payments should not exceed the interest rate on monetary assets that are essentially risk free and have maturities comparable to that of the environmental ...liability.¹⁶

The Accounting Standard Codification cites the above same statement for the use of a discount factor for reporting of environmental liabilities.

A risk free rate is the “rate available on investments that are considered to have no risk of default.”¹⁷ The most commonly used risk-free rate is the twenty-year U.S. Treasury Bond.¹⁸ For this site, the estimated duration for the EPA selected remedy is approximately 35 years.¹⁹ As such, the SEC and FASB state that the discount rate for environmental liability should not exceed the 20-year U.S. Treasury Bond Rate.

D. Discount Rates at other EPA sites

Based on a sample review of feasibility studies and proposed cleanup plans conducted in the past four years, the EPA has used discount rates of less than 7% in feasibility studies and proposed cleanup plans for other site.

The following table shows examples where the EPA used a discount rate lower than 7%:

¹⁵ FASB ASC410-30-S30.

¹⁶ Staff Accounting Bulletin 5.Y; FASB ASC410-30-S30 and paragraph 450-20-S99-1.

¹⁷ Hitchner, James R. "Methods for Developing Cost of Capital." Financial Valuation: Applications and Models. New York: J. Wiley, 2003. 139-40.

¹⁸ Hitchner, James R. "Methods for Developing Cost of Capital." Financial Valuation: Applications and Models. New York: J. Wiley, 2003. 139-40.

¹⁹ FFS for the Lower Eight Miles of the Passaic River, Appendix H.

Table 1: Examples of Discount Rates used by the EPA at other Sites²⁰

| Site | Discount Rate Used by EPA | Year of Study |
|--|----------------------------------|----------------------|
| Raritan Bay Mine Tailings Superfund Site | 1.99% ²¹ | 2012 |
| Lower Duwamish Waterway Superfund Site | 2.30% | 2012 |
| Big River Mine Tailings Superfund Site | 3.50% | 2010 |
| Montrose Superfund Site | 4.00% | 2013 |
| Del Amo Superfund Site | 5.00% | 2010 |

As shown above, the discount rate used by the EPA in the Feasibility Study for the Raritan Bay Slag Superfund Site was 1.99%. The EPA used this risk free rate rather than the 7% real discount rate for the following reasons:

The 20-year nominal treasury interest rates (OMB, 2010) for the last 6 years (no data is available prior to 2004 for the 20-year interest rate) have generally been less than 6 percent, and inflation over the same period has averaged around 3 percent per year. Thus, the 7 percent real discount rate is not believed to be realistic for alternative evaluation cost estimating. An inflation rate of 3.2 percent (average of 20 years of Engineering News Record [ENR] Construction Cost Indices rounded to the nearest tenth of a percent) and a nominal (interest) rate of 5.25 percent (average of the available data for nominal 20-year treasury interest rates rounded to the nearest quarter of a percent) was applied separately in the determination of net present value.²²

²⁰ United States Environmental Protection Agency: Region II dated September 17, 2012 p. 9; United States Environmental Protection Agency: Region X Memorandum dated November 1, 2012 pp. 7-8; United States Environmental Protection Agency: Region VII Memorandum dated June 18, 2010, p. 4; United States Environmental Protection Agency: Region IX Memorandum, dated March 22, 2013 p. 5; United States Environmental Protection Agency: Region 9 Memorandum dated May 21, 2010, p. 9.

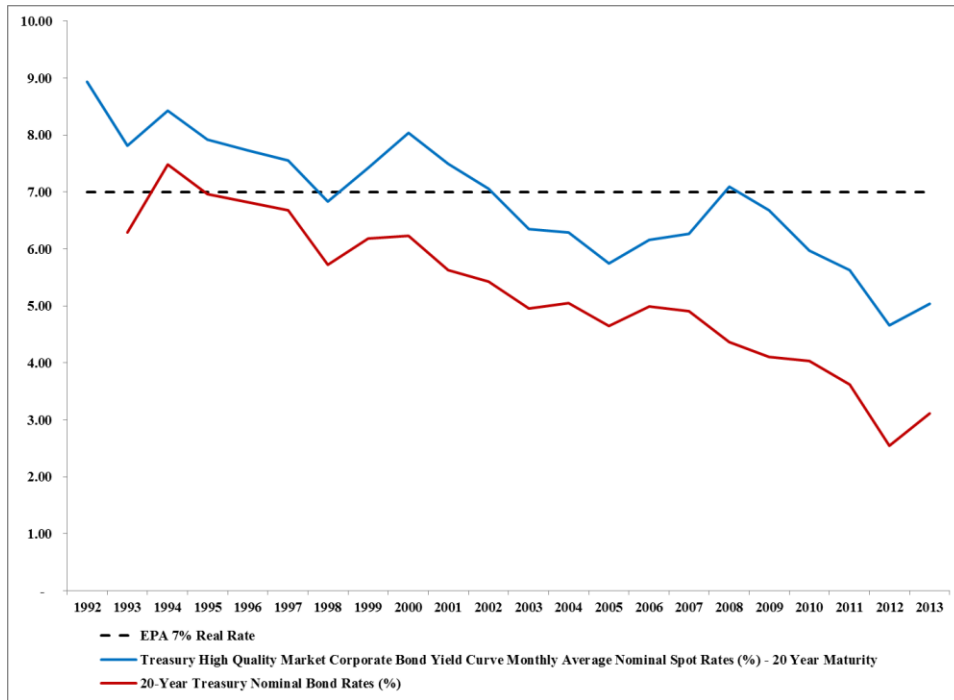
²¹ 1.99% real discount rate = (1 + nominal discount rate of 5.25%)/(1 + inflation rate of 3.2%) – 1.

²² United States Environmental Protection Agency: Region II dated September 17, 2012 p. 9.

E. Recent History of Debt (1992 - 2013)

As explained above, OMB Circular A-94 was last revised on October 29, 1992 and contained a real discount rate of 7%. As shown in the graph below, the 20-year Treasury bond nominal rate has decreased by 3.2% from a rate of 6.3% in 1993²³ to a rate of 3.1% in 2013. Similarly, the rate of corporate bonds with a 20-year maturity has decreased by 3.9% from a rate of 8.9% in 1992 to a rate of 5% in 2013. In contrast, the EPA's real discount rate has remained constant at 7%.

Figure 1: Long Term Debt Rate Summary²⁴

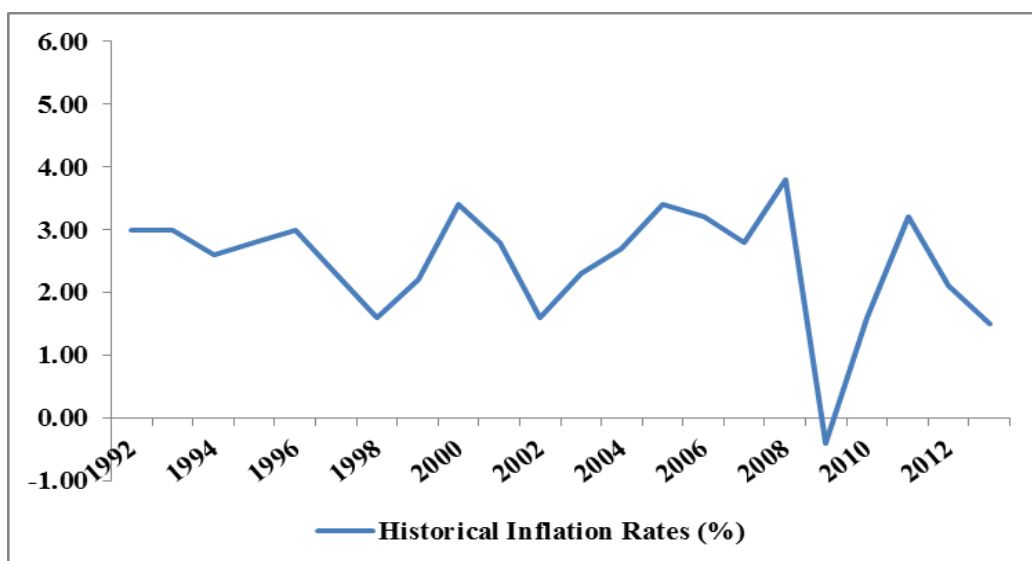


²³ Average of October through December 1993 based on available data.

²⁴ <http://www.federalreserve.gov/releases/h15/data.htm>; <http://www.treasury.gov/resource-center/economic-policy/corp-bond-yield/Pages/Corp-Yield-Bond-Curve-Papers.aspx> (HQM Corporate Yield Bond Curve Rates).

Additionally, the inflation rate has decreased from 3% in 1992 to 1.5% in 2013.²⁵

Figure 2: Historical Inflation Rates²⁶



F. Passaic River Funding Mechanism

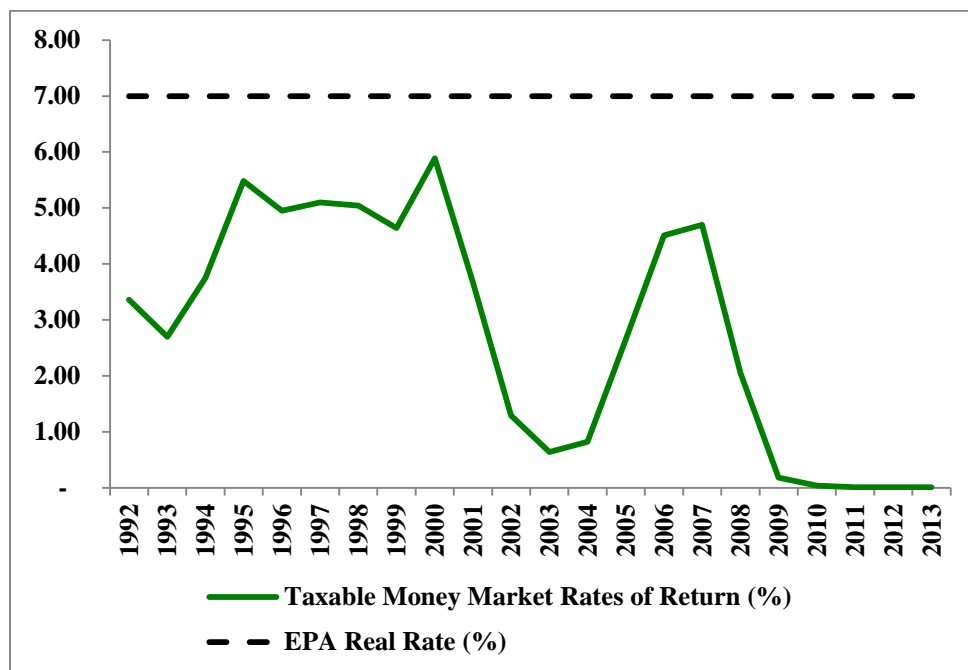
The 2000 EPA guidance states the 7% real discount rate “approximates the marginal pretax rate of return on an average investment in the private sector in recent years” (emphasis added).²⁷ The “recent years” reference is no longer valid. In addition, many PRP-lead Superfund sites around the country involve numerous parties that tend to pool their monies to fund cleanups. Many times the funds are collected up front and are invested in funds with little to no risk and are used to fund expenditures for years into the future. As such, the investment options for those funds are typically very limited and do not reflect the EPA presumption of a “return on an average investment in the private sector.” Many times private parties invest excess cash in money market accounts while remedial efforts are conducted. As shown in the graph below, the money market rates are historically much lower than the EPA’s 7% real discount rate for private companies. In 2013, for example, the average nominal money market rate for 2013 was de minimis and approximately 7% less than the EPA’s suggested rate.

²⁵ <http://www.usinflationcalculator.com/inflation/historical-inflation-rates/>

²⁶ <http://www.usinflationcalculator.com/inflation/historical-inflation-rates/>

²⁷ OSWER 9355.0-75, A Guide to Developing and Documenting Cost Estimates During the Feasibility Study, dated July 2000, pp. 4-4-4-5.

Figure 3: Money Market Rates vs. EPA's 7% Real Rate²⁸



The interest earned on excess funds held by the Passaic River PRP Group for the past four years has been less than 0.1% per year.²⁹

G. 7% Real Discount Rate is No Longer Appropriate

Using a real discount rate developed in 1992 for estimates of costs prepared in 2013 or later can lead to errors in analysis of the present value of future costs. As discussed above, FASB and the SEC both recommend use of a risk-free rate (i.e. 20-year US Treasury bond) when recording an environmental liability on a discounted basis. In 1992 when OMB revised the real discount rate to be 7% for use in evaluating cost effectiveness of alternatives, the interest rates on U.S. Treasury bonds were significantly higher than they have been in recent years (i.e. 2011 through 2013). As previously discussed and shown in Figure 1 above, the interest rate on 20-year Treasury bonds has decreased over 3% from 1993 to 2013. In the most current years, the nominal interest rate on 20-year Treasury bonds has dropped significantly, ranging from approximately 2.2% to 4.2% for the years 2011 to 2013. This is a decrease of approximately 2 to 4% from the 1993 average rate of

²⁸ <http://www.wellsfargoadvantagefunds.com/wfweb/wf/funds/profiles/profile.jsp?fundNo=3279>.

²⁹ Morgan Stanley Account Statements for the periods December 2013 and May 2014; USBank account statements for the period May 1 – 31, 2014.

6.2%, yet there has been no downward adjustment in the 7% real discount rate suggested by the EPA. Additionally, Figure 1 above demonstrates corporate bond rates, or private party long-term debt, decreased nearly 4% from 1992 to 2013.

Appendix C to OMB Circular No. A-94 was most recently updated in December 2013.³⁰ The revision states, “real rates are to be used for discounting constant-dollar flows, as is often required in cost-effectiveness analysis.”³¹ The real interest rate on Treasury notes and bonds with a 20-year maturity is reported as 1.6%.³² This rate is over 5% less than the EPA real rate of 7% used in this FFS.

H. Conclusions

The real discount rate applied by the EPA in the FFS should not be 7%, nor should it be 3% or 10%. For the reasons listed above, the proper discount rate should be much less than 7%. The basis for selecting a 7% real discount rate was based on an analysis performed 22 years ago and is no longer valid based on current economic conditions, nor is it applicable to the Lower Passaic River Site. Additionally, the EPA has provided no basis for its use of a 10% or 3% real discount rate. As discussed above, the current OMB Circular No. A-94 suggests a real interest rate of 1.6% (20-year maturity) for discounting constant-dollar flows.

III. NAVIGATIONAL DREDGING DISPROPORTIONATE COST VS. BENEFITS

A. FFS Alternative 3

Alternative 3 of the FFS includes dredging certain sections of the river for future operational use of the navigational channel as described below:

Alternative 3 includes dredging the 300-foot wide federal navigation channel from RM0 to RM2.2, to accommodate the reasonably-anticipated future use depths as determined with reference to the USACE (2010) survey of commercial users ... Where dredging depths coincide with the federally-authorized navigation channel (RM0 to RM1.2), an additional three feet

³⁰ http://www.whitehouse.gov/omb/circulars_a094/a94_appx-c.

³¹ http://www.whitehouse.gov/omb/circulars_a094/a94_appx-c.

³² http://www.whitehouse.gov/omb/circulars_a094/a94_appx-c.

would be dredged to account for historical dredging accuracy and over-dredging, followed by placement of two feet of backfill. Where future use dredging depths are shallower than the authorized channel (RM1.2 to RM2.2), an additional 5.5 feet would be dredged to accommodate an engineered cap (including provisions for a cap protection buffer and allowance for future maintenance dredging....³³

Below is a table showing the authorized depth of the river according to the U.S. Army Corps of Engineers and the proposed final depth after dredging under Alternative 3 of the FFS.

Table 2: Comparison of Authorized Depth to Final Depth Post-Dredging³⁴

| RM | Authorized Depth per COE Report (Ft) | Proposed Final Depth After Cap & Backfill per FFS Alternate 3 (Ft) |
|-----------|---|---|
| 0-1.2 | 30 | 30 |
| 1.2-1.7 | 30 | 25 |
| 1.7-2.2 | 30 | 20 |
| 2.2-2.6 | 30 | 10 |
| 2.6-4.1 | 20 | 10 |
| 4.1-8.3 | 16 | 10 |

According to an analysis performed by Integral Consulting, Inc., Alternative 3B includes the volume of material related to navigational dredging which increases costs by approximately \$850 million.³⁵ The potential benefits associated with this increased cost have not been studied and quantified by the EPA. The unknown potential benefits would accrue to very few commercial users in the lower reaches of the Passaic River.

As explained below, there is a disproportionate cost versus the potential benefit received associated with bank to bank dredging the navigational channel for potential future use.

³³ FFS for the Lower Eight Miles of the Passaic River, p. 4-38.

³⁴ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, p. 4; FFS for the Lower Eight Miles of the Passaic River, p. 4-38.

³⁵ Discussions with Integral Consulting, Inc.

B. *The Potential Future Use Benefits Are Not Quantified*

The EPA has not provided any analysis in the FFS as to the quantification of potential benefits that might result from the deeper dredging outlined in Alternative 3B for an estimated increased cost of approximately \$850 million associated with the additional navigational dredging.³⁶ Additionally, no quantitative analysis has been conducted to measure whether or not navigational dredging will provide any benefits, including transportation benefits, along the river and has not determined the value of the potential benefits.

According to Executive Order 12893 dated January 26, 1994, Principals for Federal Infrastructure Investments, “[b]enefits and costs should be quantified and monetized to the maximum extent practicable.”³⁷ The benefits have not been quantified and monetized for Alternative 3B.

C. *Potential Future Operational Use Benefits Are Limited*

The results of the survey of commercial users referenced in FFS Alternative 3B stems from the July 2010 report issued by the United States Army Corps of Engineers entitled Lower Passaic River Commercial Navigation Analysis (“COE Report”). At a “Commercial Users Outreach” meeting in August 2009 held by the EPA, participants were asked to submit comments providing their “current and future operational considerations” of the lower reaches of the Passaic River.³⁸ Passaic Valley Sewerage Commissioners, Harms Construction Co Inc., Disch Construction, Clean Earth of North Jersey, Getty Petroleum, Innovation Fuels and Napp-Grecco/Newark Asphalt Corp. were the only companies out of twenty-two active berths up to RM 8.1 to qualitatively respond showing a very limited incremental potential future use by commercial users in the area.³⁹ Their responses are summarized below:

³⁶ Discussions with Integral Consulting, Inc.

³⁷ According to Executive Order 12893 of January 26, 1994, Principals for Federal Infrastructure Investments.

³⁸ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, p. 1.

³⁹ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, p. 1, Appendix A.

Table 3: Responses to Inquiry Regarding Future Operational Considerations⁴⁰

| Commercial User | RM | Response to EPA's August 2009 Inquiry Regarding Future Operational Considerations |
|---------------------------------------|-----------|--|
| Passaic Valley Sewerage Commissioners | 0.4 | Placement of a new regional sludge treatment facility. The property has a dock that if improved could facilitate a third vessel birth. |
| Harms Construction Co Inc. | 1.4 | Operation as a marine service provider and a loading and off loading location, as well as servicing others needing access to the water for the loading and unloading of materials and other related services. Using the site as a staging site for off shore and costal work in the tri-state area. We plan to establish an onsite precast concrete products plant for supply and shipping of precast products by barge from the property. |
| Getty Petroleum | 1.6-1.7 | If the channel was deeper (appr. 25 ft.), larger vessels would be used. In addition, "we would dredge our own docking area to take full advantage of the deeper channel depth." "...we would make these investments in the next 2-5 years" if the channel was dredged. |
| Disch Construction | 1.9 | "Plan to dredge operating areas to 8' 4' MLW." If the channel was deeper, Disch Construction "[w]ould be able to fully utilize the facility with barges loaded to maximum draft." |
| Clean Earth of North Jersey (CENJ) | 2.2 | "CENJ anticipates re applying for the expired Waterfront Development permit to manage dredge materials on site." If the channel was deeper, "CENJ would operate the proposed dredge processing facility according to the proposed design criteria that would be identified in our Waterfront Development Permit application or under a permit equivalency in the case of the dredge material coming from a PRP of Passaic River sediments. Currently we would be looking at receiving 2-3 barges per day drawing 13-14 feet. The goal would be to switch to scows 2-3 per day drawing 16-17 feet." |
| Innovation Fuels | 6.5 | Larger barges would be used. |
| Napp-Grecco/Newark Asphalt Corp. | 7 | If the channel were deeper we would resume the use of the barges and become more competitive with our prices and reduce the amount of truck traffic on the roads. |

Additionally, Table 4 of the COE Report lists the most active berths, by volume, transported on the Lower Passaic River from 1997 to 2006. 97% of tons transported during this time come from only six companies and one sewerage commission.⁴¹ The remaining nine companies shipped only a total of 3% of total tons transported from 1996 to 2006.⁴² Further, over the last seventeen years, six of the twenty-two berths have not been used at all and an additional three companies that were utilizing the berths appear to be no longer functioning at the site.⁴³ In other words, there were only a few companies who responded to the EPA's survey regarding potential future commercial uses of

⁴⁰ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, Appendix A.

⁴¹ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, Table 4.

⁴² Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, Table 4.

⁴³ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, Table 4.

the Lower Passaic River and as such any incremental benefit, if any, for the proposed deepening of the channel would be limited.

Additionally, from 2006 (the last year of the COE Report) to 2011, the tonnage of material transported via the river has dropped by 36%.⁴⁴ This is a further indication that the use of the river is limited and trending downward.

Potential future commercial use benefits are primarily focused on only one of three types of carriers (i.e. bulk carriers). The other two types of carriers (containerships and car carriers) have not been (or cannot be) used on the Passaic River since containerships and car carriers do not meet the dimensional requirements imposed by the configurations of the bridges and channel. In addition, the COE Report concluded that “[o]ver the last ten years petroleum and petroleum products have accounted for more than 90 percent of the total volume.”⁴⁵ As such, the potential future use benefits of the proposed deeper channel are undefined, not quantified, and at best, limited.

D. *Physical Constraints along the River*

The Lower Passaic River is constrained by certain man-made and natural elements that would remain after the proposed deepening of the navigational channel. The COE report states that “[t]he presence of the derelict former railroad freight bridge (RM 1.2) and Point-No-Point Railroad Conrail Bridge (RM 2.6) restrict the width of the channel by 145 and 103 feet, respectively.” The existence of these bridges limits the type and size of barges that can use the Lower Passaic River. The COE Report concluded that

[o]f the three principal types of ocean-going cargo carrying vessels – containerships, car carriers, and bulk carriers – only bulk carriers could potentially be used efficiently on this waterway. There are no vessels in the container fleet or the car carrying fleet that meet the dimensional requirements imposed

⁴⁴ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, p. 13; Waterborne Commerce of the United States, Part 1 – Waterways and Harbors Atlantic Coast, p. 43

⁴³Based on internet search as of June 26,2014.

⁴⁵ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, p. 12.

by the configuration of the bridges and channel. Current use tends to confirm this constraint.⁴⁶

Similarly, RMs 4.6-6.1 are “severely constrained” by seven bridges.⁴⁷ According to the COE Report, “[a]ny vessel requiring vertical clearance greater than 12 feet will necessitate time consuming bridge openings.”⁴⁸ These time consuming openings would not be alleviated with greater navigational depths. Again, deepening of the channel would not alleviate these constraints. As such, any potential benefits that may result from deepening the channel are limited to just one type of ocean-going cargo carrier.

Further, the commercial navigational analysis utilized data from the Waterborne Commerce Statistics for navigation trends over the period of 1980 to 2006 and detailed berth usage for 1997 through 2006 concluded that the “[c]hannel depth, for the last 25 years, has been constrained by accretion from the natural siltation process in the system combined with a lack of maintenance dredging.”⁴⁹ Deepening the navigational channel would not limit the accretion from the natural siltation process.

Another constraint that would not be alleviated by deepening the channel is the requirement for turning basins to have a diameter “of at least 1.2 times the length of the design ship and preferably 1.5 times the length of the ship.”⁵⁰ The COE Report explains that “the maximum length of vessel should not exceed 200 ft (up to RM 6.3 with authorized channel width of 300ft) and 130 feet in length (upstream of RM 6.3 with authorized channel width of 200 ft).⁵¹ This specification further limits the number of vessels that could use the Lower Passaic River.”⁵²

⁴⁶ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, p. 11.

⁴⁷ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, p. 24.

⁴⁸ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, p. 24.

⁴⁹ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, p. 26.

⁵⁰ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, p. 10.

⁵¹ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, p. 10.

⁵² Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, p. 10.

As explained above, there are numerous constraints currently present at the Lower Passaic River that would limit potential future use of the proposed deeper channel since deepening the channel would not alleviate these constraints.

E. *The Potential Future Use Benefits Accrue to a Few Companies that Should Share in the Costs*

Any potential future use benefits are undefined, not quantified, and at best limited as discussed above, and therefore, the few companies who use the river for transportation, along with the Army Corp of Engineers, should share in the costs. There is precedent for such cost sharing. For example, in 2008, the National Remedy Review Board recognized the sharing of costs related to the proposed cleanup of the Waukegan Harbor. The Board noted that

The US Army Corp of Engineers (USACE) has not dredged the harbor in many years, and the cost of dredging the uncontaminated sediments is significant. To the extent that the USACE would have had to spend this money even if the harbor was not contaminated, the Board recommends that the Region investigate the opportunity for a mutually beneficial partnership with USACE (i.e. whereby EPA pays the incremental cost caused by the presence of contaminated sediments above the cost of ordinary navigationally dredging.) Such a partnership could potentially include industries that rely on shipping or the City of Waukegan, as appropriate.

In other words, the National Remedy Review Board determined that the costs associated with neglected dredging should be shared and would have been incurred anyway by the Army Corps of Engineers and that industries and the local municipality benefitting from the dredging should share in the cost.

Similar to the Waukegan Harbor, the Lower Passaic River has not been dredged for decades. In fact, as shown in the table below, some sections of the Lower Passaic River have not been dredged for over 80 years.

Table 4: Historical Dredging of the Lower 8 Miles of the Lower Passaic River⁵³

| Passaic River Reaches | RM | Last Time Dredged |
|------------------------------|-----------|---|
| Kearny Point Reach | 0-1.2 | 1983 - Maintained at 30 Feet |
| Point No Point Reach | 1.2-2.5 | 1983 - Maintained at 30 Feet (to RM 1.9) |
| Harrison Reach | 2.4-4.6 | 1937 - Maintained to 20 Feet (starting at RM 2.6) |
| Newark Reach | 4.6-6.1 | 1950 - Maintained at 16 Feet from RM 5.5) |
| Kearny Reach | 6.1-7.1 | 1950 - Maintained at 16 Feet (to RM 7.0) |
| Arlington Reach | 7.1-8.1 | 1930 - Constructed to 10 Feet (from RM 8.0) |

Similar to the National Remedy Review Board’s recommendation at the Waukegan Harbor site, costs associated with the navigational dredging on the Passaic River should be shared by those potentially benefiting from the additional navigational dredging, including the Army Corps of Engineers.

F. *Navigational Dredging Cost is Disproportionate to Potential Future Use Benefits*

As discussed in detail above, there are numerous factors that contribute to the proposed over-dredging and deepening of the navigational channel having minimal and limited potential benefit.

In addition, for the few companies that state they may use larger carriers to transport material or load shipments differently, no analyses, including but not limited to the following, have been conducted:

- 1) What amount will be saved by using larger carriers?
- 2) Does the plant/facility have excess capacity to ship more than the historical tonnage? If yes, what additional quantity would be shipped?
- 3) What is the projected useful life of the plant/facility using each berth?

⁵³ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, pp. 6-7.

- 4) What is the financial viability of each company at each berth? Historically, the types of companies using the river have changed over time and will likely continue to change.
- 5) What is the amount saved historically due to a lack of maintenance dredging?

Without a more detailed study and analysis of the potential benefits of the deeper navigational dredging costing approximately \$850 million, there is not a clear demonstration that the deepening of the navigational channel is cost effective.

The COE Report discusses the costs and benefits related to maintenance dredging as follows:

Future maintenance dredging by the USACE is subject to receipt of funding through the federal appropriation process. This project would be competing for funds with other projects nationally, with priority for funding given to projects that provide the greatest benefits relative to the cost of maintenance. The decision to maintain the navigational channel would also be influenced by the commitment from the terminal operators to maintain their berths.⁵⁴

Therefore, even if the navigational channel were dredged deeper, it does not guarantee future maintenance dredging will be performed.

At this point in time, there has not been an analysis and quantification of any benefits to justify or warrant spending an additional \$850 million for navigational dredging.

G. *Potential Recreational Future Uses are Not Quantified*

Alternative 3 of the FFS briefly discusses dredging related to accommodate potential recreational future use. It states:

Between RM2.2 and RM8.3, enough dredging would be performed to prevent the engineered cap from causing additional flooding and to provide a depth of a least 10 feet below MLW over a 200-foot width(except between RM8.1 and RM8.3 where dredging would be over a 150-foot width) to accommodate

⁵⁴ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, p. 28.

reasonably anticipated recreational future uses above RM2.2.⁵⁵
[emphasis added]

Alternative 3 of the FFS goes on to state:

Since the depth after remediation in RM1.2 to RM8.3 would be shallower than the federally-authorized navigation channel, it would be necessary to obtain modification of the authorized depth between RM1.2 to RM2.2, and deauthorization of the navigation channel above RM2.2 ... No maintenance dredging of the navigation channel would occur in the future above RM2.2.⁵⁶

The EPA has not provided any analysis in the FFS as to the identification of reasonably anticipated recreational future uses that might result from the deeper dredging outlined in Alternative 3B above.

Additionally, since the plan is to no longer provide maintenance dredging above RM2.2, future natural siltation will be unabated and left in place. The EPA has not provided any analysis in the FFS as to the identification of potential recreational benefits nor a quantification of the potential future recreational benefits that may result from the deeper dredging above RM2.2. In addition, the EPA has not provided an analysis which identifies at what point in the future those potential benefits may cease or be diminished due to a planned lack of future maintenance dredging. Therefore, there is not a complete analysis of whether or not the increased costs in fact are warranted given no quantification of any potential benefits.

Also, Alternative 3B states that “[a]dditional restrictions imposed on private activities that disturb sediment, such as vessel speed reductions, limitations on anchoring and limitations on recreational use of the river, would be required to protect the engineered cap in perpetuity.”⁵⁷ As such, any potential incremental recreational uses and benefits are undefined, unquantified, and appear to be limited at best.

⁵⁵ FFS for the Lower Eight Miles of the Passaic River, p. 4-39.

⁵⁶ FFS for the Lower Eight Miles of the Passaic River, p. 4-39.

⁵⁷ FFS for the Lower Eight Miles of the Passaic River, Table 5-4.

H. *Conclusions*

The incremental costs for dredging the river for deepening the channel is approximately \$850 million. There have been only sixteen companies that have used the Lower Passaic River during the past 17 years and eight of those companies account for only two percent of the tonnage transported.⁵⁸ Numerous constraints exist along the river limit the use of ocean-going cargo transportation vessels, regardless of depth. Even fewer (six companies and one municipality) responded to the EPA survey regarding future operational considerations. No analysis has been conducted to measure the potential benefits of deeper navigational dredging or the ability and capacity of the companies along the river to increase their shipments. No cost/benefit analysis has been performed and based on the limited use of the river and limited number of companies expressing an interest in expanding their use, along with the other river constraints, the additional costs of approximately \$850 million is disproportionate to any perceived, but not measured, potential benefits.

Further, the EPA has not provided any analysis in the FFS as to the identification of potential recreational benefits nor a quantification of the potential recreational benefits that may result from the deeper dredging above RM2.2. In addition the EPA has not provided an analysis which identifies at what point in the future those potential benefits may cease or be diminished due to a planned lack of future maintenance dredging.

⁵⁸ Lower Passaic River Commercial Navigation Analysis by United States Army Corps of Engineers New York District Revised July 2010, Table 4.

Joseph J. Egan

Joseph J. Egan is a principal with Davis & Hosfield Consulting LLC. Joe has over 29 years of consulting experience in economic damages and accounting issues in several litigation areas including environmental, construction, breach of contract, lost profits, intellectual property, acquisition disputes, and insurance. His experience at over 100 hazardous waste sites includes developing or critiquing cost allocation models, developing waste-in databases, serving as the site accountant, reviewing EPA oversight claims, determining consistency with the National Contingency Plan, insurance recovery and disputes related to cost overruns at cleanup sites. His clients have included manufacturers, telecommunication companies, pharmaceutical companies, oil companies, electric utilities, insurance companies, construction contractors, architects, engineers, and municipalities, among others.

Prior to joining Davis & Hosfield Consulting, Joe was a Managing Director with Navigant Consulting, and a Vice President for Tucker Alan, Inc., both where he consulted and testified as an economic damages expert on various matters including construction matters; intellectual property; lost profits; breaches of contract; business interruptions; insurance coverage issues such as damage allocations to policies, proper accounting of historic costs, and estimations of future liabilities; and environmental issues, among others.

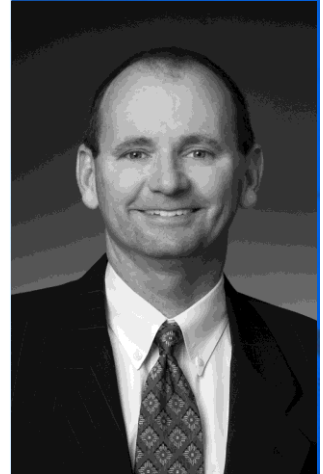
Joe has testified as an expert witness in both state and federal court at deposition, trial and arbitration. He has worked on behalf of both plaintiffs and defendants in disputes, including:

- Environmental Disputes
- Construction Cost and Delay Claims
- Insurance Disputes
- Business Interruption
- Acquisition Disputes
- Breach of Contract/Lost Profits
- Intellectual Property

Select Case Example Experience

Representative Environmental and Insurance Experience

- Developed allocation models including various allocation factors such as volume and toxicity for cleanup costs involving several to over 1,000 potentially responsible parties (PRPs). The models were used to successfully "settle out" many of the PRPs and generate revenues to clean up the sites.
- Critiqued and rebutted various cost allocation models developed at various Superfund and hazardous waste sites around the country.
- Provided expert testimony related to the reasonableness of response and remediation costs at Superfund sites including consistency with the National Contingency Plan.
- Developed models including cost allocation modeling to quantify potential future environmental costs for several large international oil companies used in settlement with their insurers.
- Analyzed past remediation costs to determine costs to clean up third-party property versus owned property on several matters.



Joseph J. Egan
20 North Wacker Drive
Suite 2150
Chicago, Illinois 60606

Tel 312-506-1531
Fax 312-506-1510
jegan@dhllc.com



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- Co-managed a team of over twenty-five people in the review of fifty years of waste management and site records covering two floors of a large warehouse for a large defense contractor to develop a “waste-out” data base. The goal of the data base was to proactively determine where wastes from the defense contractor’s various manufacturing sites had been sent for disposal, so such information could be used either to support or rebut cost allocation claims made at various Superfund sites.
 - Provided consulting and expert testimony on various insurance matters at over 100 hazardous wastes sites related to recovery of response and remediation costs.
 - Accumulated and summarized past and future cleanup cost information in a database for use in insurance recovery matters. Costs segregated between investigation costs, remedial costs and ongoing business costs.
 - Assisted a large international waste management firm with its global insurance recovery litigation including accumulating past costs related to response and remedial efforts versus ongoing operating costs at its owned landfills and where it was a PRP at Superfund sites around the country.
 - Provided expert testimony in an insurance dispute related to the investigation and cleanup of a hazardous substance. Provided expert testimony related to the costs to investigate and cleanup a hazardous substance and to cost allocation issues.
 - Consulted on a matter for a large waste management firm related to accounting and operational issues of landfills for environmental compliance tracking purposes.
 - Provided consulting services to a group of insurers related to a lawsuit filed by a large chemical company seeking recovery of remediation costs at numerous hazardous waste sites from around the country.
 - Served as Financial Oversight Manager at several Superfund sites, including a landfill, to monitor cost and schedule, develop cash flows, make cash calls to PRPs and to assist in the negotiation of change orders.
 - Assessed the settlement value of various insurance policies and developed settlement packages used to assist in settlement discussions. Developed models used to allocate damages to various insurance policies and coverage blocks using a variety of trigger theories and allocation methodologies.
 - Developed the insurance coverage matrix for a Fortune 500 company.
 - Assessed overall project management, strategy, cost effectiveness and reporting system of a company’s global insurance recovery litigation. Helped the company redirect their approach, improve cost effectiveness and reporting in order to expedite settlement discussions with their insurance carriers.
 - Assisted an electric utility company prepare for settlement discussions with various insurance companies regarding the cleanup costs of a superfund site.



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- Reviewed and enhanced the procedures and controls for the primary environmental compliance risks of a hazardous waste incinerator. Delivered recommendations to increase the controls and mitigate noncompliance risks.

Construction Matters

- Analyzed and quantified design and construction costs in a wide variety of industries, including regulated industries, oil refining, high-rise construction, general construction, among others.
- Provided consulting and engineering services on a variety of construction, utility and other dispute matters including: critical path schedule analysis related to the quantification of project delays and assistance in assigning liability for those delays; development of methods to analyze and accurately determine percentage of completion based on work accomplished for terminated lump sum contracts; analysis of cost overruns, acceleration costs and project productivity for craft labor; review of reasonableness of delay and disruption claims, assessment of power plant operations and many others.
- Assisted a bank review various construction loans of a financially troubled contractor.
- Analyzed claims from a terminated contractor against an owner.
- Analyzed cost and schedule impacts of late delivery of heat recovery steam generators at a large combined-cycle power plant. Developed policies and procedures for tracking cost impacts due to late delivery. Assisted develop a claim submitted to equipment supplier.
- Analyzed cost overruns at two 1,100 mega-watt combined-cycle power plants. Analysis included a review of craft productivity, engineering overruns and project management.
- Reviewed liquidated damages at a large combined-cycle power plant.
- Involved with the negotiations of change orders for cost increases and schedule extensions.
- Served as Project Auditor of a large construction matter related to the rebuilding of a state park damaged by a reservoir failure.

Commercial Damages, Intellectual Property and Economic Damage Analyses

- Reviewed a claim by the owner of a hotel for alleged lost profits resulting from a business interruption. Analyzed lost room revenue, food and catering sales as well as liquor sales.
- Prepared rebuttal analysis related to lost profits and reasonable royalty claim on a patent infringement matter involving landfill liner material.
- Prepared rebuttal analysis to alleged breach of contract claim and increased costs related to the supply of computer components used in the final assembly of laptop computers.
- Rebutted business interruption claim resulting from the loss of power at an iron ore mine.



- Analyzed increased costs and lost profits related to a breach of contract involving a manufacturer and a supplier of medical components.
- Analyzed the economic impact of an alleged breach of contract and fraud related to the acquisition of a company. Assisted with preparation of expert report quantifying damages resulting from the fraud and breach of contract.
- Prepared analysis of lost sales and lost profits in numerous patent infringement matters including medical products, plastic bottles, landfill liners, fiber optics, among others.
- Assisted with preparing rebuttal analysis of reasonable royalty related to an alleged misappropriation of trade secrets.
- Investigated alleged false claims submitted by a government contractor related to numerous contracts with the Department of Defense. Investigation includes work performed and amounts billed for time and expenses.
- Conducted a review of sources and uses of funds for potential fraudulent transactions related to an investment in a high technology startup company.
- Assisted a creditors committee evaluate the ongoing financial viability of a company. In addition, performed an analysis of the sources and uses of cash prior to the bankruptcy.

Employment History

Davis & Hosfield Consulting LLC ■ *Principal*, April 2008 - Present

Navigant Consulting, Chicago Office ■ *Managing Director*, 2004 - 2008

Tucker Alan Inc. ■ *Vice President*, 1994 - 2004

Arthur Andersen LLP - Environmental Services ■ *Manager*, 1992 - 1994

Peterson Consulting Limited Partnership ■ *Executive Consultant*, 1986 - 1992

Amoco Oil Company ■ *Project Engineer*, 1982 - 1986

Education

Masters of Business Administration ■ University of Chicago Graduate School of Business, specialization in Finance, 1986

Bachelor of Science ■ Iowa State University, concentrating in Civil Engineering, 1981

Professional Certifications

Professional Engineer, Illinois

Certified Fraud Examiner



Professional Affiliations

American Bar Association

Registered Professional Engineer, Illinois

American Society of Civil Engineers



Publications and Speeches

- Co-author of “Superfund Cost Allocation - An Economic Perspective.” American Bar Association Superfund and Natural Resource Damages Litigation Committee Newsletter, June 2013.
- Guest Lecturer on construction change order management and claim preparation at Northwestern University’s Master of Project Management program, June 2013.
- 2013 Commercial Law League of America Chicago Convention, “Construction Litigation for Commercial Lawyers,” May 2013.
- American Bar Association 42nd Spring Conference Environment, Energy, and Resources Law, “What’s New with Superfund and How Does It Impact Your Practice?” March 2013.
- 118th National Convention of the Commercial Law League of America, “Maximize the Benefit of Construction Damages Experts,” May 2012.
- 55th Construction Specifications Institutes Annual Convention “Improving Project Documentation, Managing Communications and Preserving Claims”, September 2011.
- 55th Annual Meeting of the Association for the Advancement of Cost Engineering International “Practices in Construction Change Order Management”, June 2011.
- Coauthor of “Practices in Construction Change Order Management.” Advancement of Cost Engineering International, June 2011.
- Guest Lecturer at University of Illinois for the Civil Engineering Department in its Construction Management & Methods class, March 2011.
- Guest Lecturer at Purdue University for the Building Construction Management Department in its Project Administration and Construction Contracts class, November 2009, April 2010 and November 2010.
- Author of “Chinese Drywall Damages Update.” Mondaq, August 2010.
- Co-author of “Identifying and Avoiding Financially Distressed Contractors.” American Bar Association Forum on the Construction Industry, Volume 12, No. 3, August 2010.
- The Association for the Advancement of Cost Engineering Chicago Midwest Section Annual Seminar - “Project Controls Showcase”, Spring 2009.
- American Bar Association Toxic Tort & Environmental Law Committee Spring Conference “Emerging Issues in Toxic Tort & Environmental Law”, Spring 2008.
- Coauthor of “Coping With FASB Interpretation No. 47 - Accounting For Conditional Asset Retirement Obligations.” American Bar Association Environmental Litigation Committee Newsletter, Fall 2007.
- Author of “Silica Litigation, Where Is It Heading?” Mealey’s Litigation Report: Silica, January 2005.
- Author of “Will Silicosis Be The Next Asbestos?” American Bar Association, January 2004 Speeches and Seminars.



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- Panelist "Proving Damages in Patent Trials," The Patent Lawyer, Winter 2005.
 - The Defense Research Institute Damages Seminar - "The Latest In Toxic Tort Damages" (2005).
 - The Association of Patent Law Firms (APLF) Round Table Presentation - "Patent Damages -Beyond The Basics" (2004).
 - Equitas Claims Roadmap Workshop - "Financial Overview of Equitas and Lloyd's Enterprise" (2003).
 - San Diego County Bar Association, Insurance Coverage and Bad Faith Section - "Financial Overview of Equitas and Lloyd's Enterprise" (2003).
 - 11th Annual American Bar Association Section Of Litigation, Insurance Coverage Midyear Meeting - "Settling Future Environmental Liabilities" (1999).

