I&M Exhibit: _____

INDIANA MICHIGAN POWER COMPANY

PRE-FILED VERIFIED DIRECT TESTIMONY

OF

JASON A. CASH

Cause No. 45933

Content

DIRECT TESTIMONY OF JASON A. CASH
ON BEHALF OF
INDIANA MICHIGAN POWER COMPANY

I. Introduction of Witness

Q1. Please state your name and business address.

My name is Jason A. Cash and my business address is 1 Riverside Plaza, Columbus, OH 43215.

Q2. By whom are you employed and in what capacity?

I am employed by American Electric Power Service Corporation (AEPSC) as Director of Regulatory Accounting Services. AEPSC supplies engineering, accounting, planning, advisory, and other services to the subsidiaries of the American Electric Power (AEP) system, one of which is Indiana Michigan Power Company (I&M or the Company).

Q3. Briefly describe your educational background and professional experience.

I graduated with a Bachelor of Science degree with a major in accounting from The Ohio State University in 2000. In 2000, I joined AEPSC and have held several positions within the Accounting organization, including general ledger accounting and financial reporting for Ohio Power Company and AEPSC. From 2008 through 2013, I worked in AEPSC's Transmission Accounting department where I was promoted to Supervisor of Transmission Accounting in 2013. From 2014 through 2019, I worked in AEPSC's Accounting Policy & Research department as a Staff Accountant and was later promoted to Senior Staff Accountant in 2019. In 2019, I was promoted to the position of Accounting Senior Manager within AEPSC's Corporate Accounting department. In 2021, I

was promoted to my current position as Director of Regulatory Accounting Services.

Q4. What are your responsibilities as Director of Regulatory Accounting Services?

My responsibilities include providing the AEP and affiliated companies with accounting support for regulatory filings, including the preparation of depreciation studies and testimony. I also monitor regulatory proceedings and legislation for accounting implications and assist in determining the appropriate regulatory accounting treatment.

Q5. Have you previously testified before any regulatory commissions?

Yes. I have prepared depreciation studies and testified before the Indiana Utility Regulatory Commission (IURC or Commission) in Cause Nos. 44967, 45235, and 45576. I have also prepared depreciation studies or testified before the Oklahoma Corporation Commission, the Louisiana Public Service Commission, the Public Utility Commission of Texas, the Public Utilities Commission of Ohio, the Virginia State Corporation Commission, the Arkansas Public Service Commission, the Public Service Commission of West Virginia, the Michigan Public Service Commission, the Public Service Commission of Kentucky, the Tennessee Regulatory Authority, and the Federal Energy Regulatory Commission.

Q6. Have you had any formal training relating to depreciation and utility accounting?

Yes. I am a member of the Society of Depreciation Professionals (SDP) and was a former at-large director for the SDP. I have completed training courses offered by the SDP, which include Depreciation Fundamentals, Life and Net

Salvage Analysis, and Analyzing the Life of Real-World Property. These training classes included topics such as introduction to plant and depreciation accounting, data requirements and collection, depreciation models, life cycle analysis, current regulatory issues, actuarial life analysis, net salvage analysis, and simulation life analysis.

II. Purpose of Testimony

Q7. What is the purpose of your testimony?

The purpose of my testimony is to recommend revised depreciation accrual rates for I&M's electric plant in service based on a depreciation study for I&M's electric utility plant in service at December 31, 2022 (as adjusted, see below). Schedules I and II in the Depreciation Study Report (included as Attachment JAC-1) detail the results of the study. The depreciation rates determined by the study are intended to provide recovery of invested capital, cost of removal, and credit for salvage over the expected life of the property.

Q8. Are you sponsoring any attachments?

Yes, I am sponsoring the following attachments:

- Attachment JAC-1: Depreciation Study Report.
- Attachment JAC-2: Sargent and Lundy's conceptual dismantling study performed for the Rockport Plant.
- Attachment JAC-3: Sargent and Lundy's conceptual dismantling studies performed for the Company's hydroelectric (or hydraulic) facilities.

Q9. Are you sponsoring any workpapers?

Yes, I am sponsoring the following workpapers:

- WP-JAC-1: Depreciation Study Workpapers
- WP-JAC-2: Figure JAC-1 of Direct Testimony

Q10. Were the attachments and workpapers that you sponsor prepared by you or under your direction and supervision?

Yes.

Q11. Please summarize your testimony.

I&M's current depreciation rates are based on the Commission Order approving the settlement agreement in Cause No. 45576. The results of the recent depreciation study, supports revisions to the depreciation rates and accruals previously approved by the Commission, resulting in an annual depreciation expense increase of $18,223,154 on a Total Company basis. The primary drivers of this increase are from the additional investments made at the Cook Nuclear Plant and the changes made to the average service lives for certain accounts in the Company's Distribution Plant.

All of the property included in the Depreciation Study was considered on a group plan. Under the group plan, depreciation is accrued upon the basis of the original cost of all property included in each depreciable plant group instead of individual items of property. Upon retirement of any depreciable property, its full cost, less any net salvage realized, is charged to the accumulated provision for depreciation regardless of the age of the particular item retired.

In this study, the plant groups consisted of the individual primary plant accounts for Production, Transmission, Distribution, and General Plant property. The depreciation rates were calculated by the Average Remaining Life Method, which is the same method that was used to calculate I&M's current depreciation rates. The Average Remaining Life Method recovers the original cost of the

plant (adjusted for net salvage) less accumulated depreciation over the average remaining life of the plant.

For Production Plant, the generating unit retirement dates and the interim retirement history for the individual plant accounts were used to determine the average service lives and the remaining lives of the plants. The average service lives for the Company's Transmission, Distribution, and General Plant were determined using statistical procedures similar to those used in the insurance industry in studies of human mortality. The historical retirement experience of property groups was studied, and retirement characteristics of the property were described using the Iowa-type retirement dispersion curves.

Net salvage for each property group was determined based on actual historical experience for Production, Transmission, Distribution, and General Plant accounts. In addition, Production Plant included terminal retirement net salvage amounts for Steam and Hydraulic Production Plant. To determine terminal net salvage for Production Plant, the depreciation study used the conceptual dismantling cost estimates reflected in I&M's current depreciation rates. These estimates were prepared by Sargent & Lundy (S&L).

The depreciation study includes expected production plant investment through the Test Year to properly match depreciation rates with plant in service when rates become effective in 2024. Establishing depreciation rates in this manner better supports the full depreciation of such assets and better aligns customer rates with the remaining service life of each generating station while reducing the extent to which the costs will need to be reflected in rates after the assets are no longer in service.

In summary, the depreciation rates being proposed in this Cause were updated to reflect (i) changes in the plant in service and accumulated depreciation balances since the last depreciation study was performed, (ii) changes in mortality characteristics and net salvage estimates for Transmission, Distribution

and General Plant since the last depreciation study was performed, (iii) reasonable assumptions for salvage and dismantlement, including an updated dismantlement estimate for the Company's Rockport Plant, and (iv) a continued consolidated "whole plant" approach for the Rockport units. The revised depreciation rates are reasonable and should be approved.

III. Depreciation Study Overview

Q12. What is the basis for I&M's current depreciation rates?

I&M's current depreciation rates are based on a Commission Order received in Cause No. 45576 where the Commission approved a settlement establishing the Company's current steam production, nuclear production, hydroelectric production, other production, transmission, distribution and general plant depreciation rates.

Q13. How do the depreciation rates and annual accruals as a result of your study compare with I&M's current rates and accruals?

Figure JAC-1 compares the rates and accruals of I&M with those of the study. This comparison is based on forecasted Total Company depreciable plant balances for Steam Production Plant prior to December 31, 2024, for Nuclear, Hydraulic, and Other Production Plant at December 31, 2024, and actual Total Company depreciable plant balances for all other functions at December 31, 2022.

Figure JAC-1. Composite Depreciation Rates and Accruals

Production Plant – Forecasted Plant In Service at December 31, 2024
Plant In Service at December 31, 2022 (All Other Functions)

	Existing		Study		
Functional Plant Group	Rates	Accruals ($)	Rates	Accruals ($)	Difference ($)
Steam Production	8.03%	93,057,039	8.00%	92,638,074	(418,965)
Nuclear Production	4.51%	168,079,946	4.66%	173,401,448	5,321,502
Hydraulic Production	4.62%	4,802,424	6.64%	6,901,367	2,098,943
Other Production	4.45%	3,104,962	4.46%	3,105,139	177
Transmission	2.66%	48,598,792	2.66%	48,660,179	61,387
Distribution	2.84%	85,398,506	3.22%	96,657,050	11,258,544
General	3.94%	7,525,843	3.89%	7,427,409	(98,434)
Total Depreciable Plant	4.07%	410,567,512	4.25%	428,790,666	18,223,154

Q14. What are you recommending with respect to I&M's depreciation accrual rates?

Based on the results of the study, I am recommending an overall increase in I&M's depreciation accrual rates, to be made effective upon implementation of new base rates.

For purposes of comparison, applying my recommended I&M Indiana rates to Total Company depreciable plant in service as of December 31, 2022 (as adjusted, as discussed later in my testimony) would produce an increase in annual depreciation expense of $18,233,154. The primary drivers of this increase are in the Nuclear and Distribution functions, as shown in *Figure JAC-1* above and discussed later in my testimony.

IV. Study Methods and Procedures

Q15. Please explain the definition of depreciation as used in preparing your depreciation study.

The definition of depreciation that I used in preparing the study is the same that is used by FERC and the National Association of Regulatory Utility Commissioners:

> *Depreciation, as applied to depreciable electric plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of electric plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance.*
>
> *Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities.*
>
> *Net salvage value means the salvage value of property retired less the cost of removal. Service value means the difference between original cost and net salvage value of electric plant.*[1]

Q16. Please explain the methods and procedures you used in preparing your depreciation study.

The methods and procedures are fully described in Attachment JAC-1, the Depreciation Study Report. In summary, all of the property included in the Depreciation Study Report was considered on a group plan. Under the group plan, depreciation is accrued upon the basis of the original cost of all property included in each depreciable plant group instead of individual items of property.

Upon retirement of any depreciable property, its full cost, less any net salvage realized, is charged to the accumulated provision for depreciation regardless of the age of the particular item retired. Also under this plan, the dollars in each

[1] 18 C.F.R. pt. 101 ("Definitions" ¶¶ 12, 19, 37).

primary plant account are considered as a separate group for depreciation accounting purposes and an annual depreciation rate for each account is determined.

In this study, the plant groups consisted of the individual primary plant accounts for Production, Transmission, Distribution, and General Plant property. The depreciation rates were calculated by the Average Remaining Life Method, which is the same method that was used to calculate I&M's current depreciation rates. The Average Remaining Life method recovers the original cost of the plant (adjusted for net salvage) less accumulated depreciation over the average remaining life of the plant.

For Production Plant, the generating unit retirement dates and the interim retirement history for the individual plant accounts were used to determine the average service lives and the remaining lives of the plants. The average service lives for the Company's Transmission, Distribution, and General Plant were determined using statistical procedures similar to those used in the insurance industry in studies of human mortality. The historical retirement experience of property groups was studied, and retirement characteristics of the property were described using the Iowa-type retirement dispersion curves.

Net salvage for each property group was determined based on actual historical experience for Production, Transmission, Distribution, and General Plant accounts. In addition, Production Plant included terminal retirement net salvage amounts for Steam and Hydraulic Production Plant.

To determine terminal net salvage for Steam and Hydraulic Production Plant, my depreciation study used an updated conceptual dismantling cost estimate for the Rockport Plant and the same conceptual dismantling cost estimates for its hydraulic production plants that are reflected in I&M's current depreciation rates. The estimates for I&M's steam and hydraulic production plants were prepared by the independent engineering firm, Sargent & Lundy (S&L).

Q17. Does S&L's conceptual dismantlement cost estimate for Rockport cover the entire Rockport Plant?

Yes. I&M contracted S&L in 2022 to perform an updated dismantlement study of the entire Rockport Plant. S&L's conceptual dismantlement cost estimate of the Rockport Plant estimates the Company's responsibility for dismantlement of the Rockport Plant at the time the plant is expected to end operation.

Q18. Do you consider the dismantling studies used in your depreciation study to be reliable and of a type generally relied upon by persons such as yourself during the course of studying depreciation rates?

Yes.

Q19. Are the estimates that were prepared by S&L reliable sources for the purposes of calculating terminal net salvage for the Company's Rockport and hydraulic plants within the depreciation study?

Yes. Rather than using a historical or a generic net salvage value, the Company chose an empirically-based approach for its production plant net salvage that takes into account specific attributes of each of I&M's generating plants. Estimates provided by an independent engineering firm, such as S&L, provide a better basis upon which to arrive at the reasonable terminal net salvage amount for each production plant.

A copy of the S&L dismantling study for the Rockport Plant is included with my testimony as Attachment JAC-2. Copies of the S&L dismantling studies for the Company's hydraulic plants are included with my testimony as Attachment JAC-3.

The recommended depreciation rates include the estimated final removal cost and expected terminal net salvage amounts specific to each of the Company's steam and hydraulic generating stations at their estimated retirement dates.

Q20. Do the estimates prepared by S&L include amounts for contingencies that may occur during the projects?

Yes. The S&L estimates contain an estimated amount for contingency.

Q21. Are the contingency costs included with S&L's demolition cost estimates reasonable and appropriate?

Yes. An amount for contingency is "intended to cover unknowns," and is included in the estimates because "experience teaches that almost every complex project, such as demolition of a generation station, ends up with unknowns."[2]

Contingencies included in the demolition cost estimates are necessary to account for the unknowns anticipated to occur during these complex projects.

Q22. Has the IURC previously accepted S&L's use of a contingency factor in the preparation of conceptual demolition cost estimates for I&M?

Yes. On page 105 of its Order in Cause No. 44075, the Commission accepted S&L's use of a contingency factor and stated: "*We find the contingencies used in I&M's demolition estimates to be reasonable and similar to the factors we approved in Cause No. 43526.*"

In its Cause No 45235 Order, the Commission also stated:

> *The Commission has previously recognized the inclusion of a contingency factor in demolition studies for purposes of computing final terminal salvage. As Mr. Cash testified, the Commission accepted the inclusion of contingencies in Cause No. 44075. 44075 Order, p. 105.*
>
> *In the 44075 Order, the Commission cited the Order in Northern Indiana Pub. Serv. Co., Cause No. 43526, p. 54,2010 WL 3444546, 284 P.U.R. 4th 369 (IURC August 25,2010), wherein the*

[2] *In Re PSI Energy, Inc.*, Cause No. 42359, p. 67, 2004 WL 1493966 (IURC May 18, 2004).

Commission approved the inclusion of contingency in the calculation of depreciation.

We find Mr. D. Garrett and Mr. Rutter, without saying so, are asking the Commission to disregard our prior acceptance of contingency in I&M's demolition estimates without showing us why this change is warranted. The Commission accepts Petitioner's proposed contingency factor.[3]

Q23. Please explain how you determined terminal net salvage as of the retirement year.

S&L provided terminal net salvage amount for the Rockport Plant, excluding any asbestos, ash pond, or landfill-type removal costs, stated at a 2022 price level. For the purposes of developing depreciation rates, I needed the terminal net salvage amount at the time of the unit retirement. Thus, I applied a 2.50% annual inflation rate factor to the net salvage amounts provided by the S&L study to determine the terminal net salvage amount at the Rockport Plant‘s retirement year.

Similarly, the S&L studies for the Company’s hydraulic plants provided terminal net salvage amounts stated at a 2015 price level. To estimate the cost at each unit’s retirement date, I applied the same 2.50% annual inflation rate factor to the net salvage amounts provided by the S&L studies in order to determine the terminal net salvage amount for each hydraulic plant at the plant’s retirement year. The terminal net salvage amounts after inflation were used in the calculation of net salvage percentages in the depreciation study.

Q24. What is the source of the inflation rate used for this purpose?

The 2.50% inflation rate was taken from the *Livingston Survey*, a December 16, 2022 publication of the research department of the Federal Reserve Bank of

[3] Cause No 45235 Order at Page 32.

Philadelphia. The *Livingston Survey* provides a long-term inflation outlook projecting an inflation rate for a ten-year period.

Q25. Has the Company applied an inflation rate or escalation factor to its final demolition estimates in previous depreciation studies that have been filed with this Commission?

Yes. The Company has consistently applied an inflation rate or escalation factor to its generation plant demolition estimates in prior depreciation studies filed with the Commission. Additionally, the Company has consistently used the *Livingston Survey* as its source for obtaining the long-term inflation rate used in its depreciation studies.

Q26. Has the IURC accepted the Company's application of an escalation factor to develop a terminal net salvage amount to be used for the purpose of calculating depreciation rates?

Yes. The IURC has consistently accepted the use of an escalation factor to develop a terminal net salvage amount. In Cause No. 44075, the Commission considered the Company's application of a 2.5% escalation factor to the Company's demolition estimates for Steam Production Plant and made the following conclusions (on page 105 of its Order) before ultimately accepting the Company's proposed depreciation rates in that Cause:

> *Therefore, we find that inflation should be factored into dismantlement cost estimates and reject the OUCC's proposal to restate costs of removal at present value.*
>
> *…*
>
> *We therefore reject Mr. Selecky's proposal to modify the depreciation rates using lower estimates of future inflation.*

The Commission accepted I&M's depreciation rates in Cause No. 44555 and Cause No. 44967, both of which included inflating I&M's final demolition costs to a future level.

In Cause No. 45235, the Commission once again agreed with the Company's application of an inflation factor to its final demolition cost estimates. On page 33 of its final order in Cause No. 45235, the Commission stated "*The Commission finds the inclusion of the escalation factor at issue was appropriate based upon Mr. Cash's rebuttal testimony.*"

Consistent with the depreciation studies that were filed with the aforementioned Causes, the Company appropriately applied an escalation factor to its final demolition estimates in the depreciation study that was prepared and filed with Cause No. 45576[4] to develop a terminal net salvage amount.

Q27. Did the depreciation study exclude the cost to remove asbestos and to cover ash ponds and landfills?

Yes. The costs to remove asbestos and to cover ash ponds and landfills are included in the Company's ARO accounting. The depreciation and accretion on these AROs are incorporated into the cost of providing service, which is discussed in more detail by Company witness Ross.

Q28. Has I&M's reacquisition of Rockport Unit 2 been excluded from the results of this depreciation study?

Yes. In accordance with the settlement agreements approved in Cause Nos. 45546 and 45576, all Rockport Unit 2 plant investments made after the

[4] Order in Cause No. 45576 approved a settlement that accepted the Company's Production Plant depreciation rates.

expiration of the lease have been excluded from this depreciation study, including the reacquisition price.

Q29. The Rockport Unit 2 Lease ended on December 7, 2022. The settlement agreements approved in Cause Nos. 44546 and 45576 authorized the recovery of the remaining net book value of the owned leasehold improvements of Rockport Unit 2 at the end of the lease. Please describe how the remaining investment in Rockport Unit 2 prior to the expiration of the lease was used in this depreciation study.

The Commission authorized I&M to fully recover the Indiana jurisdictional share of the remaining net book value of the owned leasehold improvements of Rockport Unit 2 that were not fully depreciated at the end of the Lease. The depreciation rates calculated in this depreciation study for the Rockport Plant include the remaining net book value of the owned leasehold improvements of Rockport Unit 2. However, the remaining net book value of the Rockport Unit 2, excluding final cost of removal, is currently being recovered on a levelized basis through the Environmental Cost Rider. Therefore, as described by Company witness Ross, the associated depreciation expense has been removed from the cost of service calculation that is being proposed in this Cause. Company witness Williamson separately addresses the ongoing ratemaking for I&M's cost of removal obligation associated with Rockport Unit 2 which is supported by adjustment RB/O&M-1.

Q30. Please describe the depreciation study adjustments made to amounts booked that were used to calculate depreciation rates.

Consistent with the depreciation study that was filed in Cause No. 45576, the depreciation study includes the 2023-2024 forecasted additions to plant in service at Rockport Unit 1, Cook, and the Company's hydraulic and solar generating stations to reflect a forward-looking test period for the Company's

steam, nuclear, hydraulic and other production plant investment in addition to the Company's electric utility plant in service and accumulated depreciation on the books at December 31, 2022.

The depreciation study also includes a calculation to estimate a corresponding adjustment to accumulated depreciation for all of production plant that reflects an additional two years of depreciation accrued through 2024. The adjustments made to original cost and accumulated depreciation are as follows:

- Rockport Unit 1 – Original cost $21.4 million; accumulated depreciation $225.2 million.
- Cook Plant – Original cost $134.0 million; accumulated depreciation $330.4 million.
- Hydraulic Production Plant – Original cost $47.0 million; accumulated depreciation $6.4 million.
- Other Production Plant - Original cost $0.4 million; accumulated depreciation $6.2 million

The total forecasted additions to plant in-service and accumulated depreciation for production plant included in the depreciation study total approximately $202.8 million and $568.2 million, respectively.

The forecasted additions to Rockport Unit 1, Cook, and the Company's hydraulic and solar generating station plant balances and accumulated depreciation were included with the depreciation study because production plant uses finite end-of-life dates in the depreciation study to calculate depreciation rates.

In comparison, transmission, distribution and general plant use an average service life and average remaining life to calculate depreciation rates in the depreciation study. Including the forecast additions and accumulated depreciation will ensure that accurate depreciation rates are established for each generating station when rates become effective in 2024.

Establishing depreciation rates in this manner better supports the full depreciation of such assets and better aligns customer rates with the remaining service life of each generating station while reducing the extent to which the costs will need to be reflected in rates after the assets are no longer in service.

Q31. Did you make any other adjustments to the depreciation study amounts that were used to calculate depreciation rates?

Yes. A depreciation study adjustment was made to accumulated depreciation to recognize the difference in accumulated depreciation by using the weighted average depreciation rates for book purposes versus the Commission-approved Indiana depreciation rates. Since the Indiana and Michigan jurisdictions have different depreciation rates, it is necessary to adjust the total weighted average booked accumulated depreciation amount to an Indiana total Company amount to take into account the historical jurisdictional difference in accumulated depreciation caused by the different depreciation rates.

Depreciation study adjustments were also made to booked original cost and accumulated depreciation amounts related to Cook's LCM Project and Rockport's DSI and SCR Projects. I&M received approval from the IURC (Cause Nos. 44182, 44331, 44523 and 44871) to recover a return on construction work in progress (CWIP) for these projects. This approval eliminates the accrual of allowance for funds used during construction (AFUDC) on the Indiana jurisdictional project amounts during the period that Indiana retail rates include such CWIP recovery. For Michigan, I&M continued to record AFUDC on these projects, which created a difference between Indiana's original cost and accumulated depreciation when compared to that of Michigan's. The LCM AFUDC adjustment decreased Cook's original cost by $20.8 million and increased accumulated depreciation by $14.8 million. The DSI and SCR AFUDC adjustments decreased Rockport's original cost by $6.6 million and decreased accumulated depreciation by $2.8 million. Please note that the DSI and SCR

adjustments made to the depreciation study include adjustments to both Rockport Units 1 and 2 as previously discussed. Please refer to rate base adjustment RB-4 as supported by Company witness Ross for the DSI and SCR adjustments specific to Rockport Unit 1.

V. Study Results

Q32. Please explain the results of your study for Steam Production Plant.

As shown in *Figure JAC-1,* the composite rate for Steam Production Plant decreased slightly from 8.03% to 8.00%, resulting in a decrease of approximately $0.4 million for Steam Production Plant on a Total Company basis. This is mainly due to a $14.7 million decrease in the estimated electric plant in service balance that was used in the previous depreciation study for Rockport Unit 1 compared to the actual amount used at December 31, 2022.

Q33. Please explain the results of your study for Nuclear Production Plant.

The composite rate for Nuclear Production Plant increased from 4.51% to 4.66% mainly due to a $62.8 million increase in the depreciable plant in service balance compared to the 2020 depreciation study.

Q34. Please explain the results of your study for Hydraulic Production Plant.

The composite rate for Hydraulic Production Plant increased from 4.62% to 6.64% due to a $29.6 million increase in the depreciable plant in service balance compared to the 2020 depreciation study.

Q35. Please explain the results of your study for Other Production Plant.

The composite depreciation rate for Other Production Plant increased slightly from 4.45% to 4.46% due to a slight increase in the depreciable plant in service balance since the 2020 depreciation study. The St. Joseph's solar facility was placed in service since the last depreciation study was performed.

Q36. Please explain the results of your study for Transmission Plant.

The composite depreciation rate for Transmission Plant remain almost unchanged since the last depreciation study was performed. Decreases in the average service lives of accounts 352 and 358 were offset by decreases in the net salvage ratio for accounts 352, 355, 356 and 358.

As shown on Schedule III of the depreciation study report, the Iowa Curves selected are the same as those approved in Cause No. 45576, with the exception of accounts 352 and 358. The actuarial analysis performed for Account 352 indicated that a better fitting curve should be selected for the account and conservative judgment was used for the curve and life selected for account 358.

Q37. Please explain the results of your study for Distribution Plant.

The depreciation rate for Distribution Plant increased from 2.84% to 3.22% due to decreases in the average service life for seven accounts (Accounts 362, 364, 365, 366, 367, 368, and 369) and an increase in the net salvage ratio for six accounts (Accounts 361, 362, 364, 365, 369, and 373)

The average service lives and Iowa Curves selected and proposed as a part of this depreciation study are similar to those selected and proposed by the Company in Cause No. 45576. The Commission approved a settlement agreement in Cause No. 45576.

Q38. Please explain the results of your study for General Plant.

The depreciation rate for General Plant decreased slightly from 3.94% to 3.89% mainly due to recent investment made in account 390, which adjusted the average remaining life of the account, and a decrease in the net salvage ratio to the same account.

Q39. Does this conclude your pre-filed verified direct testimony?

Yes.

VERIFICATION

I, Jason A. Cash, Director of Regulatory Accounting Services for American Electric Power Service Corporation, affirm under penalties of perjury that the foregoing representations are true and correct to the best of my knowledge, information, and belief.

Date: 8/8/2023

Jason A. Cash

INDIANA MICHIGAN POWER COMPANY

DEPRECIATION STUDY REPORT

OF

ELECTRIC PLANT IN SERVICE

AT DECEMBER 31, 2022

DEPRECIATION STUDY REPORT

Table of Contents

I. INTRODUCTION

This report presents the results of a depreciation study of Indiana Michigan Power Company's (I&M) depreciable electric utility plant in service at December 31, 2022 adjusted to include 2023-2024 forecasted additions to production plant. The study was performed by Jason A. Cash, Director of Regulatory Accounting Services at American Electric Power Service Corporation (AEPSC). The purpose of the depreciation study was to develop appropriate annual depreciation accrual rates for each of the primary plant accounts that comprise the functional groups for which I&M computes its annual depreciation expense.

The recommended depreciation rates are based on the Average Remaining Life Method of computing depreciation. Further explanation of this method is contained in Section II of this report.

The definition of depreciation used in this study is the same as that used by the Federal Energy Regulatory Commission (FERC) and the National Association of Regulatory Utility Commissioners:

> "Depreciation, as applied to depreciable electric plant, means the loss in service value not restored by current maintenance, incurred in connection with the consumption or prospective retirement of electric plant in the course of service from causes which are known to be in current operation and against which the utility is not protected by insurance. Among the causes to be given consideration are wear and tear, decay, action of the elements, inadequacy, obsolescence, changes in the art, changes in demand and requirements of public authorities."

> "Service value means the difference between original cost and the net salvage value (net salvage value means the salvage value of the property retired less the cost of removal) of the electric plant." (FERC Accounting and Reporting Requirements for Public Utilities and Licensees, ¶15.001.)

SCHEDULE I of this report shows the recommended depreciation accrual rates by primary plant accounts and composited to functional plant classifications. SCHEDULE II compares depreciation expense using existing rates approved by the Commission and rates recommended by the depreciation study. SCHEDULE III shows a comparison of the current and existing mortality characteristics that were used to compute the recommended depreciation rates for Transmission, Distribution and General Plant functions. SCHEDULE IV lists I&M's generating stations and includes the year installed (in service) and the estimated retirement year. A simple comparison of I&M's current rates and accruals and the study rates and accruals is shown below on Figure JAC-1 and again in Schedule II of the depreciation study report. Both are based on expected total Company depreciable plant balances for Production Plant at December 31, 2024 and total Company depreciable plant balances for all other functions at December 31, 2022:

Figure JAC-1
Composite Depreciation Rates and Accruals
Based on Plant In Service at December 31, 2024 (Production Plant Only)
Based on Plant In Service at December 31, 2022 (All Other Functions)
(Total Company)

	Existing		Study		
Functional Plant Group	Rates	Accruals ($)	Rates	Accruals ($)	Difference ($)
Steam Production	8.03%	93,057,039	8.00%	92,638,074	(418,965)
Nuclear Production	4.51%	168,079,946	4.66%	173,401,448	5,321,502
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Transmission	2.66%	48,598,792	2.66%	48,660,179	61,387
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Total Depreciable Plant	4.07%	410,567,512	4.25%	428,790,666	18,223,154

Based on the results of the study, I am recommending an overall increase in I&M's depreciation accrual rates, to be made effective upon implementation of new base rates. I am recommending an increase in I&M depreciation rates that would produce an annual increase in depreciation expense of $18,223,154 when applying the Indiana depreciation rates to the total Company depreciable plant in service balances. The depreciation rate changes are necessary because of changes in investment, average service lives and net salvage estimates used to calculate I&M's current depreciation rates.

II. DISCUSSION OF METHODS AND PROCEDURES USED IN THE STUDY

1. Group Method

All of the depreciable property included in this report was considered on a group plan. Under the group plan, depreciation expense is accrued upon the basis of the original cost of all property included in each depreciable plant account. Upon retirement of any depreciable property, its full cost, less any net salvage realized,

is charged to the accrued depreciation reserve regardless of the age of the particular item retired. Also, under this plan, the dollars in each primary plant account are considered as a separate group for depreciation accounting purposes and an annual depreciation rate for each account is determined. The annual accruals by primary account were then summed, to arrive at the total accrual for each functional group. The total accrual divided by the original cost yields the functional group accrual rate.

2. Annual Depreciation Rates Using the Average Remaining Life Method

I&M's current depreciation rates are based on the Average Remaining Life Method. The Average Remaining Life Method recovers the original cost of the plant, adjusted for net salvage, less accumulated depreciation, over the average remaining life of the plant. By this method, the annual depreciation rate for each account is determined on the following basis:

$$\text{Annual Depreciation Expense} = \frac{(\text{Orig. Cost} \times \text{Net Salvage Ratio}) - \text{Accumulated Depreciation}}{\text{Average Remaining Life}}$$

$$\text{Annual Depreciation Rate} = \frac{\text{Annual Depreciation Expense}}{\text{Original Cost}}$$

3. Methods of Life Analysis

Depending upon the type of property and the nature of the data available from the property accounting records, one of three life analyses was used to arrive at the historically realized mortality characteristics and service lives of the depreciable plant investments. These methods are identified and described as follows:

Life Span Analysis

The life span analysis was employed for Production Plant. I&M's investment in production plant includes steam, nuclear, hydraulic and solar generating plants. The life-span method of analysis is particularly suited to specific location property, such as a generating plant, where all of the surviving investments are likely to be retired in total at a future date.

The key elements in the life span analysis are the age of the surviving investments, the projected retirement date of the facility and the expected interim retirements. Interim retirements are those that are expected to occur between the date of the depreciation study and the expected final retirement date of the generating plant. Examples of interim retirements include fans, pumps, motors, a set of boiler tubes, a turbine rotor, etc. The interim retirement history for each primary production plant account was analyzed and the results of those analyses were used to project future interim retirements.

The age of the surviving investments was obtained from I&M's property accounting records. The retirement dates used in the life-span analysis for Steam Production Plant (Rockport) have not been updated from the retirement dates that were presented in Cause No. 45576. This depreciation study recommends continuing to calculate depreciation rates for the Rockport Plant through 2028. For Nuclear and Hydraulic Production plants, the retirement dates are based on the Nuclear Regulatory Commission (NRC) and FERC license expiration dates for the plants. For Other Production Plant, a 20-year life is being used for four of the Company's five solar facilities. A 20-year life was based on I&M's expected useful life for the facilities as originally approved by the Commission in the order in Cause No. 44511. For the St. Joseph Solar facility, a 30-year useful life is being used to calculate depreciation rates for the facility.

A discussion of the life analyses for Steam, Nuclear, Hydraulic and Other Production (solar) Plant follows:

Steam Production Plant

I&M's depreciable investment in Steam Production Plant is for the Rockport Generation plant. The Rockport Plant is located on the Ohio River near Rockport Indiana and consists of two generating units.

The Rockport generating units and their capacities are as follows (also shown on SCHEDULE IV – Estimated Generation Plant Retirement Dates):

Plant	Unit	Rating	Commercial Operating Date
Rockport	1	1,300 MW	1984
Rockport	2	1,300 MW	1989

I&M continues to evaluate each of the Rockport generating units and estimated the following retirement dates for each of the units:

Plant	Unit	Retirement Date
Rockport	1	2028
Rockport	2	2028

The estimated retirement date for the Rockport Plant is 2028 and is the same retirement date that was proposed in Cause No. 45576. The Rockport Unit 2 Lease ended on December 7, 2022. In this depreciation study, all Rockport Unit 2 plant investments made after the expiration of the lease have been excluded from the study, including the reacquisition price.

Nuclear Production Plant

I&M's depreciable investment in nuclear production plant is the Cook plant that is located on Lake Michigan at Bridgman, Michigan. The Cook generating units and their capacities are as follows:

Plant	Unit	Rating	Commercial Operating Date
Cook	1	1,020 MW	1975
Cook	2	1,090 MW	1978

In 2005, the NRC granted I&M a 20-year license extension to Cook Plant which established the currently approved estimated retirement dates of 2034 for Unit 1 and 2037 for Unit 2.

In 2013, the Company received Commission approval in Cause No. 44812 to complete a number of capital additions to the Cook Plant under a Life Cycle Management (LCM) project. The LCM project is intended to allow the Cook Plant to continue to operate during the 20-year license extension that was granted in 2005.

Hydraulic Production Plant

I&M's investment in Hydraulic Production Plant includes Berrien Springs, Buchanan, Constantine, Elkhart, Mottville and Twin Branch plants. The plants have a number of generating units that were placed into commercial operation over the period from 1904 through 1923. All the plants are located on the St. Joseph River in either the state of Indiana or Michigan.

The generating plants and their capacities are as follows:

Plant	Capacity	First Unit's Commercial Operating Date	FERC License Expiration
Berrien Springs	7.2 MW	1908	*
Buchanan	4.1 MW	1919	2036
Constantine	1.2 MW	1921	2053
Elkhart	3.4 MW	1913	2030
Mottville	1.7 MW	1923	2033
Twin Branch	4.8 MW	1904	2036

* Not FERC licensed. The retirement date was estimated to be the same date as Buchanan and Twin Branch which is 2036.

Other Production Plant

I&M's depreciable investment in Other Production Plant at December 2022 is for the Deer Creek, Olive, Twin Branch and Watervliet Solar Plants. The Deer Creek Solar Plant is located just south of Marion, Indiana and is generating up to 2.5 megawatts of electricity. The Olive Solar Plant is located in New Carlisle, Indiana and is generating up to 5.0 megawatts of electricity. The Twin Branch Solar Plant is located in Mishawaka, Indiana and is generating up to 2.6 megawatts of electricity. The Watervliet Solar Plant is located in Watervliet, MI and is generating up to 4.6 megawatts of electricity. The St. Joseph Solar Farm is located in Granger, IN, was placed in service and is generating up to 20.0 megawatts of electricity.

The generating plants and their capacities are as follows:

Plant	Capacity	Commercial Operating Date
Deer Creek	2.5 MW	2015
Olive	5.0 MW	2016
Twin Branch	2.6 MW	2016
Watervliet	4.6 MW	2016
St. Joseph	20.0 MW	2021

Actuarial Analysis – Transmission, Distribution and General Plant

This method of analyzing past experience represents the application to industrial property of statistical procedures developed in the life insurance field for investigating human mortality. It is distinguished from other methods of life estimation by the requirement that it is necessary to know the age of the property at the time of its retirement and the age of survivors, or plant remaining in service; that is, the installation date must be known for each particular retirement and for each particular survivor.

The application of this method involves the statistical procedure known as the "annual rate method" of analysis. This procedure relates the retirements during each age interval to the exposures at the beginning of that interval, the ratio of these being the annual retirement ratio. Subtracting each retirement ratio from unity yields a sequence of annual survival ratios from which a survivor curve can be determined. This is accomplished by the consecutive multiplication of the survivor ratios. The length of this curve depends primarily upon the age of the oldest property. Normally, if the period of years from the inception of the account to the time of the study is short in relation to the expected maximum life of the property, an incomplete or stub survivor curve results.

While there are a number of acceptable methods of smoothing and

extending this stub survivor curve in order to compute the area under it from which the average life is determined, the well-known Iowa Type Curve Method was used in this study.

By this procedure, instead of mathematically smoothing and projecting the stub survivor curve to determine the average life of the group, it was assumed that the stub curve would have the same mortality characteristics as the type curve selected. The selection of the appropriate type curve and average life is accomplished by plotting the stub curve, superimposing on it Iowa curves of the various types and average lives drawn to the same scale, and then determining which Iowa type curve and average life best matches the stub.

The Actuarial Method of Life Analysis was used for the following accounts:

352.0 Transmission Structures & Improvements
353.0 Transmission Station Equipment
358.0 Underground Conductor and Devices
361.0 Distribution Structures & Improvements
362.0 Distribution Station Equipment
367.0 Underground Conductor
370.0 Distribution Meters
390.0 General Structures & Improvements

The result of the actuarial analysis for the above accounts is detailed in the depreciation study work papers.

Simulated Plant Record Analysis – Transmission Plant

The “Simulated Plant Record” (SPR) method designates a class of statistical techniques that provide an estimate of the age distribution, mortality

dispersion and average service life of property accounts whose recorded history provides no indication of the age of the property units when retired from service. For each such account, the available property records usually reveal only the annual gross additions, annual retirements and balances with no indication of the age of either plant retirements or annual plant balances. For the accounts using this methodology, the “Balances method” of analysis was used.

The SPR Balances Method is a trial-and-error procedure that attempts to duplicate the annual balance of a plant account by distributing the actual annual gross additions over time according to an assumed mortality distribution. Specifically, the dollars remaining in service at any date are estimated by multiplying each year’s additions by the successive proportion surviving at each age as given by the assumed survivor characteristics. For a given year, the balance indicated is the accumulation of survivors from all vintages and this is compared with the actual book balance. This process is repeated for different survivor curves and average life combinations until a pattern is discovered that produces a series of “simulated balances” most nearly equaling the actual balances shown in a company’s books.

This determination is based on the distribution producing the minimum sum of squared differences between the simulated balance and the actual balances over a test period of years.

The iterative nature of the simulated methods makes them ideally suited for computerized analysis. For each analysis of a given property account, the computer program provides a single page summary containing the results of each analysis indicating the “best fit” based on criteria selected by the user.

The results of the analysis using the Balance Method is shown in the depreciation study work papers. The analysis also shows the value of the Index of Variation of the difference that is calculated according to the Balances Method

where a lower value for the Index of Variation indicates better agreement with the actual data.

The SPR Method of Life Analysis was utilized for the following accounts:

354.0 Transmission Towers & Fixtures

355.0 Transmission Poles & Fixtures

356.0 OH Conductor & Devices

357.0 Underground Conduit

364.0 Poles, Towers & Fixtures

365.0 Overhead Conductor & Devices

366.0 Underground Conduit

368.0 Line Transformers

369.0 Services

371.0 Installations on Customers' Premises

373.0 Street Lighting and Signal Systems

Vintage Year Accounting – General Equipment

In 1998, the Company began using a vintage year accounting method for general plant accounts 391 to 398 in accordance with Federal Energy Regulatory Commission Accounting Release Number 15 (AR-15). This accounting method requires amortization of vintage groups of property over their useful lives. AR-15 also requires that property be retired when it meets its average service life.

As a result, my recommendation for these accounts is that the current useful life approved by the Commission be retained and used to continue depreciation of the account balances.

4. Final Selection of Average Life and Curve Type

The final selection of average life and curve type for each depreciable plant account analyzed by the Actuarial and SPR Methods was primarily based on the results of the mortality analyses of past retirement history.

III. NET SALVAGE

1. Net Salvage - Steam Production Plant

The net salvage analysis for steam production plant included a review of the Company's experienced functional interim retirement, salvage and removal history for the period 1954-2022. This interim salvage analysis calculated life to date salvage, removal and net salvage percentages as compared to original cost retirements.

While this type of analysis was used to determine the net salvage applicable to interim retirements for steam production plant, the most significant net salvage amount for generating plants occurs at the end of their life. Therefore, to assist in establishing total net salvage applicable to I&M's steam generating plant, I&M commissioned the independent engineering firm, Sargent & Lundy (S&L), to update the conceptual demolition cost estimate for the Rockport Plant that was included in I&M's last depreciation study and incorporated in I&M's current depreciation rates. The updated S&L cost estimate to demolish the Rockport Plant is based on current (2022) price levels which were inflated to the retirement date of the Rockport Plant (2028) in the depreciation study. The estimate of demolition costs was included in the net salvage ratios for Steam Production Plant. S&L's demolition costs incorporated in the depreciation study totals do not include Asset Retirement Obligation (ARO) amounts associated with the removal of asbestos or any cost associated with the final disposition of Rockport landfills and ash ponds since accretion and depreciation associated with these AROs is included

separately in I&M's cost of service.

2. Net Salvage - Nuclear Production Plant

The net salvage analysis for nuclear production plant included a review of the Company's experienced functional interim retirement, salvage and removal history for the period 1995-2022. Prior to June 2007, I&M maintained salvage and removal costs at the functional plant level, rather than by primary plant accounts. To determine gross salvage, gross removal and net salvage percentages for individual plant accounts, original cost retirements, salvage and removal were detailed by account for the period 1995 through 2022. Total functional salvage and removal were allocated to individual plant accounts using original cost retirements for the period 1995 to 2007 and were listed as directly charged for 2008 through 2022. The gross salvage and cost of removal percentages were calculated for the twenty-eight year time period (1995 to 2022) for each account. The salvage and removal percentages for each account were then netted to determine a net salvage percentage for each account.

Costs associated with the final retirement of I&M's Cook nuclear plant are included in the Company's nuclear decommissioning and ARO accounting and are not included in the depreciation study.

3. Net Salvage - Hydraulic Production Plant

The net salvage analysis for hydraulic production plant included a review of the Company's experienced functional interim retirement, salvage and removal history for the period 2001-2022. This interim salvage analysis calculates annual interim salvage, removal and net salvage percentages as compared to original cost retirements.

As with the depreciation study that was performed for Cause Nos. Cause

Nos. 44967, 45235 and 45576, I&M relied on the same conceptual terminal demolition cost estimates that were provided by Sargent & Lundy (S&L) for each of the Company's hydraulic plants in that Cause. Since the S&L cost estimates to demolish the hydraulic plants are based on 2015 price levels, the S&L cost estimates were inflated to each plant's estimated retirement date in the depreciation study. I&M's current depreciation study uses the interim net salvage analysis mentioned above plus the S&L conceptual terminal demolition cost estimates to determine the total net salvage amount to include in the depreciation rate calculation for each of the Company's Hydraulic Production Plants.

4. Net Salvage - Other Production Plant

As with the depreciation study that was performed for Cause Nos. 44967, 45235 and 45576, the net salvage analysis for other production plant included an estimated cost for demolition at each site and an estimated cost to recycle the number of panels located at each site.

5. Net Salvage – Transmission, Distribution and General Plant

The net salvage percentages used in this report for Transmission, Distribution and General Plant are expressed as a percent of original cost and are based on the Company's experience combined with the judgment of the analyst. Prior to June 2007, I&M maintained salvage and removal costs at the functional plant level, rather than by primary plant accounts. To determine gross salvage, gross removal and net salvage percentages for individual plant accounts, original cost retirements, salvage and removal were detailed by account for the period 1995 through 2022. Total functional salvage and removal were allocated to individual plant accounts using original cost retirements for the period 1995 to 2007

and were listed as directly charged for 2008 through 2022. The gross salvage and cost of removal percentages were calculated for the twenty-eight year time period (1995 to 2022) for each account. The salvage and removal percentages for each account were then netted to determine a net salvage percentage for each account.

The net salvage percentages were converted to net salvage ratios (1 minus the net salvage percentage) which appear in Column IV on SCHEDULE I. The net salvage percentages were used to determine the total amount to be recovered through depreciation. The same net salvage percentages were also reflected in the determination of the calculated depreciation requirement, which was used to allocate accumulated depreciation at the functional group to the accounts comprising each group.

6. Net Salvage – Ratios

The net salvage ratios shown in Column IV on SCHEDULE I of this report may be explained as follows:

a. Where the ratio is shown as unity (1.00), it was assumed that the net salvage in that particular account would be zero.

b. Where the ratio is less than unity, it was assumed that the salvage exceeded the removal costs. For example, if the net salvage were 20%, the net salvage ratio would be expressed as .80.

c. Where the ratio is greater than unity, it was assumed that the salvage was less than the cost of removal. For example, if the net salvage were minus 5%, the net salvage ratio would be expressed

as 1.05.

IV. CALCULATION OF DEPRECIATION REQUIREMENT

The accumulated depreciation by functional group was allocated to individual plant accounts based on the calculation of a depreciation requirement (theoretical reserve) for each plant account using the average service life, curve type and net salvage amount recommended in this study.

V. STUDY RESULTS

Production, Transmission, Distribution and General plant results are discussed below. In addition, Transmission, Distribution and General Plant average service life, retirement dispersion pattern and net salvage percentages used to calculate each primary plant account depreciation rate are shown on SCHEDULE III. The mortality characteristics and net salvage values for the current rates are also shown. Changes to the mortality characteristics follow trends shown by historical retirement experience. Gross salvage and gross cost of removal percentages were largely based on the history of each account.

Steam Production Plant

The composite rate for Steam Production Plant decreased slightly from 8.03% to 8.00% resulting in a decrease of approximately $0.4 million for Steam Production Plant on a Total Company basis. This is mainly due to a $14.7 million decrease in the estimated electric plant in service balance that was used in the previous depreciation study for Rockport Unit 1 compared to the actual amount used at December 31, 2022.

Nuclear Production Plant

The composite rate for Nuclear Production Plant increased from 4.51% to 4.66% mainly due to a $62.8 million increase in the depreciable plant in service balance since the 2020 depreciation study.

Hydraulic Production Plant

The composite rate for Hydraulic Production Plant increased from 4.62% to 6.64% due to a $29.6 million increase in the depreciable plant in service balance since the 2020 depreciation study.

Other Production Plant

The composite depreciation rate for Other Production Plant increased slightly from 4.45% to 4.46% due to a slight increase in the depreciable plant in service balance since the 2020 depreciation study. The St. Joseph solar facility was placed in service since the last depreciation study was performed.

Transmission Plant

The composite depreciation rate for Transmission Plant remain almost unchanged since the last depreciation study was performed. Decreases in the average service lives of accounts 352 and 358 were offset by decreases in the net salvage ratio for accounts 352, 355, 356 and 358.

As shown on Schedule III of the depreciation study report, the Iowa Curves selected are the same as those approved in Cause No. 45576, with the exception of accounts 352 and 358. The actuarial analysis performed for Account 352 indicated that a better fitting curve should be selected for the account and conservative judgment was used for the curve and life selected for account 358.

Distribution Plant

The depreciation rate for Distribution Plant increased from 2.84% to 3.22% due to decreases in the average service life for seven accounts (Accounts 362, 364, 365, 366, 367, 368, and 369) and an increase in the net salvage ratio for six accounts (Accounts 361, 362, 364, 365, 369, and 373)

The average service lives and Iowa Curves selected and proposed as a part of this depreciation study are similar to those selected and proposed by the Company in Cause No. 45576. The Commission approved a settlement agreement in Cause No. 45576.

General Plant

The depreciation rate for General Plant decreased slightly from 3.94% to 3.89% mainly due to recent investment made in account 390, which adjusted the average remaining life of the account, and a decrease in the net salvage ratio to the same account.

SCHEDULE I – EXPLANATION OF COLUMN HEADINGS

SCHEDULE I shows the determination of the recommended annual depreciation accrual rate by primary plant accounts by the straight line remaining life method. An explanation of the schedule follows:

Column I	-	Account number.
Column II	-	Account title.
Column III	-	Original Cost at December 31, 2022, adjusted to include 2023-2024 projected additions
Column IV	-	Net Salvage Ratio.
Column V	-	Total to be Recovered (Column III) * (Column IV).
Column VI	-	Calculated Depreciation Requirement.
Column VII	-	Allocated Accumulated Depreciation – I&M's accumulated depreciation (adjusted book reserve) spread to each account on the basis of the Calculated Depreciation Requirement shown in Column VI.
Column VIII	-	Remaining to be Recovered (Column V - Column VII).
Column IX	-	Average Remaining Life.
Column X	-	Recommended Annual Accrual Amount.
Column XI	-	Recommended Annual Accrual Percent or Depreciation Rate (Column X/Column III).

INDIANA MICHIGAN POWER COMPANY
SCHEDULE I - CALCULATION OF DEPRECIATION RATES BY THE REMAINING LIFE METHOD
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2022 (1)
AVERAGE LIFE GROUP (ALG) METHOD ACCRUAL RATES

IN

ACCOUNT NO.	ACCOUNT TITLE	ORIGINAL COST	NET SALVG RATIO	TOTAL TO BE RECOVERED	CALCULATED DEPRECIATION REQUIREMENT	ALLOCATED ACCUMULATED DEPRECIATION	REMAINING TO BE RECOVERED	AVG REMAIN LIFE	RECOMMENDED ANNUAL ACCRUAL AMOUNT	RECOMMENDED ANNUAL ACCRUAL %
(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)	(XI)
STEAM PRODUCTION PLANT										
Rockport										
311.0	Structures & Improvements	109,167,264	1.04	113,533,955	102,983,651	86,774,197	26,759,758	3.49	7,667,552	7.02%
312.0	Boiler Plant Equipment	851,851,600	1.04	885,925,664	762,371,264	642,375,305	243,550,359	3.46	70,390,277	8.26%
314.0	Turbogenerator Units	109,246,674	1.04	113,616,541	100,474,614	84,660,078	28,956,463	3.44	8,417,576	7.71%
315.0	Accessory Electrical Equipment	62,421,661	1.04	64,918,527	59,416,421	50,064,376	14,854,151	3.48	4,268,434	6.84%
316.0	Miscellaneous Power Plant Equip.	25,490,857	1.04	26,510,491	23,729,275	19,994,327	6,516,164	3.44	1,894,234	7.43%
	Total Rockport	1,158,178,056	1.04	1,204,505,178	1,048,975,225	883,868,283	320,636,895	3.46	92,638,074	8.00%
Total Steam Production Plant		**1,158,178,056**	**1.04**	**1,204,505,178**	**1,048,975,225**	**883,868,283**	**320,636,895**	**3.46**	**92,638,074**	**8.00%**
NUCLEAR PRODUCTION PLANT										
Cook Unit 1										
321.0	Structures & Improvements	87,160,034	1.01	88,031,634	71,435,014	57,205,862	30,825,772	9.33	3,303,941	3.79%
322.0	Reactor Plant Equipment	778,636,649	1.02	794,209,382	544,472,033	436,018,563	358,190,819	9.13	39,232,291	5.04%
323.0	Turbogenerator Units	308,891,808	1.02	315,069,644	205,358,255	164,452,912	150,616,732	8.81	17,096,110	5.53%
324.0	Accessory Electrical Equipment	146,111,370	1.00	146,111,370	104,415,004	83,616,563	62,494,807	9.24	6,763,507	4.63%
325.0	Miscellaneous Power Plant Equip.	36,609,290	1.00	36,609,290	25,031,360	20,045,359	16,563,931	9.09	1,822,215	4.98%
	Total Cook Unit 1	1,357,409,151	1.02	1,380,031,320	950,711,666	761,339,259	618,692,061	9.07	68,218,065	5.03%
Cook Unit 2										
321.0	Structures & Improvements	393,960,583	1.02	401,839,795	274,793,806	220,057,584	181,782,211	12.21	14,887,978	3.78%
322.0	Reactor Plant Equipment	1,066,938,458	1.03	1,098,946,612	668,429,170	535,284,658	563,661,954	11.85	47,566,410	4.46%
323.0	Turbogenerator Units	423,603,653	1.03	436,311,763	247,332,516	198,066,313	238,245,450	11.31	21,065,026	4.97%
324.0	Accessory Electrical Equipment	214,402,807	1.00	214,402,807	123,635,883	99,008,832	115,393,975	12.06	9,568,323	4.46%
325.0	Miscellaneous Power Plant Equip.	268,391,790	1.00	268,391,790	157,071,142	125,784,116	142,607,674	11.79	12,095,647	4.51%
	Total Cook Unit 2	2,367,297,291	1.02	2,419,892,766	1,471,262,517	1,178,201,503	1,241,691,263	11.81	105,183,384	4.44%
Total Nuclear Production Plant		**3,724,706,442**	**1.02**	**3,799,924,086**	**2,421,974,183**	**1,939,540,763**	**1,860,383,324**	**10.73**	**173,401,448**	**4.66%**
HYDRAULIC PRODUCTION PLANT										
Berrien Springs										
331.0	Structures & Improvements	2,284,067	1.03	2,352,589	1,005,967	722,118	1,630,471	11.38	143,275	6.27%
332.0	Reservoirs, Dams & Waterways	6,232,447	1.03	6,419,420	4,656,648	3,342,701	3,076,719	11.43	269,179	4.32%
333.0	Waterwheels, Turbines & Generators	8,270,419	1.03	8,518,532	5,818,157	4,176,471	4,342,061	11.30	384,253	4.65%
334.0	Accessory Electrical Equip.	1,399,758	1.03	1,441,751	1,017,299	730,252	711,499	11.18	63,640	4.55%
335.0	Misc. Power Plant Equip.	926,016	1.03	953,796	622,924	447,156	506,640	11.35	44,638	4.82%
	Total Berrien Springs	19,112,707	1.03	19,686,088	13,120,995	9,418,698	10,267,390	11.35	904,986	4.73%
Buchanan										
331.0	Structures & Improvements	633,338	1.04	658,672	431,166	309,506	349,166	11.38	30,682	4.84%
332.0	Reservoirs, Dams & Waterways	4,944,983	1.04	5,142,782	3,888,458	2,791,268	2,351,514	11.43	205,732	4.16%
333.0	Waterwheels, Turbines & Generators	1,596,255	1.04	1,660,105	1,230,802	883,512	776,593	11.30	68,725	4.31%
334.0	Accessory Electrical Equip.	1,063,665	1.04	1,106,212	824,791	592,063	514,149	11.18	45,988	4.32%
335.0	Misc. Power Plant Equip.	299,147	1.04	311,113	204,308	146,659	164,454	11.35	14,489	4.84%
	Total Buchanan	8,537,388	1.04	8,878,884	6,579,525	4,723,008	4,155,876	11.37	365,617	4.28%

INDIANA MICHIGAN POWER COMPANY
SCHEDULE I - CALCULATION OF DEPRECIATION RATES BY THE REMAINING LIFE METHOD
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2022 (1)
AVERAGE LIFE GROUP (ALG) METHOD ACCRUAL RATES

IN

ACCOUNT NO.	ACCOUNT TITLE	ORIGINAL COST	NET SALVG RATIO	TOTAL TO BE RECOVERED	CALCULATED DEPRECIATION REQUIREMENT	ALLOCATED ACCUMULATED DEPRECIATION	REMAINING TO BE RECOVERED	AVG REMAIN LIFE	RECOMMENDED ANNUAL ACCRUAL AMOUNT	RECOMMENDED ANNUAL ACCRUAL %
(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)	(XI)
Elkhart										
331.0	Structures & Improvements	3,475,752	1.01	3,510,510	2,198,983	1,578,505	1,932,005	5.47	353,200	10.16%
332.0	Reservoirs, Dams & Waterways	23,472,975	1.01	23,707,705	13,790,772	9,899,487	13,808,218	5.48	2,519,748	10.73%
333.0	Waterwheels, Turbines & Generators	1,863,479	1.01	1,882,114	1,320,679	948,029	934,085	5.45	171,392	9.20%
334.0	Accessory Electrical Equip.	1,637,531	1.01	1,653,906	1,144,503	821,563	832,343	5.43	153,286	9.36%
335.0	Misc. Power Plant Equip.	741,936	1.01	749,355	386,293	277,294	472,061	5.47	86,300	11.63%
	Total Elkhart	31,191,673	1.01	31,503,590	18,841,230	13,524,878	17,978,712	5.47	3,283,926	10.53%
Twin Branch										
331.0	Structures & Improvements	2,015,464	1.03	2,075,928	1,004,957	721,393	1,354,535	11.38	119,028	5.91%
332.0	Reservoirs, Dams & Waterways	11,889,255	1.03	12,245,933	7,092,844	5,091,486	7,154,447	11.43	625,936	5.26%
333.0	Waterwheels, Turbines & Generators	13,977,965	1.03	14,397,304	7,863,807	5,644,910	8,752,394	11.30	774,548	5.54%
334.0	Accessory Electrical Equip.	4,057,046	1.03	4,178,757	2,351,805	1,688,206	2,490,551	11.18	222,768	5.49%
335.0	Misc. Power Plant Equip.	1,538,045	1.03	1,584,186	666,784	478,640	1,105,546	11.35	97,405	6.33%
	Total Twin Branch	33,477,775	1.03	34,482,108	18,980,197	13,624,635	20,857,473	11.34	1,839,685	5.50%
Constantine										
331.0	Structures & Improvements	591,746	1.18	698,260	291,733	209,416	488,844	27.77	17,603	2.97%
332.0	Reservoirs, Dams & Waterways	2,079,173	1.18	2,453,424	1,077,299	773,322	1,680,102	28.05	59,897	2.88%
333.0	Waterwheels, Turbines & Generators	1,247,869	1.18	1,472,485	697,516	500,701	971,784	27.24	35,675	2.86%
334.0	Accessory Electrical Equip.	844,196	1.18	996,151	314,286	225,605	770,546	26.51	29,066	3.44%
335.0	Misc. Power Plant Equip.	597,703	1.18	705,290	192,332	138,062	567,228	27.61	20,544	3.44%
	Total Constantine	5,360,687	1.18	6,325,611	2,573,166	1,847,106	4,478,505	27.51	162,785	3.04%
Mottville										
331.0	Structures & Improvements	937,078	1.03	965,190	671,772	482,221	482,969	8.44	57,224	6.11%
332.0	Reservoirs, Dams & Waterways	2,678,406	1.03	2,758,758	2,090,035	1,500,299	1,258,459	8.46	148,754	5.55%
333.0	Waterwheels, Turbines & Generators	740,671	1.03	762,891	598,641	429,725	333,166	8.39	39,710	5.36%
334.0	Accessory Electrical Equip.	918,568	1.03	946,125	668,721	480,031	466,094	8.32	56,021	6.10%
335.0	Misc. Power Plant Equip.	473,807	1.03	488,021	300,914	216,006	272,015	8.42	32,306	6.82%
336.0	Roads, Railroads & Bridges	1,044	1.03	1,075	925	664	411	8.50	48	4.64%
	Total Mottville	5,749,574	1.03	5,922,061	4,331,008	3,108,946	2,813,115	8.42	334,063	5.81%
Crew Service Center										
331.0	Structures & Improvements	417,303	1.04	433,995	298,458	214,243	219,752	27.77	7,913	1.90%
335.0	Misc. Power Plant Equip.	126,865	1.04	131,940	91,804	65,900	66,040	27.61	2,392	1.89%
	Total Crew Service Center	544,168	1.04	565,935	390,262	280,143	285,792	27.73	10,305	1.89%
Total Hydraulic Production Plant		**103,973,972**	**1.03**	**107,364,276**	**64,816,383**	**46,527,418**	**60,836,862**	**8.82**	**6,901,367**	**6.64%**

INDIANA MICHIGAN POWER COMPANY
SCHEDULE I - CALCULATION OF DEPRECIATION RATES BY THE REMAINING LIFE METHOD
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2022 (1)
AVERAGE LIFE GROUP (ALG) METHOD ACCRUAL RATES

IN

ACCOUNT NO.	TITLE	ORIGINAL COST	NET SALVG RATIO	TOTAL TO BE RECOVERED	CALCULATED DEPRECIATION REQUIREMENT	ALLOCATED ACCUMULATED DEPRECIATION	REMAINING TO BE RECOVERED	AVG REMAIN LIFE	RECOMMENDED ANNUAL ACCRUAL AMOUNT	RECOMMENDED ANNUAL ACCRUAL %
(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	(VIII)	(IX)	(X)	(XI)
OTHER PRODUCTION PLANT										
Deer Creek Solar Facility										
344.0	Generators	5,668,204	1.03	5,838,250	2,773,169	2,677,802	3,160,448	10.50	300,995	5.31%
345.0	Accessory Electric Equip.	720,502	1.03	742,117	255,066	246,294	495,823	10.50	47,221	6.55%
346.0	Misc. Power Plant Equip.	10,893	1.03	11,220	3,838	3,706	7,514	10.50	716	6.57%
	Total Deer Creek Solar Facility	6,399,599		6,591,587	3,032,073	2,927,802	3,663,785	10.50	348,932	5.45%
Olive Solar Facility										
341.0	Structures & Improvements	376,687	1.04	391,754	166,496	160,770	230,984	11.50	20,086	5.33%
344.0	Generators	11,184,837	1.04	11,632,230	4,943,698	4,773,689	6,858,541	11.50	596,395	5.33%
345.0	Accessory Electric Equip.	269,062	1.04	279,824	118,925	114,835	164,989	11.50	14,347	5.33%
346.0	Misc. Power Plant Equip.	215,250	1.04	223,860	95,141	91,869	131,991	11.50	11,477	5.33%
	Total Olive Solar Facility	12,045,836	1.04	12,527,669	5,324,260	5,141,163	7,386,506	11.50	642,305	5.33%
Twin Branch Solar Facility										
344.0	Generators	7,013,108	1.04	7,293,632	3,087,395	2,981,222	4,312,410	11.50	374,992	5.35%
Watervliet Solar Facility										
341.0	Structures & Improvements	358,604	1.04	372,948	158,391	152,944	220,004	11.50	19,131	5.33%
344.0	Generators	11,118,727	1.04	11,563,476	4,911,008	4,742,122	6,821,354	11.50	593,161	5.33%
346.0	Misc. Power Plant Equip.	353,961	1.04	368,119	154,757	149,435	218,684	11.50	19,016	5.37%
	Total Watervliet Solar Facility	11,831,292	1.04	12,304,544	5,224,156	5,044,501	7,260,043	11.50	631,308	5.34%
St. Joseph Solar Facility										
344.0	Generators	28,019,932	1.02	28,580,331	3,318,176	3,204,066	25,376,265	26.50	957,595	3.42%
345.0	Accessory Electric Equip.	4,169,716	1.02	4,253,110	493,786	476,805	3,776,305	26.50	142,502	3.42%
346.0	Misc. Power Plant Equip.	219,459	1.02	223,848	25,854	24,965	198,883	26.50	7,505	3.42%
	Total St. Joseph Solar Facility	32,409,107	1.02	33,057,289	3,837,816	3,705,836	29,351,453	26.50	1,107,602	3.42%
Total Other Production Plant		**69,698,942**	1.03	**71,774,722**	**20,505,700**	**19,800,524**	**51,974,198**	16.74	**3,105,139**	**4.46%**
Total Production Plant		**5,056,557,412**	**1.03**	**5,183,568,263**	**3,556,271,491**	**2,889,736,988**	**2,293,831,280**	**8.31**	**276,046,028**	**5.46%**
TRANSMISSION PLANT										
350.1	Land Rights	64,064,915	1.00	64,064,915	25,280,133	19,346,882	44,718,033	39.35	1,136,418	1.77%
352.0	Structures & Improvements	81,317,493	1.08	87,822,892	10,557,077	8,079,330	79,743,562	52.79	1,510,581	1.86%
353.0	Station Equipment	869,619,205	1.11	965,277,318	238,510,937	182,532,388	782,744,930	33.13	23,626,469	2.72%
354.0	Towers & Fixtures	231,461,520	1.39	321,731,513	189,801,466	145,255,035	176,476,478	27.06	6,521,673	2.82%
355.0	Poles & Fixtures	246,283,528	1.63	401,442,151	42,788,549	32,746,071	368,696,080	44.67	8,253,774	3.35%
356.0	OH Conductor & Devices	315,493,916	1.34	422,761,847	164,935,731	126,225,292	296,536,555	40.86	7,257,380	2.30%
357.0	Underground Conduit	9,301,350	1.00	9,301,350	1,255,156	960,571	8,340,779	47.58	175,300	1.88%
358.0	Underground Conductor	8,281,750	1.12	9,275,560	1,618,185	1,238,397	8,037,163	45.40	177,030	2.14%
359.0	Roads and Trails	91,159	1.00	91,159	28,690	21,956	69,203	44.54	1,554	1.70%
Total Transmission Plant		**1,825,914,836**	**1.25**	**2,281,768,705**	**674,775,924**	**516,405,920**	**1,765,362,783**	**36.28**	**48,660,179**	**2.66%**

INDIANA MICHIGAN POWER COMPANY
SCHEDULE I - CALCULATION OF DEPRECIATION RATES BY THE REMAINING LIFE METHOD
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2022 (1)
AVERAGE LIFE GROUP (ALG) METHOD ACCRUAL RATES

IN

ACCOUNT NO. (I)	ACCOUNT TITLE (II)	ORIGINAL COST (III)	NET SALVG RATIO (IV)	TOTAL TO BE RECOVERED (V)	CALCULATED DEPRECIATION REQUIREMENT (VI)	ALLOCATED ACCUMULATED DEPRECIATION (VII)	REMAINING TO BE RECOVERED (VIII)	AVG REMAIN LIFE (IX)	RECOMMENDED ANNUAL ACCRUAL AMOUNT (X)	RECOMMENDED ANNUAL ACCRUAL % (XI)
DISTRIBUTION PLANT - IN										
360.1	Land Rights	13,375,221	1.00	13,375,221	2,955,527	3,147,203	10,228,018	50.85	201,141	1.50%
361.0	Structures & Improvements	48,277,855	1.48	71,451,225	6,439,198	3,394,198	68,057,027	59.31	1,147,480	2.38%
362.0	Station Equipment	426,065,190	1.18	502,756,924	69,614,058	37,538,195	465,218,729	36.90	12,607,554	2.96%
363.0	Storage Battery Equipment	5,606,730	1.00	5,606,730	4,990,220	4,717,430	889,300	1.65	538,970	9.61%
364.0	Poles, Towers, & Fixtures	292,977,351	2.00	585,954,702	102,294,280	119,031,476	466,923,226	34.68	13,463,761	4.60%
365.0	Overhead Conductor & Devices	481,814,461	1.23	592,631,787	91,455,813	101,076,818	491,554,969	34.85	14,104,877	2.93%
366.0	Underground Conduit	168,383,859	1.00	168,383,859	25,068,434	25,724,316	142,659,543	52.66	2,709,068	1.61%
367.0	Underground Conductor	280,815,903	1.00	280,815,903	45,423,563	49,165,340	231,650,563	47.01	4,927,687	1.75%
368.0	Line Transformers	348,521,033	1.08	376,402,716	108,595,472	145,622,782	230,779,934	19.36	11,920,451	3.42%
369.0	Services	185,596,560	1.26	233,851,666	55,716,599	66,920,282	166,931,384	34.28	4,869,644	2.62%
370.0	Meters	121,402,803	1.17	142,041,280	30,969,907	43,080,212	98,961,068	12.13	8,158,373	6.72%
371.0	Installations on Custs. Prem.	22,616,730	1.23	27,818,578	8,167,368	14,675,128	13,143,450	12.56	1,046,453	4.63%
373.0	Street Lighting & Signal Sys.	26,445,402	1.19	31,470,028	10,928,505	12,846,404	18,623,624	15.10	1,233,353	4.66%
Total Distribution Plant - IN		**2,421,899,098**	**1.25**	**3,032,560,619**	**562,618,944**	**626,939,784**	**2,405,620,835**	**31.27**	**76,928,811**	**3.18%**
DISTRIBUTION PLANT - MI										
360.1	Land Rights	6,553,884	1.00	6,553,884	1,383,503	1,473,228	5,080,656	50.85	98,559	1.50%
361.0	Structures & Improvements	6,893,081	1.48	10,201,760	710,993	374,777	9,826,983	59.31	163,836	2.38%
362.0	Station Equipment	111,247,494	1.18	131,272,043	20,276,606	10,933,814	120,338,229	36.90	3,291,888	2.96%
363.0	Storage Battery Equipment	0	1.00	0	0	0	0	1.65	0	0.00%
364.0	Poles, Towers, & Fixtures	96,677,876	2.00	193,355,752	33,613,362	39,113,117	154,242,635	34.68	4,442,827	4.60%
365.0	Overhead Conductor & Devices	157,949,552	1.23	194,277,949	25,576,445	29,372,245	164,905,704	34.85	4,623,894	2.93%
366.0	Underground Conduit	16,520,088	1.00	16,520,088	2,792,190	2,865,244	13,654,844	52.66	265,786	1.61%
367.0	Underground Conductor	40,962,693	1.00	40,962,693	10,952,973	11,855,227	29,107,466	47.01	718,803	1.75%
368.0	Line Transformers	59,094,048	1.08	63,821,572	15,950,110	21,388,547	42,433,025	19.36	2,021,191	3.42%
369.0	Services	36,759,380	1.26	46,316,819	10,015,322	13,230,320	33,086,499	34.28	964,485	2.62%
370.0	Meters	36,834,121	1.17	43,095,922	4,503,081	6,263,942	36,831,980	12.13	2,475,285	6.72%
371.0	Installations on Custs. Prem.	8,654,863	1.23	10,645,481	3,462,207	6,220,893	4,424,588	12.56	400,452	4.63%
373.0	Street Lighting & Signal Sys.	5,601,300	1.19	6,665,547	1,025,427	1,205,385	5,460,162	15.10	261,232	4.66%
Total Distribution Plant - MI		**583,748,380**	**1.31**	**763,689,510**	**130,262,219**	**144,296,739**	**619,392,771**	**31.40**	**19,728,238**	**3.38%**
Total Distribution Plant		**3,005,647,478**	**1.26**	**3,796,250,129**	**692,881,163**	**771,236,523**	**3,025,013,606**	**31.30**	**96,657,050**	**3.22%**
GENERAL PLANT										
390.0	Structures & Improvements	77,307,445	1.04	80,399,743	15,951,088	12,021,186	68,378,557	36.07	1,895,718	2.45%
391.0	Office Furniture & Equipment	5,703,382	0.98	5,589,314	2,804,540	2,113,580	3,475,734	10.96	317,129	5.56%
392.0	Transportation Equipment	72,626	1.00	72,626	5,216	3,931	68,695	18.56	3,701	5.10%
393.0	Stores Equipment	1,371,646	1.00	1,371,646	424,986	320,281	1,051,365	9.66	108,837	7.93%
394.0	Tools Shop & Garage Equipment	19,185,176	1.00	19,185,176	8,403,757	6,333,306	12,851,870	8.99	1,429,574	7.45%
395.0	Laboratory Equipment	349,600	0.99	346,104	152,325	114,796	231,308	11.20	20,653	5.91%
396.0	Power Operated Equipment	543,715	1.02	554,589	407,154	306,843	247,746	6.65	37,255	6.85%
397.0	Communication Equipment	73,174,224	1.04	76,101,193	23,603,890	17,788,552	58,312,641	18.63	3,130,040	4.28%
398.0	Miscellaneous Equipment	13,098,543	0.95	12,443,616	5,042,399	3,800,093	8,643,523	17.84	484,502	3.70%
Total General Plant		**190,806,357**	**1.03**	**196,064,007**	**56,795,355**	**42,802,568**	**153,261,439**	**20.63**	**7,427,409**	**3.89%**
	Total Depreciable Plant	**10,078,926,083**	**1.14**	**11,457,651,104**	**4,980,723,933**	**4,220,181,999**	**7,237,469,108**	**16.88**	**428,790,666**	**4.25%**

Notes:

(1) Production Plant original cost includes 2023-24 forecasted plant additions totaling $308,217,272. A corresponding adjustment was made to Production Plant accumulated depreciation that includes an additional two years of depreciation using the expected plant balances at 12/31/2024.

(2) Rockport depreciation rates are calculated using a 2028 retirement date.

INDIANA MICHIGAN POWER COMPANY
ANNUAL DEPRECIATION RATES AND ACCRUALS BY THE REMAINING LIFE METHOD
SCHEDULE II - COMPARE DEPRECIATION EXPENSE USING CURRENT AND STUDY RATES
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2022 (1)

IN

ACCOUNT NO.	TITLE	ORIGINAL COST	CURRENT INDIANA APPROVED RATE	ANNUAL ACCRUAL	STUDY RATE	STUDY ACCRUAL	DIFFERENCE (DECREASE)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
STEAM PRODUCTION PLANT							
Rockport Unit 1							
311.0	Structures & Improvements	103,813,792	9.19%	9,540,487	7.02%	7,291,542	(2,248,945)
312.0	Boiler Plant Equipment	662,426,962	9.90%	65,580,269	8.26%	54,737,724	(10,842,545)
314.0	Turbogenerator Units	108,379,469	9.82%	10,642,864	7.71%	8,350,757	(2,292,107)
315.0	Accessory Electrical Equipment	60,333,610	9.10%	5,490,359	6.84%	4,125,652	(1,364,707)
316.0	Miscellaneous Power Plant Equipment	18,645,918	9.67%	1,803,060	7.43%	1,385,584	(417,476)
	Total Rockport U1	953,599,751	9.76%	93,057,039	7.96%	75,891,259	(17,165,780)
Rockport Unit 2							
311.0	Structures & Improvements	5,353,472	0.00%	0	7.02%	376,010	376,010
312.0	Boiler Plant Equipment	189,424,638	0.00%	0	8.26%	15,652,554	15,652,554
314.0	Turbogenerator Units	867,204	0.00%	0	7.71%	66,819	66,819
315.0	Accessory Electrical Equipment	2,088,052	0.00%	0	6.84%	142,782	142,782
316.0	Miscellaneous Power Plant Equipment	6,844,939	0.00%	0	7.43%	508,650	508,650
	Total Rockport U2	204,578,305	0.00%	0	8.19%	16,746,815	16,746,815
Total Steam Production Plant		**1,158,178,056**	**8.03%**	**93,057,039**	**8.00%**	**92,638,074**	**-418,965**
NUCLEAR PRODUCTION PLANT							
Cook Unit 1							
321.0	Structures & Improvements	87,160,034	3.60%	3,137,761	3.79%	3,303,941	166,180
322.0	Reactor Plant Equipment	778,636,649	4.87%	37,919,605	5.04%	39,232,291	1,312,686
323.0	Turbogenerator Units	308,891,808	5.43%	16,772,825	5.53%	17,096,110	323,285
324.0	Accessory Electrical Equipment	146,111,370	4.35%	6,355,845	4.63%	6,763,507	407,662
325.0	Miscellaneous Power Plant Equipment	36,609,290	4.71%	1,724,298	4.98%	1,822,215	97,917
	Total Cook Unit 1	1,357,409,151	4.86%	65,910,334	5.03%	68,218,065	2,307,731
Cook Unit 2							
321.0	Structures & Improvements	393,960,583	3.61%	14,221,977	3.78%	14,887,978	666,001
322.0	Reactor Plant Equipment	1,066,938,458	4.33%	46,198,435	4.46%	47,566,410	1,367,975
323.0	Turbogenerator Units	423,603,653	5.06%	21,434,345	4.97%	21,065,026	(369,319)
324.0	Accessory Electrical Equipment	214,402,807	4.23%	9,069,239	4.46%	9,568,323	499,084
325.0	Miscellaneous Power Plant Equipment	268,391,790	4.19%	11,245,616	4.51%	12,095,647	850,031
	Total Cook Unit 2	2,367,297,291	4.32%	102,169,612	4.44%	105,183,384	3,013,772
Total Nuclear Production Plant		**3,724,706,442**	**4.51%**	**168,079,946**	**4.66%**	**173,401,448**	**5,321,502**
HYDRAULIC PRODUCTION PLANT							
Berrien Springs							
331.0	Structures & Improvements	2,284,067	4.12%	94,104	6.27%	143,275	49,171
332.0	Reservoirs, Dams & Waterways	6,232,447	3.52%	219,382	4.32%	269,179	49,797
333.0	Waterwheels, Turbines & Generators	8,270,419	3.88%	320,892	4.65%	384,253	63,361
334.0	Accessory Electrical Equip.	1,399,758	3.75%	52,491	4.55%	63,640	11,149
335.0	Misc. Power Plant Equip.	926,016	4.06%	37,596	4.82%	44,638	7,042
	Total Berrien Springs	19,112,707	3.79%	724,465	4.73%	904,986	180,521
Buchanan							
331.0	Structures & Improvements	633,338	4.15%	26,284	4.84%	30,682	4,398
332.0	Reservoirs, Dams & Waterways	4,944,983	3.36%	166,151	4.16%	205,732	39,581
333.0	Waterwheels, Turbines & Generators	1,596,255	3.30%	52,676	4.31%	68,725	16,049
334.0	Accessory Electrical Equip.	1,063,665	3.54%	37,654	4.32%	45,988	8,334
335.0	Misc. Power Plant Equip.	299,147	4.15%	12,415	4.84%	14,489	2,074
	Total Buchanan	8,537,388	3.46%	295,180	4.28%	365,617	70,437

INDIANA MICHIGAN POWER COMPANY
ANNUAL DEPRECIATION RATES AND ACCRUALS BY THE REMAINING LIFE METHOD
SCHEDULE II - COMPARE DEPRECIATION EXPENSE USING CURRENT AND STUDY RATES
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2022 (1)

IN

ACCOUNT NO.	TITLE	ORIGINAL COST	CURRENT INDIANA APPROVED RATE	ANNUAL ACCRUAL	STUDY RATE	STUDY ACCRUAL	DIFFERENCE (DECREASE)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Elkhart							
331.0	Structures & Improvements	3,475,752	6.00%	208,545	10.16%	353,200	144,655
332.0	Reservoirs, Dams & Waterways	23,472,975	6.49%	1,523,396	10.73%	2,519,748	996,352
333.0	Waterwheels, Turbines & Generators	1,863,479	5.24%	97,646	9.20%	171,392	73,746
334.0	Accessory Electrical Equip.	1,637,531	5.36%	87,772	9.36%	153,286	65,514
335.0	Misc. Power Plant Equip.	741,936	7.30%	54,161	11.63%	86,300	32,139
	Total Elkhart	31,191,673	6.32%	1,971,520	10.53%	3,283,926	1,312,406
Twin Branch							
331.0	Structures & Improvements	2,015,464	4.66%	93,921	5.91%	119,028	25,107
332.0	Reservoirs, Dams & Waterways	11,889,255	3.99%	474,381	5.26%	625,936	151,555
333.0	Waterwheels, Turbines & Generators	13,977,965	4.27%	596,859	5.54%	774,548	177,689
334.0	Accessory Electrical Equip.	4,057,046	4.21%	170,802	5.49%	222,768	51,966
335.0	Misc. Power Plant Equip.	1,538,045	5.03%	77,364	6.33%	97,405	20,041
	Total Twin Branch	33,477,775	4.22%	1,413,327	5.50%	1,839,685	426,358
Constantine							
331.0	Structures & Improvements	591,746	2.54%	15,030	2.97%	17,603	2,573
332.0	Reservoirs, Dams & Waterways	2,079,173	2.44%	50,732	2.88%	59,897	9,165
333.0	Waterwheels, Turbines & Generators	1,247,869	2.40%	29,949	2.86%	35,675	5,726
334.0	Accessory Electrical Equip.	844,196	3.05%	25,748	3.44%	29,066	3,318
335.0	Misc. Power Plant Equip.	597,703	3.08%	18,409	3.44%	20,544	2,135
	Total Constantine	5,360,687	2.61%	139,868	3.04%	162,785	22,917
Mottville							
331.0	Structures & Improvements	937,078	4.64%	43,480	6.11%	57,224	13,744
332.0	Reservoirs, Dams & Waterways	2,678,406	4.08%	109,279	5.55%	148,754	39,475
333.0	Waterwheels, Turbines & Generators	740,671	3.87%	28,664	5.36%	39,710	11,046
334.0	Accessory Electrical Equip.	918,568	4.56%	41,887	6.10%	56,021	14,134
335.0	Misc. Power Plant Equip.	473,807	5.45%	25,822	6.82%	32,306	6,484
336.0	Roads, Railroads & Bridges	1,044	3.15%	33	4.64%	48	15
	Total Mottville	5,749,574	4.33%	249,165	5.81%	334,063	84,898
Crew Service Center							
331.0	Structures & Improvements	417,303	1.64%	6,844	1.90%	7,913	1,069
335.0	Misc. Power Plant Equip.	126,865	1.62%	2,055	1.89%	2,392	337
	Total Crew Service Center	544,168	1.64%	8,899	1.89%	10,305	1,406
Total Hydraulic Production Plant		**103,973,972**	**4.62%**	**4,802,424**	**6.64%**	**6,901,367**	**2,098,943**

INDIANA MICHIGAN POWER COMPANY
ANNUAL DEPRECIATION RATES AND ACCRUALS BY THE REMAINING LIFE METHOD
SCHEDULE II - COMPARE DEPRECIATION EXPENSE USING CURRENT AND STUDY RATES
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2022 (1)

IN

ACCOUNT NO.	TITLE	ORIGINAL COST	CURRENT INDIANA APPROVED RATE	ANNUAL ACCRUAL	STUDY RATE	STUDY ACCRUAL	DIFFERENCE (DECREASE)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
OTHER PRODUCTION PLANT							
Deer Creek Solar Facility							
344.0	Generators	5,668,204	5.38%	304,949	5.31%	300,995	(3,954)
345.0	Accessory Electric Equip.	720,502	6.57%	47,337	6.55%	47,221	(116)
346.0	Misc. Power Plant Equip.	10,893	7.11%	774	6.57%	716	(58)
	Total Deer Creek Solar Facility	6,399,599	5.52%	353,060	5.45%	348,932	(4,128)
Olive Solar Facility							
341.0	Structures & Improvements	376,687	5.33%	20,077	5.33%	20,086	9
344.0	Generators	11,184,837	5.33%	596,152	5.33%	596,395	243
345.0	Accessory Electric Equip.	269,062	5.33%	14,341	5.33%	14,347	6
346.0	Misc. Power Plant Equip.	215,250	5.33%	11,473	5.33%	11,477	4
	Total Olive Solar Facility	12,045,836	5.33%	642,043	5.33%	642,305	262
Twin Branch Solar Facility							
344.0	Generators	7,013,108	5.38%	377,305	5.35%	374,992	(2,313)
Watervliet Facility							
341.0	Structures & Improvements	358,604	5.33%	19,114	5.33%	19,131	17
344.0	Generators	11,118,727	5.33%	592,628	5.33%	593,161	533
346.0	Misc. Power Plant Equip.	353,961	5.34%	18,902	5.37%	19,016	114
	Total Watervliet Facility	11,831,292	5.33%	630,644	5.34%	631,308	664
St. Joseph Solar Facility							
344.0	Generators	28,019,932	3.40%	952,678	3.42%	957,595	4,917
345.0	Accessory Electric Equip.	4,169,716	3.40%	141,770	3.42%	142,502	732
346.0	Misc. Power Plant Equip.	219,459	3.40%	7,462	3.42%	7,505	43
	Total St. Joseph Solar Facility	32,409,107	3.40%	1,101,910		1,107,602	5,692
Total Other Production Plant		**69,698,942**	**4.45%**	**3,104,962**	**4.46%**	**3,105,139**	**177**
Total Production Plant		**5,056,557,412**	**5.32%**	**269,044,371**	**5.46%**	**276,046,028**	**7,001,657**
TRANSMISSION PLANT							
350.1	Land Rights	64,064,915	1.76%	1,127,543	1.77%	1,136,418	8,875
352.0	Structures & Improvements	81,317,493	1.76%	1,431,188	1.86%	1,510,581	79,393
353.0	Station Equipment	869,619,205	2.68%	23,305,795	2.72%	23,626,469	320,674
354.0	Towers & Fixtures	231,461,520	2.85%	6,596,653	2.82%	6,521,673	(74,980)
355.0	Poles & Fixtures	246,283,528	3.40%	8,373,640	3.35%	8,253,774	(119,866)
356.0	OH Conductor & Devices	315,493,916	2.34%	7,382,558	2.30%	7,257,380	(125,178)
357.0	Underground Conduit	9,301,350	2.25%	209,280	1.88%	175,300	(33,980)
358.0	Underground Conductor	8,281,750	2.06%	170,604	2.14%	177,030	6,426
359.0	Roads and Trails	91,159	1.68%	1,531	1.70%	1,554	23
Total Transmission Plant		**1,825,914,836**	**2.66%**	**48,598,792**	**2.66%**	**48,660,179**	**61,387**

INDIANA MICHIGAN POWER COMPANY
ANNUAL DEPRECIATION RATES AND ACCRUALS BY THE REMAINING LIFE METHOD
SCHEDULE II - COMPARE DEPRECIATION EXPENSE USING CURRENT AND STUDY RATES
BASED ON DEPRECIABLE PLANT IN SERVICE AT DECEMBER 31, 2022 (1)

IN

ACCOUNT NO.	TITLE	ORIGINAL COST	CURRENT INDIANA APPROVED RATE	ANNUAL ACCRUAL	STUDY RATE	STUDY ACCRUAL	DIFFERENCE (DECREASE)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
DISTRIBUTION PLANT - IN							
360.1	Land Rights	13,375,221	1.44%	192,603	1.50%	201,141	8,538
361.0	Structures & Improvements	48,277,855	1.96%	946,246	2.38%	1,147,480	201,234
362.0	Station Equipment	426,065,190	2.56%	10,907,269	2.96%	12,607,554	1,700,285
363.0	Storage Battery Equipment	5,606,730	9.09%	509,652	9.61%	538,970	29,318
364.0	Poles, Towers, & Fixtures	292,977,351	3.56%	10,429,994	4.60%	13,463,761	3,033,767
365.0	Overhead Conductor & Devices	481,814,461	2.26%	10,889,007	2.93%	14,104,877	3,215,870
366.0	Underground Conduit	168,383,859	1.37%	2,306,859	1.61%	2,709,068	402,209
367.0	Underground Conductor	280,815,903	1.65%	4,633,462	1.75%	4,927,687	294,225
368.0	Line Transformers	348,521,033	2.43%	8,469,061	3.42%	11,920,451	3,451,390
369.0	Services	185,596,560	2.25%	4,175,923	2.62%	4,869,644	693,721
370.0	Meters	121,402,803	10.08%	12,237,403	6.72%	8,158,373	(4,079,030)
371.0	Installations on Custs. Prem.	22,616,730	4.90%	1,108,220	4.63%	1,046,453	(61,767)
373.0	Street Lighting & Signal Sys.	26,445,402	3.75%	991,703	4.66%	1,233,353	241,650
Total Distribution Plant - IN		**2,421,899,098**	**2.80%**	**67,797,402**	**3.18%**	**76,928,811**	**9,131,409**
DISTRIBUTION PLANT - MI							
360.1	Land Rights	6,553,884	1.44%	94,376	1.50%	98,559	4,183
361.0	Structures & Improvements	6,893,081	1.96%	135,104	2.38%	163,836	28,732
362.0	Station Equipment	111,247,494	2.56%	2,847,936	2.96%	3,291,888	443,952
363.0	Storage Battery Equipment	0	9.09%	0	9.61%	0	0
364.0	Poles, Towers, & Fixtures	96,677,876	3.56%	3,441,732	4.60%	4,442,827	1,001,095
365.0	Overhead Conductor & Devices	157,949,552	2.26%	3,569,660	2.93%	4,623,894	1,054,234
366.0	Underground Conduit	16,520,088	1.37%	226,325	1.61%	265,786	39,461
367.0	Underground Conductor	40,962,693	1.65%	675,884	1.75%	718,803	42,919
368.0	Line Transformers	59,094,048	2.43%	1,435,985	3.42%	2,021,191	585,206
369.0	Services	36,759,380	2.25%	827,086	2.62%	964,485	137,399
370.0	Meters	36,834,121	10.08%	3,712,879	6.72%	2,475,285	(1,237,594)
371.0	Installations on Custs. Prem.	8,654,863	4.90%	424,088	4.63%	400,452	(23,636)
373.0	Street Lighting & Signal Sys.	5,601,300	3.75%	210,049	4.66%	261,232	51,183
Total Distribution Plant - MI		**583,748,380**	**3.02%**	**17,601,104**	**3.38%**	**19,728,238**	**2,127,134**
Total Distribution Plant		**3,005,647,478**	**2.84%**	**85,398,506**	**3.22%**	**96,657,050**	**11,258,544**
GENERAL PLANT							
390.0	Structures & Improvements	77,307,445	2.54%	1,963,609	2.45%	1,895,718	(67,891)
391.0	Office Furniture & Equipment	5,703,382	5.47%	311,975	5.56%	317,129	5,154
392.0	Transportation Equipment	72,626	4.64%	3,370	5.10%	3,701	331
393.0	Stores Equipment	1,371,646	8.08%	110,829	7.93%	108,837	(1,992)
394.0	Tools Shop & Garage Equipment	19,185,176	7.86%	1,507,955	7.45%	1,429,574	(78,381)
395.0	Laboratory Equipment	349,600	6.44%	22,514	5.91%	20,653	(1,862)
396.0	Power Operated Equipment	543,715	6.45%	35,070	6.85%	37,255	2,185
397.0	Communication Equipment	73,174,224	4.21%	3,080,635	4.28%	3,130,040	49,405
398.0	Miscellaneous Equipment	13,098,543	3.74%	489,886	3.70%	484,502	(5,384)
Total General Plant		**190,806,357**	**3.94%**	**7,525,843**	**3.89%**	**7,427,409**	**-98,434**
	Total Depreciable Plant	**10,078,926,083**	**4.07%**	**410,567,512**	**4.25%**	**428,790,666**	**18,223,154**

Notes:

(1) Production Plant original cost includes 2023-24 forecasted plant additions totaling $308,217,272. A corresponding adjustment was made to Production Plant accumulated depreciation that includes an additional two years of depreciation using the expected plant balances at 12/31/2024.

(2) Rockport depreciation rates are calculated using a 2028 retirement date.

INDIANA MICHIGAN POWER COMPANY
SCHEDULE III - COMPARISON OF MORTALITY CHARACTERISTICS
DEPRECIATION STUDY AS OF DECEMBER 31, 2022

IN

(1)		(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
		Existing Rates					Study Rates				
		Average Service Life (Years)	Iowa Curve	Salvage Factor	Cost of Removal Factor	Net Salvage Factor	Average Service Life (Years)	Iowa Curve	Salvage Factor	Cost of Removal Factor	Net Salvage Factor
TRANSMISSION PLANT											
350.1	Rights of Way	65	R5.0	0%	0%	0%	65	R5.0	0%	0%	0%
352.0	Structures & Improvements	65	L1.5	0%	10%	-10%	60	L2.0	0%	8%	-8%
353.0	Station Equipment	44	L1.0	15%	25%	-10%	44	L1.0	14%	25%	-11%
354.0	Towers & Fixtures	66	R5.0	2%	41%	-39%	66	R5.0	2%	41%	-39%
355.0	Poles & Fixtures	50	L0.5	3%	67%	-64%	50	L0.0	2%	65%	-63%
356.0	OH Cond. & Devices	67	R4.0	8%	43%	-35%	67	R4.0	6%	40%	-34%
357.0	Underground Conduit	55	R5.0	0%	0%	0%	55	R5.0	0%	0%	0%
358.0	Underground Conductor and Devices	60	L1.5	0%	13%	-13%	55	L1.5	0%	12%	-12%
359.0	Roads and Trails	65	R5.0	0%	0%	0%	65	R5.0	0%	0%	0%
DISTRIBUTION PLANT											
360.1	Rights of Way	65	R5.0	0%	0%	0%	65	R5.0	0%	0%	0%
361.0	Structures & Improvements	65	R1.5	1%	26%	-25%	65	L1.5	1%	49%	-48%
362.0	Station Equipment	46	L0.5	10%	22%	-12%	43	L0.5	8%	26%	-18%
363.0	Storage Battery Equipment	15	SQ	0%	0%	0%	15	SQ	0%	0%	0%
364.0	Poles, Towers, & Fixtures	48	L0.0	17%	104%	-87%	42	L0.0	16%	116%	-100%
365.0	Overhead Conductor & Devices	48	L0.0	18%	34%	-16%	41	L0.0	16%	39%	-23%
366.0	Underground Conduit	71	R2.0	0%	0%	0%	62	R2.0	0%	0%	0%
367.0	Underground Conductor	60	R1.0	0%	0%	0%	57	R1.0	0%	0%	0%
368.0	Line Transformers	35	R0.5	16%	24%	-8%	27	R0.5	15%	23%	-8%
369.0	Services	50	R0.5	4%	28%	-24%	45	R0.5	3%	29%	-26%
370.0	Meters	15	SQ	9%	29%	-20%	15	L0.0	7%	24%	-17%
371.0	Installations on Custs. Prem.	17	L0.0	3%	26%	-23%	18	L0.0	3%	26%	-23%
373.0	Street Lighting & Signal Sys.	22	R0.5	6%	24%	-18%	22	R0.5	6%	25%	-19%
GENERAL PLANT											
390.0	Structures & Improvements	45	L1.0	6%	11%	-5%	45	L1.0	6%	10%	-4%
391.0	Office Furniture & Equipment	22	SQ	6%	3%	3%	22	SQ	6%	4%	2%
392.0	Transportation Equipment	20	SQ	0%	0%	0%	20	SQ	0%	0%	0%
393.0	Stores Equipment	14	SQ	0%	0%	0%	14	SQ	0%	0%	0%
394.0	Tools Shop & Garage Equipment	16	SQ	1%	1%	0%	16	SQ	1%	1%	0%
395.0	Laboratory Equipment	20	SQ	2%	1%	1%	20	SQ	2%	1%	1%
396.0	Power Operated Equipment	25	SQ	2%	2%	0%	25	SQ	2%	4%	-2%
397.0	Communication Equipment	27	SQ	6%	7%	-1%	27	SQ	5%	9%	-4%
398.0	Miscellaneous Equipment	30	SQ	25%	17%	8%	30	SQ	25%	20%	5%

INDIANA MICHIGAN POWER COMPANY
SCHEDULE IV - ESTIMATED GENERATION PLANT RETIREMENT DATES
DEPRECIATION STUDY AS OF DECEMBER 31, 2022

Plant	Capacity (MW)	Fuel	Year Installed	Estimated Year Retired	Life Span (Years)
Steam Production Plant					
Rockport					
Unit 1	1,300	Coal	1984	2028	44
Unit 2 (a)	1,300	Coal	1989	2028	39
Nuclear Production Plant					
Cook					
Unit 1	1,020	Nuclear	1975	2034	59
Unit 2	1,090	Nuclear	1978	2037	59
Hydraulic Production Plant (b)					
Berrien Springs	7.2	Hydro	1908	2036	128
Buchanan	4.1	Hydro	1919	2036	117
Constantine	1.2	Hydro	1921	2053	132
Elkhart	3.4	Hydro	1913	2030	117
Mottville	1.7	Hydro	1923	2033	110
Twin Branch	4.8	Hydro	1904	2036	132
Other Production Plant					
Deer Creek Solar Facility	2.5	Solar	2015	2035	20
Olive Solar Facility	5.0	Solar	2016	2036	20
Twin Branch Solar Facility	2.6	Solar	2016	2036	20
Watervliet Solar Facility	4.6	Solar	2016	2036	20
St. Joseph Solar Facility	20.0	Solar	2021	2051	30

NOTES:

(a) The associated owned equipment at Rockport Unit 2 prior to the expiration of the lease and the purchase of Rockport Unit 2.

(b) The estimated retirement year for the Company's Hydraulic Production Plants assumes that the plants will be retired at their end of their current FERC license year. Berrien Springs is not FERC licensed and the Berrien Springs retirement year was assumed to be the same year as Buchanan and Twin Branch Plants which is 2036.

Rockport Plant

DEMOLITION COST ESTIMATE

Prepared for:
Indiana Michigan Power Company (Owner)
and American Electric Power Service Corporation

Project No. A13351.023
March 7, 2022
Revision 0

55 East Monroe Street
Chicago, IL 60603-5780 USA

Rockport Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Demolition Cost Estimate
March 7, 2022

Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	10/5/21	Comments	G. Amen	B. Andric		All
0	3/7/2022	Use	G. Amen	B. Andric	A. Redd	All

TABLE OF CONTENTS

1.0 INTRODUCTION

The Rockport Plant located near Rockport, Indiana is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of two generating units with a generating capacity of 1,300 megawatts each. Unit 1 was placed in operation in 1984 and Unit 2 in 1989.

Sargent & Lundy (S&L) previously prepared a Demolition Cost Estimate for Rockport Plant Unit 1 and a separate Asbestos Removal Cost Estimate in February 2016. AEP recently contracted S&L to update the previously prepared cost estimates taking into consideration specific scope additions/deletions, with the notable inclusion of Unit 2 facilities, all common facilities and updating pricing to 4th Quarter 2021 levels. The objective of the demolition cost estimate is to determine the gross demolition costs for Rockport Plant (including gross salvage credits and any other benefits), in support of documenting a component of future AEP book depreciation rates to be approved by the I&M's state commissions and potential future inclusion in submittal of a rate case to the state commissions, and other potential uses. The cost estimate considers the demolition/dismantlement methodology which complies with current OSHA rules and regulations.

2.0 COST ESTIMATE SUMMARY

Conceptual Demolition Cost Estimate No. 33962D, was prepared and is included as Exhibit 1. The cost estimate is structured into a code of accounts as identified in Table 2-1.

Table 2-1
Cost Estimate Code of Accounts

Account Number	Description
10	Demolition Costs (including steel, equipment & piping scrap value)
18	Scrap Value Costs
21	Civil Work Costs
90, 91, 92	General Conditions Costs
93	Indirect Costs
94	Contingency Costs
96	Escalation Costs

The results of the cost estimate are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary

Description	Total Cost
Demolition Cost	$ 65,802,104
Scrap Value	($ 31,349,894)
General Conditions Costs	$ 19,973,300
Indirect Cost	$ 6,862,000
Contingency Cost	$ 18,598,100
Total Project Cost	$ 79,885,610

Asbestos Removal Conceptual Cost Estimate No. 33963C was prepared and is included as Exhibit 2. The total estimated cost for asbestos removal prior to plant dismantlement is $603,762. Quantities were derived from drawings and past experience. Asbestos removal applies to the entire plant facilities. The cost of asbestos removal is excluded from the demolition cost estimate in Table 2-2 above.

3.0 TECHNICAL BASIS

The scope of dismantlement includes the complete Rockport Plant generating facility and plant common services. Common facilities include:

Ohio River barge unloading facilities and docking river cells, coal handling, storm water ponds and river water intake structure and piping to the facility.

The following are excluded from the scope of the demolition cost estimate:

- Bottom Ash and Fly Ash retention and disposal ponds
- Asbestos removal (separate cost estimate prepared)
- Switchyard

The following scope revisions were included in the current cost estimate:

- Added Unit 2 and all common facilities
- Added Unit 2 SCR System
- Added Unit 2 DSI System
- Added Ammonia storage facilities
- AEP request that paved surfaces are to remain in place, not demolished
- AEP requested that below grade concrete foundations/structures are to remain in place, not demolished
- AEP requested that scrap value be based on five year historical average.

4.0 COMMERCIAL BASIS

4.1 General Information

The Demolition Cost Estimate prepared for the Rockport Plant is a conceptual estimate of the cost to dismantle Rockport Plant. Costs were calculated for (1) demolition of existing plant structures and equipment and associated site restoration costs, (2) scrap value of metals, (3) associated indirect costs, and (4) contingency.

All units used in the cost estimate are U.S. Standard and all costs are in US Dollars (4th Quarter 2021 levels). A three (3) year demolition schedule is anticipated including asbestos removal (to be performed prior to start of demolition work). The schedule takes into consideration environmental permitting, asbestos removal which includes mapping out all asbestos contamination throughout the plant and associated abatement, followed by the demolition work and site restoration. All items identified above will be demolished at the same time

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in this cost estimate were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the site plot plan and other drawings and data provided by Plant Personnel.

4.3 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate are based on the prevailing wages for Evansville, Indiana as published in "R.S. Means Labor Rates for the Construction Industry", 2021 Edition. These prevailing rates are representative of union or non-union rates, whichever is prevailing in the area. Costs have been added to cover social security, workmen's compensation, federal and state unemployment insurance. The resulting burdened craft rates were then used to develop typical crew rates applicable to the task being performed

4.3.1 Labor Work Schedule and Incentives

The estimate assumed a 5x8 work week. No per diem or other labor incentives are included.

4.3.2 General Conditions Cost

Allowances were included in the cost estimate as direct costs as noted for the following:

- Labor Supervision
- Construction Management
- Field Office Expenses
- Safety
- Temporary Facilities
- Mobilization / Demobilization
- Legal Expenses / Claims

- Small Tools & Consumables
- General Liability Insurance
- Construction Equipment Mobilization / Demobilization
- Freight on Material
- Contractor's General and Administrative Costs
- Contractor's Profit

4.4 Scrap Value

The value of scrap was determined by a 5 year average from November 2016 to November 2021 based on "Scrap Metals Market Watch" as published in "American Recycler News" (www.americanrecycler.com) using Zone 4. The values obtained are delivered prices to the recycler. Transportation cost to the recycler is assumed @ 30 $/ton resulting in the values below:

- Carbon Steel @ 216 $/ton
- #2 Copper @ 5,103 $/ton
- #2 Insulated Copper Wire @ 2,690 $/ton
- Stainless Steel @ 1,094 $/ton
- Aluminum @ 1,213 $/ton

Note: 1 Ton = 2,000 Lbs

4.5 Indirect Costs

Allowances were included in the cost estimate as indirect costs as noted for the following:

- Engineering, Procurement and Project Services: None included.
- Construction Management Support: None included.
- Owners Cost: Included as 8.0% of the total direct cost. Owners Costs include owner project engineering, administration and construction management, permits and fees, legal expenses, taxes, removal of chemicals, etc.

4.6 Escalation

No allowance for escalation was included in the cost estimate.

4.7 Contingency

Allowances were included in the cost estimate as contingency as noted for the following:

- Scrap Value: Included as a 15.0% reduction in the salvage value resulting in a total net reduction in the salvage value. The contingency assumes a potential drop in salvage value thus increasing the project cost.
- Material: Included as 20.0% of the total material cost.
- Labor: Included as 20.0% of the total labor cost.
- Indirect: Included as 20.0% of the total indirect cost.
- Subcontract: Included as 20.0% of the total indirect cost.

4.8 Assumptions

The following assumptions apply to the cost estimates.

- All facilities will be demolished in the same time period.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.
- All coal and fuel oil will be consumed prior to demolition.
- All electrical equipment and wiring is de-energized prior to start of dismantlement.
- No extraordinary environmental costs for demolition have been included.
- PCB’**s** are not present on site.
- Disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- Bottom Ash Ponds are not included. These costs will be determined by the Owner.
- The method of chimney demolition to a “gross” demolition method which involves toppling the chimney and demolishing it on the ground. This method was chosen since no significant structures will be remaining on-site within a “1100 feet of the chimney fall radius” during a whole plant demolition.
- Switchyards within the plant boundaries are not part of the scope, neither are access roads to these facilities. Fences and gates needed to protect the switchyard will be left in place.
- All items above grade will be demolished.
- Paved surfaces are to remain in place, not demolished
- Below grade concrete foundations/structures are to remain in place, not demolished
- Underground piping, conduit and cable ducts will be abandoned in place.
- Underground piping larger than 4 feet diameter will be filled with concrete flowable fill and capped at the ends to prevent collapse.
- All demolished materials are considered debris, except for organic combustibles and non-embedded metals which have scrap value.

- The basis for salvage estimating is for scrap value only. No resale of equipment or material is included.
- Disturbed areas will be buried under 6 inches of topsoil mulched and seeded with grass – no other landscaping is included.
- All borrow material is assumed to be purchased from off-site sources.
- Debris not suitable for burial is to be disposed of off-site.

5.0 REFERENCES

Drawings utilized in the preparation of this conceptual demolition cost estimate are identified in Table 5-1.

Table 5-1
Reference Drawings

Unit	Document Number	Revision	Title
0	12-3750-6	6	General Site Arrangement
0	12-3751-4	4	General Site Arrangement
0	12-16001A	----	Coal Handling General Arrangement Plan
0	12-6002-1	1	Coal Handling General Arrangement Plan
0	12-5030-11	11	Plot Plan (2) 1300 MW Units
1	12-50700B-B	B	SCR Retrofit Project, Unit 1 South Plot Plan
1	12-50700A-B	B	SCR Retrofit Project, Unit 1 SCR Island Plat Plan
1	12-507000-B	B	SCR Retrofit Project, Unit 1 Overall Site Plot Plan
1	1-509000-0	C	SCR General Arrangement, Elevation View A-A Looking South
1	1-509001-0	D	SCR General Arrangement, Elevation View B-B Looking West
1	1-509002-0	D	SCR General Arrangement, Elevation View C-C Looking West
1	1-509003-0	D	SCR General Arrangement, Elevation View D-D Looking West
1	1-509004-0	D	SCR General Arrangement, Elevation View E-E Looking East
1	1-509005-0	D	SCR General Arrangement, Sectional Plan View F-F Platform at EL 329'8"
1	10509006-0	D	SCR General Arrangement, Sectional Plan View G-G Platform at EL 316'8"
1	10509007-0	D	SCR General Arrangement, Sectional Plan View H-H Plat. at EL 305'2"
1	10509008-0	D	SCR General Arrangement, Sectional Plan View J-J Plat. at EL 275' 3 1/2"
1	10509009-0	D	SCR General Arrangement, Sectional Plan View K-K Plat. at EL 257' 9"
1	10509010-0	D	SCR General Arrangement, Sectional Plan View L-L Plat. at EL 238' 3 1/2"
1	10509011-0	D	SCR General Arrangement, Sectional Plan View M-M Plat. at EL 234' to 220'-11 3/8"

Unit	Document Number	Revision	Title
1	10509012-0	D	SCR General Arrangement, Sectional Plan View N-N Plat. at EL 212'-6"
1	10509013-0	D	SCR General Arrangement, Sectional Plan View P-P Plat. at EL 171'
0	100DPI		Rockport Station Drainage
			Used for Asbestos Removal Estimate
0	2012-25134	B	Firewall Block ad Filler Pack Install Natural Draft Counter-flow Tower
0	1-12003-3	3	600V Auxiliary One Line Diagram
0	1-12018-0		600V Auxiliary One Line Diagram, Vacuum Pump Houses No.1 and No. 1-2
0	12-12012-3	3	Coal Handling 600V Auxiliary One Line Diagram
0	12-12012-4	4	Coal Handling 600V Auxiliary One Line Diagram

0 = Common

1 = Unit 1

2 = Unit 2

EXHIBIT 1
Rockport Plant
Demolition Cost Estimate No. 33962D

AEP
ROCKPORT
DEMOLITION COST ESTIMATE

Estimator	GA
Labor rate table	21INEVN
Project No.	A13351.023
Estimate Date	3/7/22
Reviewed By	JM
Approved By	BA
Estimate No.	33962D

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Equip Amount	Total Cost
1	UNIT 1	351,907	(13,892,057)		159,046	8,988,816	3,428,675	(1,122,659)
2	UNIT 2	351,907	(13,892,057)		159,046	8,988,816	3,428,675	(1,122,659)
3	COMMON FACILITIES	7,389,630	(3,565,780)	16,592,601	157,214	8,784,322	7,496,756	36,697,528
	TOTAL DIRECT	8,093,444	(31,349,894)	16,592,601	475,305	26,761,953	14,354,106	34,452,210

Estimate Totals

Description	Amount	Totals	Hours
Labor	26,761,953		475,305
Material	16,592,601		
Subcontract	8,093,444		
Construction Equipment	14,354,106		
Scrap Value	(31,349,894)		
	34,452,210	**34,452,210**	
General Conditions			
Additional Labor Costs			
90-1 Labor Supervision	1,605,700		
90-2 Show-up Time	535,200		
90-3 Cost Due To OT 5-10's			
90-4 Cost Due To OT 6-10's			
90-5 Per Diem			
Site Overheads			
91-1 Construction Management	2,890,300		
91-2 Field Office Expenses	635,900		
91-3 Material&Quality Control			
91-4 Site Services			
91-5 Safety	571,000		
91-6 Temporary Facilities	434,400		
91-7 Temporary Utilities			
91-8 Mobilization/Demob.	457,800		
91-9 Legal Expenses/Claims	67,600		
Other Construction Indirects			
92-1 Small Tools & Consumables	289,000		
92-2 Scaffolding			
92-3 General Liability Insur.	289,000		
92-4 Constr. Equip. Mob/Demob	143,500		
92-5 Freight on Material	829,600		
92-6 Freight on Scrap			
92-7 Sales Tax			
92-8 Contractors G&A	4,621,800		
92-9 Contractors Profit	6,602,500		
	19,973,300	**54,425,510**	
Project Indirect Costs			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	6,862,000		
93-8 EPC Fee			
	6,862,000	**61,287,510**	
Contingency			
94-1 Contingency on Const Eq	2,540,700		
94-3 Contingency on Material	3,057,600		
94-4 Contingency on Labor	6,054,000		
94-5 Contingency on Subcontr.	1,214,000		
94-6 Contingency on Scrap	4,702,500		
94-7 Contingency on Indirect	1,029,300		
	18,598,100	**79,885,610**	
Escalation			
96-1 Escalation on Const Equip			
96-3 Escalation on Material			
96-4 Escalation on Labor			
96-5 Escalation on Subcontract			
96-6 Escalation on Scrap			
96-7 Escalation on Indirects			
		79,885,610	
98 Interest During Constr			
		79,885,610	
Total		**79,885,610**	

Area	Group	Phase	Description	Notes	Quantity	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Equip Amount	Total Cost
1			**UNIT 1**									
	10.00.00		**WHOLE PLANT DEMOLITION**									
		10.22.00	**CONCRETE**									
			BUILDING/EQUIPMENT FOUNDATION/PAD	DRAFT EQUIPMENT	5,424.00 CY	-	-		6,102	351,292	134,183	485,475
			BUILDING/EQUIPMENT FOUNDATION/PAD	CONCRETE ASH SILOS 40 FT DIA X 151 FT HIGH, 2 EACH	2,000.00 CY	-	-		2,250	129,533	49,478	179,010
			BUILDING/EQUIPMENT FOUNDATION/PAD	DSI SYSTEM SILOS AND EQUIPMENT	311.20 CY	-	-		350	20,155	7,699	27,854
			BUILDING/EQUIPMENT FOUNDATION/PAD	CONCRETE COOLING TOWER SHELL/PRECAST	20,300.00 CY	-	-		22,838	1,314,755	502,197	1,816,952
			BUILDING/EQUIPMENT FOUNDATION/PAD	COOLING TOWER BASIN TO 2 FT BELOW GRADE	CY	-	-					
			BUILDING/EQUIPMENT FOUNDATION/PAD	SCR BOX, DUCTWORK, STRUCTURAL STEEL	260.00 CY	-	-		293	16,839	6,432	23,271
			MAIN POWER BLOCK FOUNDATION	BOILER BLD	290.40 CY	-	-		245	14,110	5,390	19,500
			MAIN POWER BLOCK FOUNDATION	TURBINE BLD	364.40 CY	-	-		308	17,706	6,763	24,469
			ELEVATED CONCRETE FLOOR / ROOF	BOILER BLD ROOF	581.00 CY	-	-		348	20,035	7,653	27,688
			ELEVATED CONCRETE FLOOR / ROOF	TURBINE BLD ROOF	729.00 CY	-	-		437	25,139	9,602	34,742
			ELEVATED CONCRETE FLOOR / ROOF	TURBINE BLD OPERATING CONCRETE FLOOR	2,187.00 CY	-	-		1,310	75,417	28,807	104,225
			TRANSFORMER FIRE WALLS		378.00 CY	-	-		408	23,502	8,977	32,480
			TURBINE PEDESTAL		2,800.00 CY	-	-		5,040	290,153	110,830	400,982
			CONCRETE						**39,928**	**2,298,637**	**878,010**	**3,176,647**
		10.23.00	**STEEL**									
			STRUCTURAL, GIRT AND GALLERY STEEL	BOILER AND TURBINE BUILDING	20,077.00 TN	-	-		20,398	1,158,212	343,914	1,502,126
			STEEL						**20,398**	**1,158,212**	**343,914**	**1,502,126**
		10.24.00	**ARCHITECTURAL**									
			PRECIPITATOR CONTROL BUILDING		239,200.00 CF	-	-		718	40,387	19,899	60,286
			VACUUM PUMP HOUSE		141,725.00 CF	-	-		425	23,929	11,790	35,719
			METAL SIDING	BOILER BUILDING	159,600.00 SF	-	-		958	54,564	30,480	85,044
			METAL SIDING	TURBINE BUILDING	72,540.00 SF	-	-		435	24,800	13,854	38,654
			MASONRY WALLS - CONCRETE BLOCK & TILES	TURBINE BUILDING	13,120.00 SF	-	-		105	5,907	2,911	8,818
			ARCHITECTURAL						**2,641**	**149,587**	**78,934**	**228,520**
		10.26.00	**MISCELLANEOUS STRUCTURAL ITEM**									
			ELEVATOR		1.00 EA	-	-		150	8,336	3,416	11,751
			MISCELLANEOUS STRUCTURAL ITEM						**150**	**8,336**	**3,416**	**11,751**
		10.31.00	**MECHANICAL EQUIPMENT**									
			MAIN BOILER AND APPURTENANCES		8,108.00 TN	-	-		16,419	932,254	358,749	1,291,002
			PRECIPITATOR		4,448.00 TN	-	-		9,007	500,530	205,094	705,624
			STEAM TURBINE GENERATOR		2,823.00 TN	-	-		5,717	317,670	130,166	447,836
			FLUES AND DUCTS INCL. BREACHING		6,548.00 TN	-	-		17,680	1,003,848	386,299	1,390,147
			SCR BOX, DUCTWORK, STRUCTURAL STEEL, AMMONIA STORAGE SYSTEM		3,459.00 TN	-	-		9,339	518,985	212,656	731,641
			DEMIN WATER STORAGE TANK 375,000, 37' DIA AND 40' TALL		43.00 TN	-	-		116	6,452	2,644	9,095
			FUEL OIL TANK	2,000,000 GALLON, 100 FT DIA X 40 FT TALL	190.00 TN	-	-		513	28,507	11,681	40,188
			CHEMICAL FLUSH HOLDING TANK	1,500,000 GALLON, 60 FT DIA X 60 FT TALL	136.00 TN	-	-		367	20,405	8,361	28,766
			CLEAN CONDENSATE STORAGE TANK (STAINLESS STEEL)	1,500,000 GALLON, 60 FT DIA X 60 FT TALL	136.00 TN	-	-		367	20,405	8,361	28,766
			CONTAMINATED CONDENSATE STORAGE TANK	1,000,000 GALLON, 60 FT DIA X 40 FT TALL	79.00 TN	-	-		213	11,853	4,857	16,710
			FANS		695.00 TN	-	-		1,407	78,208	32,046	110,254
			BOP EQUIPMENT, PUMPS, FW HEATERS, ELECTRIC MOTORS, ETC.		4,981.00 TN	-	-		10,087	560,508	229,670	790,178
			DSI EQUIPMENT INCLUDING HOPPERS		54.00 TN	-	-		109	6,077	2,490	8,566
			ACI EQUIPMENT INCLUDING HOPPERS		54.00 TN	-	-		109	6,077	2,490	8,566
			CONDENSER		461.00 TN	-	-		934	51,876	21,256	73,132
			CONDENSER TUBES	#2 COPPER	180.00 TN	-	-		365	20,255	8,300	28,555
			MECHANICAL EQUIPMENT						**72,749**	**4,083,910**	**1,625,120**	**5,709,029**
		10.34.00	**HVAC**									
			MAIN BUILDING HVAC		1.00 LT	-	-		1,500	83,355	34,155	117,510
			HVAC						**1,500**	**83,355**	**34,155**	**117,510**
		10.35.00	**PIPING**									
			PIPING, VALVES AND HANGERS	BOILER PLANT PIPING AND HANGERS	4,173.00 TN	-	-		8,450	469,585	192,414	661,998
			PIPING						**8,450**	**469,585**	**192,414**	**661,998**
		10.41.00	**ELECTRICAL EQUIPMENT**									
			LIGHT FIXTURE		500.00 EA	-	-		200	11,114	4,554	15,668

Area	Group	Phase	Description	Notes	Quantity	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Equip Amount	Total Cost
		10.41.00	ELECTRICAL EQUIPMENT									
			ISO PHASE BUS DUCT		25.00 TN	-	-		89	4,950	2,028	6,978
			MISCELLANEOUS ELECTRICAL EQUIPMENT		750.00 TN	-	-		2,672	148,497	60,847	209,344
			ELECTRICAL EQUIPMENT						2,961	164,561	67,429	231,990
		10.42.00	RACEWAY, CABLE TRAY, & CONDUIT									
			CONDUIT		314.00 TN	-	-		2,041	113,418	46,474	159,892
			CABLE TRAY		314.00 TN	-	-		1,884	104,694	42,899	147,593
			RACEWAY, CABLE TRAY, & CONDUIT						3,925	218,112	89,372	307,485
		10.43.00	CABLE									
			COPPER WIRE		100.00 TN	-	-		1,000	67,830	22,770	90,600
			CABLE						1,000	67,830	22,770	90,600
			WHOLE PLANT DEMOLITION						153,702	8,702,123	3,335,534	12,037,657
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			CARBON STEEL	EQUIPMENT, STRUCTURAL STEEL	-57,079.00 TN	-	(12,329,064)	-				(12,329,064)
			CARBON STEEL	PRE FAB BUILDINGS STRUCTURAL STEEL	-134.00 TN	-	(28,944)	-				(28,944)
			CARBON STEEL	BOILER, TURBINE AND OTHER BUILDING SIDING	-147.00 TN	-	(31,752)	-				(31,752)
			CARBON STEEL	CONDUIT AND CABLE TRAY	-628.00 TN	-	(135,648)	-				(135,648)
			MIXED STEEL				(12,525,408)					(12,525,408)
		18.20.00	STAINLESS STEEL									
			STAINLESS STEEL	CLEAN CONDENSATE STORAGE TANK (STAINLESS STEEL)	-136.00 TN	-	(148,784)	-				(148,784)
			STAINLESS STEEL				(148,784)					(148,784)
		18.30.00	COPPER									
			#2 INSULATED COPPER WIRE		-100.00 TN	-	(269,000)	-				(269,000)
			#2 COPPER	CONDENSER TUBES	-180.00 TN	-	(918,540)	-				(918,540)
			COPPER				(1,187,540)					(1,187,540)
		18.50.00	ALUMINUM									
			ALUMINUM	ISO PHASE BUS DUCT	-25.00 TN	-	(30,325)	-		-	-	(30,325)
			ALUMINUM				(30,325)					(30,325)
			SCRAP VALUE				(13,892,057)					(13,892,057)
	21.00.00		CIVIL WORK									
		21.52.00	WASTE DISPOSAL									
			OFFSITE DISPOSAL AND TRANSPORTATION FEE	BUILDING DEBRIS	9,511.00 CY	351,907	-				-	351,907
			ONSITE DISPOSAL	DEMOLISHED CONCRETE TO BE DISPOSED ON SITE IN BELOW GRADE VOIDS	35,625.00 CY		-		5,344	286,692	93,142	379,834
			WASTE DISPOSAL			351,907			5,344	286,692	93,142	731,741
			CIVIL WORK			351,907			5,344	286,692	93,142	731,741
			1 UNIT 1			**351,907**	**(13,892,057)**		**159,046**	**8,988,816**	**3,428,675**	**(1,122,659)**
2			**UNIT 2**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			BUILDING/EQUIPMENT FOUNDATION/PAD	DRAFT EQUIPMENT	5,424.00 CY	-	-		6,102	351,292	134,183	485,475
			BUILDING/EQUIPMENT FOUNDATION/PAD	CONCRETE ASH SILOS 40 FT DIA X 151 FT HIGH, 2 EACH	2,000.00 CY	-	-		2,250	129,533	49,478	179,010
			BUILDING/EQUIPMENT FOUNDATION/PAD	DSI SYSTEM SILOS AND EQUIPMENT	311.20 CY	-	-		350	20,155	7,699	27,854
			BUILDING/EQUIPMENT FOUNDATION/PAD	CONCRETE COOLING TOWER SHELL/PRECAST	20,300.00 CY	-	-		22,838	1,314,755	502,197	1,816,952
			BUILDING/EQUIPMENT FOUNDATION/PAD	COOLING TOWER BASIN TO 2 FT BELOW GRADE	CY	-	-					
			BUILDING/EQUIPMENT FOUNDATION/PAD	SCR BOX, DUCTWORK, STRUCTURAL STEEL	260.00 CY	-	-		293	16,839	6,432	23,271
			MAIN POWER BLOCK FOUNDATION	BOILER BLD	290.40 CY	-	-		245	14,110	5,390	19,500
			MAIN POWER BLOCK FOUNDATION	TURBINE BLD	364.40 CY	-	-		308	17,706	6,763	24,469
			ELEVATED CONCRETE FLOOR / ROOF	BOILER BLD ROOF	581.00 CY	-	-		348	20,035	7,653	27,688
			ELEVATED CONCRETE FLOOR / ROOF	TURBINE BLD ROOF	729.00 CY	-	-		437	25,139	9,602	34,742
			ELEVATED CONCRETE FLOOR / ROOF	TURBINE BLD OPERATING CONCRETE FLOOR	2,187.00 CY	-	-		1,310	75,417	28,807	104,225
			TRANSFORMER FIRE WALLS		378.00 CY	-	-		408	23,502	8,977	32,480
			TURBINE PEDESTAL		2,800.00 CY	-	-		5,040	290,153	110,830	400,982
			CONCRETE						39,928	2,298,637	878,010	3,176,647

Area	Group	Phase	Description	Notes	Quantity	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Equip Amount	Total Cost
		10.23.00	**STEEL**									
			STRUCTURAL, GIRT AND GALLERY STEEL	BOILER AND TURBINE BUILDING	20,077.00 TN	-	-		20,398	1,158,212	343,914	1,502,126
			STEEL						**20,398**	**1,158,212**	**343,914**	**1,502,126**
		10.24.00	**ARCHITECTURAL**									
			PRECIPITATOR CONTROL BUILDING		239,200.00 CF	-	-		718	40,387	19,899	60,286
			VACUUM PUMP HOUSE		141,725.00 CF	-	-		425	23,929	11,790	35,719
			METAL SIDING	BOILER BUILDING	159,600.00 SF	-	-		958	54,564	30,480	85,044
			METAL SIDING	TURBINE BUILDING	72,540.00 SF	-	-		435	24,800	13,854	38,654
			MASONRY WALLS - CONCRETE BLOCK & TILES	TURBINE BUILDING	13,120.00 SF	-	-		105	5,907	2,911	8,818
			ARCHITECTURAL						**2,641**	**149,587**	**78,934**	**228,520**
		10.26.00	**MISCELLANEOUS STRUCTURAL ITEM**									
			ELEVATOR		1.00 EA	-	-		150	8,336	3,416	11,751
			MISCELLANEOUS STRUCTURAL ITEM						**150**	**8,336**	**3,416**	**11,751**
		10.31.00	**MECHANICAL EQUIPMENT**									
			MAIN BOILER AND APPURTENANCES		8,108.00 TN	-	-		16,419	932,254	358,749	1,291,002
			PRECIPITATOR		4,448.00 TN	-	-		9,007	500,530	205,094	705,624
			STEAM TURBINE GENERATOR		2,823.00 TN	-	-		5,717	317,670	130,166	447,836
			FLUES AND DUCTS INCL. BREACHING		6,548.00 TN	-	-		17,680	1,003,848	386,299	1,390,147
			SCR BOX, DUCTWORK, STRUCTURAL STEEL, AMMONIA STORAGE SYSTEM		3,459.00 TN	-	-		9,339	518,985	212,656	731,641
			DEMIN WATER STORAGE TANK 375,000, 37' DIA AND 40' TALL		43.00 TN	-	-		116	6,452	2,644	9,095
			FUEL OIL TANK	2,000,000 GALLON, 100 FT DIA X 40 FT TALL	190.00 TN	-	-		513	28,507	11,681	40,188
			CHEMICAL FLUSH HOLDING TANK	1,500,000 GALLON, 60 FT DIA X 60 FT TALL	136.00 TN	-	-		367	20,405	8,361	28,766
			CLEAN CONDENSATE STORAGE TANK (STAINLESS STEEL)	1,500,000 GALLON, 60 FT DIA X 60 FT TALL	136.00 TN	-	-		367	20,405	8,361	28,766
			CONTAMINATED CONDENSATE STORAGE TANK	1,000,000 GALLON, 60 FT DIA X 40 FT TALL	79.00 TN	-	-		213	11,853	4,857	16,710
			FANS		695.00 TN	-	-		1,407	78,208	32,046	110,254
			BOP EQUIPMENT, PUMPS, FW HEATERS, ELECTRIC MOTORS, ETC.		4,981.00 TN	-	-		10,087	560,508	229,670	790,178
			DSI EQUIPMENT INCLUDING HOPPERS		54.00 TN	-	-		109	6,077	2,490	8,566
			ACI EQUIPMENT INCLUDING HOPPERS		54.00 TN	-	-		109	6,077	2,490	8,566
			CONDENSER		461.00 TN	-	-		934	51,876	21,256	73,132
			CONDENSER TUBES	#2 COPPER	180.00 TN	-	-		365	20,255	8,300	28,555
			MECHANICAL EQUIPMENT						**72,749**	**4,083,910**	**1,625,120**	**5,709,029**
		10.34.00	**HVAC**									
			MAIN BUILDING HVAC		1.00 LT	-	-		1,500	83,355	34,155	117,510
			HVAC						**1,500**	**83,355**	**34,155**	**117,510**
		10.35.00	**PIPING**									
			PIPING, VALVES AND HANGERS	BOILER PLANT PIPING AND HANGERS	4,173.00 TN	-	-		8,450	469,585	192,414	661,998
			PIPING						**8,450**	**469,585**	**192,414**	**661,998**
		10.41.00	**ELECTRICAL EQUIPMENT**									
			LIGHT FIXTURE		500.00 EA	-	-		200	11,114	4,554	15,668
			ISO PHASE BUS DUCT		25.00 TN	-	-		89	4,950	2,028	6,978
			MISCELLANEOUS ELECTRICAL EQUIPMENT		750.00 TN	-	-		2,672	148,497	60,847	209,344
			ELECTRICAL EQUIPMENT						**2,961**	**164,561**	**67,429**	**231,990**
		10.42.00	**RACEWAY, CABLE TRAY, & CONDUIT**									
			CONDUIT		314.00 TN	-	-		2,041	113,418	46,474	159,892
			CABLE TRAY		314.00 TN	-	-		1,884	104,694	42,899	147,593
			RACEWAY, CABLE TRAY, & CONDUIT						**3,925**	**218,112**	**89,372**	**307,485**
		10.43.00	**CABLE**									
			COPPER WIRE		100.00 TN	-	-		1,000	67,830	22,770	90,600
			CABLE						**1,000**	**67,830**	**22,770**	**90,600**
			WHOLE PLANT DEMOLITION						**153,702**	**8,702,123**	**3,335,534**	**12,037,657**
	18.00.00		**SCRAP VALUE**									
		18.10.00	**MIXED STEEL**									
			CARBON STEEL	EQUIPMENT, STRUCTURAL STEEL	-57,079.00 TN	-	(12,329,064)	-				(12,329,064)
			CARBON STEEL	PRE FAB BUILDINGS STRUCTURAL STEEL	-134.00 TN	-	(28,944)	-				(28,944)
			CARBON STEEL	BOILER, TURBINE AND OTHER BUILDING SIDING	-147.00 TN	-	(31,752)	-				(31,752)
			CARBON STEEL	CONDUIT AND CABLE TRAY	-628.00 TN	-	(135,648)	-				(135,648)

Area	Group	Phase	Description	Notes	Quantity	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Equip Amount	Total Cost
			MIXED STEEL				(12,525,408)					(12,525,408)
		18.20.00	STAINLESS STEEL									
			STAINLESS STEEL	CLEAN CONDENSATE STORAGE TANK (STAINLESS STEEL)	-136.00 TN	-	(148,784)	-				(148,784)
			STAINLESS STEEL				(148,784)					(148,784)
		18.30.00	COPPER									
			#2 INSULATED COPPER WIRE		-100.00 TN	-	(269,000)	-				(269,000)
			#2 COPPER	CONDENSER TUBES	-180.00 TN	-	(918,540)	-				(918,540)
			COPPER				(1,187,540)					(1,187,540)
		18.50.00	ALUMINUM									
			ALUMINUM	ISO PHASE BUS DUCT	-25.00 TN	-	(30,325)	-		-	-	(30,325)
			ALUMINUM				(30,325)					(30,325)
			SCRAP VALUE				(13,892,057)					(13,892,057)
	21.00.00		CIVIL WORK									
		21.52.00	WASTE DISPOSAL									
			OFFSITE DISPOSAL AND TRANSPORTATION FEE	BUILDING DEBRIS	9,511.00 CY	351,907	-				-	351,907
			ONSITE DISPOSAL	DEMOLISHED CONCRETE AND MASONRY TO BE DISPOSED ON SITE IN BELOW GRADE VOIDS	35,625.00 CY		-		5,344	286,692	93,142	379,834
			WASTE DISPOSAL			351,907			5,344	286,692	93,142	731,741
			CIVIL WORK			351,907			5,344	286,692	93,142	731,741
			2 UNIT 2			**351,907**	**(13,892,057)**		**159,046**	**8,988,816**	**3,428,675**	**(1,122,659)**
3			**COMMON FACILITIES**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.21.00	CIVIL WORK									
			REMOVE RAILROAD TRACK RAIL, TIES, SPREAD BALLAST		14,558.00 TF	-	-		3,276	188,279	151,265	339,544
			PAVED / GRAVEL SURFACES		SY	-	-					
			ROADS		SY	-	-					
			PULL SHEET PILE AND CAP FOR 30 FT BARGE ANCHOR CELL + 15 FT BARGE CELLS = 4000 TNS X 1/2 FOR COMMON = 2000 TN PER AEP	58 RIVER CELLS, INCLUDES FILLER REMOVAL.	2,000.00 TN	-	-		13,500	735,210	646,110	1,381,320
			CIVIL WORK						16,776	923,489	797,375	1,720,864
		10.22.00	CONCRETE									
			BUILDING/EQUIPMENT FOUNDATION/PAD	TANKS	CY	-	-					
			BUILDING/EQUIPMENT FOUNDATION/PAD	FUEL EQUIPMENT - MATERIAL HANDLING	4,200.00 CY	-	-		4,725	272,018	103,903	375,921
			BUILDING/EQUIPMENT FOUNDATION/PAD	MISC EQUIPMENT PADS AND SITE BUILDING FOUNDATION	CY	-	-					
			BUILDING/EQUIPMENT FOUNDATION/PAD	U1 & 2 RIVER WATER MAKEUP PUMP HOUSES, 2,050 CY X 1/2 FOR COMMON	2,050.00 CY	-	-		2,306	132,771	50,714	183,485
			BUILDING/EQUIPMENT FOUNDATION/PAD	LOADING DOCKS	1,705.00 CY	-	-		1,918	110,426	42,180	152,606
			BUILDING/EQUIPMENT FOUNDATION/PAD	AMMONIA STORAGE TANK AREA	CY	-	-					
			BUILDING/EQUIPMENT FOUNDATION/PAD	AMMONIA TRUCK UNLOADING PAD	CY	-	-					
			BUILDING/EQUIPMENT FOUNDATION/PAD	AMMONIA STORAGE PDC	CY	-	-					
			BUILDING/EQUIPMENT FOUNDATION/PAD	SCR AIR COMPRESSOR BUILDING	CY	-	-					
			BUILDING/EQUIPMENT FOUNDATION/PAD	BUILDINGS	CY	-	-					
			BUILDING/EQUIPMENT FOUNDATION/PAD	TRANSFORMERS	208.50 CY	-	-		235	13,504	5,158	18,662
			WALKWAYS		CY	-	-					
			PILE CAP FOR 30 FT BARGE ANCHOR CELL		524.00 CY	-	-		1,472	84,768	32,379	117,147
			PILE CAP FOR 15 FT BARGE CELLS		1,551.00 CY	-	-		4,358	250,908	95,839	346,747
			CONCRETE						15,015	864,396	330,173	1,194,569
		10.24.00	ARCHITECTURAL									
			MATERIAL HANDLING BUILDINGS AND TOWERS		2,018,450.00 CF	-	-		6,055	340,795	167,915	508,710
			WAREHOUSES AND STOREROOMS		2,095,920.00 CF	-	-		6,288	353,875	174,360	528,235
			MISCELLANEOUS SMALL BUILDINGS		186,900.00 CF	-	-		561	31,556	15,548	47,104
			ENERGY INFORMATION CENTER		84,450.00 CF	-	-		253	14,259	7,025	21,284
			PREFAB DIESEL GENERATOR CONTROL BUILDING		42,700.00 CF	-	-		128	7,209	3,552	10,762
			PRETREATMENT BUILDING		804,024.00 CF	-	-		2,412	135,751	66,887	202,638
			SERVICE BUILDING		897,345.00 CF	-	-		2,692	151,508	74,650	226,158
			U 1 & 2 RIVER WATER MAKEUP PUMP HOUSES		324,800.00 CF	-	-		974	54,839	27,020	81,859
			AMMONIA STORAGE PDC BUILDING		33,000.00 CF	-	-		99	5,572	2,745	8,317
			SCR AIR COMPRESSOR BUILDING		49,900.00 CF	-	-		150	8,425	4,151	12,576
			ARCHITECTURAL						19,612	1,103,790	543,854	1,647,643
		10.25.00	CONCRETE CHIMNEY & STACK									
			PROCESS CONCRETE CHIMNEY DEBRIS		7,800.00 CY		-		8,775	505,177	192,962	698,139

Area	Group	Phase	Description	Notes	Quantity	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Equip Amount	Total Cost
		10.25.00	**CONCRETE CHIMNEY & STACK**									
			EXPLOSIVE DEMOLITION CONTRACTOR FEE		1.00 CY	350,000	-					350,000
			CONCRETE CHIMNEY & STACK			**350,000**			**8,775**	**505,177**	**192,962**	**1,048,139**
		10.26.00	**MISCELLANEOUS STRUCTURAL ITEM**									
			MISCELLANEOUS SMALL OBSTACLE REMOVAL FROM SITE		1.00 LT	-	-		2,000	111,140	45,540	156,680
			MISCELLANEOUS STRUCTURAL ITEM						**2,000**	**111,140**	**45,540**	**156,680**
		10.31.00	**MECHANICAL EQUIPMENT**									
			WATER TREATMENT DEMINERALIZATION & CHEMICAL TREATMENT EQUIPMENT		50.00 TN	-	-		101	5,626	2,305	7,932
			1.2 MW DIESEL GENERATOR AND ENCLOSURE		37.00 TN	-	-		100	5,551	2,275	7,826
			CIRCULATING WATER SYSTEM EQUIPMENT		350.00 TN	-	-		709	39,385	16,138	55,523
			MISCELLANEOUS FUEL OIL EQUIPMENT		70.00 TN	-	-		189	10,503	4,304	14,806
			TURBINE ROOM O.H. CRANE		1.00 EA	-	-		300	17,034	5,058	22,092
			TURBINE ROOM GANTRY CRANE		1.00 EA	-	-		40	2,271	674	2,946
			HYDRANTS		1.00 LS	-	-		200	11,496	9,236	20,732
			MECHANICAL EQUIPMENT						**1,639**	**91,867**	**39,990**	**131,857**
		10.33.00	**MATERIAL HANDLING EQUIPMENT**									
			COAL HANDLING EQUIPMENT		9,012.00 TN	-	-		24,332	1,352,151	554,049	1,906,200
			(2) BARGE UNLOADERS		400.00 TN	-	-		1,080	60,016	24,592	84,607
			MATERIAL HANDLING EQUIPMENT						**25,412**	**1,412,167**	**578,640**	**1,990,807**
		10.41.00	**ELECTRICAL EQUIPMENT**									
			"MALONEY" TRANSFORMER, 138KV/13.2KV/35000KVA		88.00 TN	-	-		235	13,067	5,354	18,421
			"WESTINGHOUSE", TRANSFORMER, 138KV/13.2KV/35000KVA		55.00 TN	-	-		147	8,167	3,346	11,513
			"WESTINGHOUSE", TRANSFORMER, 138KV/13.2KV/35000KVA		55.00 TN	-	-		147	8,167	3,346	11,513
			"WESTINGHOUSE", TRANSFORMER, 138KV/13.2KV/35000KVA		55.00 TN	-	-		147	8,167	3,346	11,513
			"WESTINGHOUSE", TRANSFORMER, 138KV/13.2KV/35000KVA		55.00 TN	-	-		147	8,167	3,346	11,513
			"WESTINGHOUSE", TRANSFORMER, 138KV/13.2KV/35000KVA		55.00 TN	-	-		147	8,167	3,346	11,513
			"GENERAL ELECTRIC", TRANSFORMER, 145KV/21KV/196,000KVA		107.00 TN	-	-		286	15,888	6,510	22,398
			"GENERAL ELECTRIC", TRANSFORMER, 145KV/21KV/196,000KVA		107.00 TN	-	-		286	15,888	6,510	22,398
			"GENERAL ELECTRIC", TRANSFORMER, 138KV/4.16KV/12,000KVA		25.00 TN	-	-		67	3,712	1,521	5,233
			"WESTINGHOUSE", TRANSFORMER, 21KV/4.16KV/12,000KVA		22.00 TN	-	-		59	3,267	1,339	4,605
			"WESTINGHOUSE", TRANSFORMER, 21KV/4.16KV/12,000KVA		22.00 TN	-	-		59	3,267	1,339	4,605
			"WESTINGHOUSE", TRANSFORMER, 21KV/4.16KV/12,000KVA		22.00 TN	-	-		59	3,267	1,339	4,605
			"WESTINGHOUSE", TRANSFORMER, 138KV/2.4KV/3750KVA		19.00 TN	-	-		51	2,821	1,156	3,977
			"WESTINGHOUSE", TRANSFORMER, 138KV/2.4KV/3750KVA		19.00 TN	-	-		51	2,821	1,156	3,977
			"WESTINGHOUSE", TRANSFORMER, 13.2KV/2.4KV/3750KVA		19.00 TN	-	-		51	2,821	1,156	3,977
			LIGHT FIXTURE		500.00 EA	-	-		200	11,114	4,554	15,668
			OUTDOOR LIGHT POLE / FIXTURE		200.00 EA	-	-		300	16,671	6,831	23,502
			MISCELLANEOUS ELECTRICAL EQUIPMENT		100.00 TN	-	-		356	19,800	8,113	27,913
			ELECTRICAL EQUIPMENT						**2,794**	**155,235**	**63,608**	**218,843**
			WHOLE PLANT DEMOLITION			**350,000**			**92,023**	**5,167,260**	**2,592,143**	**8,109,402**
	11.00.00		**DEMOLITION**									
		11.99.00	**DEMOLITION, MISCELLANEOUS**									
			DEMOLISH WATER TREATMENT PIPING AND ELECTRICAL FACILITIES	AFTER WATER TREATMENT IS COMPLETED	1.00 LS	30,000	-				-	30,000
			DEMOLITION, MISCELLANEOUS			**30,000**						**30,000**
			DEMOLITION			**30,000**						**30,000**
	18.00.00		**SCRAP VALUE**									
		18.10.00	**MIXED STEEL**									
			CARBON STEEL	EQUIPMENT	-11,969.00 TN	-	(2,585,304)	-				(2,585,304)
			CARBON STEEL	RAILROAD RAIL	-557.00 TN	-	(120,312)	-				(120,312)
			CARBON STEEL	BUILDING STEEL EXCLUDING BOILER AND TURBINE BLD	-2,259.00 TN	-	(487,944)	-				(487,944)

Area	Group	Phase	Description	Notes	Quantity	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Equip Amount	Total Cost
		18.10.00	MIXED STEEL									
			CARBON STEEL	PRE FAB BUILDINGS SIDING	-20.00 TN	-	(4,320)	-				(4,320)
			CARBON / COPPER	TRANSFORMERS	-725.00 TN	-	(313,200)	-				(313,200)
			MIXED STEEL				(3,511,080)					(3,511,080)
		18.20.00	STAINLESS STEEL									
			STAINLESS STEEL	DEMINERALIZED WATER EQUIPMENT	-50.00 TN	-	(54,700)	-				(54,700)
			STAINLESS STEEL				(54,700)					(54,700)
			SCRAP VALUE				(3,565,780)					(3,565,780)
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									
			MASS EXCAVATION	LEVEL FUEL OIL CONTAINMENT BERM	5,185.00 CY	-	-		207	11,482	19,906	31,388
			MASS EXCAVATE SETTLED SOLIDS AND DISPOSE IN THE ONSITE CCR LANDFILL	WASTE WATER PONDS, 1100' X 630' X 2' DEEP, X2 PONDS	102,667.00 CY	-	-		4,107	227,346	394,159	621,505
			MASS EXCAVATE SETTLED SOLIDS AND DISPOSE IN THE ONSITE CCR LANDFILL	CLEAR WATER POND, 410' X 320' X 1' DEEP	4,859.00 CY	-	-		194	10,760	18,655	29,414
			MASS EXCAVATE SETTLED SOLIDS AND DISPOSE IN THE ONSITE CCR LANDFILL	RECLAIM WATER POND, 670' X 320' X 1' DEEP	7,941.00 CY	-	-		318	17,585	30,487	48,072
			MASS EXCAVATION, 1 FT DEEP	COAL PILE AREA INCLUDING RUNOFF PONDS	121,213.00 CY	-	-		4,849	268,414	465,361	733,775
			EXCAVATION						9,675	535,586	928,568	1,464,154
		21.21.00	MASS FILL									
			MASS FILL, COMMON EARTH 1 FT DEEP	COAL PILE AREA	121,213.00 CY	-	-	2,424,260	4,242	234,862	407,191	3,066,313
			MASS FILL, COMMON EARTH 6 INCHES DEEP	PAVED SURFACES	CY	-	-					
			MASS FILL, COMMON EARTH	STORM WATER PONDS	CY	-	-					
			MASS FILL, COMMON EARTH	WASTE WATER PONDS, 1100' X 630' X 10' DEEP, X2 PONDS	513,333.00 CY	-	-	10,266,660	17,967	994,634	1,724,440	12,985,734
			MASS FILL, COMMON EARTH	CLEAR WATER POND, RECLAIM WATER POND, DEMOLISHED CONCRETE IS DISPOSED IN THESE AREAS. QUANTITY TO FILL REMAINING VOID TO GRADE LEVEL.	38,712.00 CY	-	-	774,240	1,355	75,008	130,045	979,294
			MASS FILL, COMMON EARTH	ROADS	CY	-	-					
			MASS FILL, COMMON EARTH	COAL PILE RUNOFF PONDS	34,554.00 CY	-	-	691,080	1,209	66,952	116,077	874,109
			MASS FILL					14,156,240	24,773	1,371,457	2,377,753	17,905,449
		21.22.00	COMPACTION									
			COMPACTION	STORM WATER PONDS	CY	-	-					
			COMPACTION	WASTE WATER PONDS, 1100' X 630' X 10' DEEP, X2 PONDS	513,333.00 CY	-	-		10,267	568,362	985,394	1,553,756
			COMPACTION	CLEAR WATER POND, RECLAIM WATER POND, DEMOLISHED CONCRETE IS DISPOSED IN THESE AREAS. QUANTITY TO FILL REMAINING VOID TO GRADE LEVEL.	37,838.00 CY	-	-		757	41,894	72,634	114,528
			COMPACTION	COAL PILE RUNOFF PONDS	34,554.00 CY	-	-		691	38,258	66,330	104,588
			COMPACTION	COAL PILE AREA	121,213.00 CY	-	-		2,424	134,207	232,680	366,888
			COMPACTION						14,139	782,722	1,357,038	2,139,760
		21.47.00	LANDSCAPING									
			HYDRO SEEDING	PONDS	23.80 AC	54,930	-	-		-	-	54,930
			HYDRO SEEDING	COAL PILE AREA INCLUDING RUNOFF PONDS	75.10 AC	173,331	-	-		-	-	173,331
			HYDRO SEEDING	ROADS	AC		-	-		-	-	
			HYDRO SEEDING	PAVED SURFACES	AC		-	-		-	-	
			HYDRO SEEDING	COAL PILE RUNOFF POND 5	0.92 AC	2,123	-	-		-	-	2,123
			LANDSCAPING			230,385						230,385
		21.52.00	WASTE DISPOSAL									
			OFFSITE DISPOSAL AND TRANSPORTATION FEE	RAILROAD TIES	3,509.00 CY	129,833	-				-	129,833
			OFFSITE DISPOSAL AND TRANSPORTATION FEE	PRE FAB BUILDINGS DEBRIS	7,263.00 CY	268,731	-				-	268,731
			OFFSITE DISPOSAL AND TRANSPORTATION FEE	PAVED SURFACES	CY	0	-					
			OFFSITE DISPOSAL AND TRANSPORTATION FEE	COAL PILE AREA	121,213.00 CY	4,484,881	-				-	4,484,881
			ONSITE DISPOSAL	DEMOLISHED CONCRETE TO BE DISPOSED ON SITE IN BELOW GRADE VOIDS	10,238.00 CY		-		1,536	82,390	26,767	109,158
			ONSITE DISPOSAL	DEMOLISHED CHIMNEY CONCRETE TO BE DISPOSED ON SITE IN BELOW GRADE VOIDS	7,800.00 CY		-		1,170	62,771	20,393	83,164
			WASTE DISPOSAL			4,883,445			2,706	145,161	47,160	5,075,766
			CIVIL WORK			5,113,830		14,156,240	51,292	2,834,925	4,710,519	26,815,514

Area	Group	Phase	Description	Notes	Quantity	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Equip Amount	Total Cost
	22.00.00		CONCRETE									
		22.13.00	CONCRETE									
			MAT FOUNDATION LESS THAN 5 FT THICK, 4500 PSI	80' X 100' X 1.5' THK CONCRETE SLAB FOR DEWATERING EQUIPMENT	444.44 CY	-	-	64,444	556	28,100	7,128	99,672
			FLOWABLE FILL, 1500 PSI	CIRCULATING WATER SYSTEM PIPING AND TUNNELS	1,800.00 CY	-	-	216,000	900	45,522	11,547	273,069
			FLOWABLE FILL, 1500 PSI	CIRCULATING WATER PIPING	3,417.00 CY	-	-	410,040	1,709	86,416	21,920	518,376
			FLOWABLE FILL, 1500 PSI	COAL TRACK HOPPER ESCAPE TUNNELS	104.00 CY	-	-	12,480	52	2,630	667	15,777
			FLOWABLE FILL, 1500 PSI	COAL TRACK HOPPER CONVEYOR TUNNEL	1,190.00 CY	-	-	142,800	595	30,095	7,634	180,529
			FLOWABLE FILL, 1500 PSI	COAL RECLAIM HOPPER CONVEYOR TUNNEL	1,701.00 CY	-	-	204,120	851	43,018	10,912	258,050
			FLOWABLE FILL, 1500 PSI	COAL RECLAIM HOPPERS	1,115.00 CY	-	-	133,800	558	28,198	7,153	169,151
			FLOWABLE FILL, 1500 PSI	COAL TRACK HOPPER	4,585.00 CY	-	-	550,200	2,293	115,955	29,413	695,567
			FLOWABLE FILL, 1500 PSI	COAL TRACK HOPPER STAIRWELL	558.00 CY	-	-	66,960	279	14,112	3,580	84,651
			CONCRETE					1,800,844	7,791	394,046	99,953	2,294,843
		22.17.00	FORMWORK									
			BUILT UP INSTALL & STRIP	80' X 100' X 1.5' THK CONCRETE SLAB FOR DEWATERING EQUIPMENT	540.00 SF	-	-	1,350	108	5,945	877	8,172
			FORMWORK					1,350	108	5,945	877	8,172
		22.25.00	REINFORCING									
			UNCOATED A615 GR60	80' X 100' X 1.5' THK CONCRETE SLAB FOR DEWATERING EQUIPMENT	33.33 TN	-	-	34,166	600	35,412	6,702	76,280
			REINFORCING					34,166	600	35,412	6,702	76,280
			CONCRETE					1,836,361	8,499	435,403	107,532	2,379,296
	31.00.00		MECHANICAL EQUIPMENT									
		31.93.00	WATER TREATING									
			MOBILIZATION / DEMOBILIZATION	VENDOR TO UNLOAD AND SETUP ALL VENDOR SUPPLIED EQUIPMENT	1.00 LS	250,000	-	-				250,000
			CLARIFICATION, ULTRA FILTRATION, DEWATERING, AND OPERATION MONTHLY RENTAL COST INCLUDES:		6.00 MO	1,380,000	-	-				1,380,000
			EQUALIZATION / MIX TANK	INCLUDED ABOVE	LS	-	-	-				
			COAGULANT FEED SYSTEM	INCLUDED ABOVE	LS	-	-	-				
			POLYMER FEED SYSTEM	INCLUDED ABOVE	LS	-	-	-				
			ACTIFLOW AQUAMOVE MOBILE CLARIFIER TRAILER	INCLUDED ABOVE	LS	-	-	-				
			ORGANO-SULFIDE FEED SYSTEM	INCLUDED ABOVE	LS	-	-	-				
			CLARIFIED WATER MIX / FRAC TANK(S)	INCLUDED ABOVE	LS	-	-	-				
			UF FEED PUMPS	INCLUDED ABOVE	LS	-	-	-				
			UF FEED TRAILER	INCLUDED ABOVE	LS	-	-	-				
			SLUDGE COLLECTION / THICKENER TANK	INCLUDED ABOVE	LS	-	-	-				
			DEWATERING POLYMER FEED SYSTEM	INCLUDED ABOVE	LS	-	-	-				
			SLUDGE RECYCLE PUMPS	INCLUDED ABOVE	LS	-	-	-				
			FILTER PRESS FEED PUMPS	INCLUDED ABOVE	LS	-	-	-				
			FILTER PRESS	INCLUDED ABOVE	LS	-	-	-				
			VEOLIA STAFF, 1 SHIFT PER DAY, WITH AUTOMATIC OPERATION	INCLUDED ABOVE	LS	-	-	-				
			WATER TREATING			1,630,000						1,630,000
			MECHANICAL EQUIPMENT			1,630,000						1,630,000
	35.00.00		PIPING									
		35.99.00	MISCELLANEOUS									
			WATER TREATMENT SYSTEM INLET/OUTLET PIPING, DEWATERING PUMPS		1.00 LS	25,000	-				-	25,000
			INLET WATER TO W.T. SYSTEM AND POTABLE WATER FOR POLYMER MAKEDOWN AND SAFETY SHOWER), SAFETY SHOWER, SLUDGE ROLL OFF BOXES		1.00 LS	30,000	-				-	30,000
			MISCELLANEOUS			55,000						55,000
			PIPING			55,000						55,000
	41.00.00		ELECTRICAL EQUIPMENT									
		41.99.00	ELECTRICAL EQUIPMENT, MISCELLANEOUS									
			DIESEL POWERED 250KW GENERATOR	POWER SUPPLY FOR WATER TREATMENT EQUIPMENT	180.00 DAY	19,800	-				-	19,800
			MISC ELECTRICAL EQUIPMENT AND LABOR	ALLOWANCE	30.00 EA		-	600,000	5,400	346,734	86,562	1,033,296
			ELECTRICAL EQUIPMENT, MISCELLANEOUS			19,800		600,000	5,400	346,734	86,562	1,053,096
			ELECTRICAL EQUIPMENT			19,800		600,000	5,400	346,734	86,562	1,053,096
	71.00.00		PROJECT INDIRECT									
		71.27.00	FREIGHT									
			FREIGHT FOR WATER TREATMENT EQUIPMENT	NOT INCLUDED IN VENDORS COST	1.00 LS	5,000	-				-	5,000

Area	Group	Phase	Description	Notes	Quantity	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Equip Amount	Total Cost
			FREIGHT			5,000						5,000
		71.99.00	PROJECT INDIRECT, USER DEFINED									
			MONTHLY OPERATION & MAINTENANCE COST FOR WATER TREATMENT SYSTEM	CHEMICALS, CONSUMABLE, POWER, DISSPOSAL, SPARE PARTS	6.00 MO	186,000	-				-	186,000
			PROJECT INDIRECT, USER DEFINED			186,000						186,000
			PROJECT INDIRECT			191,000						191,000
			3 COMMON FACILITIES			**7,389,630**	**(3,565,780)**	**16,592,601**	**157,214**	**8,784,322**	**7,496,756**	**36,697,528**

EXHIBIT 2
Rockport Plant
Asbestos Removal Cost Estimate No. 33963C

AEP
ROCKPORT
DEMOLITION COST ESTIMATE - ASBESTOS

Estimator	GA
Labor rate table	21INEVN
Project No.	A13351.023
Estimate Date	10/5/21
Reviewed By	JM
Approved By	BA
Estimate No.	33963C

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Equip Amount	Total Cost
1	UNIT 1	31,000			120	6,535	5,743	43,278
2	UNIT 2	31,000			120	6,535	5,743	43,278
3	COMMON FACILITIES	355,006			3,062			355,006
	TOTAL DIRECT	417,006			3,303	13,070	11,486	441,563

Estimate Totals

Description	Amount	Totals	Hours
Labor	13,070		3,303
Material			
Subcontract	417,006		
Construction Equipment	11,486		
Scrap Value			
	441,562	**441,562**	
General Conditions			
Additional Labor Costs			
90-1 Labor Supervision	6,500		
90-2 Show-up Time			
90-3 Cost Due To OT 5-10's			
90-4 Cost Due To OT 6-10's			
90-5 Per Diem			
Site Overheads			
91-1 Construction Management	19,600		
91-2 Field Office Expenses			
91-3 Material&Quality Control			
91-4 Site Services			
91-5 Safety	400		
91-6 Temporary Facilities	3,900		
91-7 Temporary Utilities			
91-8 Mobilization/Demob.	7,800		
91-9 Legal Expenses/Claims			
Other Construction Indirects			
92-1 Small Tools & Consumables	7,800		
92-2 Scaffolding			
92-3 General Liability Insur.	200		
92-4 Constr. Equip. Mob/Demob	3,400		
92-5 Freight on Material			
92-6 Freight on Scrap			
92-7 Sales Tax			
92-8 Contractors G&A	4,900		
92-9 Contractors Profit	7,000		
	61,500	**503,062**	
Project Indirect Costs			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost			
93-8 EPC Fee			
		503,062	
Contingency			
94-1 Contingency on Const Eq	3,400		
94-3 Contingency on Material			
94-4 Contingency on Labor	13,900		
94-5 Contingency on Subcontr.	83,400		
94-6 Contingency on Scrap			
94-7 Contingency on Indirect			
	100,700	**603,762**	
Escalation			
96-1 Escalation on Const Equip			
96-3 Escalation on Material			
96-4 Escalation on Labor			
96-5 Escalation on Subcontract			
96-6 Escalation on Scrap			
96-7 Escalation on Indirects			
		603,762	
98 Interest During Constr			
		603,762	
Total		**603,762**	

Area	Group	Phase	Description	Notes	Quantity	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Equip Amount	Total Cost
1			UNIT 1									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.37.00	ASBESTOS REMOVAL									
			FLOOR TILE, NONFRIABLE	ALLOWANCE	500.00 SF	-	-		40	2,178	1,914	4,093
			CEILING TILE, NONFRIABLE	ALLOWANCE	500.00 SF	-	-		80	4,357	3,829	8,186
			ASBESTOS REMOVAL - ELECTRICAL -600 V SWITCHGEAR	ALLOWANCE	1.00 LS	15,500	-		0			15,500
			ASBESTOS REMOVAL - MISC GASKETS	ALLOWANCE	1.00 LS	15,500	-		0			15,500
			ASBESTOS REMOVAL			31,000			120	6,535	5,743	43,278
			WHOLE PLANT DEMOLITION			31,000			120	6,535	5,743	43,278
			1 UNIT 1			31,000			120	6,535	5,743	43,278
2			UNIT 2									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.37.00	ASBESTOS REMOVAL									
			FLOOR TILE, NONFRIABLE	ALLOWANCE	500.00 SF	-	-		40	2,178	1,914	4,093
			CEILING TILE, NONFRIABLE	ALLOWANCE	500.00 SF	-	-		80	4,357	3,829	8,186
			ASBESTOS REMOVAL - ELECTRICAL -600 V SWITCHGEAR	ALLOWANCE	1.00 LS	15,500	-		0			15,500
			ASBESTOS REMOVAL - MISC GASKETS	ALLOWANCE	1.00 LS	15,500	-		0			15,500
			ASBESTOS REMOVAL			31,000			120	6,535	5,743	43,278
			WHOLE PLANT DEMOLITION			31,000			120	6,535	5,743	43,278
			2 UNIT 2			31,000			120	6,535	5,743	43,278
3			COMMON FACILITIES									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.37.00	ASBESTOS REMOVAL									
			TRANSITE PIPE, NONFRIABLE	ASSUME 6" DIAMETER ON 10' CENTERS	11,900.00 LF	248,472	-		1,071			248,472
			ASBESTOS REMOVAL - ELECTRICAL -600 V SWITCHGEAR	ALLOWANCE	1.00 LS	14,152	-		0			14,152
			ASBESTOS REMOVAL - DRIFT ELIMINATORS COOLING TOWER	ASSUME 1"X8' BOARD 6" CENTERS	19,910.00 LS	92,382	-		1,991			92,382
			PCB REMOVAL	NO PCBs ONSITE - ASBESTOS ONLY	0.00 LS	-	-	0		0	0	0
			ASBESTOS REMOVAL			355,006			3,062			355,006
			WHOLE PLANT DEMOLITION			355,006			3,062			355,006
			3 COMMON FACILITIES			355,006			3,062			355,006

Berrien Springs Hydroelectric Plant

CONCEPTUAL DEMOLITION COST ESTIMATE

Prepared for:
Indiana Michigan Power Company (Owner)
and American Electric Power Service Corporation

Project No. 13465-000
February 12, 2016
Revision 0

55 East Monroe Street
Chicago, IL 60603-5780 USA

Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	01/28/16	Comments	R. C. Kinsinger	A.D. Chapin D. F. Franczak	M. N. Ozan	All
0	02/12/16	Use	R. C. Kinsinger RKinsinger AC	A.D. Chapin AChapin D. F. Franczak D.F. Franczak	T. J. Meehan	All

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1.0 INTRODUCTION

The Berrien Springs Hydroelectric Plant located in the City of Berrien Springs, Michigan is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of two (2) earthen dams separated by a concrete spillway, rollway section and powerhouse. The powerhouse and adjacent penstock sections are located between the left embankment and the rollway sections. Each of the two (2) open flume penstock sections feed six (6) Flygt generating units which were installed in 1995 with a total capacity rating of 7,200 kW. The two (2) original generating units located in the powerhouse were abandoned in place and the other two (2) of the four (4) units were removed. Trash racks and a log boom are located upstream of the penstock sections. The control room for the hydroelectric components is located in the powerhouse.

AEP recently contracted S&L to prepare conceptual demolition cost estimates considering three (3) retirement options defined as follows: (1) Option 1, Non-Power Operation, (2) Option 2, Partial Removal of the Dam Structures, and (3) Option 3, Complete Removal of the Dam and Powerhouse. Also, in addition S&L was requested to prepare a separate Asbestos Removal Conceptual Cost Estimate.

The objective of the conceptual demolition cost estimates is to determine the gross demolition costs for Berrien Springs Hydroelectric Plant (including gross salvage credits and any other benefits), in support of documenting a component of future AEP book depreciation rates to be approved by the I&M's state commissions and potential future inclusion in submittal of a rate case to the state commissions, and other potential uses. The cost estimate considers the demolition/dismantlement methodology which complies with current OSHA rules and regulations.

2.0 COST ESTIMATE SUMMARY

Conceptual Demolition Cost Estimate No. 33705B, dated February 12, 2016, was prepared and is included as Exhibit 2. This cost estimate was prepared for retirement option 3, but includes accounts allowing the determination of cost estimates for retirement options 1 and 2 as well. A summary of the conceptual demolition cost estimates for all three (3) retirement options is provided in Exhibit 1 and detailed in the following tables.

The cost estimate is structured into a code of accounts as identified in Table 2-1.

Table 2-1
Cost Estimate Code of Accounts

Account Number	Description
10, 21	Demolition Costs (including steel, equipment & piping scrap value)
18	Scrap Value Costs
91	Other Direct & Construction Indirect Costs
93	Indirect Costs
94	Contingency Costs
96	Escalation Costs

The results of the cost estimate for retirement option 3 are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary
Retirement Option 3

Description	Total Cost
Demolition Cost	$9,416,995
Scrap Value	($226,765)
Direct Cost Subtotal	$9,190,231
Indirect Cost	$942,000
Contingency Cost	$2,106,000
Escalation Cost	$0
Total Project Cost	$12,238,230

The results of the cost estimate for retirement option 1 are provided in Table 2-3 below.

Table 2-3
Cost Estimate Results Summary
Retirement Option 1

Description	Total Cost
Demolition Cost	$177,529
Scrap Value	($113,105)
Direct Cost Subtotal	$64,424
Indirect Cost	$6,000
Contingency Cost	$53,600
Escalation Cost	$0
Total Project Cost	$124,024

The results of the cost estimate for retirement option 2 are provided in Table 2-4 below.

Table 2-4
Cost Estimate Results Summary
Retirement Option 2

Description	Total Cost
Demolition Cost	$6,189,535
Scrap Value	($186,641)
Direct Cost Subtotal	$6,002,895
Indirect Cost	$615,000
Contingency Cost	$1,389,400
Escalation Cost	$0
Total Project Cost	$8,007,295

Asbestos Removal Conceptual Cost Estimate No. 33737B, dated February 12, 2016, was prepared and is included as Exhibit 3. The total estimated cost for asbestos removal prior to plant dismantlement is $5,100. Quantities were derived from drawings and past experience. The cost of asbestos removal is excluded from the total conceptual demolition cost estimates for each retirement option detailed in the tables above.

3.0 TECHNICAL BASIS

The scope of dismantlement is based on three (3) retirement options, as requested by AEP, as follows:

Retirement Option 1, Non-Power Operation: This scenario would consider leaving intact all of the existing water-impounding structures and the powerhouse. Only the electric generating units and their auxiliary equipment would be removed so as to preclude the generation of electricity by the former hydroelectric plant. In addition, the spillway would be modified as required in order to pass river flows and maintain the impoundment's water surface elevation at the current conditions.

Retirement Option 2, Partial Removal of the Dam Structures: This scenario would consider demolition and removal of certain elements of the hydroelectric site in order to drain the existing impoundment and create a natural river channel through the dam site. This would generally include removal of the generating units and powerhouse and possibly but not inclusively demolition and removal of substantial portions of concrete spillway structures. This option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

Retirement Option 3, Complete Removal of the Dam and Powerhouse: This scenario would consider complete removal of the electric generating components and powerhouse and complete removal of the dam. Similar to option 2, this option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

The scope of dismantlement for each retirement option, as interpreted from the definitions above, are identified on marked plant drawings included as Exhibit 4. The scope of dismantlement and the sequence of demolition for each retirement option are defined on these sketches.

Retirement options 2 and 3 include the same demolition work as retirement option 1, removal of the generating unit components from the powerhouse. The powerhouse is not removed in retirement option 1, but is removed in retirement option 3. For retirement option 2 the powerhouse may or may not be removed, depending on if removal of portions of the dam can restore river flow to natural flow without removing the powerhouse (refer to Exhibit 4).

For each of the retirement options the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of all sediment potentially disturbed by the partial or complete removal of the dam. The subcontractor costs included in retirement options 2 and 3 are for lime stabilization of the sediment and removal of the sediment and other wastes (such as timber) to the waste disposal site. These costs do not apply to retirement option 1 since only generating unit components in the powerhouse are removed and this material has scrap value.

Retirement options 2 and 3 include the stabilization of newly exposed riverbanks, which include the dam area and areas upstream of the dam. The extent of stabilization for retirement option 3 may be slightly more than retirement option 2, since the entire dam is being removed in retirement option 3.

The following are excluded from the scope of the conceptual demolition cost estimates:

- Asbestos removal (separate cost estimate prepared).
- The conceptual demolition cost estimate includes the cost to remove the one (1) main power transformer located in the switchyard, but not the cost to remove the switchyard itself (and remaining components in the switchyard).
- The existing fish ladder will remain in place.
- Evaluation of the effect of the complete removal of the series of dams on the river watershed.
- Evaluation of the effect of the removal of any one dam, on either the upstream or downstream side dam and reservoir, after removal of the dam.
- Potential social or environmental impact of the draining of the reservoirs and the impact on property values or other community impact.
- The conceptual demolition cost estimate excludes any costs related to performing surveys to quantify the amount of sediment and chemical testing of the sediment. The quantity of sediment to be removed was estimated for retirement options 2 and 3 and the cost to remove the sediment is included in the conceptual demolition cost estimate. As stated above, the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of the sediment potentially disturbed by the partial or complete removal of the dam.

The scope of the demolition cost estimate was reaffirmed during a review of the facility by two S&L employees in conjunction with a representative from Bradenburg Industrial Service Co. and AEP corporate and plant personnel. The facility review was held on Wednesday December 16, 2015.

4.0 COMMERCIAL BASIS

4.1 General Information

The Conceptual Demolition Cost Estimates prepared for the Berrien Springs Hydroelectric Plant is a conceptual estimate of the cost to dismantle the powerhouse and dam in accordance with the scope defined for each of the three (3) retirement options. Costs were calculated for (1) demolition of existing plant structures and equipment and associated site restoration costs, (2) scrap value of steel, copper and stainless steel, as applicable, (3) associated indirect costs, and (4) contingency.

All units used in the cost estimate are U.S. Standard and all costs are in US Dollars (4th Quarter 2015 levels). A three (3) year demolition schedule is anticipated for retirement option 3 including asbestos removal (to be performed prior to start of demolition work). The schedule takes into consideration environmental permitting, asbestos removal which includes mapping out all asbestos contamination throughout the powerhouse and associated abatement, followed by total plant demolition and site restoration. The schedule for the other two (2) retirement options would be correspondingly less.

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in the cost estimates were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the hydroelectric plant drawings and data provided by AEP, and the information obtained from Plant personnel during the facility review.

4.3 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate were calculated as Union Labor rates for South Bend, Indiana, based on 2015, R. S. Means “Labor Rates for the Construction Industry”. The craft rates were incorporated into work crews appropriate for the activities by adding allowances for small tools, construction equipment, insurance, and site overheads to arrive at crew hourly rates detailed in the cost estimate. A 1.10 regional labor productivity multiplier was included based on Compass International Global Construction Yearbook, 2015 Edition, for union work in Indiana. National Maintenance

Agreement Rates (typically negotiated by AEP) do not apply as this work is assumed to be performed as a lump sum contract.

4.3.1 Labor Work Schedule and Incentives

The estimate assumed a 5x8 work week. No per diem or other labor incentives are included.

4.3.2 Construction Indirects

Allowances were included in the cost estimate as direct costs as noted for the following:

- Freight: Material and scrap freight included in the material and scrap costs.
- Additional Crane Allowance: None included. Cost of cranes and construction machinery are included in the labor wage rates.
- Mobilization and Demobilization: Included in labor wage rates.
- Scaffolding: Included in labor wage rates.
- Consumables: Included in material and labor costs.
- Per Diem Costs: Excluded from the estimate.
- Contractor's General and Administrative Costs and Profit: Included in the labor wage rates.

4.4 Scrap Value

The value of scrap was determined by a 3 month average (November and December 2015 and January 2016) using Zone 4 (USA Midwest) of the "Scrap Metals Market Watch" (www.americanrecycler.com).

Since the values obtained are delivered pieces, 25% of the values obtained were deducted to pay for separation, preparation and shipping to the mills. This resulted in realized prices of:

- Mixed Steel Value @ $118/Ton
- Copper Value @ $3,180/Ton
- Stainless Steel @ $675/Ton

Note: 1 Ton = 2,000 Lbs

All steel is considered to be mixed steel unless otherwise noted.

4.5 Indirect Costs

Allowances were included in the cost estimate as indirect costs as noted for the following:

- Engineering, Procurement and Project Services: None included.
- Construction Management Support: None included.
- Owners Cost: Included as 10.0% of the total direct cost. Owners Costs include owner project engineering, administration and construction management, permits and fees, legal expenses, taxes, removal of chemicals, etc.

4.6 Escalation

No allowance for escalation was included in the cost estimate. All costs are determined in 4th Quarter 2015 levels.

4.7 Contingency

Allowances were included in the cost estimate as contingency as noted for the following:

- Scrap Value: Included as 15.0% reduction in the salvage value resulting in a total net reduction in the salvage value. The contingency assumes a potential drop in salvage value thus increasing the project cost. Scrap costs are very volatile but by taking a 3-month average some of the effect of volatility is reduced. However there are other variables that affect scrap pricing such as the quantity and processing fees. The contingency applied is based on the estimators confidence in scrap pricing used in the demolition cost estimate.
- Material: Included as 20.0% of the total material cost.
- Labor: Included as 20.0% of the total labor cost.
- Indirect: Included as 20.0% of the total indirect cost.
- Subcontractor: Included as 20.0% of the total subcontractor cost.

4.8 Assumptions

The following assumptions apply to the cost estimates.

- The cost estimate for each retirement option is based on the scope and the demolition sequences defined on the sketches provided in Exhibit 4.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.

- All electrical equipment and wiring is de-energized prior to start of dismantlement, except for that required for remote operation of the spillway gates after demolition is completed for retirement option 1.
- No extraordinary environmental costs for demolition have been included.
- Handling, on-site and off-site disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- The window glazing in the powerhouse may be asbestos contaminated and an allowance for removal and disposal is included in the asbestos removal cost estimate. There is no building or pipe insulation in the facility and consequently no insulation related asbestos contamination.
- Switchyards within the plant boundaries are not part of the scope, neither are access roads to these facilities. Fences and gates needed to protect the switchyard will be left in place.
- All demolished materials are considered debris, except for organic combustibles and non-embedded metals which have scrap value.
- The basis for salvage estimating is for scrap value only. No resale of equipment or material is included.
- Sediment removed due to demolition work is treated with lime and hauled offsite to an approved waste disposal facility.

5.0 REFERENCES

5.1 Berrien Springs Plant Drawings: One-Line Diagrams, No. 12-12001-2, 10/30/07 and No. W-1000, Revision 17.

5.2 Spaulding Consultants, LLC, Supporting Technical Information Document, Berrien Springs Hydroelectric Project, November, 2007.

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EXHIBIT 1
Berrien Springs Hydroelectric Plant
Conceptual Demolition Cost Estimate Summary

Berrien Springs Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Estimate Number: 33705B

February 12, 2016

	Retirement Option 1	Retirement Option 2	Retirement Option 3
Demolition Cost	$ 177,529	$ 6,189,535	$ 9,416,995
Scrap Value	$ (113,105)	$ (186,641)	$ (226,765)
Direct Cost Subtotal	$ 64,424	$ 6,002,895	$ 9,190,231
Indirect Cost	$ 6,000	$ 615,000	$ 942,000
Contingency Cost	$ 53,600	$ 1,389,400	$ 2,106,000
Escalation Cost	$ -	$ -	$ -
Total Demolition Cost	$ 124,024	$ 8,007,295	$ 12,238,230

EXHIBIT 2
Berrien Springs Hydroelectric Plant
Conceptual Demolition Cost Estimate No. 33705B

AEP BERRIEN SPRINGS
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	BERRIEN SPRINGS
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33705B
Estimate Class	Conceptual
Cost index	INSOU

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ACCOUNT A	DEMOLITION ACCOUNT A		(113,105)	27,930	1,746	149,599	64,424
ACCOUNT B	DEMOLITION ACCOUNT B	782,260	(73,536)	2,644,808	33,942	2,584,938	5,938,471
ACCOUNT C	DEMOLITION ACCOUNT C	1,456,400	(40,124)	2,863	19,762	1,768,197	3,187,336
	TOTAL DIRECT	2,238,660	(226,765)	2,675,601	55,450	4,502,734	9,190,231

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	4,502,734		55,450
Material	2,675,601		
Subcontract	2,238,660		
Scrap Value	(226,765)		
	9,190,230	**9,190,230**	
Other Direct & Construction Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		9,190,230	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	942,000		
93-8 EPC Fee			
	942,000	**10,132,230**	
Contingency:			
94-1 Contingency on Material	535,000		
94-2 Contingency on Labor	901,000		
94-3 Contingency on Sub.	448,000		
94-6 Contingency on Scrap	34,000		
94-5 Contingency on Indirect	188,000		
	2,106,000	**12,238,230**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		12,238,230	
Total		***12,238,230***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ACCOUNT A			DEMOLITION ACCOUNT A									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO .6 MW FLYGT GENERATOR	12 GENERATORS AT 9500# EA	57.00 TN	564	85.53 /MH	48,269		-		48,269
			DEMO FLYGT TURBINE AND GEARS	12 GENERATORS AT 14000# EA	84.00 TN	832	85.53 /MH	71,134		-		71,134
			DEMO HOIZONTAL CAMELBACK GENERATOR	2 GENERATORS AT 14000# EA	14.00 TN	139	85.53 /MH	11,856		-		11,856
			TURBINE ROOM 5 TON GANTRY CRANE		5.00 TN	50	121.33 /MH	6,006		-		6,006
			MECHANICAL EQUIPMENT			1,584		137,265				137,265
			WHOLE PLANT DEMOLITION			1,584		137,265				137,265
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	.6 MW FLYGT GENERATOR, 12 @5,225# EA	-31.00 TN		79.62 /MH		-	-	(3,660)	(3,660)
			MIXED STEEL	DEMO FLYGT TURBINE AND GEARS	-84.00 TN		79.62 /MH		-	-	(9,919)	(9,919)
			MIXED STEEL	DEMO HOIZONTAL CAMELBACK GENERATOR, 2 @ 4.2 TN EA	-8.40 TN		79.62 /MH		-	-	(992)	(992)
			MIXED STEEL	TURBINE ROOM 5 TON GANTRY CRANE	-5.00 TN		79.62 /MH		-	-	(590)	(590)
			MIXED STEEL								(15,161)	(15,161)
		18.30.00	COPPER									
			COPPER	12 - .6 MW FLYGT GENERATOR 12@ 4,275 LB EA	-25.60 TN		79.62 /MH		-	-	(81,408)	(81,408)
			COPPER	DEMO HOIZONTAL CAMELBACK GENERATOR, 2 @ 2.6 TN EA	-5.20 TN		79.62 /MH		-	-	(16,536)	(16,536)
			COPPER								(97,944)	(97,944)
			SCRAP VALUE								(113,105)	(113,105)
	22.00.00		CONCRETE									
		22.13.00	Concrete									
			FLOWABLE FILL, 1500 PSI	FILL PENSTOCKS TO PREVENT BYPASS FLOW	294.00 CY	162	76.27 /MH	12,334	27,930	-	-	40,264
			Concrete			162		12,334	27,930			40,264
			CONCRETE			162		12,334	27,930			40,264
			ACCOUNT A DEMOLITION ACCOUNT A			1,746		149,599	27,930		(113,105)	64,424
ACCOUNT B			DEMOLITION ACCOUNT B									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - TOP PORTION: WEIR, ENDWALL, GATE WALLS & HEAD WALL	2,197.00 CY	2,719	89.94 /MH	244,552		-	-	244,552
			EQUIPMENT/ BUILDING FOUNDATION	GRAVITY DAM - TOP PORTION OF DAM	697.00 CY	863	89.94 /MH	77,584		-	-	77,584
			CONCRETE			3,582		322,137				322,137
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	TAINTER GATES STRUCTURE AND WALKWAY	44.90 TN	50	79.62 /MH	3,996		-	-	3,996
			STRUCTURAL AND GIRT STEEL	GRAVITY DAM TOP PORTION OF DAM: STREEL AND WALKWAY	35.50 TN	40	79.62 /MH	3,159		-	-	3,159
			STEEL			90		7,155				7,155
		10.31.00	MECHANICAL EQUIPMENT									
			80 KW PROPANE ELECTRIC GENERATOR		1.50 TN	3	121.33 /MH	405		-		405
			BAR RACKS	4 AT 5 TONS EACH	20.00 TN	45	121.33 /MH	5,406		-		5,406
			TAINTER GATES	6 AT 5 TONS EACH	30.00 TN	67	121.33 /MH	8,109		-		8,109
			STOP LOGS	6 AT 5 TONS EACH	30.00 TN	67	121.33 /MH	8,109		-		8,109
			MECHANICAL EQUIPMENT			182		22,029				22,029
		10.41.00	ELECTRICAL EQUIPMENT									
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 6800/9068 KVA (STEEL)	10.00 TN	29	80.14 /MH	2,356		-	-	2,356
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 6800/9068 KVA (CU)	5.00 TN	15	80.14 /MH	1,178		-	-	1,178
			MISCELLANEOUS ELECTRICAL EQUIPMENT		5.00 TN	15	80.14 /MH	1,178		-	-	1,178
			ELECTRICAL EQUIPMENT			59		4,711				4,711
		10.86.00	WASTE									
			WASTE	MISC	1.00 LS	0	121.33 /MH	13		-	10,000	10,013
			WASTE			0		13			10,000	10,013

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
			WHOLE PLANT DEMOLITION			3,912		356,045			10,000	366,045
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	80 KW PROPANE ELECTRIC GENERATOR	-1.50 TN		79.62 /MH		-	-	(177)	(177)
			MIXED STEEL	BAR RACKS	-20.00 TN		79.62 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL	TAINTER GATES AND WALKWAY	-44.90 TN		79.62 /MH		-	-	(5,302)	(5,302)
			MIXED STEEL	STOP LOGS	-30.00 TN		79.62 /MH		-	-	(3,542)	(3,542)
			MIXED STEEL	GRAVITY DAM TOP PORTION OF DAM: STREEL AND WALKWAY	-35.50 TN		79.62 /MH		-	-	(4,192)	(4,192)
			MIXED STEEL	GENERATOR BUS TRANSFORMERS	-10.00 TN		79.62 /MH		-	-	(1,181)	(1,181)
			MIXED STEEL								(16,756)	(16,756)
		18.30.00	COPPER									
			COPPER	CABLE	-10.00 TN		79.62 /MH		-	-	(31,800)	(31,800)
			COPPER	MISC. TRANSFORMERS & MOTORS UNIT 1	-6.00 TN		79.62 /MH		-	-	(19,080)	(19,080)
			COPPER	GENERATOR BUS TRANSFORMERS	-5.00 TN		79.62 /MH		-	-	(15,900)	(15,900)
			COPPER								(66,780)	(66,780)
			SCRAP VALUE								(83,536)	(83,536)
	21.00.00		CIVIL WORK									
		21.17.00	Earthwork, Excavation									
			FOUNDATION EXCAVATION, COMMON EARTH USING 1 CY BACKHOE	RIVER BED EXCAVATION FOR RIPRAP	100.00 CY	17	88.08 /MH	1,453		-	-	1,453
			Earthwork, Excavation			17		1,453				1,453
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	STREAMBED PROTECTION 47770 CY - 5689 CY ASSUMING REUSE OF CAUSEWAY STONE	42,081.00 CY	18,564	74.10 /MH	1,375,577	1,721,113	-	-	3,096,689
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	FOR CAUSEWAYS INSTALLATION	5,689.00 CY	2,510	74.10 /MH	185,966	232,680	-	-	418,647
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	REUSE CAUSEWAY RIP RAP FOR BANK PROTECTION	5,689.00 CY	2,510	74.10 /MH	185,966		-	-	185,966
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIPRAP PROTECTION AT SPILLWAY FLOOR	100.00 CY	44	74.10 /MH	3,269	4,090	-	-	7,359
			Erosion and Sedimentation Control			23,627		1,750,778	1,957,883			3,708,661
		21.47.00	LANDSCAPING									
			HYDRO OR AIR SEED & MULCH & FERTILIZER		450.00 AC	6,386	74.64 /MH	476,661	686,925	-	-	1,163,586
			LANDSCAPING			6,386		476,661	686,925			1,163,586
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING	3,556.00 CY		196.64 /MH			142,240	-	142,240
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX 7111+3556	10,667.00 CY		196.64 /MH			640,020	-	640,020
			Soil Remediation							782,260		782,260
			CIVIL WORK			30,030		2,228,893	2,644,808	782,260		5,655,961
			ACCOUNT B DEMOLITION ACCOUNT B			**33,942**		**2,584,938**	**2,644,808**	**782,260**	**(73,536)**	**5,938,471**
ACCOUNT C			**DEMOLITION ACCOUNT C**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - BOTTOM PORTION : APRON AND THROAT	4,869.00 CY	6,026	89.94 /MH	541,978		-	-	541,978
			EQUIPMENT/ BUILDING FOUNDATION	GRAVITY DAM - BOTTOM PORTION: APRON AND BASE	838.00 CY	1,037	89.94 /MH	93,279		-	-	93,279
			EQUIPMENT/ BUILDING FOUNDATION	EAST AND WEST PENSTOCKS - TOP PORTION	638.00 CY	790	89.94 /MH	71,017		-	-	71,017
			EQUIPMENT/ BUILDING FOUNDATION	EAST AND WEST PENSTOCKS - BOTTOM PORTION: APRON AND BASE	4,284.00 CY	5,302	89.94 /MH	476,860		-	-	476,860
			EQUIPMENT/ BUILDING FOUNDATION	GENERATOR HOUSE - TOP PORTION : WALLS	1,106.00 CY	1,369	89.94 /MH	123,111		-	-	123,111
			EQUIPMENT/ BUILDING FOUNDATION	GENERATOR HOUSE - BOTTOM PORTION : BASEMENT FLOOR	1,546.00 CY	1,913	89.94 /MH	172,088		-	-	172,088
			CONCRETE			16,437		1,478,333				1,478,333
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	EAST AND WEST PENSTOCKS - TOP PORTION, STEEL DECK AND BAR RACK	128.00 TN	143	79.62 /MH	11,391		-	-	11,391

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	GENERATOR HOUSE	221.00 TN	247	79.62 /MH	19,667		-	-	19,667
			STEEL			390		31,058				31,058
		10.24.00	ARCHITECTURAL									
			GENERATOR HOUSE	68'x93'x70' TALL	442,680.00 CF	1,899	89.81 /MH	170,575		-	-	170,575
			ARCHITECTURAL			1,899		170,575				170,575
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO FLYGT PENSTOCKS	12 GENERATORS AT 11,800# EA	70.80 TN	701	85.53 /MH	59,956		-		59,956
			DEMO CAMELBACK PENSTOCKS	2 GENERATORS AT 15 TN EA	30.00 TN	297	85.53 /MH	25,405		-		25,405
			MECHANICAL EQUIPMENT			998		85,361				85,361
			WHOLE PLANT DEMOLITION			19,724		1,765,327				1,765,327
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	DEMO FLYGT PENSTOCKS	-70.80 TN		79.62 /MH		-	-	(8,360)	(8,360)
			MIXED STEEL	DEMO CAMELBACK PENSTOCKS	-30.00 TN		79.62 /MH		-	-	(3,542)	(3,542)
			MIXED STEEL	EAST AND WEST PENSTOCKS - TOP PORTION, STEEL DECK AND BAR RACK	-128.00 TN		79.62 /MH		-	-	(15,114)	(15,114)
			MIXED STEEL	GENERATOR HOUSE	-111.00 TN		79.62 /MH		-	-	(13,107)	(13,107)
			MIXED STEEL								(40,124)	(40,124)
			SCRAP VALUE								(40,124)	(40,124)
	21.00.00		CIVIL WORK									
		21.17.00	Earthwork, Excavation									
			FOUNDATION EXCAVATION, COMMON EARTH USING 1 CY BACKHOE	RIVER BED EXCAVATION FOR RIPRAP (140-100)	40.00 CY	7	88.08 /MH	581		-	-	581
			Earthwork, Excavation			7		581				581
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT RETAINING WALLS (170-100)	70.00 CY	31	74.10 /MH	2,288	2,863	-	-	5,151
			Erosion and Sedimentation Control			31		2,288	2,863			5,151
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING	6,620.00 CY		196.64 /MH			264,800	-	264,800
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX 7111+3556	19,860.00 CY		196.64 /MH			1,191,600	-	1,191,600
			Soil Remediation							1,456,400		1,456,400
			CIVIL WORK			37		2,870	2,863	1,456,400		1,462,133
			ACCOUNT C DEMOLITION ACCOUNT C			**19,762**		**1,768,197**	**2,863**	**1,456,400**	**(40,124)**	**3,187,336**

EXHIBIT 3
Berrien Springs Hydroelectric Plant
Asbestos Removal Conceptual Cost Estimate No. 33737B

AEP BERRIEN SPRINGS
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	BERRIEN SPRINGS
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33737B
Estimate Class	Conceptual
Cost index	INSOU

AEP BERRIEN SPRINGS
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ASBESTOS	ASBESTOS REMOVAL	3,800					3,800
	TOTAL DIRECT	3,800					3,800

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor			
Material			
Subcontract	3,800		
Scrap Value			
	3,800	**3,800**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		3,800	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	400		
93-8 EPC Fee			
	400	**4,200**	
Contingency:			
94-1 Contingency on Material			
94-2 Contingency on Labor			
94-3 Contingency on Sub.	800		
94-6 Contingency on Scrap			
94-5 Contingency on Indirect	100		
	900	**5,100**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		5,100	
Total		***5,100***	

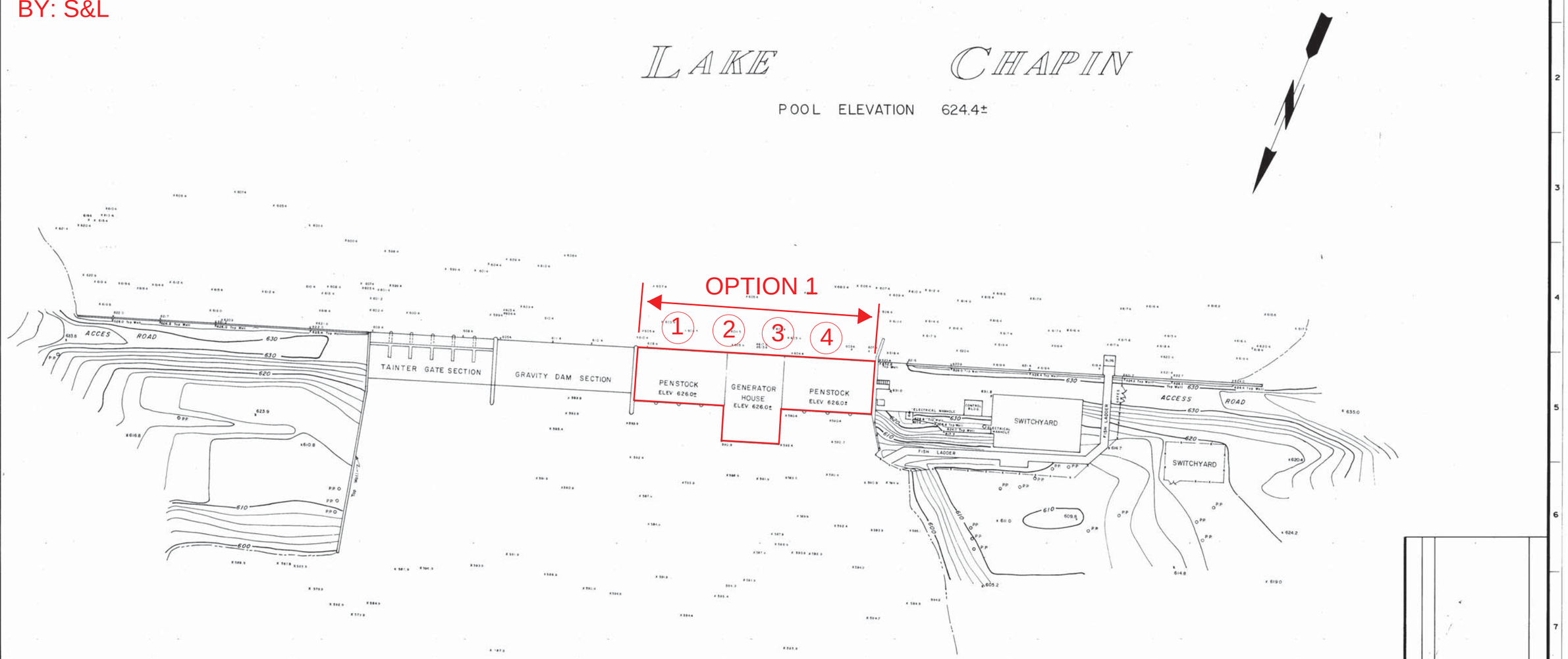
Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ASBESTOS			**ASBESTOS REMOVAL**									
	10.00.00		**WHOLE PLANT DEMOLITION**									
		10.37.00	**ASBESTOS REMOVAL**									
			ASBESTOS REMOVAL - MISC MATERIALS	WINDOW CAULKING MISC MATERIALS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL							**3,800**		**3,800**
			WHOLE PLANT DEMOLITION							**3,800**		**3,800**
			ASBESTOS ASBESTOS REMOVAL							**3,800**		**3,800**

EXHIBIT 4
Berrien Springs Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

DWG. NO. 14-30000

BERRIEN SPRINGS HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2018
PAGE 1 OF 7



PLAN
SCALE 1" = 40'

OPTION 1

1. INSTALL STOPLOGS
2. REMOVE EQUIPMENT
3. GROUT PENSTOCKS
4. REMOVE STOPLOGS

DATE	NO.	DESCRIPTION	APPD.
7/29/10		ISSUED FOR CONSTRUCTION	MP

REVISIONS

INDIANA MICHIGAN POWER COMPANY
BERRIEN SPRINGS HYDRO PLANT
BERRIEN SPRINGS MICHIGAN

EXITING TOPOGRAPHY

AMERICAN ELECTRIC POWER SERVICE CORP.
SURVEY AND MAPPING SECTION
INDIANA MICHIGAN ELECTRIC COMPANY
BERRIEN SPRINGS HYDRO PLANT
EAST & WEST EMBANKMENT AREAS SHOWING TOPOGRAPHY → STRUCTURES - FEATURES
FIELD APPROVAL (ENGINEERING SECTION)
DESIGNER
A.E.P. CO.
DRAWN BY JDB DATE 6/23/87
CHECKED BY KLM DATE 6/25/87
SHEET 1 OF 1
SCALE 1" = 40'
083 330/40 870609

DWG. NO. 14-30000-0
ARCH. ELEC. MECH. STR.
SCALE 1" = 40'
DR. JDB
CH. MTP
DES. DR.
DATED 7/22/10
ENGINEERING DIVISION
APPROVED BY
DESIGN DIVISION
AMERICAN ELECTRIC POWER SERVICE CORP.

AEP-6 6788

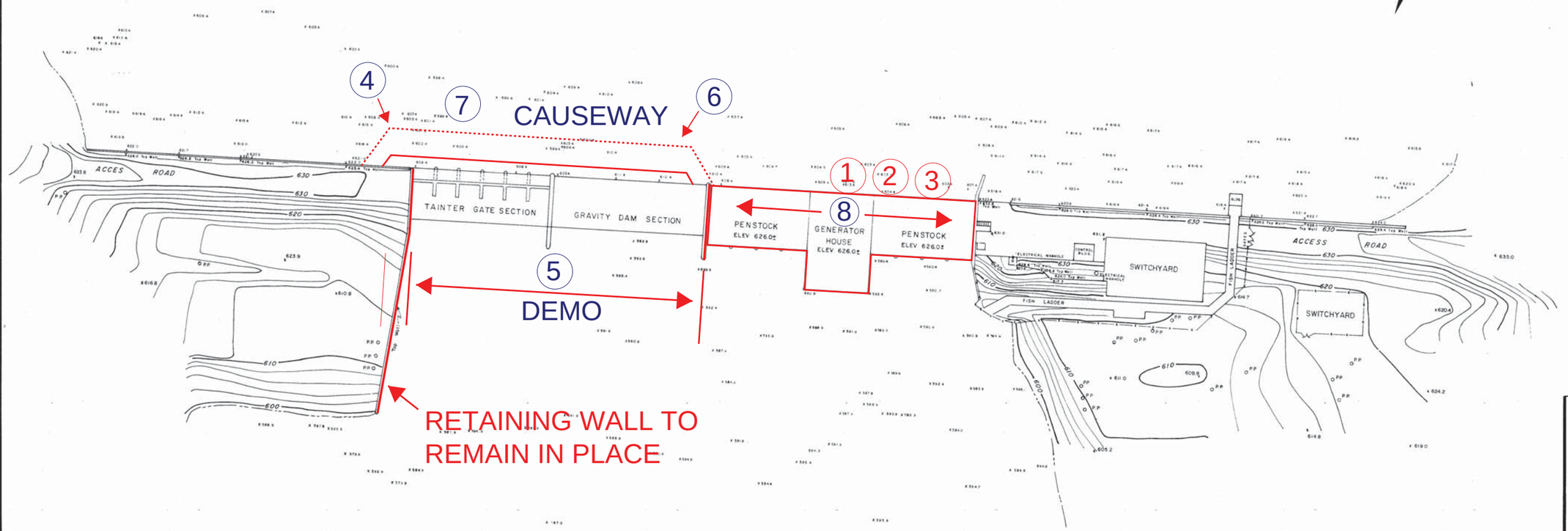
DWG. NO. 14-30000

BERRIEN SPRINGS HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
PAGE 2 OF 7

PHASE 1
① INSTALL STOPLOGS
② REMOVE EQUIPMENT
③ REMOVE STOPLOGS

PHASE 2
④ CONSTRUCT CAUSEWAY
⑤ DEMO TAINTER GATES & SPILLWAY SECTIONS
⑥ PLACE RIPRAP PROTECTION
⑦ REMOVE CAUSEWAY
⑧ GROUT PENSTOCKS



PLAN
SCALE 1" = 40'

OPTION 2

ST. JOSEPH RIVER
WATER ELEVATION 598.9±

FLOW

DATE	NO.	DESCRIPTION	APPD.
4/29/16	0	ISSUED FOR CONSTRUCTION	MB

REVISIONS

INDIANA MICHIGAN POWER COMPANY
BERRIEN SPRINGS HYDRO PLANT
BERRIEN SPRINGS MICHIGAN

EXITING TOPOGRAPHY

DWG. NO. 14-30000-0

AMERICAN ELECTRIC POWER SERVICE CORP.
SURVEY AND MAPPING SECTION
INDIANA MICHIGAN ELECTRIC COMPANY
BERRIEN SPRINGS HYDRO PLANT
EAST & WEST EMBANKMENT AREAS SHOWING TOPOGRAPHY → STRUCTURES - FEATURES
FIELD APPROVAL (ENGINEERING SECTION)
DESIGNER
A.E.P. CO.
DRAWN BY JDB DATE 6/23/87
CHECKED BY KLH DATE 6/25/87
SHEET 1 OF 1
SCALE 1" = 40'
083 130/40 870609

ENGINEERING DIVISION
DESIGN DIVISION
APPROVED BY
AMERICAN ELECTRIC POWER SERVICE CORP.

6788

DWG. NO. 14-30000

BERRIEN SPRINGS HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
PAGE 3 OF 7

PHASE 1
① INSTALL STOPLOGS
② REMOVE EQUIPMENT
③ REMOVE STOPLOGS

PHASE 2
④ CONSTRUCT CAUSEWAY
⑤ DEMO TAINTER GATES & SPILLWAY SECTIONS
⑥ PLACE RIPRAP PROTECTION AT RETAINING WALL
⑦ REMOVE CAUSEWAY

PHASE 3
⑧ CONSTRUCT CAUSEWAY
⑨ DEMO GENERATION BUILDINGS
⑩ PLACE RIPRAP PROTECTION AT RETAINING WALL
⑪ REMOVE CAUSEWAY

LAKE CHAPIN
POOL ELEVATION 624.4±

RETAINING WALL TO REMAIN IN PLACE

ABUTMENT TO REMAIN IN PLACE

RETAINING WALL TO REMAIN IN PLACE

ABUTMENT TO REMAIN IN PLACE

DEMO

DEMO

TAINTER GATE SECTION

GRAVITY DAM SECTION

PENSTOCK ELEV 626.0±

GENERATOR HOUSE ELEV 626.0±

PENSTOCK ELEV 626.0±

SWITCHYARD

SWITCHYARD

FISH LADDER

ACCESS ROAD

ACCESS ROAD

PLAN
SCALE 1" = 40'

OPTION 3

ST. JOSEPH RIVER
WATER ELEVATION 598.9±

FLOW

DATE	NO.	DESCRIPTION	APPD.
8/29/90	3	ISSUED FOR CONSTRUCTION	MP

REVISIONS

INDIANA MICHIGAN POWER COMPANY
BERRIEN SPRINGS HYDRO PLANT
BERRIEN SPRINGS MICHIGAN

EXITING TOPOGRAPHY

DWG. NO. 14-30000-0

AMERICAN ELECTRIC POWER SERVICE CORP.
SURVEY AND MAPPING SECTION
INDIANA MICHIGAN ELECTRIC COMPANY
BERRIEN SPRINGS HYDRO PLANT
EAST & WEST EMBANKMENT AREAS SHOWING TOPOGRAPHY - STRUCTURES - FEATURES
FIELD APPROVAL (ENGINEERING SECTION)
DESIGNER
A.E.P. CO.
DRAWN BY JDB DATE 6/23/87
CHECKED BY KLH DATE 6/25/87
SHEET 1 OF 1
SCALE 1" = 40'
083 330/40 870609

ARCH. | ELEC. | MECH. | STR.
SCALE 1"=40'
DR. J.B.T.
CH. MTB
SQ. LDR
DATED 7/22/90
ENGINEERING DIVISION
DESIGN DIVISION
APPROVED BY

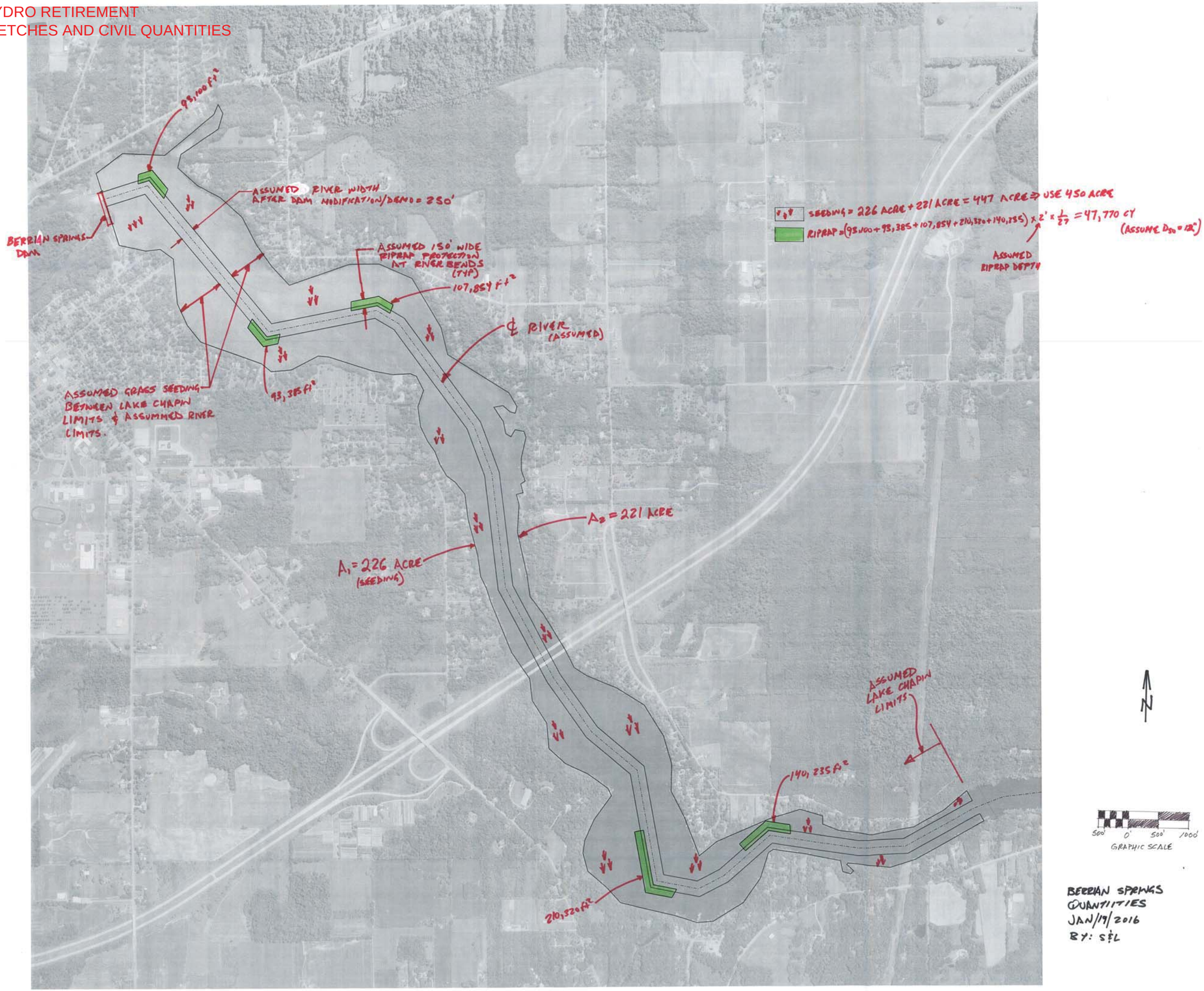
AMERICAN ELECTRIC POWER SERVICE CORP.

678B

Indiana Michigan Power Company
Attachment JAC-3
Witness; Cash
Page 31 of 205

BERRIAN SPRINGS			
OPTION 2			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	450	ACRE	
RIPRAP PROTECTION	47,770	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	100	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT SPILLWAY FLOOR SLAB	100	CY	2 ft riprap protection @ D(50)=12"

OPTION 3			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	450	ACRE	
RIPRAP PROTECTION	47,770	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	140	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT RETAINING WALLS	170	CY	2 ft riprap protection @ D(50)=12"

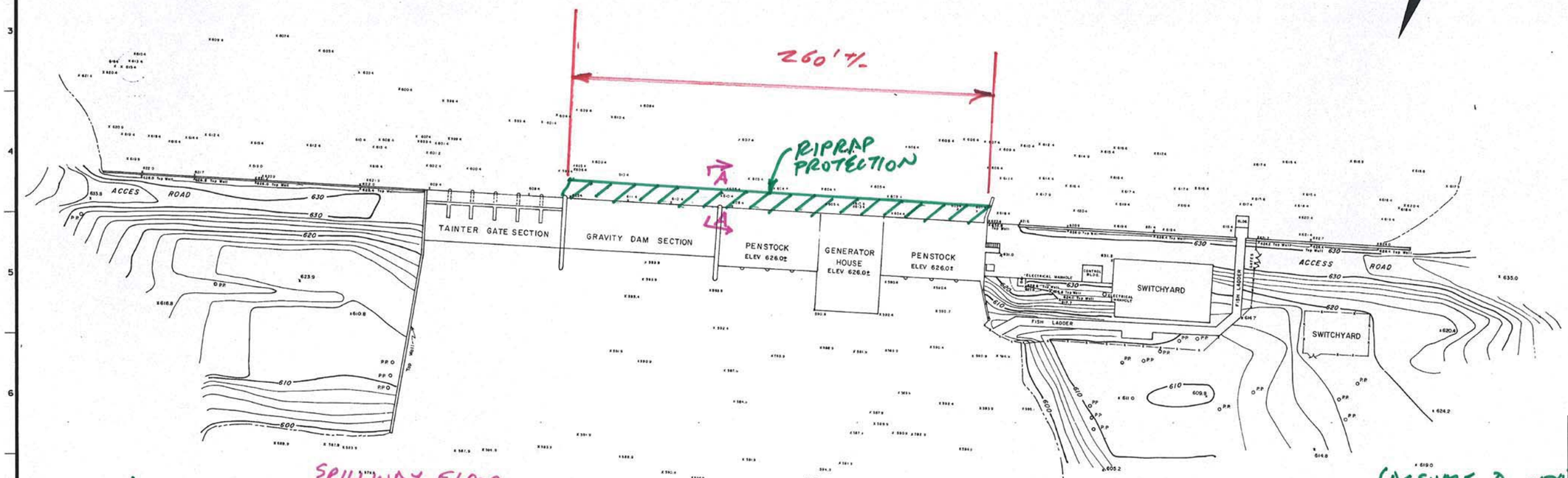


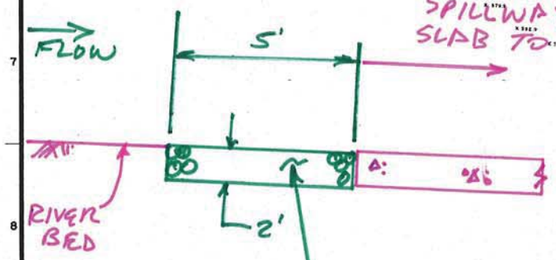
BERRIAN SPRINGS
QUANTITIES
JAN/19/2016
BY: S&L

I&M CONCEPTUAL DEMO ESTIMATE
BERRIAN SPRINGS RETIREMENT OPTION 2
CIVIL QUANTITIES

LAKE CHAPIN

POOL ELEVATION 624.4±





SECTION A
N.T.S.

$V_{RIPRAP} = (5' \times 2') \times 260' \times \frac{1}{27} = 96\ CY \approx 100\ CY$

$V_{EXC} = V_{RIPRAP} = 100\ CY$

V_{CUT} TO BE REPLACED BY RIPRAP

(ASSUME D_{50}=12")

PLAN
SCALE 1" = 40'

ST. JOSEPH RIVER

WATER ELEVATION 598.9±

FLOW

DATE	NO.	DESCRIPTION	APPD.
6/29/78		ISSUED FOR CONSTRUCTION	MB

REVISIONS

INDIANA MICHIGAN POWER COMPANY

BERRIEN SPRINGS HYDRO PLANT

BERRIEN SPRINGS MICHIGAN

EXITING TOPOGRAPHY

DWG. NO. 14-30000-0

AMERICAN ELECTRIC POWER SERVICE CORP.
SURVEY AND MAPPING SECTION
INDIANA MICHIGAN ELECTRIC COMPANY
BERRIEN SPRINGS HYDRO PLANT
EAST & WEST EMBANKMENT AREAS SHOWING TOPOGRAPHY → STRUCTURES – FEATURES

FIELD APPROVAL (ENGINEERING SECTION)
DESIGNER
A.E.P. CO.

DRAWN BY JDB DATE 8/23/77
CHECKED BY PLH DATE 8/25/77
SHEET 1 OF 1
SCALE 1" = 40'

083 330/40 870609

ENGINEERING DIVISION
DESIGN DIVISION
APPROVED BY

AMERICAN ELECTRIC POWER SERVICE CORP.

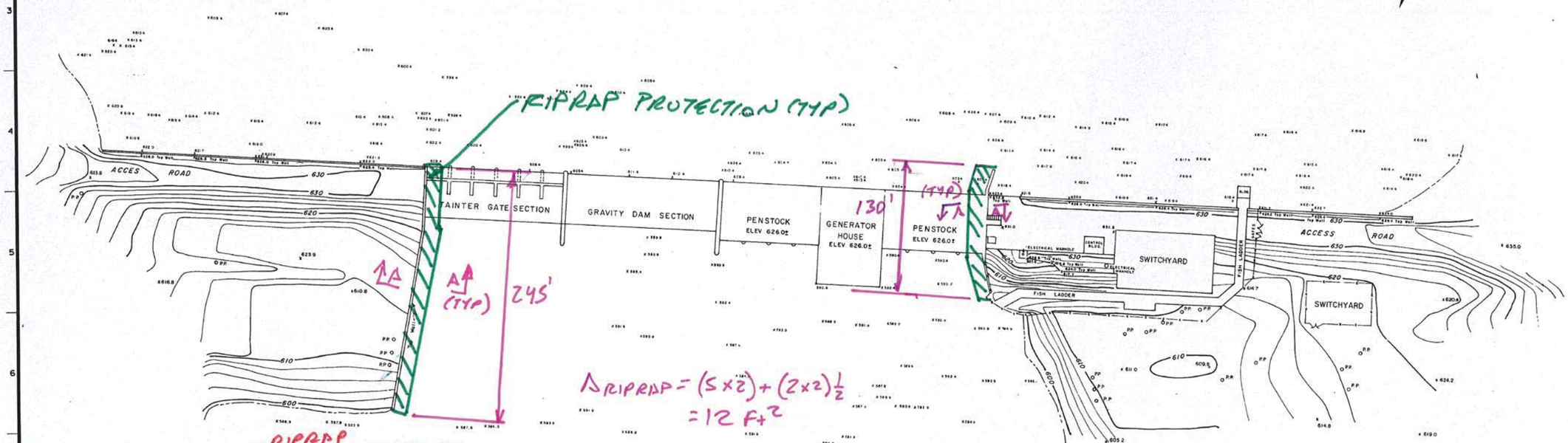
AEP-G 6788

DWG. NO. 14-30000

I&M CONCEPTUAL DEMO ESTIMATE
BERRIAN SPRINGS RETIREMENT OPTION 3
CIVIL QUANTITIES

LAKE CHAPIN

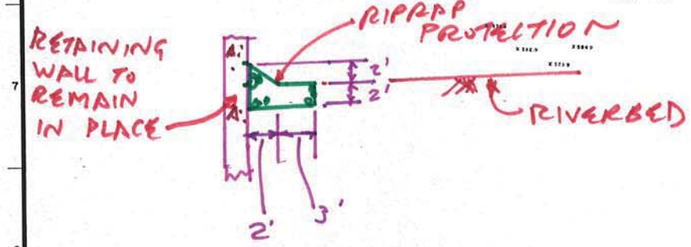
POOL ELEVATION 624.4±



$\Delta_{RIPRAP} = (5\times2) + (2\times2)\frac{1}{2}$
$= 12\ ft^2$

$V_{RIPRAP} = (12)\times(245+130)\left(\frac{1}{27}\right) = 170\ CY$

$V_{EXC} = (5\times2)\times(245+130)\left(\frac{1}{27}\right) = 140\ CY$



SECTION A
N.T.S.

PLAN
SCALE 1" = 40'

ST. JOSEPH RIVER
WATER ELEVATION 598.9±

FLOW

DATE	NO.	DESCRIPTION	APPD.
8/29/80		ISSUED FOR CONSTRUCTION	MD

REVISIONS

INDIANA MICHIGAN POWER COMPANY
BERRIEN SPRINGS HYDRO PLANT
BERRIEN SPRINGS MICHIGAN

EXITING TOPOGRAPHY

DWG. NO. 14-30000-0

ARCH. | ELEC. | MECH. | STR.

SCALE 1"=40'
DR. J.B.T.
CH. MMP
SU. LDN
DATE 2/22/94
APPROVED BY: ENGINEERING DIVISION, DESIGN DIVISION

AMERICAN ELECTRIC POWER SERVICE CORP.
SURVEY AND MAPPING SECTION
INDIANA MICHIGAN ELECTRIC COMPANY
BERRIEN SPRINGS HYDRO PLANT
EAST & WEST EMBANKMENT AREAS SHOWING TOPOGRAPHY – STRUCTURES – FEATURES

FIELD APPROVAL (ENGINEERING SECTION)
DESIGNER
A.E.P. CO.
DRAWN BY JOB DATE 6/23/87
CHECKED BY KLH DATE 6/25/87
SHEET 1 OF 1
SCALE 1" = 40'

083 870609

AMERICAN ELECTRIC POWER SERVICE CORP.

AEP-G 6788

Buchanan Hydroelectric Plant

CONCEPTUAL DEMOLITION COST ESTIMATE

Prepared for:
Indiana Michigan Power Company (Owner)
and American Electric Power Service Corporation

Project No. 13465-000
February 12, 2016
Revision 0

55 East Monroe Street
Chicago, IL 60603-5780 USA

Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	01/29/16	Comments	R. C. Kinsinger	A.D. Chapin D. F. Franczak	M. N. Ozan	All
0	02/12/16	Use	R. C. Kinsinger RKinsinger AC	A.D. Chapin AChapin D. F. Franczak D.F. Franczak	T. J. Meehan	All

TABLE OF CONTENTS

1.0 INTRODUCTION

The Buchanan Hydroelectric Plant located in the City of Buchanan, Michigan is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of (from left to right referenced facing downstream) a short left embankment section, a south abutment training wall, the spillway, the left headrace embankment (which includes the fish ladder), the powerhouse and the terminal headrace abutment. An access bridge spans the upstream end of the headrace and is not considered a water retaining structure. The powerhouse is located downstream of the spillway, at the downstream end of the headrace, and returns flow to the river in a cross channel direction. The powerhouse contains ten (10) operating Leffel Type Z and S turbine generators rated at 0.4 to 0.5 MW each, installed in 1996.

AEP recently contracted S&L to prepare conceptual demolition cost estimates considering three (3) retirement options defined as follows: (1) Option 1, Non-Power Operation, (2) Option 2, Partial Removal of the Dam Structures, and (3) Option 3, Complete Removal of the Dam and Powerhouse. Also, in addition S&L was requested to prepare a separate Asbestos Removal Conceptual Cost Estimate.

The objective of the conceptual demolition cost estimates is to determine the gross demolition costs for Buchanan Hydroelectric Plant (including gross salvage credits and any other benefits), in support of documenting a component of future AEP book depreciation rates to be approved by the I&M's state commissions and potential future inclusion in submittal of a rate case to the state commissions, and other potential uses. The cost estimate considers the demolition/dismantlement methodology which complies with current OSHA rules and regulations.

2.0 COST ESTIMATE SUMMARY

Conceptual Demolition Cost Estimate No. 33706B, dated February 12, 2016, was prepared and is included as Exhibit 2. This cost estimate was prepared for retirement option 3, but includes accounts allowing the determination of cost estimates for retirement options 1 and 2 as well. A summary of the conceptual demolition cost estimates for all three (3) retirement options is provided in Exhibit 1 and detailed in the following tables.

The cost estimate is structured into a code of accounts as identified in Table 2-1.

Table 2-1
Cost Estimate Code of Accounts

Account Number	Description
10, 21, 22	Demolition Costs (including steel, equipment & piping scrap value)
18	Scrap Value Costs
91	Other Direct & Construction Indirect Costs
93	Indirect Costs
94	Contingency Costs
96	Escalation Costs

The results of the cost estimate for retirement option 3 are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary
Retirement Option 3

Description	Total Cost
Demolition Cost	$6,045,099
Scrap Value	($161,882)
Direct Cost Subtotal	$5,883,217
Indirect Cost	$599,000
Contingency Cost	$1,343,000
Escalation Cost	$0
Total Project Cost	$7,825,217

The results of the cost estimate for retirement option 1 are provided in Table 2-3 below.

Table 2-3
Cost Estimate Results Summary
Retirement Option 1

Description	Total Cost
Demolition Cost	$149,377
Scrap Value	($80,344)
Direct Cost Subtotal	$69,033
Indirect Cost	$7,000
Contingency Cost	$42,600
Escalation Cost	$0
Total Project Cost	$118,633

The results of the cost estimate for retirement option 2 are provided in Table 2-4 below.

Table 2-4
Cost Estimate Results Summary
Retirement Option 2

Description	Total Cost
Demolition Cost	$4,143,050
Scrap Value	($81,466)
Direct Cost Subtotal	$4,061,584
Indirect Cost	$414,000
Contingency Cost	$918,600
Escalation Cost	$0
Total Project Cost	$5,394,184

Asbestos Removal Conceptual Cost Estimate No. 33738B, dated February 12, 2016, was prepared and is included as Exhibit 3. The total estimated cost for asbestos removal prior to plant dismantlement is $55,200. Quantities were derived from drawings and past experience. Asbestos removal applies to the powerhouse, thus the removal cost applies to all three (3) retirement options. The cost of asbestos removal is excluded from the total conceptual demolition cost estimates for each retirement option detailed in the tables above.

3.0 TECHNICAL BASIS

The scope of dismantlement is based on three (3) retirement options, as requested by AEP, as follows:

Retirement Option 1, Non-Power Operation: This scenario would consider leaving intact all of the existing water-impounding structures and the powerhouse. Only the electric generating units and their auxiliary equipment would be removed so as to preclude the generation of electricity by the former hydroelectric plant. In addition, the spillway would be modified as required in order to pass river flows and maintain the impoundment's water surface elevation at the current conditions.

Retirement Option 2, Partial Removal of the Dam Structures: This scenario would consider demolition and removal of certain elements of the hydroelectric site in order to drain the existing impoundment and create a natural river channel through the dam site. This would generally include removal of the generating units and powerhouse and possibly but not inclusively demolition and removal of substantial portions of concrete spillway structures. This option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

Retirement Option 3, Complete Removal of the Dam and Powerhouse: This scenario would consider complete removal of the electric generating components and powerhouse and complete removal of the dam. Similar to option 2, this option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

The scope of dismantlement for each retirement option, as interpreted from the definitions above, are identified on marked plant drawings included as Exhibit 4. The scope of dismantlement and the sequence of demolition for each retirement option are defined on these sketches.

Retirement options 2 and 3 include the same demolition work as retirement option 1, removal of the generating unit components from the powerhouse. The powerhouse is not removed in retirement option 1, but is removed in retirement option 3. For retirement option 2 the powerhouse may or may not be removed, depending on if removal of portions of the dam can restore river flow to natural flow without removing the powerhouse (refer to Exhibit 4).

For each of the retirement options the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of all sediment potentially disturbed by the partial or complete removal of the dam. The subcontractor costs included in retirement options 2 and 3 are for lime stabilization of the sediment and removal of the sediment and other wastes (such as timber) to the waste disposal site. These costs do not apply to retirement option 1 since only generating unit components in the powerhouse are removed and this material has scrap value.

Retirement options 2 and 3 include the stabilization of newly exposed riverbanks, which include the dam area and areas upstream of the dam. The extent of stabilization for retirement option 3 may be slightly more than retirement option 2, since the entire dam is being removed in retirement option 3.

The following are excluded from the scope of the conceptual demolition cost estimates:

- Asbestos removal (separate cost estimate prepared).
- The conceptual demolition cost estimate includes the cost to remove the one (1) main power transformer located in the switchyard, but not the cost to remove the switchyard itself (and remaining components in the switchyard).
- The existing fish ladder and access bridge will remain in place.
- Evaluation of the effect of the complete removal of the series of dams on the river watershed.
- Evaluation of the effect of the removal of any one dam, on either the upstream or downstream side dam and reservoir, after removal of the dam.
- Potential social or environmental impact of the draining of the reservoirs and the impact on property values or other community impact.
- The conceptual demolition cost estimate excludes any costs related to performing surveys to quantify the amount of sediment and chemical testing of the sediment. The quantity of sediment to be removed was estimated for retirement options 2 and 3 and the cost to remove the sediment is included in the conceptual demolition cost estimate. As stated above, the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of the sediment potentially disturbed by the partial or complete removal of the dam.

The scope of the demolition cost estimate was reaffirmed during a review of the facility by two S&L employees in conjunction with a representative from Bradenburg Industrial Service Co. and AEP corporate and plant personnel. The facility review was held on Wednesday December 16, 2015.

4.0 COMMERCIAL BASIS

4.1 General Information

The Conceptual Demolition Cost Estimates prepared for the Buchanan Hydroelectric Plant is a conceptual estimate of the cost to dismantle the powerhouse and dam in accordance with the scope defined for each of the three (3) retirement options. Costs were calculated for (1) demolition of existing plant structures and equipment and associated site restoration costs, (2) scrap value of steel, copper and stainless steel, as applicable, (3) associated indirect costs, and (4) contingency.

All units used in the cost estimate are U.S. Standard and all costs are in US Dollars (4th Quarter 2015 levels). A three (3) year demolition schedule is anticipated for retirement option 3 including asbestos removal (to be performed prior to start of demolition work). The schedule takes into consideration environmental permitting, asbestos removal which includes mapping out all asbestos contamination throughout the powerhouse and associated abatement, followed by total plant demolition and site restoration. The schedule for the other two (2) retirement options would be correspondingly less.

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in the cost estimates were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the hydroelectric plant drawings and data provided by AEP, and the information obtained from Plant personnel during the facility review.

4.3 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate were calculated as Union Labor rates for South Bend, Indiana, based on 2015, R. S. Means “Labor Rates for the Construction Industry”. The craft rates were incorporated into work crews appropriate for the activities by adding allowances for small tools, construction equipment, insurance, and site overheads to arrive at crew hourly rates detailed in the cost estimate. A 1.10 regional labor productivity multiplier was included based on Compass International Global Construction Yearbook, 2015 Edition, for union work in Indiana. National Maintenance

Agreement Rates (typically negotiated by AEP) do not apply as this work is assumed to be performed as a lump sum contract.

4.3.1 Labor Work Schedule and Incentives

The estimate assumed a 5x8 work week. No per diem or other labor incentives are included.

4.3.2 Construction Indirects

Allowances were included in the cost estimate as direct costs as noted for the following:

- Freight: Material and scrap freight included in the material and scrap costs.
- Additional Crane Allowance: None included. Cost of cranes and construction machinery are included in the labor wage rates.
- Mobilization and Demobilization: Included in labor wage rates.
- Scaffolding: Included in labor wage rates.
- Consumables: Included in material and labor costs.
- Per Diem Costs: Excluded from the estimate.
- Contractor's General and Administrative Costs and Profit: Included in the labor wage rates.

4.4 Scrap Value

The value of scrap was determined by a 3 month average (November and December 2015 and January 2016) using Zone 4 (USA Midwest) of the "Scrap Metals Market Watch" (www.americanrecycler.com).

Since the values obtained are delivered pieces, 25% of the values obtained were deducted to pay for separation, preparation and shipping to the mills. This resulted in realized prices of:

- Mixed Steel Value @ $118/Ton
- Copper Value @ $3,180/Ton
- Stainless Steel @ $675/Ton

Note: 1 Ton = 2,000 Lbs

All steel is considered to be mixed steel unless otherwise noted.

4.5 Indirect Costs

Allowances were included in the cost estimate as indirect costs as noted for the following:

- Engineering, Procurement and Project Services: None included.
- Construction Management Support: None included.
- Owners Cost: Included as 10.0% of the total direct cost. Owners Costs include owner project engineering, administration and construction management, permits and fees, legal expenses, taxes, removal of chemicals, etc.

4.6 Escalation

No allowance for escalation was included in the cost estimate. All costs are determined in 4th Quarter 2015 levels.

4.7 Contingency

Allowances were included in the cost estimate as contingency as noted for the following:

- Scrap Value: Included as 15.0% reduction in the salvage value resulting in a total net reduction in the salvage value. The contingency assumes a potential drop in salvage value thus increasing the project cost. Scrap costs are very volatile but by taking a 3-month average some of the effect of volatility is reduced. However there are other variables that affect scrap pricing such as the quantity and processing fees. The contingency applied is based on the estimators confidence in scrap pricing used in the demolition cost estimate.
- Material: Included as 20.0% of the total material cost.
- Labor: Included as 20.0% of the total labor cost.
- Indirect: Included as 20.0% of the total indirect cost.
- Subcontractor: Included as 20.0% of the total subcontractor cost.

4.8 Assumptions

The following assumptions apply to the cost estimates.

- The cost estimate for each retirement option is based on the scope and the demolition sequences defined on the sketches provided in Exhibit 4.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.

- All electrical equipment and wiring is de-energized prior to start of dismantlement, except for that required for remote operation of the sluice and crest gates after demolition is completed for retirement option 1. There are two (2) sluice gates on the dam and three (3) hydraulically operated crest gates used to regulate the reservoir elevation.
- No extraordinary environmental costs for demolition have been included.
- Handling, on-site and off-site disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- The window glazing in the powerhouse may be asbestos contaminated and an allowance for removal and disposal is included in the asbestos removal cost estimate. There are twenty (20) control boards mounted on 3' x 9' transite (asbestos) panels and an allowance for removal and disposal is included in the asbestos removal cost estimate. There is no building or pipe insulation in the facility and consequently no insulation related asbestos contamination.
- Switchyards within the plant boundaries are not part of the scope, neither are access roads to these facilities. Fences and gates needed to protect the switchyard will be left in place.
- All demolished materials are considered debris, except for organic combustibles and non-embedded metals which have scrap value.
- The basis for salvage estimating is for scrap value only. No resale of equipment or material is included.
- Sediment removed due to demolition work is treated with lime and hauled offsite to an approved waste disposal facility.

5.0 REFERENCES

5.1 Buchanan Plant Drawings: One-Line Diagrams, No. 1-12001-0 and No. E-1000, Revision 8.

5.2 Findlay Engineering, Inc., Supporting Technical Information Document, Buchanan Hydroelectric Project, August, 2005.

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EXHIBIT 1
Buchanan Hydroelectric Plant
Conceptual Demolition Cost Estimate Summary

Buchanan Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Estimate Number: 33706B

	Retirement Option 1	Retirement Option 2	Retirement Option 3
Demolition Cost	$ 149,377	$ 4,143,050	$ 6,045,099
Scrap Value	$ (80,344)	$ (81,466)	$ (161,882)
Direct Cost Subtotal	$ 69,033	$ 4,061,584	$ 5,883,217
Indirect Cost	$ 7,000	$ 414,000	$ 599,000
Contingency Cost	$ 42,600	$ 918,600	$ 1,343,000
Escalation Cost	$ -	$ -	$ -
Total Demolition Cost	$ 118,633	$ 5,394,184	$ 7,825,217

EXHIBIT 2
Buchanan Hydroelectric Plant
Conceptual Demolition Cost Estimate No. 33706B

AEP BUCHANAN
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	BUCHANAN
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33706B
Estimate Class	Conceptual
Cost index	INSOU

AEP BUCHANAN
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ACCOUNT A	DEMOLITION ACCOUNT A		(80,344)	27,930	1,404	121,447	69,033
ACCOUNT B	DEMOLITION ACCOUNT B	865,700	(1,122)	1,830,118	17,340	1,297,855	3,992,551
ACCOUNT C	DEMOLITION ACCOUNT C	489,000	(80,416)	(2,945)	15,823	1,415,994	1,821,633
	TOTAL DIRECT	1,354,700	(161,882)	1,855,103	34,568	2,835,296	5,883,218

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	2,835,296		34,568
Material	1,855,103		
Subcontract	1,354,700		
Scrap Value	(161,882)		
	5,883,217	**5,883,217**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		5,883,217	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	599,000		
93-8 EPC Fee			
	599,000	**6,482,217**	
Contingency:			
94-1 Contingency on Material	371,000		
94-2 Contingency on Labor	557,000		
94-3 Contingency on Sub.	271,000		
94-6 Contingency on Scrap	24,000		
94-5 Contingency on Indirect	120,000		
	1,343,000	**7,825,217**	
Escalation:			
96-1 Escalation on Const Equip			
96-2 Escalation on Engr Equip			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Process Eq			
96-5 Escalation on Indirects			
		7,825,217	
		7,825,217	
Total		***7,825,217***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ACCOUNT A			**DEMOLITION ACCOUNT A**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO .6 MW GENERATOR	10 GENERATORS AT 9500# EA	47.50 TN	470	85.53 /MH	40,225		-		40,225
			DEMO TURBINE AND GEARS	10 GENERATORS AT 14000# EA	70.00 TN	693	85.53 /MH	59,278		-		59,278
			TURBINE ROOM 8.8 TON OVERHEAD CRANE		8.00 TN	79	121.33 /MH	9,610		-		9,610
			MECHANICAL EQUIPMENT			1,243		109,113				109,113
			WHOLE PLANT DEMOLITION			1,243		109,113				109,113
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	10 - .4 & .5 MW GENERATOR, 10 @5,225# EA	-26.10 TN		79.62 /MH		-	-	(3,082)	(3,082)
			MIXED STEEL	DEMO TURBINE AND GEARS	-70.00 TN		79.62 /MH		-	-	(8,266)	(8,266)
			MIXED STEEL	TURBINE ROOM 8.8 TON OVERHEAD CRANE	-8.00 TN		79.62 /MH		-	-	(945)	(945)
			MIXED STEEL								(12,292)	(12,292)
		18.30.00	COPPER									
			COPPER	10 .4 &.5 MW GENERATOR 10@ 4,275 LB EA	-21.40 TN		79.62 /MH		-	-	(68,052)	(68,052)
			COPPER								(68,052)	(68,052)
			SCRAP VALUE								(80,344)	(80,344)
	22.00.00		CONCRETE									
		22.13.00	Concrete									
			FLOWABLE FILL, 1500 PSI	FILL PENSTOCKS TO PREVENT BYPASS FLOW	294.00 CY	162	76.27 /MH	12,334	27,930	-	-	40,264
			Concrete			162		12,334	27,930			40,264
			CONCRETE			162		12,334	27,930			40,264
			ACCOUNT A DEMOLITION ACCOUNT A			**1,404**		**121,447**	**27,930**		**(80,344)**	**69,033**
ACCOUNT B			**DEMOLITION ACCOUNT B**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	SLUICE GATE CREST 16'X6'X7.7'	27.00 CY	33	89.94 /MH	3,005		-	-	3,005
			EQUIPMENT/ BUILDING FOUNDATION	RIGHT GATE CREST 137.85X6'X7.7'	236.00 CY	292	89.94 /MH	26,270		-	-	26,270
			EQUIPMENT/ BUILDING FOUNDATION	CENTER GATE APRON 127.9X6X3.5	99.00 CY	123	89.94 /MH	11,020		-	-	11,020
			EQUIPMENT/ BUILDING FOUNDATION	LEFT GATE CREST 92.44X6'X7.7	158.00 CY	196	89.94 /MH	17,587		-	-	17,587
			CONCRETE			644		57,882				57,882
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	HEADRACE BRIDGE - LEFT IN PLACE	0.00 TN		79.62 /MH			-	-	
		10.31.00	MECHANICAL EQUIPMENT									
			80 KW PROPANE ELECTRIC GENERATOR		1.50 TN	3	121.33 /MH	405		-		405
			SLUICE GATES	2 AT 4 TONS EACH	8.00 TN	18	121.33 /MH	2,162		-		2,162
			MECHANICAL EQUIPMENT			21		2,568				2,568
			WHOLE PLANT DEMOLITION			665		60,450				60,450
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	80 KW PROPANE ELECTRIC GENERATOR	-1.50 TN		79.62 /MH		-	-	(177)	(177)
			MIXED STEEL	SLUICE GATES	-8.00 TN		79.62 /MH		-	-	(945)	(945)
			MIXED STEEL								(1,122)	(1,122)
			SCRAP VALUE								(1,122)	(1,122)
	21.00.00		CIVIL WORK									
		21.17.00	Earthwork, Excavation									
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR RIPRAP	152.00 CY	28	88.08 /MH	2,504		-	-	2,504
			Earthwork, Excavation			28		2,504				2,504
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	FOR CAUSEWAYS	5,156.00 CY	1,684	74.10 /MH	124,789	210,880	-	-	335,670
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIPRAP PROTECTION	38,100.00 CY	12,444	74.10 /MH	922,124	1,558,290	-	-	2,480,414
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	CREDIT FOR REUSE OF CAUSEWAY STONE	-5,156.00 CY		74.10 /MH		(210,880)	-	-	(210,880)
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIPRAP PROTECTION AT SPILLWAY FLOOR SLAB	152.00 CY	50	74.10 /MH	3,679	6,217	-	-	9,896

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
			Erosion and Sedimentation Control			**14,178**		**1,050,593**	**1,564,507**			**2,615,099**
		21.47.00	**LANDSCAPING**									
			HYDRO OR AIR SEED & MULCH & FERTILIZER		174.00 AC	2,469	74.64 /MH	184,309	265,611	-	-	449,920
			LANDSCAPING			**2,469**		**184,309**	**265,611**			**449,920**
		21.65.00	**Soil Remediation**									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING	3,935.00 CY		196.64 /MH			157,400	-	157,400
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX (7870+3935)	11,805.00 CY		196.64 /MH			708,300	-	708,300
			Soil Remediation							**865,700**		**865,700**
			CIVIL WORK			**16,676**		**1,237,405**	**1,830,118**	**865,700**		**3,933,223**
			ACCOUNT B DEMOLITION ACCOUNT B			**17,340**		**1,297,855**	**1,830,118**	**865,700**	**(1,122)**	**3,992,551**
ACCOUNT C			**DEMOLITION ACCOUNT C**									
	10.00.00		**WHOLE PLANT DEMOLITION**									
		10.22.00	**CONCRETE**									
			EQUIPMENT/ BUILDING FOUNDATION	SLUICE GATE APRON 16'X34'X6'	121.00 CY	150	89.94 /MH	13,469		-	-	13,469
			EQUIPMENT/ BUILDING FOUNDATION	SLUICE GATE THROAT 16'X34'X6'	121.00 CY	150	89.94 /MH	13,469		-	-	13,469
			EQUIPMENT/ BUILDING FOUNDATION	RIGHT GATE APRON 137.85X34'X6'	1,042.00 CY	1,290	89.94 /MH	115,987		-	-	115,987
			EQUIPMENT/ BUILDING FOUNDATION	RIGHT GATE THROAT 137.85X34'X6'	1,042.00 CY	1,290	89.94 /MH	115,987		-	-	115,987
			EQUIPMENT/ BUILDING FOUNDATION	1 CENTER GATE APRON 127.9X30X4.5	640.00 CY	792	89.94 /MH	71,240		-	-	71,240
			EQUIPMENT/ BUILDING FOUNDATION	2 CENTER GATE APRON 127.9X30X4.5	640.00 CY	792	89.94 /MH	71,240		-	-	71,240
			EQUIPMENT/ BUILDING FOUNDATION	CENTER GATE THROAT 127.9X40'X10'	1,895.00 CY	2,345	89.94 /MH	210,936		-	-	210,936
			EQUIPMENT/ BUILDING FOUNDATION	LEFT GATE APRON 92.44X34X6'	698.00 CY	864	89.94 /MH	77,696		-	-	77,696
			EQUIPMENT/ BUILDING FOUNDATION	LEFT GATE THROAT 92.44X34X6'	698.00 CY	864	89.94 /MH	77,696		-	-	77,696
			GENERATOR HOUSE		2,890.00 CY	3,577	89.94 /MH	321,691		-	-	321,691
			CONCRETE			**12,113**		**1,089,409**				**1,089,409**
		10.23.00	**STEEL**									
			STRUCTURAL AND GIRT STEEL	GENERATOR HOUSE	221.00 TN	247	79.62 /MH	19,667		-	-	19,667
			STEEL			**247**		**19,667**				**19,667**
		10.24.00	**ARCHITECTURAL**									
			GENERATOR HOUSE	272.5'X30'X60'TALL	490,500.00 CF	2,104	89.81 /MH	189,001		-	-	189,001
			ARCHITECTURAL			**2,104**		**189,001**				**189,001**
		10.31.00	**MECHANICAL EQUIPMENT**									
			DEMO PENSTOCKS	10 GENERATORS AT 11,800# EA	59.00 TN	584	85.53 /MH	49,963		-		49,963
			BAR RACKS	10 AT 5 TONS EACH	50.00 TN	111	121.33 /MH	13,514		-		13,514
			STOP LOGS	10 AT 5 TONS EACH	50.00 TN	111	121.33 /MH	13,514		-		13,514
			MECHANICAL EQUIPMENT			**807**		**76,992**				**76,992**
		10.41.00	**ELECTRICAL EQUIPMENT**									
			GENERATOR BUS TRANSFORMERS	2.4 to 34.5 KV, 2.67 MVA (STEEL)	3.40 TN	10	80.14 /MH	801		-	-	801
			GENERATOR BUS TRANSFORMERS	2.4 to 34.5 KV, 2.67 MVA (CU)	1.85 TN	5	80.14 /MH	436		-	-	436
			MISCELLANEOUS ELECTRICAL EQUIPMENT		5.00 TN	15	80.14 /MH	1,178		-	-	1,178
			ELECTRICAL EQUIPMENT			**30**		**2,415**				**2,415**
		10.86.00	**WASTE**									
			WASTE - USER DEFINED	MISC	1.00 LS	0	121.33 /MH	13		-	10,000	10,013
			WASTE			**0**		**13**			**10,000**	**10,013**
			WHOLE PLANT DEMOLITION			**15,301**		**1,377,498**			**10,000**	**1,387,498**
	18.00.00		**SCRAP VALUE**									
		18.10.00	**MIXED STEEL**									
			MIXED STEEL	DEMO PENSTOCKS	-59.00 TN		79.62 /MH		-	-	(6,967)	(6,967)
			MIXED STEEL	BAR RACKS	-50.00 TN		79.62 /MH		-	-	(5,904)	(5,904)
			MIXED STEEL	STOP LOGS	-50.00 TN		79.62 /MH		-	-	(5,904)	(5,904)
			MIXED STEEL	GENERATOR HOUSE	-122.60 TN		79.62 /MH		-	-	(14,477)	(14,477)
			MIXED STEEL	GENERATOR BUS TRANSFORMERS	-3.40 TN		79.62 /MH		-	-	(401)	(401)
			MIXED STEEL								**(33,653)**	**(33,653)**
		18.30.00	**COPPER**									
			COPPER	CABLE	-10.00 TN		79.62 /MH		-	-	(31,800)	(31,800)
			COPPER	MISC. TRANSFORMERS & MOTORS UNIT 1	-6.00 TN		79.62 /MH		-	-	(19,080)	(19,080)
			COPPER	GENERATOR BUS TRANSFORMERS	-1.85 TN		79.62 /MH		-	-	(5,883)	(5,883)

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
			COPPER								(56,763)	(56,763)
			SCRAP VALUE								(90,416)	(90,416)
	21.00.00		CIVIL WORK									
		21.17.00	Earthwork, Excavation									
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	RIVERBED CREDIT EXCAVATION FOR RIPRAP (152-95)	-55.00 CY	-10	88.08 /MH	(906)		-	-	(906)
			Earthwork, Excavation			-10		(906)				(906)
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	ADDITIONAL CAUSEWAY RIPRAP FOR PHASE 3	1,700.00 CY	555	74.10 /MH	41,145	69,530	-	-	110,675
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	ADDITIONAL CREDIT FOR REUSE OF PHASE 3 CAUSEWAY STONE	-1,700.00 CY		74.10 /MH		(69,530)	-	-	(69,530)
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIPRAP PROTECTION AT RETAINING WALLS - CREDIT (152-80)	-72.00 CY	-24	74.10 /MH	(1,743)	(2,945)	-	-	(4,687)
			Erosion and Sedimentation Control			532		39,402	(2,945)			36,457
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	ADDITIONAL LIME ADDITIVE FOR DRYING PHASE 3 (6158-3935)	2,223.00 CY		196.64 /MH			88,920	-	88,920
			REMOVAL OF LOCALIZED SILT AT DAM	ADDITIONAL LOAD, MIX AND HAUL LIME AND SEDIMENT MIX PHASE 3 (18473-11805)	6,668.00 CY		196.64 /MH			400,080	-	400,080
			Soil Remediation							489,000		489,000
			CIVIL WORK			521		38,496	(2,945)	489,000		524,551
			ACCOUNT C DEMOLITION ACCOUNT C			**15,823**		**1,415,994**	**(2,945)**	**489,000**	**(80,416)**	**1,821,633**

EXHIBIT 3
Buchanan Hydroelectric Plant
Asbestos Removal Conceptual Cost Estimate No. 33738B

AEP BUCHANAN
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	BUCHANAN
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33738B
Estimate Class	Conceptual
Cost index	INSOU

AEP BUCHANAN
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

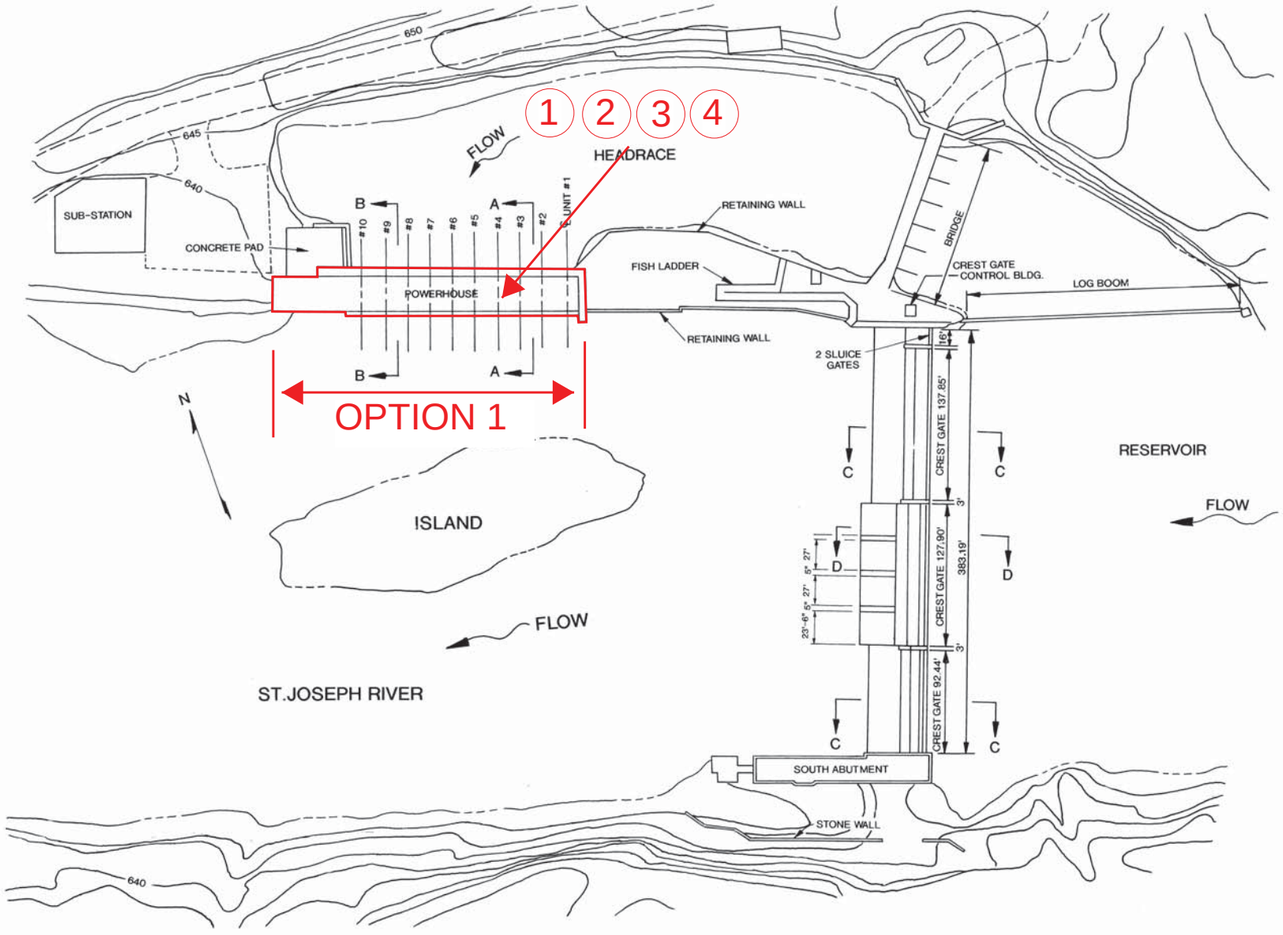
Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ASBESTOS	ASBESTOS REMOVAL	41,800					41,800
	TOTAL DIRECT	41,800					41,800

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor			
Material			
Subcontract	41,800		
Scrap Value			
	41,800	**41,800**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		41,800	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	4,200		
93-8 EPC Fee			
	4,200	**46,000**	
Contingency:			
94-1 Contingency on Material			
94-2 Contingency on Labor			
94-3 Contingency on Sub.	8,400		
94-6 Contingency on Scrap			
94-5 Contingency on Indirect	800		
	9,200	**55,200**	
Escalation:			
96-1 Escalation on Const Equip			
96-2 Escalation on Engr Equip			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Process Eq			
96-5 Escalation on Indirects			
		55,200	
		55,200	
Total		***55,200***	

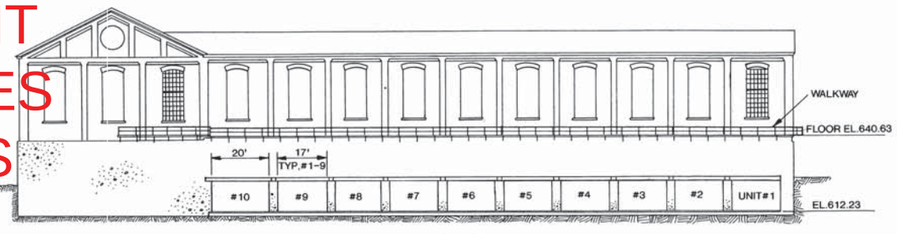
Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ASBESTOS			**ASBESTOS REMOVAL**									
	10.00.00		**WHOLE PLANT DEMOLITION**									
		10.37.00	**ASBESTOS REMOVAL**									
			ASBESTOS REMOVAL - MISC MATERIALS	WINDOW CAULKING MISC MATERIALS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL - CONTROL /INSTRUMENT PANELS	20 PANELS 1X3X9' TALL	20.00 CY		121.33 /MH			38,000	-	38,000
			ASBESTOS REMOVAL							**41,800**		**41,800**
			WHOLE PLANT DEMOLITION							**41,800**		**41,800**
			ASBESTOS ASBESTOS REMOVAL							**41,800**		**41,800**

EXHIBIT 4
Buchanan Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence



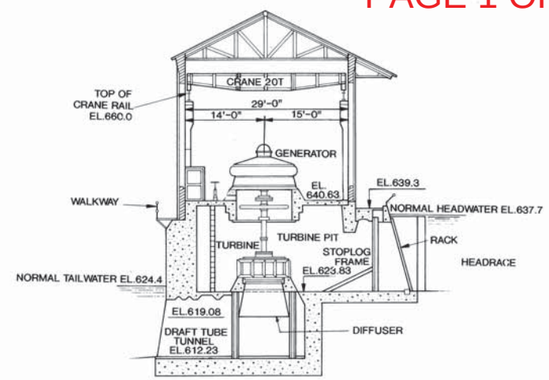
PLAN

0 50 100 150 200 FEET



POWERHOUSE
SOUTH ELEVATION

0 20 40 60 80 100 FEET



SECTION A-A
UNITS 1-6 INCL.

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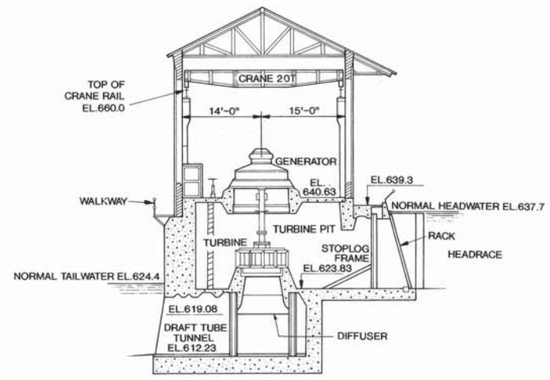


SECTION B-B
UNITS 7-10 INCL.

10 8 6 4 2 0 10 20 30 FEET

OPTION 1

① INSTALL STOPLOGS
② REMOVE EQUIPMENT
③ GROUT DRAFT TUBES
④ REMOVE STOPLOGS

THIS DRAWING, EXHIBIT"F",IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY.

BY _____

DATE 10/31/91

EXHIBIT F SHEET 1 OF 2

INDIANA MICHIGAN POWER COMPANY
BUCHANAN
HYDROELECTRIC PROJECT NO. 2551
MICHIGAN
PLAN, ELEVATIONS AND SECTIONS

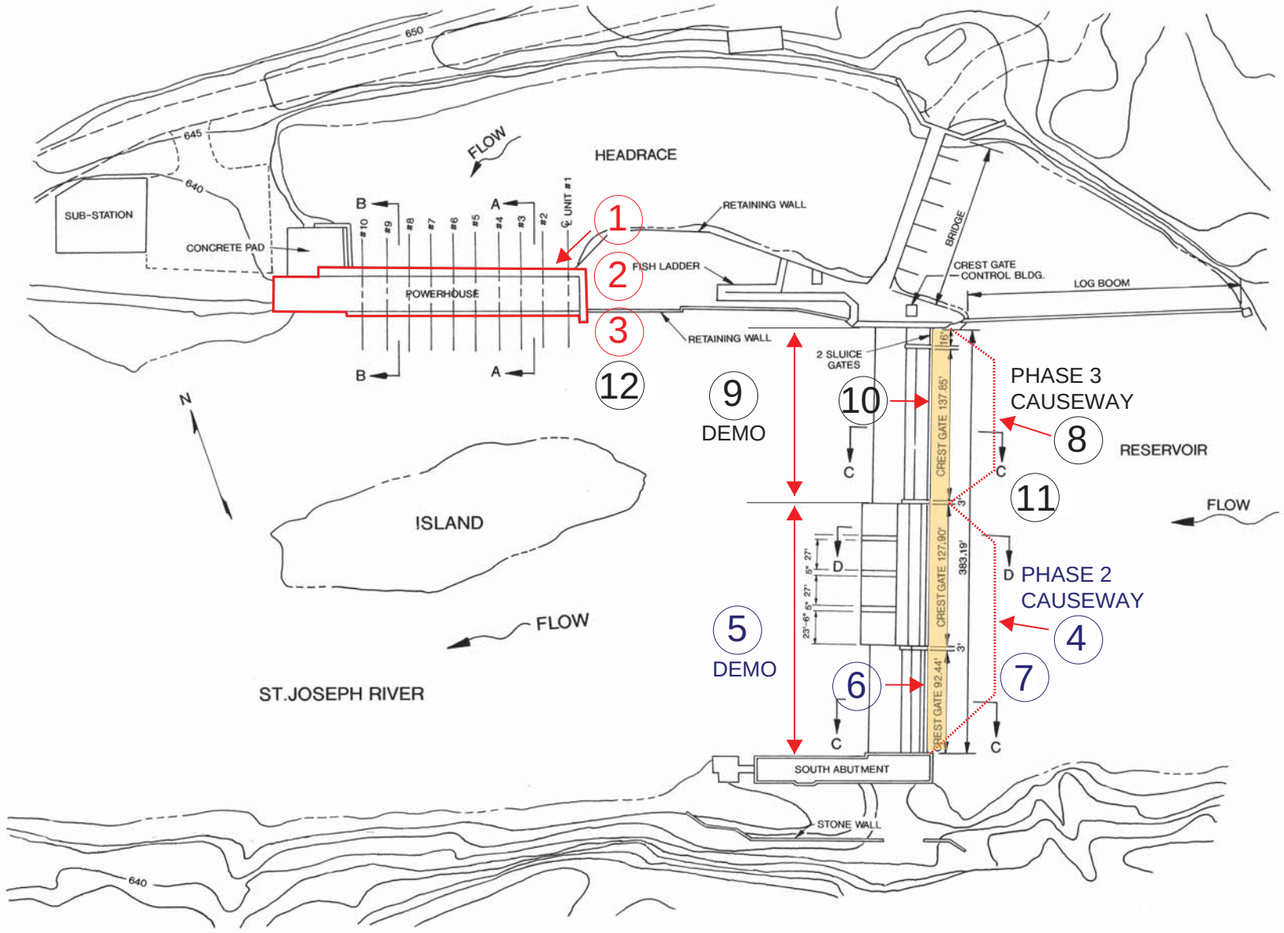
FERC No. 2551-004-1

BUCHANAN HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

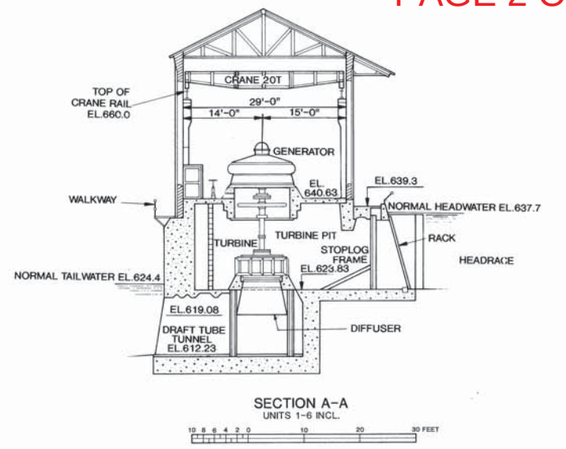
PHASE 1
① INSTALL STOPLOGS
② REMOVE EQUIPMENT
③ REMOVE STOPLOGS

PHASE 2
④ CONSTRUCT CAUSEWAY
⑤ DEMO SPILLWAY SECTIONS
⑥ PLACE RIPRAP PROTECTION
⑦ REMOVE CAUSEWAY

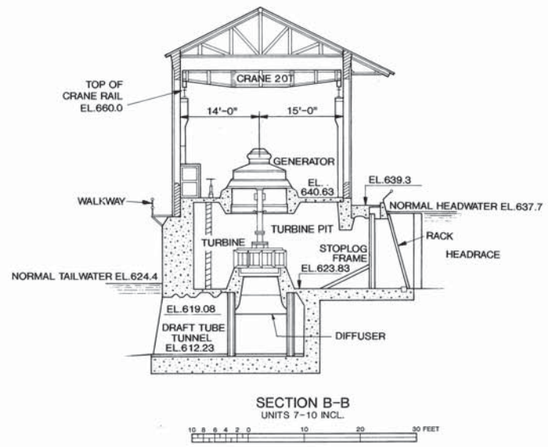
PHASE 3
⑧ CONSTRUCT CAUSEWAY
⑨ DEMO SPILLWAY
⑩ PLACE RIPRAP PROTECTION
⑪ REMOVE CAUSEWAY
⑫ GROUT DRAFT TUBE



PLAN
0 50 100 150 200 FEET

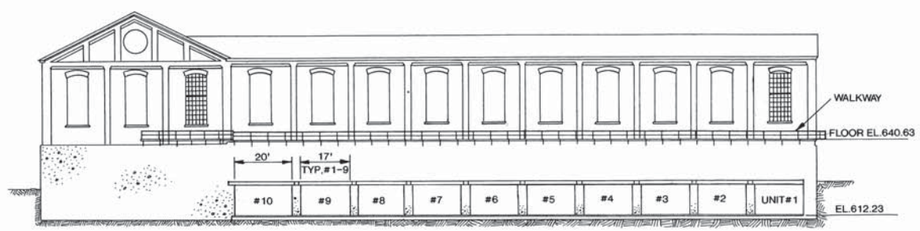


SECTION A–A
UNITS 1–6 INCL.
10 8 6 4 2 0 10 20 30 FEET



SECTION B–B
UNITS 7–10 INCL.
10 8 6 4 2 0 10 20 30 FEET

OPTION 2



POWERHOUSE
SOUTH ELEVATION
0 20 40 60 80 100 FEET

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BY _____
DATE 10/31/91

EXHIBIT F SHEET 1 OF 2

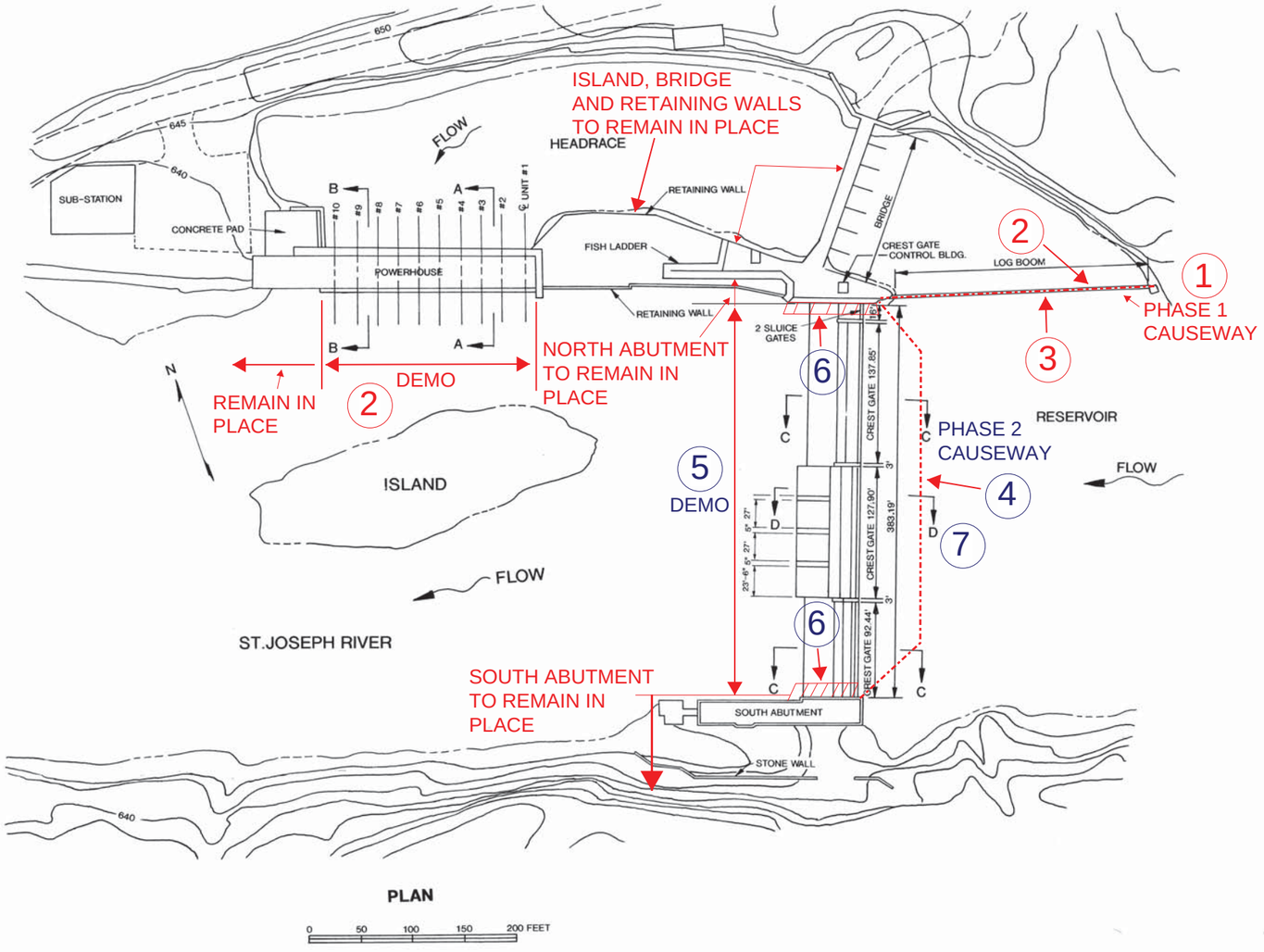
INDIANA MICHIGAN POWER COMPANY
BUCHANAN
HYDROELECTRIC PROJECT NO. 2551
MICHIGAN
PLAN, ELEVATIONS AND SECTIONS

FERC No. 2551–004–1

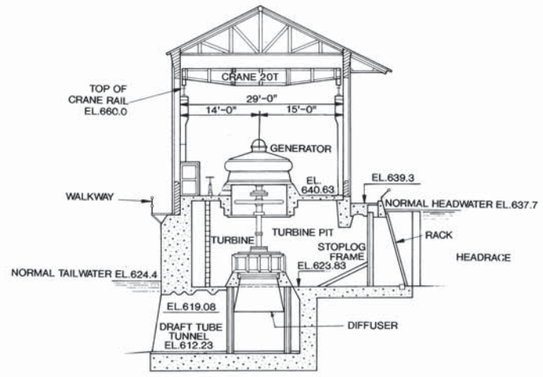
BUCHANAN HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

PHASE 1
1. CONSTRUCT CAUSEWAY
2. DEMO POWERHOUSE AND LOG BOOM
3. REMOVE CAUSEWAY

PHASE 2
4. CONSTRUCT CAUSEWAY
5. DEMO SPILLWAY SECTIONS
6. PLACE RIPRAP PROTECTION AT ABUTMENTS
7. REMOVE CAUSEWAY

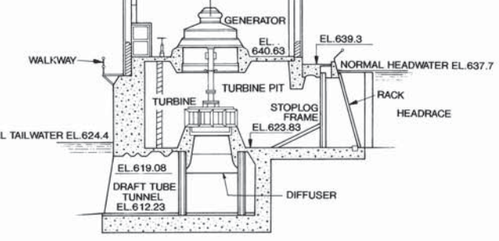


PLAN
0 50 100 150 200 FEET



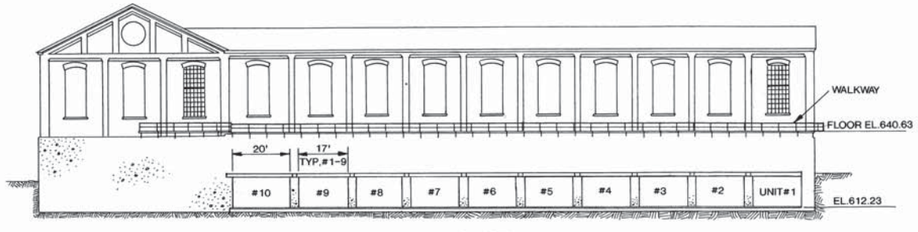
SECTION A–A
UNITS 1–6 INCL.
10 8 6 4 2 0 10 20 30 FEET

PHASE 3 CAUSEWAY
8
11



SECTION B–B
UNITS 7–10 INCL.
10 8 6 4 2 0 10 20 30 FEET

OPTION 3



POWERHOUSE
SOUTH ELEVATION
0 20 40 60 80 100 FEET

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BY _____
DATE 10/31/91

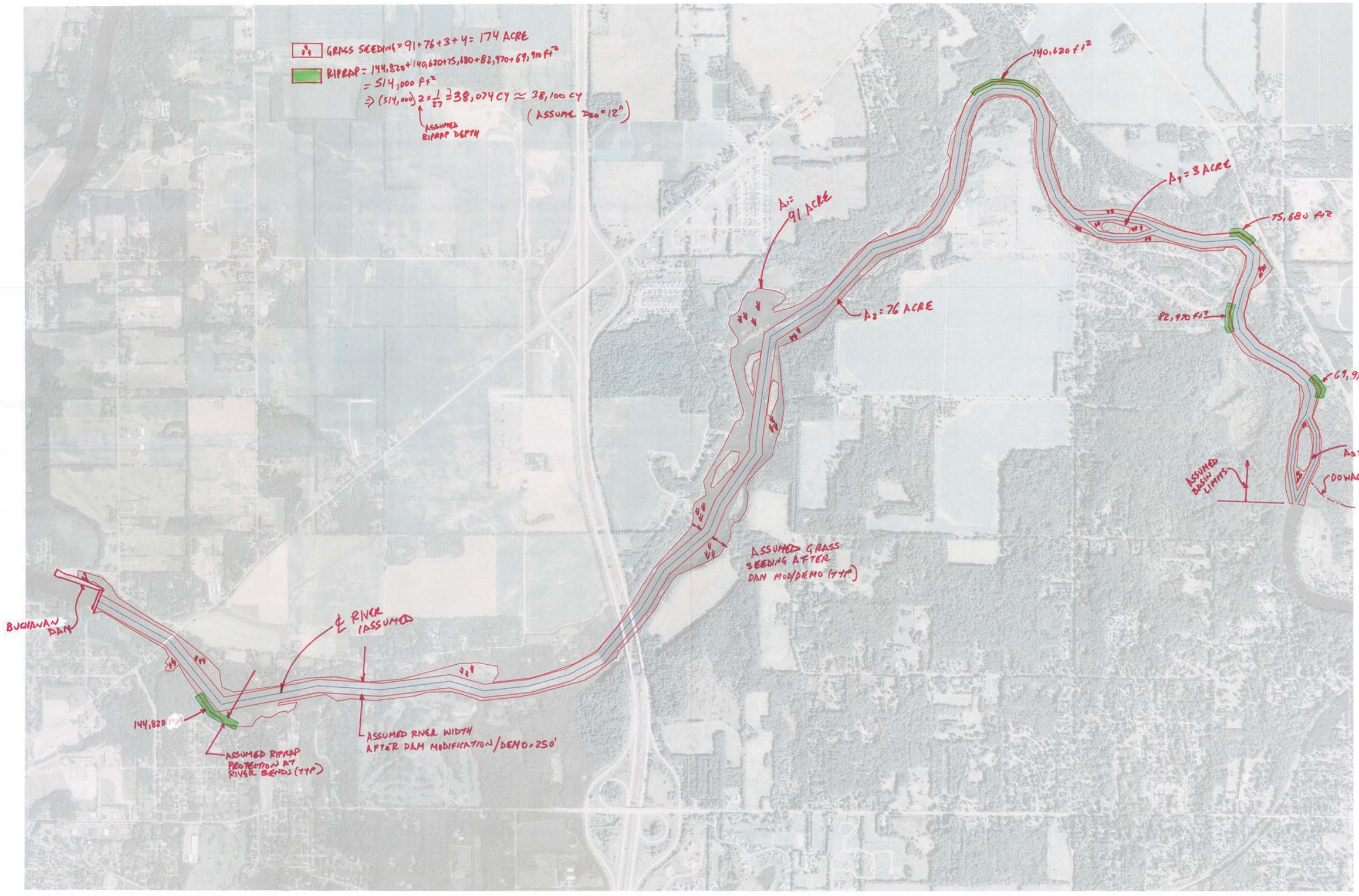
EXHIBIT F SHEET 1 OF 2

INDIANA MICHIGAN POWER COMPANY
BUCHANAN
HYDROELECTRIC PROJECT NO. 2551
MICHIGAN
PLAN, ELEVATIONS AND SECTIONS

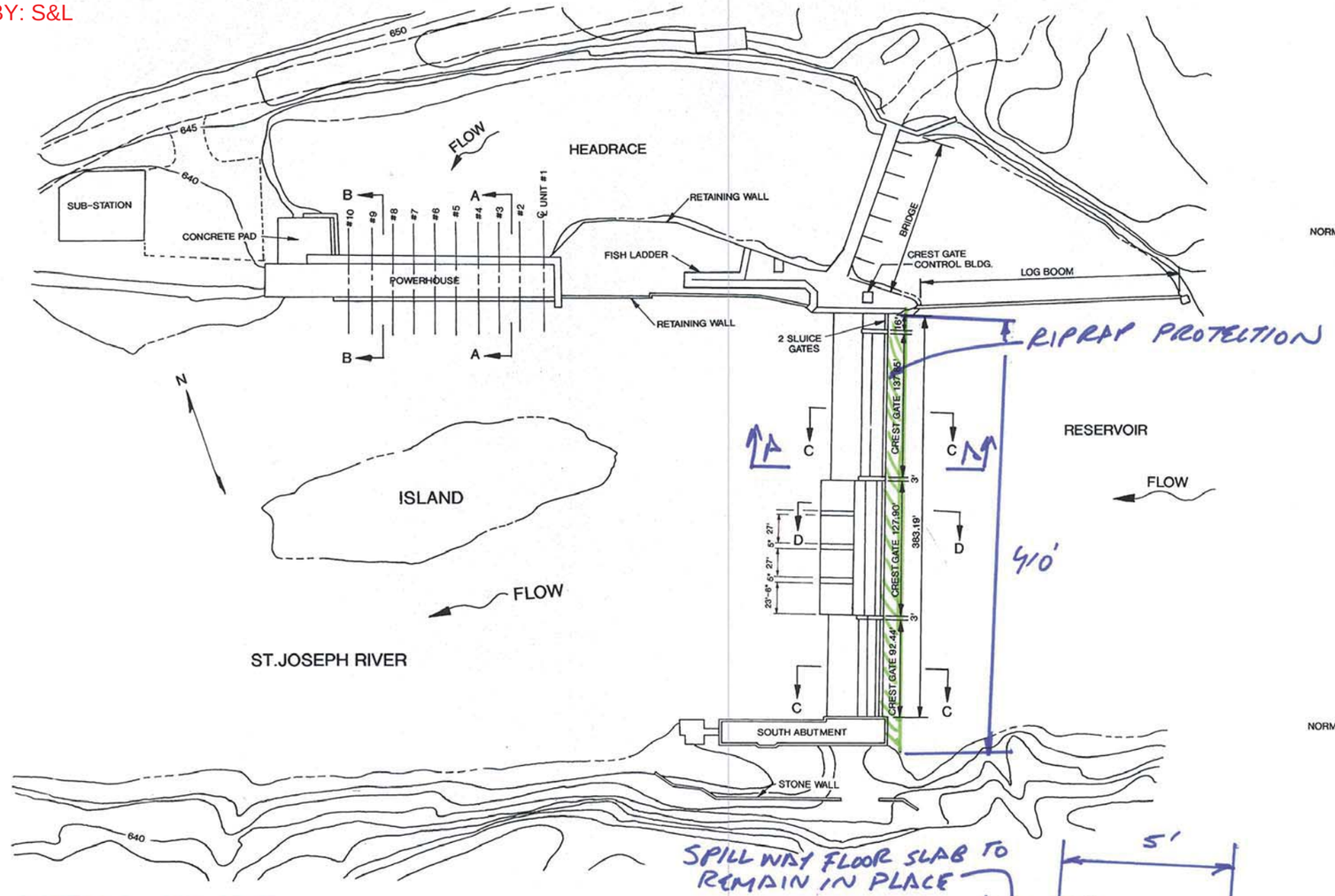
FERC No. 2551–004–1

BUCHANAN			
OPTION 2			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	174	ACRE	
RIPRAP PROTECTION	38,100	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	152	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT SPILLWAY FLOOR SLAB	152	CY	2 ft riprap protection @ D(50)=12"

OPTION 3			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	174	ACRE	
RIPRAP PROTECTION	38,100	CY	2 ft riprap protection @ D(50)=12"
~~BASIN FILL~~	~~86,100~~	~~CY~~	
~~RIPRAP PROTECTION FOR CONCRETE REMOVAL~~	~~4,180~~	~~CY~~	~~2 ft riprap protection @ D(50)=12"~~
RIVERBED EXCAVATION FOR RIPRAP	95	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT RETAINING WALLS	80	CY	2 ft riprap protection @ D(50)=12"

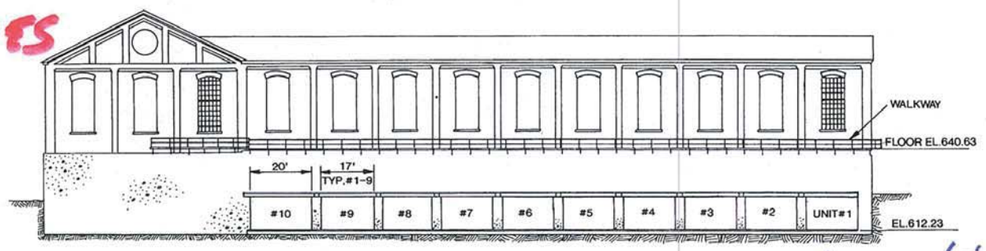


BUCHANAN HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L



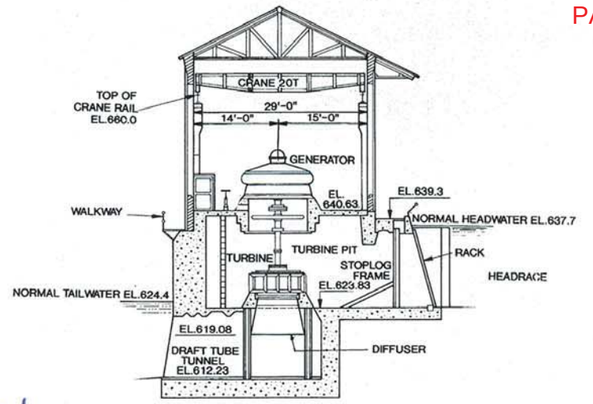
PLAN

0 50 100 150 200 FEET



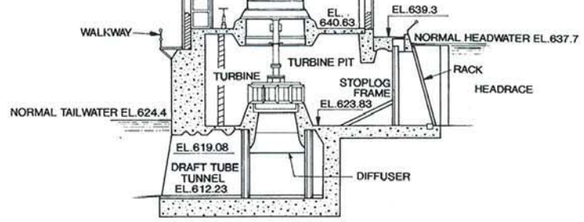
POWERHOUSE
SOUTH ELEVATION

0 20 40 60 80 100 FEET



SECTION A-A
UNITS 1-6 INCL.

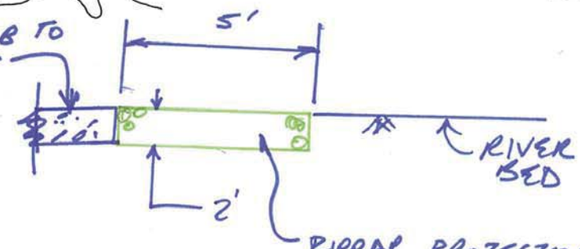
10 8 6 4 2 0 10 20 30 FEET



SECTION B-B
UNITS 7-10 INCL.

10 8 6 4 2 0 10 20 30 FEET

SPILL WAY FLOOR SLAB TO REMAIN IN PLACE



RIPRAP PROTECTION PAST AT RIVERBOTTOM ADJACENT TO SPILLWAY FLOOR SLAB TO REMAIN IN PLACE

I&M CONCEPTUAL DEMO ESTIMATE
BUCHANAN RETIREMENT OPTION 2
CIVIL QUANTITIES

SECTION A
N.T.S.

$V_{RIPRAP} = (5' \times 2')(410')(\frac{1}{27}) = 152\ CY$

$V_{CUT} = V_{RIPRAP} = 152\ CY$

EXHIBIT F

SHEET 1 OF 2

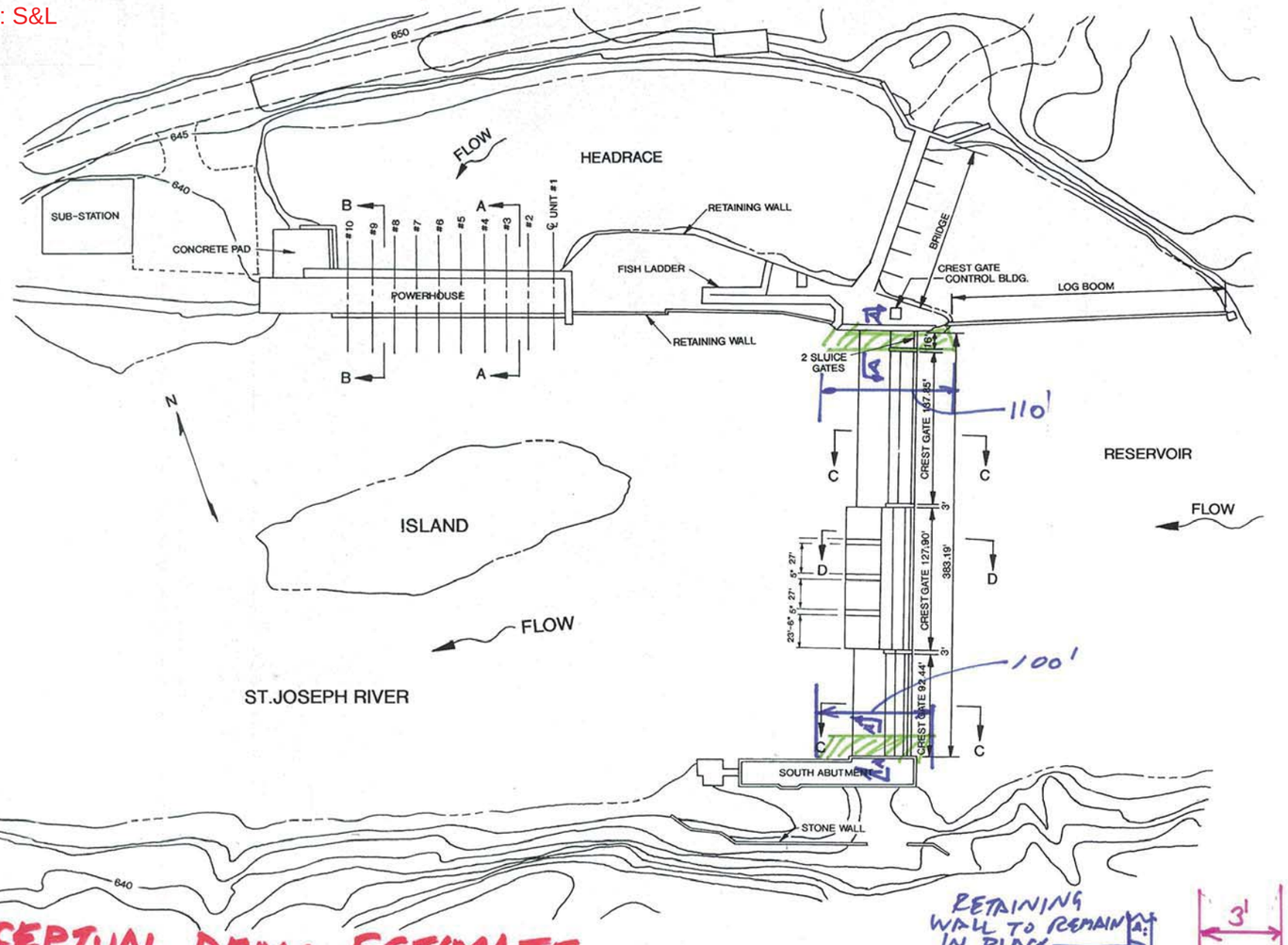
INDIANA MICHIGAN POWER COMPANY
BUCHANAN
HYDROELECTRIC PROJECT NO. 2551
MICHIGAN
PLAN, ELEVATIONS AND SECTIONS

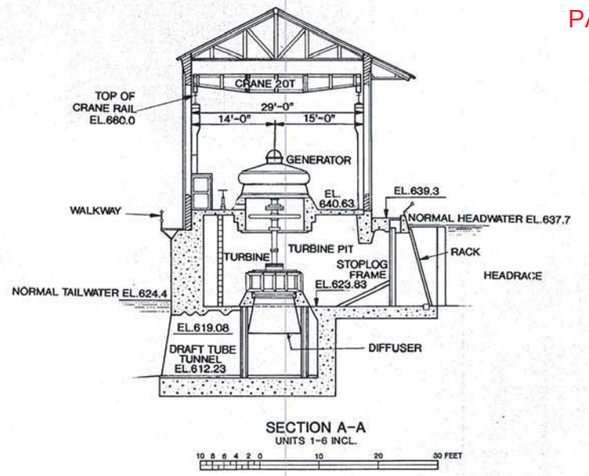
THIS DRAWING, EXHIBIT "F", IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY.

BY Bert Bennett

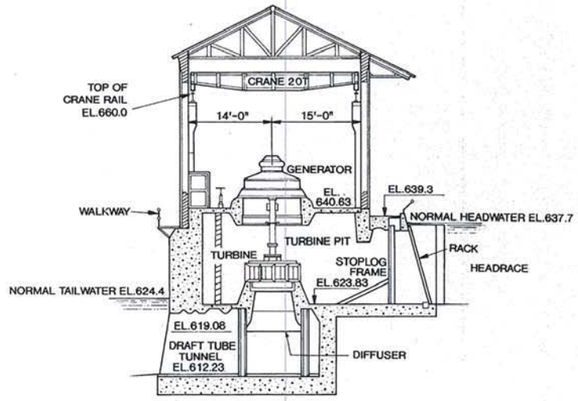
DATE 10/31/91

FERC No. 2551-004-1

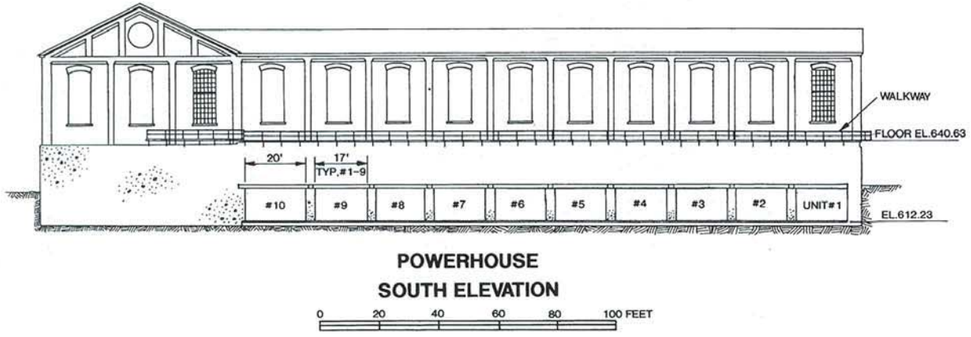




SECTION A–A
UNITS 1–6 INCL.
10 8 6 4 2 0 10 20 30 FEET

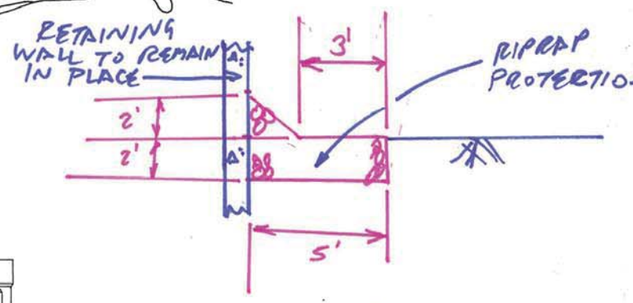


SECTION B–B
UNITS 7–10 INCL.
10 8 6 4 2 0 10 20 30 FEET



POWERHOUSE
SOUTH ELEVATION
0 20 40 60 80 100 FEET

I&M CONCEPTUAL DEMO ESTIMATE
BUCHANAN RETIREMENT OPTION 3
CIVIL QUANTITIES



SECTION A
N.T.S

$V_{RIPRAP} = (124\,ft^2)(110+100) \times \frac{1}{27} = 95\ CY$

$V_{OUT} = (10\,ft^2)(110+100) \times \frac{1}{27} = 80\ CY$

THIS DRAWING, EXHIBIT"F",IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY.
BY Robert Bennett
DATE 10/31/91

EXHIBIT F SHEET 1 OF 2

INDIANA MICHIGAN POWER COMPANY
BUCHANAN
HYDROELECTRIC PROJECT NO.2551
MICHIGAN
PLAN, ELEVATIONS AND SECTIONS

Constantine Hydroelectric Plant

CONCEPTUAL DEMOLITION COST ESTIMATE

Prepared for:
Indiana Michigan Power Company (Owner)
and American Electric Power Service Corporation

Project No. 13465-000
February 12, 2016
Revision 0

55 East Monroe Street
Chicago, IL 60603-5780 USA

AEP AMERICAN® ELECTRIC POWER

Constantine Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Conceptual Demolition Cost Estimate
February 12, 2016

Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	01/29/16	Comments	R. C. Kinsinger	A.D. Chapin D. F. Franczak	M. N. Ozan	All
0	02/12/16	Use	R. C. Kinsinger RKinsinger RC	A.D. Chapin ADChapin D. F. Franczak D.F. Franczak	T. J. Meehan JMeehan	All

TABLE OF CONTENTS

1.0 INTRODUCTION

The Constantine Hydroelectric Plant located in the City of Constantine, Michigan is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of (from left to right referenced facing downstream) a left abutment embankment section, a flashboard regulated spillway, a canal headgate structure, a power canal (headrace) flanked by earth embankments on either side of the canal, the powerhouse and a separate saddle dike on the left bank of the power canal. The powerhouse is located downstream of the spillway, at the downstream end of the headrace, and returns flow to the river. The powerhouse contains four (4) operating S. Morgan Francis turbine generators rated at 0.3 MW each, installed in 1923 or 1924.

AEP recently contracted S&L to prepare conceptual demolition cost estimates considering three (3) retirement options defined as follows: (1) Option 1, Non-Power Operation, (2) Option 2, Partial Removal of the Dam Structures, and (3) Option 3, Complete Removal of the Dam and Powerhouse. Also, in addition S&L was requested to prepare a separate Asbestos Removal Conceptual Cost Estimate.

The objective of the conceptual demolition cost estimates is to determine the gross demolition costs for Constantine Hydroelectric Plant (including gross salvage credits and any other benefits), in support of documenting a component of future AEP book depreciation rates to be approved by the I&M's state commissions and potential future inclusion in submittal of a rate case to the state commissions, and other potential uses. The cost estimate considers the demolition/dismantlement methodology which complies with current OSHA rules and regulations.

2.0 COST ESTIMATE SUMMARY

Conceptual Demolition Cost Estimate No. 33707B, dated February 12, 2016, was prepared and is included as Exhibit 2. This cost estimate was prepared for retirement option 3, but includes accounts allowing the determination of cost estimates for retirement options 1 and 2 as well. A summary of the conceptual demolition cost estimates for all three (3) retirement options is provided in Exhibit 1 and detailed in the following tables.

The cost estimate is structured into a code of accounts as identified in Table 2-1.

Table 2-1
Cost Estimate Code of Accounts

Account Number	Description
10, 21, 22	Demolition Costs (including steel, equipment & piping scrap value)
18	Scrap Value Costs
91	Other Direct & Construction Indirect Costs
93	Indirect Costs
94	Contingency Costs
96	Escalation Costs

The results of the cost estimate for retirement option 3 are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary
Retirement Option 3

Description	Total Cost
Demolition Cost	$3,711,338
Scrap Value	($92,058)
Direct Cost Subtotal	$3,619,279
Indirect Cost	$371,000
Contingency Cost	$830,000
Escalation Cost	$0
Total Project Cost	$4,820,280

The results of the cost estimate for retirement option 1 are provided in Table 2-3 below.

Table 2-3
Cost Estimate Results Summary
Retirement Option 1

Description	Total Cost
Demolition Cost	$238,539
Scrap Value	($83,035)
Direct Cost Subtotal	$174,023
Indirect Cost	$17,000
Contingency Cost	$67,700
Escalation Cost	$0
Total Project Cost	$258,723

The results of the cost estimate for retirement option 2 are provided in Table 2-4 below.

Table 2-4
Cost Estimate Results Summary
Retirement Option 2

Description	Total Cost
Demolition Cost	$3,375,501
Scrap Value	($83,035)
Direct Cost Subtotal	$3,292,465
Indirect Cost	$337,000
Contingency Cost	$755,000
Escalation Cost	$0
Total Project Cost	$4,384,465

Asbestos Removal Conceptual Cost Estimate No. 33739B, dated February 12, 2016, was prepared and is included as Exhibit 3. The total estimated cost for asbestos removal prior to plant dismantlement is $55,200. Quantities were derived from drawings and past experience. Asbestos removal applies to the powerhouse, thus the removal cost applies to all three (3) retirement options. The cost of asbestos removal is excluded from the total conceptual demolition cost estimates for each retirement option detailed in the tables above.

3.0 TECHNICAL BASIS

The scope of dismantlement is based on three (3) retirement options, as requested by AEP, as follows:

Retirement Option 1, Non-Power Operation: This scenario would consider leaving intact all of the existing water-impounding structures and the powerhouse. Only the electric generating units and their auxiliary equipment would be removed so as to preclude the generation of electricity by the former hydroelectric plant. In addition, the spillway would be modified as required in order to pass river flows and maintain the impoundment's water surface elevation at the current conditions.

Retirement Option 2, Partial Removal of the Dam Structures: This scenario would consider demolition and removal of certain elements of the hydroelectric site in order to drain the existing impoundment and create a natural river channel through the dam site. This would generally include removal of the generating units and powerhouse and possibly but not inclusively demolition and removal of substantial portions of concrete spillway structures. This option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

Retirement Option 3, Complete Removal of the Dam and Powerhouse: This scenario would consider complete removal of the electric generating components and powerhouse and complete removal of the dam. Similar to option 2, this option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

The scope of dismantlement for each retirement option, as interpreted from the definitions above, are identified on marked plant drawings included as Exhibit 4. The scope of dismantlement and the sequence of demolition for each retirement option are defined on these sketches.

Retirement options 2 and 3 include the same demolition work as retirement option 1, removal of the generating unit components from the powerhouse. The powerhouse is not removed in retirement option 1, but is removed in retirement option 3. For retirement option 2 the powerhouse may or may not be removed, depending on if removal of portions of the dam can restore river flow to natural flow without removing the powerhouse (refer to Exhibit 4).

For each of the retirement options the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of all sediment potentially disturbed by the partial or complete removal of the dam. The subcontractor costs included in retirement options 2 and 3 are for lime stabilization of the sediment and removal of the sediment and other wastes (such as timber) to the waste disposal site. These costs do not apply to retirement option 1 since only generating unit components in the powerhouse are removed and this material has scrap value.

Retirement options 2 and 3 include the stabilization of newly exposed riverbanks, which include the dam area and areas upstream of the dam. The extent of stabilization for retirement option 3 may be slightly more than retirement option 2, since the entire dam is being removed in retirement option 3.

The following are excluded from the scope of the conceptual demolition cost estimates:

- Asbestos removal (separate cost estimate prepared).
- The conceptual demolition cost estimate includes the cost to remove the three (3) main power transformers located in the switchyard, but not the cost to remove the switchyard itself (and remaining components in the switchyard).
- The separate brick storage building near the entrance road will remain in place.
- Evaluation of the effect of the complete removal of the series of dams on the river watershed.
- Evaluation of the effect of the removal of any one dam, on either the upstream or downstream side dam and reservoir, after removal of the dam.
- Potential social or environmental impact of the draining of the reservoirs and the impact on property values or other community impact.
- The conceptual demolition cost estimate excludes any costs related to performing surveys to quantify the amount of sediment and chemical testing of the sediment. The quantity of sediment to be removed was estimated for retirement options 2 and 3 and the cost to remove the sediment is included in the conceptual demolition cost estimate. As stated above, the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of the sediment potentially disturbed by the partial or complete removal of the dam.

The scope of the demolition cost estimate was reaffirmed during a review of the facility by two S&L employees in conjunction with a representative from Bradenburg Industrial Service Co. and AEP corporate and plant personnel. The facility review was held on Tuesday December 15, 2015.

4.0 COMMERCIAL BASIS

4.1 General Information

The Conceptual Demolition Cost Estimates prepared for the Constantine Hydroelectric Plant is a conceptual estimate of the cost to dismantle the powerhouse and dam in accordance with the scope defined for each of the three (3) retirement options. Costs were calculated for (1) demolition of existing plant structures and equipment and associated site restoration costs, (2) scrap value of steel, copper and stainless steel, as applicable, (3) associated indirect costs, and (4) contingency.

All units used in the cost estimate are U.S. Standard and all costs are in US Dollars (4th Quarter 2015 levels). A three (3) year demolition schedule is anticipated for retirement option 3 including asbestos removal (to be performed prior to start of demolition work). The schedule takes into consideration environmental permitting, asbestos removal which includes mapping out all asbestos contamination throughout the powerhouse and associated abatement, followed by total plant demolition and site restoration. The schedule for the other two (2) retirement options would be correspondingly less.

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in the cost estimates were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the hydroelectric plant drawings and data provided by AEP, and the information obtained from Plant personnel during the facility review.

4.3 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate were calculated as Union Labor rates for South Bend, Indiana, based on 2015, R. S. Means “Labor Rates for the Construction Industry”. The craft rates were incorporated into work crews appropriate for the activities by adding allowances for small tools, construction equipment, insurance, and site overheads to arrive at crew hourly rates detailed in the cost estimate. A 1.10 regional labor productivity multiplier was included based on Compass International Global Construction Yearbook, 2015 Edition, for union work in Indiana. National Maintenance

Agreement Rates (typically negotiated by AEP) do not apply as this work is assumed to be performed as a lump sum contract.

4.3.1 Labor Work Schedule and Incentives

The estimate assumed a 5x8 work week. No per diem or other labor incentives are included.

4.3.2 Construction Indirects

Allowances were included in the cost estimate as direct costs as noted for the following:

- Freight: Material and scrap freight included in the material and scrap costs.
- Additional Crane Allowance: None included. Cost of cranes and construction machinery are included in the labor wage rates.
- Mobilization and Demobilization: Included in labor wage rates.
- Scaffolding: Included in labor wage rates.
- Consumables: Included in material and labor costs.
- Per Diem Costs: Excluded from the estimate.
- Contractor's General and Administrative Costs and Profit: Included in the labor wage rates.

4.4 Scrap Value

The value of scrap was determined by a 3 month average (November and December 2015 and January 2016) using Zone 4 (USA Midwest) of the "Scrap Metals Market Watch" (www.americanrecycler.com).

Since the values obtained are delivered pieces, 25% of the values obtained were deducted to pay for separation, preparation and shipping to the mills. This resulted in realized prices of:

- Mixed Steel Value @ $118/Ton
- Copper Value @ $3,180/Ton
- Stainless Steel @ $675/Ton

Note: 1 Ton = 2,000 Lbs

All steel is considered to be mixed steel unless otherwise noted.

4.5 Indirect Costs

Allowances were included in the cost estimate as indirect costs as noted for the following:

- Engineering, Procurement and Project Services: None included.
- Construction Management Support: None included.
- Owners Cost: Included as 10.0% of the total direct cost. Owners Costs include owner project engineering, administration and construction management, permits and fees, legal expenses, taxes, removal of chemicals, etc.

4.6 Escalation

No allowance for escalation was included in the cost estimate. All costs are determined in 4th Quarter 2015 levels.

4.7 Contingency

Allowances were included in the cost estimate as contingency as noted for the following:

- Scrap Value: Included as 15.0% reduction in the salvage value resulting in a total net reduction in the salvage value. The contingency assumes a potential drop in salvage value thus increasing the project cost. Scrap costs are very volatile but by taking a 3-month average some of the effect of volatility is reduced. However there are other variables that affect scrap pricing such as the quantity and processing fees. The contingency applied is based on the estimators confidence in scrap pricing used in the demolition cost estimate.
- Material: Included as 20.0% of the total material cost.
- Labor: Included as 20.0% of the total labor cost.
- Indirect: Included as 20.0% of the total indirect cost.
- Subcontractor: Included as 20.0% of the total subcontractor cost.

4.8 Assumptions

The following assumptions apply to the cost estimates.

- The cost estimate for each retirement option is based on the scope and the demolition sequences defined on the sketches provided in Exhibit 4.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.

- All electrical equipment and wiring is de-energized prior to start of dismantlement. There is no reservoir control at this plant, hence electrical power is not required for retirement option 1. The tailwater at Constantine is controlled by the gated spillway structure at Mottville Hydroelectric Plant, approximately seven (7) miles downstream.
- No extraordinary environmental costs for demolition have been included.
- Handling, on-site and off-site disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- The window glazing in the powerhouse may be asbestos contaminated and an allowance for removal and disposal is included in the asbestos removal cost estimate. There are twenty (20) control boards mounted on 3' x 9' transite (asbestos) panels and an allowance for removal and disposal is included in the asbestos removal cost estimate. There is no building or pipe insulation in the facility and consequently no insulation related asbestos contamination.
- Switchyards within the plant boundaries are not part of the scope, neither are access roads to these facilities. Fences and gates needed to protect the switchyard will be left in place.
- All demolished materials are considered debris, except for organic combustibles and non-embedded metals which have scrap value.
- The basis for salvage estimating is for scrap value only. No resale of equipment or material is included.
- Sediment removed due to demolition work is treated with lime and hauled offsite to an approved waste disposal facility.

5.0 REFERENCES

5.1 Constantine Plant Drawings: One-Line Diagrams, No. 14-12001 and No. E-1000, 12/16/06.

5.2 Findlay Engineering, Inc., Supporting Technical Information Document, Constantine Hydroelectric Project, October, 2005.

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EXHIBIT 1
Constantine Hydroelectric Plant
Conceptual Demolition Cost Estimate Summary

Constantine Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Estimate Number: 33707B

February 12, 2016

	Retirement Option 1	Retirement Option 2	Retirement Option 3
Demolition Cost	$ 238,539	$ 3,375,501	$ 3,711,338
Scrap Value	$ (83,035)	$ (83,035)	$ (92,058)
Direct Cost Subtotal	$ 174,023	$ 3,292,465	$ 3,619,279
Indirect Cost	$ 17,000	$ 337,000	$ 371,000
Contingency Cost	$ 67,700	$ 755,000	$ 830,000
Escalation Cost	$ -	$ -	$ -
Total Demolition Cost	$ 258,723	$ 4,384,465	$ 4,820,280

EXHIBIT 2
Constantine Hydroelectric Plant
Conceptual Demolition Cost Estimate No. 33707B

AEP CONSTANTINE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	CONSTANTINE
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33707B
Estimate Class	Conceptual
Cost index	INSOU

AEP CONSTANTINE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ACCOUNT A	DEMOLITION ACCOUNT A	18,520	(83,035)	83,209	1,411	155,330	174,023
ACCOUNT B	DEMOLITION ACCOUNT B	523,340		1,485,812	14,749	1,109,290	3,118,442
ACCOUNT C	DEMOLITION ACCOUNT C	(105,880)	(9,023)		4,890	441,717	326,814
	TOTAL DIRECT	435,980	(92,058)	1,569,021	21,050	1,706,337	3,619,279

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	1,706,337		21,050
Material	1,569,021		
Subcontract	435,980		
Scrap Value	(92,058)		
	3,619,280	**3,619,280**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		3,619,280	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	371,000		
93-8 EPC Fee			
	371,000	**3,990,280**	
Contingency:			
94-1 Contingency on Material	314,000		
94-2 Contingency on Labor	341,000		
94-3 Contingency on Sub.	87,000		
94-6 Contingency on Scrap	14,000		
94-5 Contingency on Indirect	74,000		
	830,000	**4,820,280**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		4,820,280	
		4,820,280	
Total		***4,820,280***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ACCOUNT A			DEMOLITION ACCOUNT A									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO .3 MW GENERATOR	4 GENERATORS AT 6300# EA	12.60 TN	125	85.53 /MH	10,670		-		10,670
			DEMO TURBINE AND GEARS	4 TURBINES AT 9300# EA	18.60 TN	184	85.53 /MH	15,751		-		15,751
			TURBINE ROOM 6.5 TON OVERHEAD CRANE		5.00 TN	50	121.33 /MH	6,006		-		6,006
			MECHANICAL EQUIPMENT			358		32,428				32,428
		10.41.00	ELECTRICAL EQUIPMENT									
			GENERATOR BUS TRANSFORMERS	2.4 to 34.5 KV, 2.67 MVA (STEEL)	8.40 TN	25	80.14 /MH	1,979		-	-	1,979
			GENERATOR BUS TRANSFORMERS	2.4 to 34.5 KV, 2.67 MVA (CU)	4.40 TN	13	80.14 /MH	1,037		-	-	1,037
			MISCELLANEOUS ELECTRICAL EQUIPMENT		4.00 TN	12	80.14 /MH	942		-	-	942
			ELECTRICAL EQUIPMENT			49		3,958				3,958
			WHOLE PLANT DEMOLITION			408		36,385				36,385
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	4 GENERATORS AT 6300# EA	-12.60 TN		79.62 /MH		-	-	(1,488)	(1,488)
			MIXED STEEL	4 TURBINES AT 9300# EA	-18.60 TN		79.62 /MH		-	-	(2,196)	(2,196)
			MIXED STEEL	TURBINE ROOM 6.5 TON OVERHEAD CRANE	-5.00 TN		79.62 /MH		-	-	(590)	(590)
			MIXED STEEL	80 KW PROPANE ELECTRIC GENERATOR	-1.50 TN		79.62 /MH		-	-	(177)	(177)
			MIXED STEEL	GENERATOR BUS TRANSFORMERS	-8.40 TN		79.62 /MH		-	-	(992)	(992)
			MIXED STEEL								(5,443)	(5,443)
		18.30.00	COPPER									
			COPPER	4 GENERATORS 4 @ 4000 LB EA	-8.00 TN		79.62 /MH		-	-	(25,440)	(25,440)
			COPPER	CABLE	-6.00 TN		79.62 /MH		-	-	(19,080)	(19,080)
			COPPER	MISC. TRANSFORMERS & MOTORS	-6.00 TN		79.62 /MH		-	-	(19,080)	(19,080)
			COPPER	GENERATOR BUS TRANSFORMERS	-4.40 TN		79.62 /MH		-	-	(13,992)	(13,992)
			COPPER								(77,592)	(77,592)
			SCRAP VALUE								(83,035)	(83,035)
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									
			MASS EXCAVATION, COMMON EARTH USING 1.5 CY BACKHOE AND (6) 12 CY DUMP TRUCKS,	DIKE EXCAVATION TO PROVIDE RACEWAY DRAINAGE- MATERIAL PLACED DIRECTLY DOWNSTREAM OF HEADGATES	5,075.00 CY	363	196.64 /MH	71,360		-	-	71,360
			EXCAVATION			363		71,360				71,360
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIPRAP PROTECTION AT DIKE MODIFICATION	1,765.00 CY	576	74.10 /MH	42,718	72,189	-	-	114,906
			Erosion and Sedimentation Control			576		42,718	72,189			114,906
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT HEADGATE	LIME ADDITIVE FOR DRYING	463.00 CY		196.64 /MH			18,520	-	18,520
			Soil Remediation							18,520		18,520
			CIVIL WORK			939		114,078	72,189	18,520		204,787
	22.00.00		CONCRETE									
		22.13.00	Concrete									
			FLOWABLE FILL, 1500 PSI	FILL PENSTOCKS TO PREVENT BYPASS FLOW	116.00 CY	64	76.27 /MH	4,867	11,020	-	-	15,887
			Concrete			64		4,867	11,020			15,887
			CONCRETE			64		4,867	11,020			15,887
			ACCOUNT A DEMOLITION ACCOUNT A			1,411		155,330	83,209	18,520	(83,035)	174,023
ACCOUNT B			DEMOLITION ACCOUNT B									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	SPILLWAY THROAT	670.00 CY	829	89.94 /MH	74,579		-	-	74,579
			CONCRETE			829		74,579				74,579
			WHOLE PLANT DEMOLITION			829		74,579				74,579
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
		21.17.00	EXCAVATION									
			MASS EXCAVATION, COMMON EARTH USING 1.5 CY BACKHOE AND (6) 12 CY DUMP TRUCKS,	RIVERBED EXCAVATION FOR RIPRAP PLACEMENT	90.00 CY	6	196.64 /MH	1,266		-	-	1,266
			EXCAVATION			6		1,266				1,266
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	NEW STONE REQD IF CAUSEWAY STONE IS REUSED (24070-4297)	19,773.00 CY	6,458	74.10 /MH	478,561	808,716	-	-	1,287,276
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	FOR CAUSEWAYS	4,297.00 CY	1,403	74.10 /MH	103,999	175,747	-	-	279,746
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RELOCATE CAUSE WAY STONE FOR RIVER BEND PR0TECTION	4,297.00 CY	1,403	74.10 /MH	103,999		-	-	103,999
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT FLOOR SLABS TO REMAIN IN PLACE	90.00 CY	29	74.10 /MH	2,178	3,681	-	-	5,859
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT ABUTMENTS TO REMAIN IN PLACE (240-90)	150.00 CY	49	74.10 /MH	3,630	6,135	-	-	9,765
			Erosion and Sedimentation Control			9,344		692,368	994,279			1,686,647
		21.47.00	LANDSCAPING									
			HYDRO OR AIR SEED & MULCH & FERTILIZER		322.00 AC	4,570	74.64 /MH	341,078	491,533	-	-	832,611
			LANDSCAPING			4,570		341,078	491,533			832,611
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING	2,000.00 CY		196.64 /MH			80,000	-	80,000
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX (4000+2000)	6,000.00 CY		196.64 /MH			360,000	-	360,000
			REMOVAL OF LOCALIZED SILT AT HEADGATE	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX 926+463	1,389.00 CY		196.64 /MH			83,340	-	83,340
			Soil Remediation							523,340		523,340
			CIVIL WORK			13,920		1,034,711	1,485,812	523,340		3,043,863
			ACCOUNT B DEMOLITION ACCOUNT B			14,749		1,109,290	1,485,812	523,340		3,118,442
ACCOUNT C			DEMOLITION ACCOUNT C									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	SPILLWAY APRON	579.00 CY	717	89.94 /MH	64,450		-	-	64,450
			EQUIPMENT/ BUILDING FOUNDATION	HEADGATE BAYS	738.00 CY	913	89.94 /MH	82,148		-	-	82,148
			EQUIPMENT/ BUILDING FOUNDATION	SPILLWAY FOUNDATION	358.00 CY	443	89.94 /MH	39,850		-	-	39,850
			EQUIPMENT/ BUILDING FOUNDATION	POWER HOUSE	1,270.00 CY	1,572	89.94 /MH	141,366		-	-	141,366
			CONCRETE			3,645		327,813				327,813
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	GENERATOR HOUSE 140'X58X50'	101.50 TN	113	79.62 /MH	9,033		-	-	9,033
			STEEL			113		9,033				9,033
		10.24.00	ARCHITECTURAL									
			GENERATOR HOUSE	140X58X50' TALL	203,000.00 CF	871	89.81 /MH	78,221		-	-	78,221
			ARCHITECTURAL			871		78,221				78,221
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO PENSTOCKS	4 GENERATORS AT 7,800# EA	15.60 TN	154	85.53 /MH	13,211		-		13,211
			BAR RACKS	4 AT 5 TONS EACH	20.00 TN	45	121.33 /MH	5,406		-		5,406
			SLUICE GATES	1 AT 4 TONS EACH	4.00 TN	9	121.33 /MH	1,081		-		1,081
			STOP LOGS	4 AT 5 TONS EACH	20.00 TN	45	121.33 /MH	5,406		-		5,406
			MECHANICAL EQUIPMENT			252		25,103				25,103
		10.86.00	WASTE									
			WASTE - USER DEFINED	MISC	1.00 LS		121.33 /MH			-	10,000	10,000
			WASTE								10,000	10,000
			WHOLE PLANT DEMOLITION			4,882		440,170			10,000	450,170
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	DEMO PENSTOCKS	-15.60 TN		79.62 /MH		-	-	(1,842)	(1,842)
			MIXED STEEL	BAR RACKS	-20.00 TN		79.62 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL	SLUICE GATES	-4.00 TN		79.62 /MH		-	-	(472)	(472)
			MIXED STEEL	STOP LOGS	-20.00 TN		79.62 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL	GENERATOR HOUSE	-101.50 TN		79.62 /MH		-	-	(11,985)	(11,985)

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
			MIXED STEEL								(19,023)	(19,023)
			SCRAP VALUE								(19,023)	(19,023)
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									
			MASS EXCAVATION, COMMON EARTH USING 1.5 CY BACKHOE AND (6) 12 CY DUMP TRUCKS,	RIVERBED EXCAVATION FOR RIPRAP PLACEMENT (200-90)	110.00 CY	8	196.64 /MH	1,547		-	-	1,547
			EXCAVATION			8		1,547				1,547
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING CREDIT (1519-2000)	-481.00 CY		196.64 /MH			(19,240)	-	(19,240)
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX CREDIT (4556-6000))	-1,444.00 CY		196.64 /MH			(86,640)	-	(86,640)
			Soil Remediation							(105,880)		(105,880)
			CIVIL WORK			8		1,547		(105,880)		(104,333)
			ACCOUNT C DEMOLITION ACCOUNT C			**4,890**		**441,717**		**(105,880)**	**(9,023)**	**326,814**

EXHIBIT 3
Constantine Hydroelectric Plant
Asbestos Removal Conceptual Cost Estimate No. 33739B

AEP CONSTANTINE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	CONSTANTINE
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33739B
Estimate Class	Conceptual
Cost index	INSOU

AEP CONSTANTINE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ASBESTOS	ASBESTOS REMOVAL	41,800					41,800
	TOTAL DIRECT	41,800					41,800

Estimate Totals

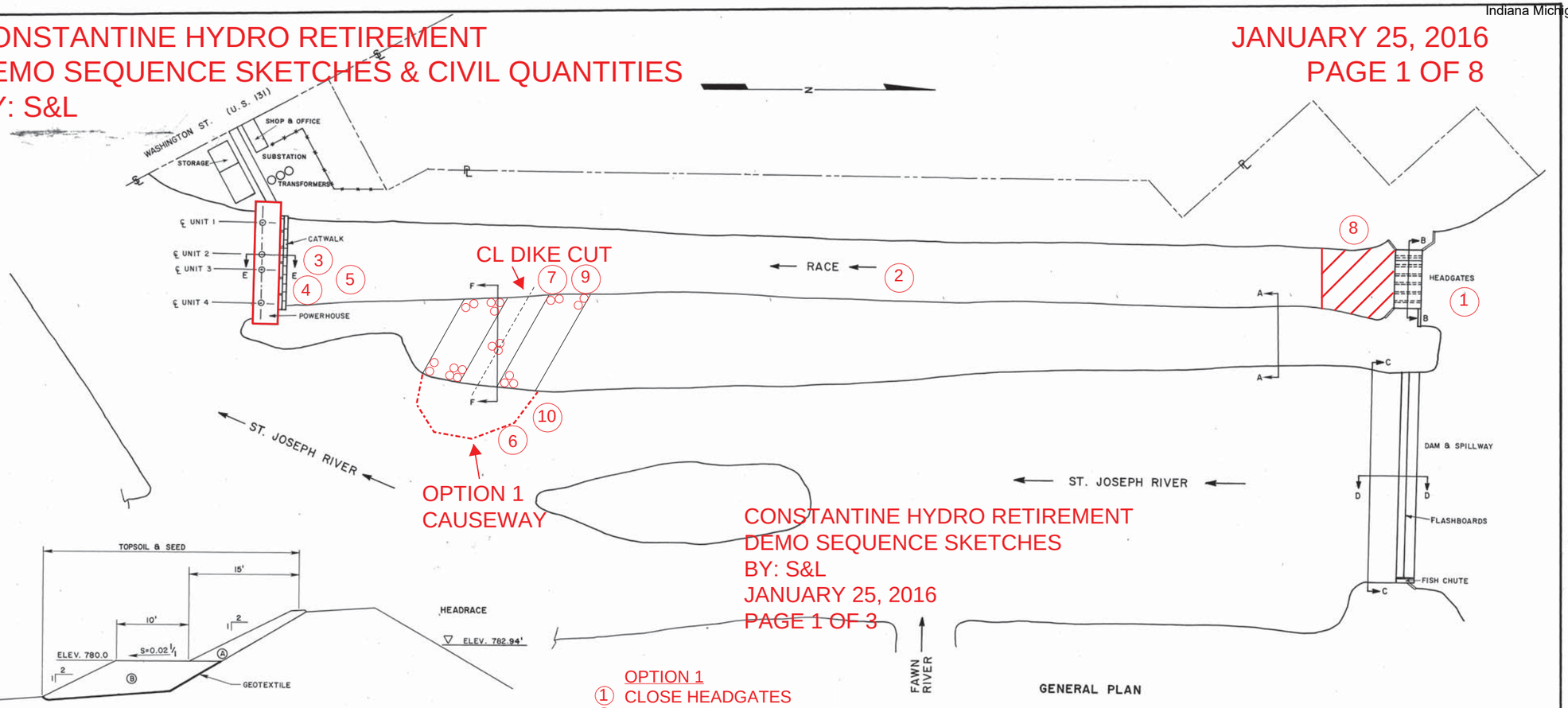
Description	Amount	Totals	Hours
Direct Costs:			
Labor			
Material			
Subcontract	41,800		
Scrap Value			
	41,800	**41,800**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		41,800	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	4,200		
93-8 EPC Fee			
	4,200	**46,000**	
Contingency:			
94-1 Contingency on Material			
94-2 Contingency on Labor			
94-3 Contingency on Sub.	8,400		
94-6 Contingency on Scrap			
94-5 Contingency on Indirect	800		
	9,200	**55,200**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		55,200	
		55,200	
Total		***55,200***	

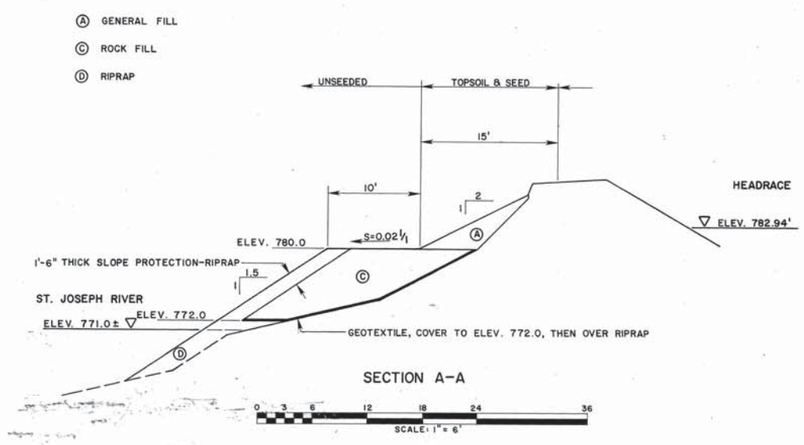
Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ASBESTOS			**ASBESTOS REMOVAL**									
	10.00.00		**WHOLE PLANT DEMOLITION**									
		10.37.00	**ASBESTOS REMOVAL**									
			ASBESTOS REMOVAL - MISC MATERIALS	WINDOW CAULKING MISC MATERIALS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL - CONTROL /INSTRUMENT PANELS	20 PANELS 1X3X9' TALL	20.00 CY		121.33 /MH			38,000	-	38,000
			ASBESTOS REMOVAL							**41,800**		**41,800**
			WHOLE PLANT DEMOLITION							**41,800**		**41,800**
			ASBESTOS ASBESTOS REMOVAL							**41,800**		**41,800**

EXHIBIT 4
Constantine Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

CONSTANTINE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

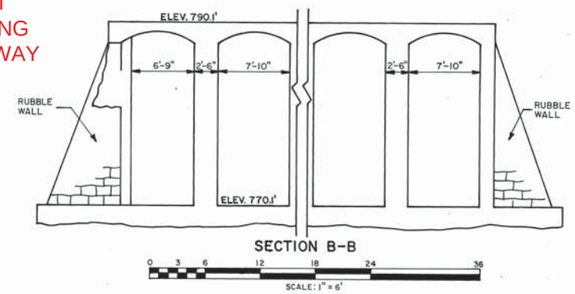
JANUARY 25, 2016
PAGE 1 OF 8





CONSTANTINE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES
BY: S&L
JANUARY 25, 2016
PAGE 1 OF 3

OPTION 1
1. CLOSE HEADGATES
2. DRAIN HEADRACE
3. INSTALL STOPLOGS
4. REMOVE EQUIPMENT
5. GROUT PENSTOCKS
6. CONSTRUCT CAUSEWAY
7. CUT DIKE
8. PLACE CUT MATERIAL BEHIND HEADGATES
9. PLACE RIPRAP AT NEW DIKE OPENING
10. REMOVE CAUSEWAY



THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 12 DAY OF Sept, 19 84

MICHIGAN POWER COMPANY
BY A.T. Williams Jr.
VICE PRESIDENT

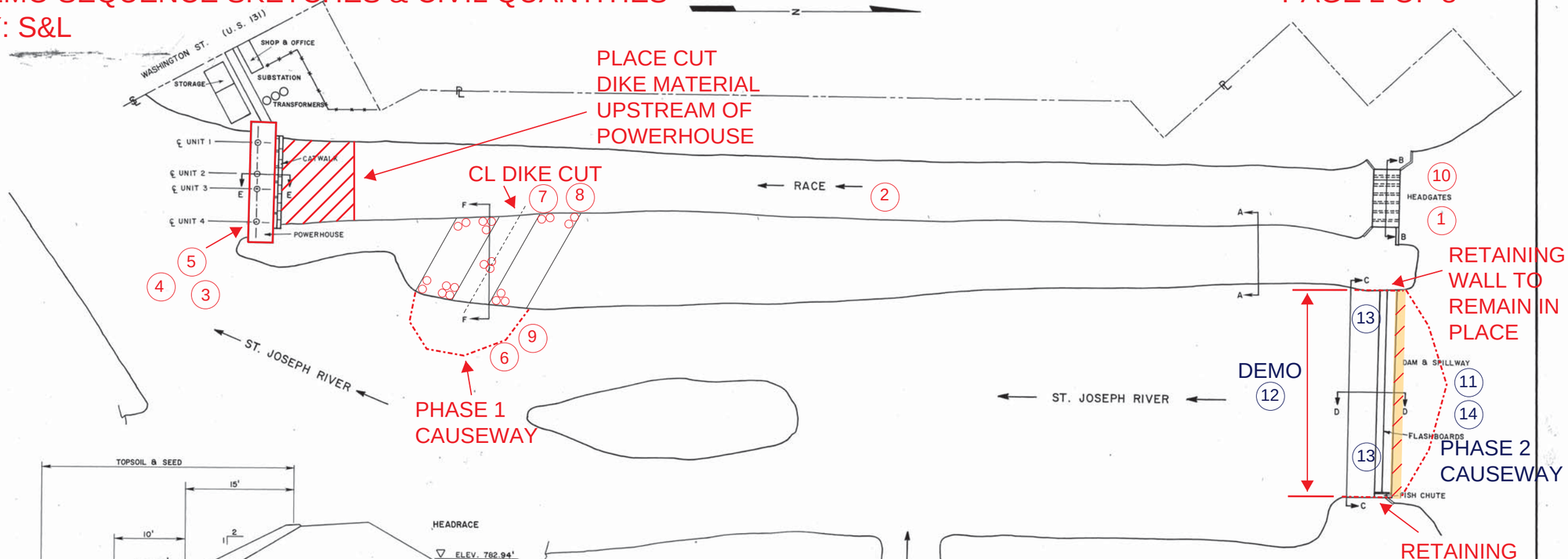
EXHIBIT F
SHEET 1 OF 3

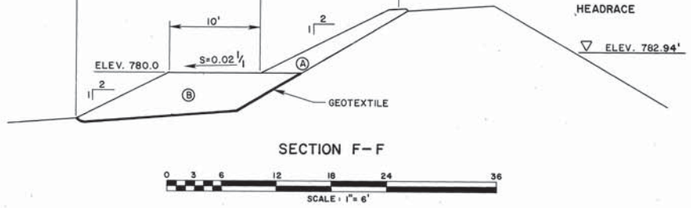
MICHIGAN POWER COMPANY
CONSTANTINE HYDRO PROJECT
PROJECT NO. 10661 MICHIGAN
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

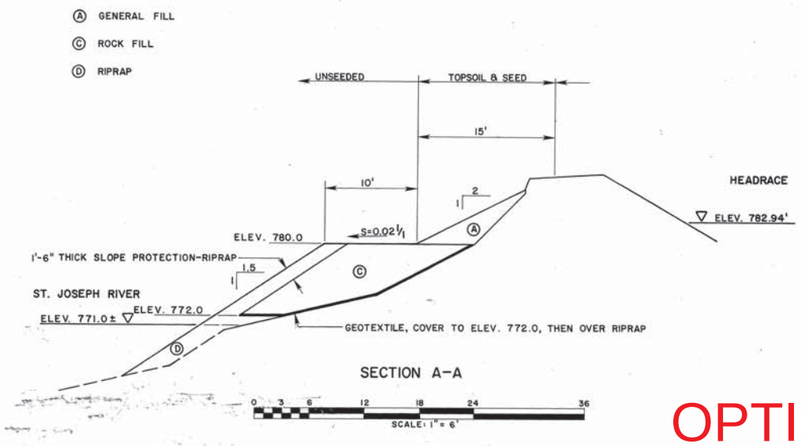
FERC NO. 10661-1

CONSTANTINE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
PAGE 2 OF 8

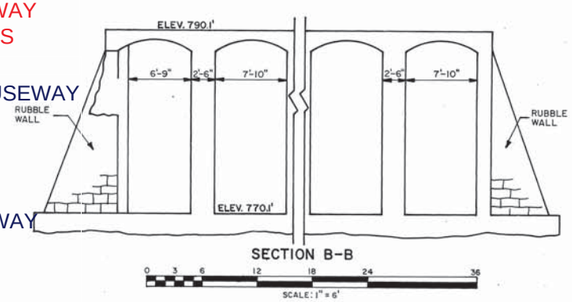






PHASE 1
1. CLOSE HEADGATES
2. DRAIN RACEWAY
3. INSTALL STOPLOGS
4. REMOVE EQUIPMENT
5. GROUT PENSTOCKS
6. CONSTRUCT CAUSEWAY
7. CUT DIKE
8. PLACE RIPRAP AT NEW DIKE OPENING
9. REMOVE CAUSEWAY
10. OPEN HEADGATES

PHASE 2
11. CONSTRUCT CAUSEWAY
12. DEMO SPILLWAY SECTIONS
13. PLACE RIPRAP PROTECTION
14. REMOVE CAUSEWAY



OPTION 2

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MICHIGAN POWER COMPANY
BY A.E. Williams Jr.
VICE PRESIDENT

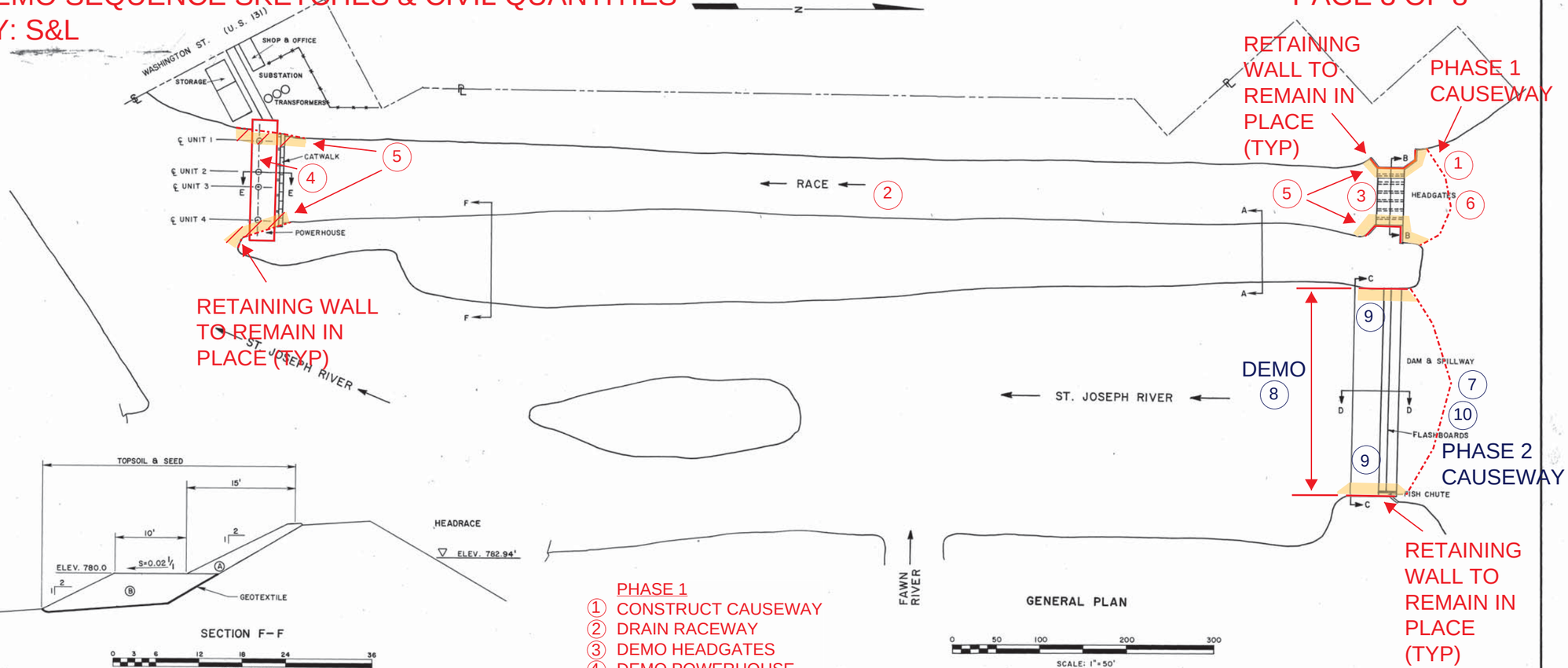
EXHIBIT F
SHEET 1 OF 3

MICHIGAN POWER COMPANY
CONSTANTINE HYDRO PROJECT
PROJECT NO. 10661 MICHIGAN
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

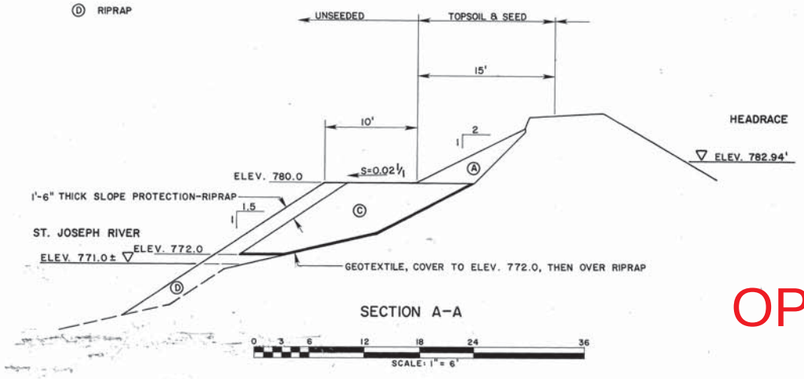
FERC NO. 10661-1

CONSTANTINE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
PAGE 3 OF 8



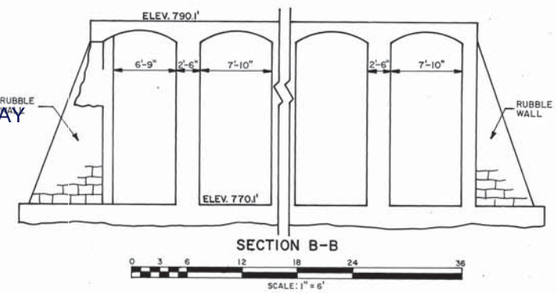
Ⓐ GENERAL FILL
Ⓒ ROCK FILL
Ⓓ RIPRAP



PHASE 1
① CONSTRUCT CAUSEWAY
② DRAIN RACEWAY
③ DEMO HEADGATES
④ DEMO POWERHOUSE
⑤ PLACE RIPRAP AT RETAINING WALLS
⑥ REMOVE CAUSEWAY

PHASE 2
⑦ CONSTRUCT CAUSEWAY
⑧ DEMO SPILLWAY
⑨ PLACE RIPRAP PROTECTION AT RETAINING WALLS
⑩ REMOVE CAUSEWAY

OPTION 3



THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS
12 DAY OF Sept, 19 34

MICHIGAN POWER COMPANY
BY A.M. Williams Jr.
VICE PRESIDENT

EXHIBIT F
SHEET 1 OF 3

MICHIGAN POWER COMPANY
CONSTANTINE HYDRO PROJECT
PROJECT NO. 10661 MICHIGAN
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

FERC NO. 10661-1

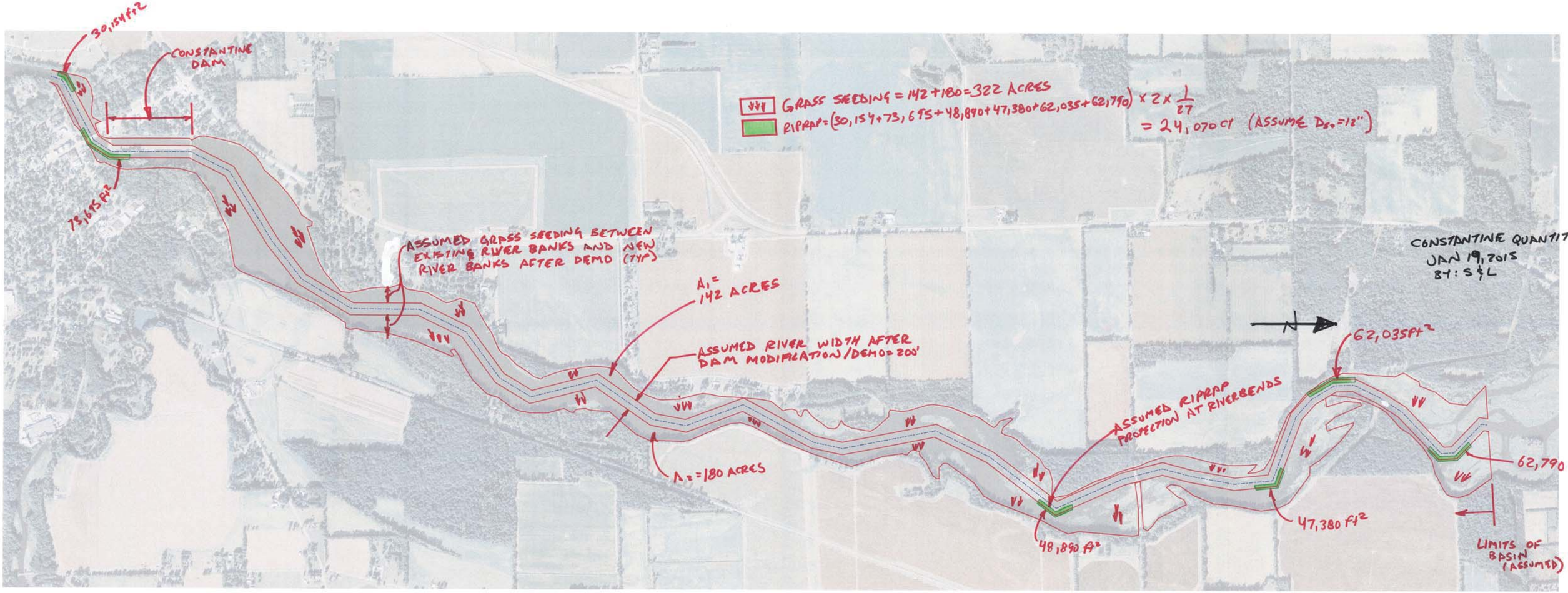
Indiana Michigan Power Company
Attachment JAC-3
Witness; Cash
Page 99 of 205

CONSTANTINE			
OPTION 1			
ITEM	QUANTITY	UNIT	REMARKS
DIKE EXCAVATION	5,075	CY	DIKE EXCAVATION TO DRAIN HEADRACE. PLACE MATERIAL BEHIND HEADGATE
RIPRAP PROTECTION AT DIKE MODIFICATION	1,765	CY	2 ft riprap protection @ D(50)=12"

OPTION 2			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	322	ACRE	
RIPRAP PROTECTION	24,070	CY	2 ft riprap protection @ D(50)=12"
DIKE EXCAVATION	5,075	CY	DIKE EXCAVATION TO DRAIN HEADRACE. PLACE MATERIAL UPSTREAM OF POWERHOUSE
RIPRAP PROTECTION AT DIKE MODIFICATION	1,765	CY	2 ft riprap protection @ D(50)=12"
RIPRAP PROTECTION AT FLOOR SLAB TO REMAIN IN PLACE	90	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP PLACEMENT	90	CY	TO BE REPLACED BY RIPRAP

OPTION 3			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	322	ACRE	
RIPRAP PROTECTION AT RIVER BENDS	24,070	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	200	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT ABUTMENTS	240	CY	2 ft riprap protection @ D(50)=12"

Note: Localized miscellaneous silt removal and earthwork as part of dam demolition by Brandenburg


30,154 ft²
CONSTANTINE DAM
73,675 ft²
GRASS SEEDING = 142 + 180 = 322 ACRES
RIPRAP = (30,154 + 73,675 + 48,890 + 47,380 + 62,035 + 62,790) x 2 x 1/27
= 24,070 CY (ASSUME D50 = 12")
ASSUMED GRASS SEEDING BETWEEN EXISTING RIVER BANKS AND NEW RIVER BANKS AFTER DEMO (TYP)
A1 = 142 ACRES
ASSUMED RIVER WIDTH AFTER DAM MODIFICATION/DEMO = 200'
A2 = 180 ACRES
ASSUMED RIPRAP PROTECTION AT RIVERBENDS
48,890 ft²
47,380 ft²
62,035 ft²
62,790 ft²
LIMITS OF BASIN (ASSUMED)
CONSTANTINE QUANTITIES
JAN 19, 2015
BY: S&L
500' 0' 500' 1000'
GRAPHIC SCALE

2' DEEP RIPRAP PROTECTION
$A_{RIPRAP} = 23,830 ft^2$
$V_{RIPRAP} = (23,930) \times 2 \times \frac{1}{27} = 1,765 CY$ (*)

PLACE 5,075 CY OF CUT DOWNSTREAM OF HEADGATES

$A_{RIPRAP} = 23,830 ft^2$

WASHINGTON ST. (U.S. 131)
SHOP & OFFICE
STORAGE
SUBSTATION
TRANSFORMERS
℄ UNIT 1
℄ UNIT 2
℄ UNIT 3
℄ UNIT 4
CATWALK
POWERHOUSE
TOP OF RIPRAP EL. 784
RIPRAP PROTECTION
RACE
HEADGATES
NEW SPILLWAY
B SPILLWAY EL. 787
2:1 SLOPE (TYP.)
TOP OF SPILLWAY EL. 787.5' (TYP.)
35'
3.5'
FLOW
ST. JOSEPH RIVER
DAM & SPILLWAY
FLASHBOARDS
FISH CHUTE

QUANTITY
* APPLIES TO OPTION 1 & 2

$V_{CUT} = V_{A \to B} = (0+1200)\frac{1}{2} \times 39 \times 1/27 = 870 CY$
$V_{B \to C} = (1200+1200)\frac{1}{2} \times 75 \times 1/27 = 3335 CY$
$V_{C \to D} = V_{A \to B} = 870 CY$
$\Sigma V = 870 + 3335 + 870 = 5,075 CY$ (CUT) (*)

$A_A = 0$
$A_B = 1200 ft^2$
$A_C = 1200 ft^2$
$A_D = 0$

T/DIKE EL. 787.5
HEADRACE
ELEV. 782.94'
TOPSOIL & SEED
15'
10'
ELEV. 780.0
S=0.02 1/1
GEOTEXTILE
$A = 1200 ft^2$
B/RACE EL. 769 +/-
B/RIVER EL. 763 +/-

SECTION F-F
SCALE: 1" = 6'

FAWN RIVER

GENERAL PLAN
SCALE: 1" = 50'

Ⓐ GENERAL FILL
Ⓒ ROCK FILL
Ⓓ RIPRAP

SECTION B & C
N.T.S.

UNSEEDED
TOPSOIL & SEED
15'
10'
HEADRACE
ELEV. 782.94'
ELEV. 780.0
S=0.02 1/1
1'-6" THICK SLOPE PROTECTION-RIPRAP
ST. JOSEPH RIVER
ELEV. 771.0 ±
ELEV. 772.0
GEOTEXTILE, COVER TO ELEV. 772.0, THEN OVER RIPRAP

SECTION A-A
SCALE: 1" = 6'

ELEV. 790.1'
6'-9"
2'-6"
7'-10"
2'-6"
7'-10"
RUBBLE WALL
RUBBLE WALL
ELEV. 770.1'

SECTION B-B
SCALE: 1" = 6'

THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 12 DAY OF Sept, 19 22

MICHIGAN POWER COMPANY
BY [signature]
VICE PRESIDENT

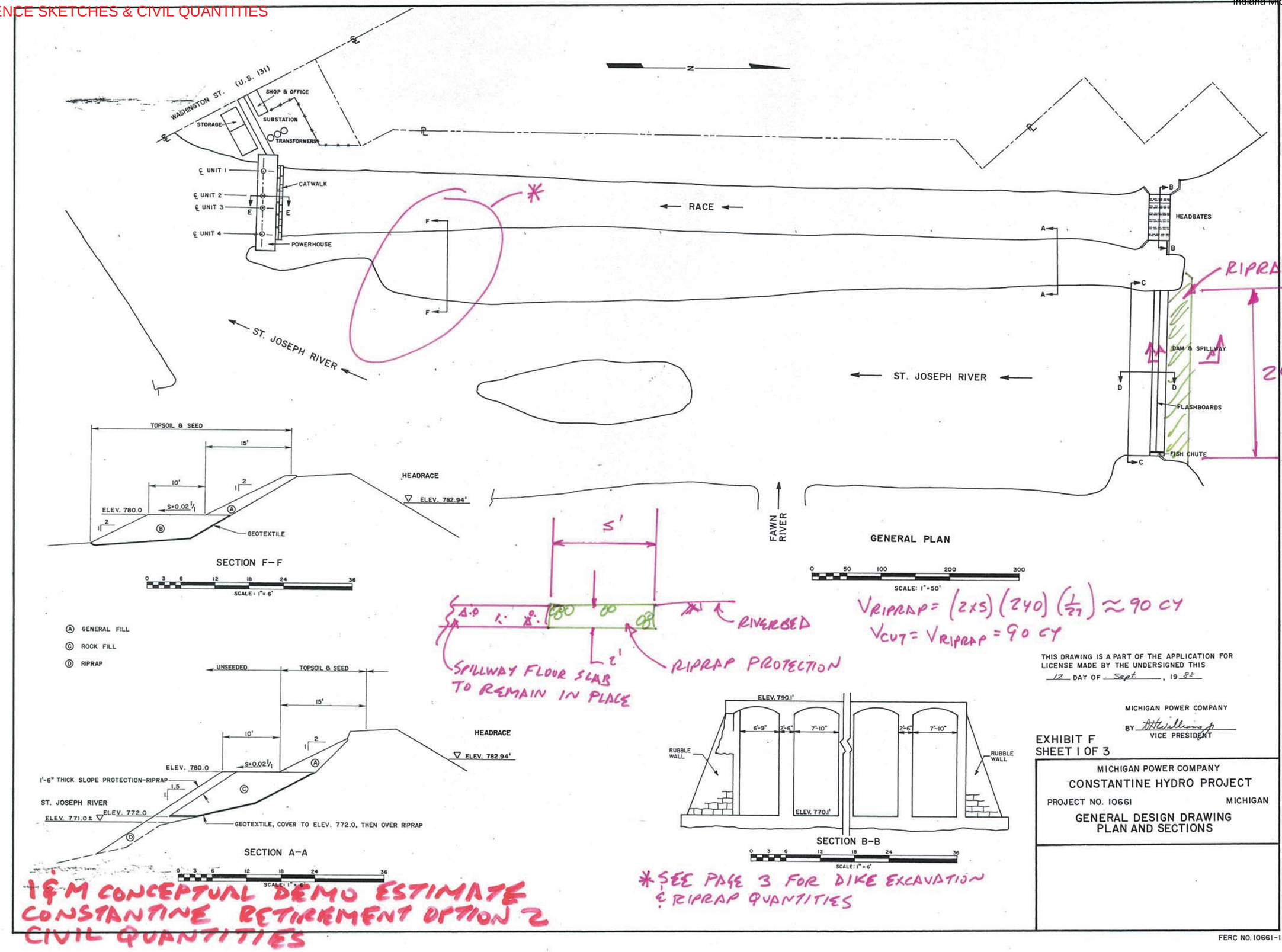
EXHIBIT F
SHEET 1 OF 3

MICHIGAN POWER COMPANY
CONSTANTINE HYDRO PROJECT
PROJECT NO. 10661 MICHIGAN
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

FERC NO. 10661-1

1 & M CONCEPTUAL DEMO ESTIMATE
CONSTANTINE RETIREMENT OPTION 1 & 2
CIVIL QUANTITIES

Indiana Michigan Power Company
Attachment JAC-3
Witness; Cash
Page 102 of 205



$V_{RIPRAP} = (2 \times 5)(240)\left(\frac{1}{27}\right) \approx 90$ CY

$V_{CUT} = V_{RIPRAP} = 90$ CY

THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 12 DAY OF Sept., 19 82

MICHIGAN POWER COMPANY
BY A.E. Williams Jr.
VICE PRESIDENT

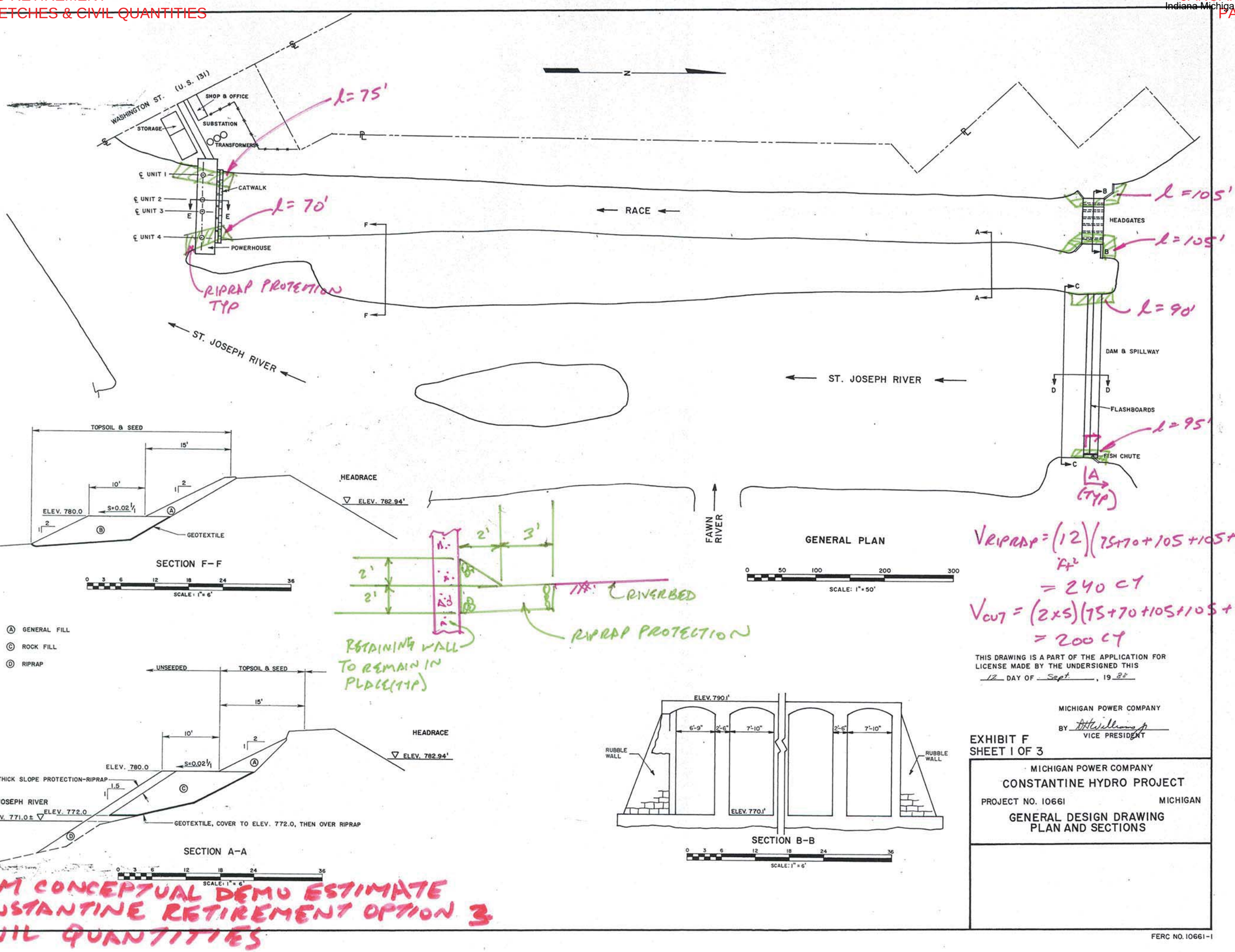
EXHIBIT F
SHEET 1 OF 3

MICHIGAN POWER COMPANY
CONSTANTINE HYDRO PROJECT
PROJECT NO. 10661 MICHIGAN
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

FERC NO. 10661-1

*SEE PAGE 3 FOR DIKE EXCAVATION & RIPRAP QUANTITIES

T&M CONCEPTUAL DEMO ESTIMATE
CONSTANTINE RETIREMENT OPTION 2
CIVIL QUANTITIES



$V_{RIPRAP} = \left(\frac{12}{ft^2}\right)(75+70+105+105+90+95)\frac{1}{27}$
$= 240\ CY$
$V_{CUT} = (2\times5)(75+70+105+105+90+95)\frac{1}{27}$
$= 200\ CY$

THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 12 DAY OF Sept, 19 82

MICHIGAN POWER COMPANY
BY Otto Williams Jr
VICE PRESIDENT

EXHIBIT F
SHEET 1 OF 3

MICHIGAN POWER COMPANY
CONSTANTINE HYDRO PROJECT
PROJECT NO. 10661 MICHIGAN
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

FERC NO. 10661-1

I&M CONCEPTUAL DEMO ESTIMATE
CONSTANTINE RETIREMENT OPTION 3
CIVIL QUANTITIES

Elkhart Hydroelectric Plant

CONCEPTUAL DEMOLITION COST ESTIMATE

Prepared for:
Indiana Michigan Power Company (Owner)
and American Electric Power Service Corporation

Project No. 13465-000
February 12, 2016
Revision 0

55 East Monroe Street
Chicago, IL 60603-5780 USA

Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	02/01/16	Comments	R. C. Kinsinger	A.D. Chapin D. F. Franczak	M. N. Ozan	All
0	02/12/16	Use	R. C. Kinsinger RKinsinger RC	A.D. Chapin AChapin D. F. Franczak D. F. Franczak	T. J. Meehan	All

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1.0 INTRODUCTION

The Elkhart Hydroelectric Plant located in the City of Elkhart, Indiana is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of (from right to left referenced facing downstream) a gated reinforced concrete spillway, an integral intake and powerhouse at the south (left) end of the spillway and concrete retaining walls at both abutments. Between the spillway and powerhouse, there is a concrete gravity cantilevered wall that extends downstream. The spillway is equipped with eleven (11) tainter gates which regulate headwater. The powerhouse consists of the intake and turbine pits followed by the generator room. The powerhouse contains three (3) horizontal shaft operating turbine generators. Unit 1 is rated at 1.44 MW and was installed in 1913 and Units 2 and 3 are rated at 1 MW each and were installed in 1921.

AEP recently contracted S&L to prepare conceptual demolition cost estimates considering three (3) retirement options defined as follows: (1) Option 1, Non-Power Operation, (2) Option 2, Partial Removal of the Dam Structures, and (3) Option 3, Complete Removal of the Dam and Powerhouse. Also, in addition S&L was requested to prepare a separate Asbestos Removal Conceptual Cost Estimate.

The objective of the conceptual demolition cost estimates is to determine the gross demolition costs for Elkhart Hydroelectric Plant (including gross salvage credits and any other benefits), in support of documenting a component of future AEP book depreciation rates to be approved by the I&M's state commissions and potential future inclusion in submittal of a rate case to the state commissions, and other potential uses. The cost estimate considers the demolition/dismantlement methodology which complies with current OSHA rules and regulations.

2.0 COST ESTIMATE SUMMARY

Conceptual Demolition Cost Estimate No. 33708B, dated February 12, 2016, was prepared and is included as Exhibit 2. This cost estimate was prepared for retirement option 3, but includes accounts allowing the determination of cost estimates for retirement options 1 and 2 as well. A summary of the conceptual demolition cost estimates for all three (3) retirement options is provided in Exhibit 1 and detailed in the following tables.

The cost estimate is structured into a code of accounts as identified in Table 2-1.

Table 2-1
Cost Estimate Code of Accounts

Account Number	Description
10, 21, 22	Demolition Costs (including steel, equipment & piping scrap value)
18	Scrap Value Costs
91	Other Direct & Construction Indirect Costs
93	Indirect Costs
94	Contingency Costs
96	Escalation Costs

The results of the cost estimate for retirement option 3 are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary
Retirement Option 3

Description	Total Cost
Demolition Cost	$7,177,344
Scrap Value	($165,008)
Direct Cost Subtotal	$7,012,335
Indirect Cost	$718,000
Contingency Cost	$1,604,000
Escalation Cost	$0
Total Project Cost	$9,334,335

The results of the cost estimate for retirement option 1 are provided in Table 2-3 below.

Table 2-3
Cost Estimate Results Summary
Retirement Option 1

Description	Total Cost
Demolition Cost	$68,721
Scrap Value	($42,715)
Direct Cost Subtotal	$26,005
Indirect Cost	$2,000
Contingency Cost	$20,000
Escalation Cost	$0
Total Project Cost	$48,005

The results of the cost estimate for retirement option 2 are provided in Table 2-4 below.

Table 2-4
Cost Estimate Results Summary
Retirement Option 2

Description	Total Cost
Demolition Cost	$5,182,983
Scrap Value	($148,382)
Direct Cost Subtotal	$5,034,600
Indirect Cost	$515,000
Contingency Cost	$1,161,900
Escalation Cost	$0
Total Project Cost	$6,711,500

Asbestos Removal Conceptual Cost Estimate No. 33740B, dated February 12, 2016, was prepared and is included as Exhibit 3. The total estimated cost for asbestos removal prior to plant dismantlement is $363,660. Quantities were derived from drawings and past experience. Asbestos removal applies to the powerhouse, thus the removal cost applies to all three (3) retirement options. The cost of asbestos removal is excluded from the total conceptual demolition cost estimates for each retirement option detailed in the tables above.

3.0 TECHNICAL BASIS

The scope of dismantlement is based on three (3) retirement options, as requested by AEP, as follows:

Retirement Option 1, Non-Power Operation: This scenario would consider leaving intact all of the existing water-impounding structures and the powerhouse. Only the electric generating units and their auxiliary equipment would be removed so as to preclude the generation of electricity by the former hydroelectric plant. In addition, the spillway would be modified as required in order to pass river flows and maintain the impoundment's water surface elevation at the current conditions.

Retirement Option 2, Partial Removal of the Dam Structures: This scenario would consider demolition and removal of certain elements of the hydroelectric site in order to drain the existing impoundment and create a natural river channel through the dam site. This would generally include removal of the generating units and powerhouse and possibly but not inclusively demolition and removal of substantial portions of concrete spillway structures. This option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

Retirement Option 3, Complete Removal of the Dam and Powerhouse: This scenario would consider complete removal of the electric generating components and powerhouse and complete removal of the dam. Similar to option 2, this option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

The scope of dismantlement for each retirement option, as interpreted from the definitions above, are identified on marked plant drawings included as Exhibit 4. The scope of dismantlement and the sequence of demolition for each retirement option are defined on these sketches.

Retirement options 2 and 3 include the same demolition work as retirement option 1, removal of the generating unit components from the powerhouse. The powerhouse is not removed in retirement option 1, but is removed in retirement option 3. For retirement option 2 the powerhouse may or may not be removed, depending on if removal of portions of the dam can restore river flow to natural flow without removing the powerhouse (refer to Exhibit 4).

For each of the retirement options the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of all sediment potentially disturbed by the partial or complete removal of the dam. The subcontractor costs included in retirement options 2 and 3 are for lime stabilization of the sediment and removal of the sediment and other wastes (such as timber) to the waste disposal site. These costs do not apply to retirement option 1 since only generating unit components in the powerhouse are removed and this material has scrap value.

Retirement options 2 and 3 include the stabilization of newly exposed riverbanks, which include the dam area and areas upstream of the dam. The extent of stabilization for retirement option 3 may be slightly more than retirement option 2, since the entire dam is being removed in retirement option 3.

The following are excluded from the scope of the conceptual demolition cost estimates:

- Asbestos removal (separate cost estimate prepared).
- The conceptual demolition cost estimate includes the cost to remove the two (2) main power transformers located in the switchyard, but not the cost to remove the switchyard itself (and remaining components in the switchyard).
- Evaluation of the effect of the complete removal of the series of dams on the river watershed.
- Evaluation of the effect of the removal of any one dam, on either the upstream or downstream side dam and reservoir, after removal of the dam.
- Potential social or environmental impact of the draining of the reservoirs and the impact on property values or other community impact.
- The conceptual demolition cost estimate excludes any costs related to performing surveys to quantify the amount of sediment and chemical testing of the sediment. The quantity of sediment to be removed was estimated for retirement options 2 and 3 and the cost to remove the sediment is included in the conceptual demolition cost estimate. As stated above, the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of the sediment potentially disturbed by the partial or complete removal of the dam.

The scope of the demolition cost estimate was reaffirmed during a review of the facility by two S&L employees in conjunction with a representative from Bradenburg Industrial Service Co. and AEP corporate and plant personnel. The facility review was held on Tuesday December 15, 2015.

4.0 COMMERCIAL BASIS

4.1 General Information

The Conceptual Demolition Cost Estimates prepared for the Elkhart Hydroelectric Plant is a conceptual estimate of the cost to dismantle the powerhouse and dam in accordance with the scope defined for each of the three (3) retirement options. Costs were calculated for (1) demolition of existing plant structures and equipment and associated site restoration costs, (2) scrap value of steel, copper and stainless steel, as applicable, (3) associated indirect costs, and (4) contingency.

All units used in the cost estimate are U.S. Standard and all costs are in US Dollars (4th Quarter 2015 levels). A three (3) year demolition schedule is anticipated for retirement option 3 including asbestos removal (to be performed prior to start of demolition work). The schedule takes into consideration environmental permitting, asbestos removal which includes mapping out all asbestos contamination throughout the powerhouse and associated abatement, followed by total plant demolition and site restoration. The schedule for the other two (2) retirement options would be correspondingly less.

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in the cost estimates were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the hydroelectric plant drawings and data provided by AEP, and the information obtained from Plant personnel during the facility review.

4.3 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate were calculated as Union Labor rates for South Bend, Indiana, based on 2015, R. S. Means “Labor Rates for the Construction Industry”. The craft rates were incorporated into work crews appropriate for the activities by adding allowances for small tools, construction equipment, insurance, and site overheads to arrive at crew hourly rates detailed in the cost estimate. A 1.10 regional labor productivity multiplier was included based on Compass International Global Construction Yearbook, 2015 Edition, for union work in Indiana. National Maintenance

Agreement Rates (typically negotiated by AEP) do not apply as this work is assumed to be performed as a lump sum contract.

4.3.1 Labor Work Schedule and Incentives

The estimate assumed a 5x8 work week. No per diem or other labor incentives are included.

4.3.2 Construction Indirects

Allowances were included in the cost estimate as direct costs as noted for the following:

- Freight: Material and scrap freight included in the material and scrap costs.
- Additional Crane Allowance: None included. Cost of cranes and construction machinery are included in the labor wage rates.
- Mobilization and Demobilization: Included in labor wage rates.
- Scaffolding: Included in labor wage rates.
- Consumables: Included in material and labor costs.
- Per Diem Costs: Excluded from the estimate.
- Contractor's General and Administrative Costs and Profit: Included in the labor wage rates.

4.4 Scrap Value

The value of scrap was determined by a 3 month average (November and December 2015 and January 2016) using Zone 4 (USA Midwest) of the "Scrap Metals Market Watch" (www.americanrecycler.com).

Since the values obtained are delivered pieces, 25% of the values obtained were deducted to pay for separation, preparation and shipping to the mills. This resulted in realized prices of:

- Mixed Steel Value @ $118/Ton
- Copper Value @ $3,180/Ton
- Stainless Steel @ $675/Ton

Note: 1 Ton = 2,000 Lbs

All steel is considered to be mixed steel unless otherwise noted.

4.5 Indirect Costs

Allowances were included in the cost estimate as indirect costs as noted for the following:

- Engineering, Procurement and Project Services: None included.
- Construction Management Support: None included.
- Owners Cost: Included as 10.0% of the total direct cost. Owners Costs include owner project engineering, administration and construction management, permits and fees, legal expenses, taxes, removal of chemicals, etc.

4.6 Escalation

No allowance for escalation was included in the cost estimate. All costs are determined in 4th Quarter 2015 levels.

4.7 Contingency

Allowances were included in the cost estimate as contingency as noted for the following:

- Scrap Value: Included as 15.0% reduction in the salvage value resulting in a total net reduction in the salvage value. The contingency assumes a potential drop in salvage value thus increasing the project cost. Scrap costs are very volatile but by taking a 3-month average some of the effect of volatility is reduced. However there are other variables that affect scrap pricing such as the quantity and processing fees. The contingency applied is based on the estimators confidence in scrap pricing used in the demolition cost estimate.
- Material: Included as 20.0% of the total material cost.
- Labor: Included as 20.0% of the total labor cost.
- Indirect: Included as 20.0% of the total indirect cost.
- Subcontractor: Included as 20.0% of the total subcontractor cost.

4.8 Assumptions

The following assumptions apply to the cost estimates.

- The cost estimate for each retirement option is based on the scope and the demolition sequences defined on the sketches provided in Exhibit 4.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.

- All electrical equipment and wiring is de-energized prior to start of dismantlement, except for that required for remote operation of tainter gates No. 10 and 11 after demolition is completed for retirement option 1.
- No extraordinary environmental costs for demolition have been included.
- Handling, on-site and off-site disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- The window glazing in the powerhouse may be asbestos contaminated and an allowance for removal and disposal is included in the asbestos removal cost estimate. There are nine (9) control boards mounted on 3' x 9' transite (asbestos) panels and eighteen (18) 4kV breakers mounted in cubicles constructed of transite panels. An allowance for removal and disposal of these transite panels is included in the asbestos removal cost estimate. There is no building or pipe insulation in the facility and consequently no insulation related asbestos contamination.
- Switchyards within the plant boundaries are not part of the scope, neither are access roads to these facilities. Fences and gates needed to protect the switchyard will be left in place.
- All demolished materials are considered debris, except for organic combustibles and non-embedded metals which have scrap value.
- The basis for salvage estimating is for scrap value only. No resale of equipment or material is included.
- Sediment removed due to demolition work is treated with lime and hauled offsite to an approved waste disposal facility.

5.0 REFERENCES

5.1 Elkhart Plant Drawings: One-Line Diagrams, No. 5839-1000-35, Revision 35 and No. 13-12000-1, 6/5/98.

5.2 American Electric Power, Supporting Technical Information Document, Elkhart Hydroelectric Project, September, 2007.

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EXHIBIT 1
Elkhart Hydroelectric Plant
Conceptual Demolition Cost Estimate Summary

Elkhart Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Estimate Number: 33708B

	Retirement Option 1	Retirement Option 2	Retirement Option 3
Demolition Cost	$ 68,721	$ 5,182,983	$ 7,177,344
Scrap Value	$ (42,715)	$ (148,382)	$ (165,008)
Direct Cost Subtotal	$ 26,005	$ 5,034,600	$ 7,012,335
Indirect Cost	$ 2,000	$ 515,000	$ 718,000
Contingency Cost	$ 20,000	$ 1,161,900	$ 1,604,000
Escalation Cost	$ -	$ -	$ -
Total Demolition Cost	$ 48,005	$ 6,711,500	$ 9,334,335

EXHIBIT 2
Elkhart Hydroelectric Plant
Conceptual Demolition Cost Estimate No. 33708B

AEP ELKHART
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	ELKHART
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33708B
Estimate Class	Conceptual
Cost index	INSOU

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ACCOUNT A	DEMOLITION ACCOUNT A		(42,715)		748	68,721	26,005
ACCOUNT B	DEMOLITION ACCOUNT B	663,920	(105,667)	2,073,405	30,143	2,376,937	5,008,595
ACCOUNT C	DEMOLITION ACCOUNT C	617,580	(16,626)	25,644	15,074	1,351,137	1,977,735
	TOTAL DIRECT	1,281,500	(165,009)	2,099,049	45,964	3,796,795	7,012,335

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	3,796,795		45,964
Material	2,099,049		
Subcontract	1,281,500		
Scrap Value	(165,009)		
	7,012,335	**7,012,335**	
Other Direct & Construction Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		7,012,335	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	718,000		
93-8 EPC Fee			
	718,000	**7,730,335**	
Contingency:			
94-1 Contingency on Material	420,000		
94-2 Contingency on Labor	759,000		
94-3 Contingency on Sub.	256,000		
94-6 Contingency on Scrap	25,000		
94-5 Contingency on Indirect	144,000		
	1,604,000	**9,334,335**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		9,334,335	
		9,334,335	
Total		***9,334,335***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ACCOUNT A			DEMOLITION ACCOUNT A									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO 1.44 MW CAMELBACK GENERATOR	1 GENERATORS AT 16000# EA	8.00 TN	88	85.53 /MH	7,527		-		7,527
			DEMO 1.0 MW CAMELBACK GENERATOR	2 GENERATORS AT 13000# EA	13.00 TN	143	85.53 /MH	12,232		-		12,232
			DEMO SYNC CONDENSER	1 AT 8000# EA	4.00 TN	44	85.53 /MH	3,764		-		3,764
			DEMO 1.44 MW FRANCIS TURBINE AND GEARS	1 GENERATORS AT 11.8TN EA	11.80 TN	130	85.53 /MH	11,103		-		11,103
			DEMO 1.0 MW FRANCIS TURBINE AND GEARS	2 GENERATORS AT 9.5 EA	19.00 TN	209	85.53 /MH	17,878		-		17,878
			TURBINE ROOM 30 TON OVERHEAD CRANE	CRANE IS NOT MOTORIZED	40.00 TN	89	121.33 /MH	10,812		-		10,812
			BAR RACKS	4 AT 5 TONS EACH	20.00 TN	45	121.33 /MH	5,406		-		5,406
			MECHANICAL EQUIPMENT			748		68,721				68,721
			WHOLE PLANT DEMOLITION			748		68,721				68,721
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	DEMO 1.44 MW CAMELBACK GENERATOR	-8.00 TN		79.62 /MH		-	-	(945)	(945)
			MIXED STEEL	DEMO 1.0 MW CAMELBACK GENERATOR	-5.80 TN		79.62 /MH		-	-	(685)	(685)
			MIXED STEEL	DEMO SYNC CONDENSER	-4.00 TN		79.62 /MH		-	-	(472)	(472)
			MIXED STEEL	DEMO 1.44 MW FRANCIS TURBINE AND GEARS	-11.80 TN		79.62 /MH		-	-	(1,393)	(1,393)
			MIXED STEEL	DEMO 1.0 MW FRANCIS TURBINE AND GEARS	-19.00 TN		79.62 /MH		-	-	(2,244)	(2,244)
			MIXED STEEL	TURBINE ROOM 30 TON OVERHEAD CRANE	-40.00 TN		79.62 /MH		-	-	(4,723)	(4,723)
			MIXED STEEL	BAR RACKS	-20.00 TN		79.62 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL								(12,823)	(12,823)
		18.30.00	COPPER									
			COPPER	DEMO 1.44 MW CAMELBACK GENERATOR	-3.60 TN		79.62 /MH		-	-	(11,448)	(11,448)
			COPPER	DEMO 2-1.0 MW CAMELBACK GENERATOR	-5.80 TN		79.62 /MH		-	-	(18,444)	(18,444)
			COPPER								(29,892)	(29,892)
			SCRAP VALUE								(42,715)	(42,715)
			ACCOUNT A DEMOLITION ACCOUNT A			748		68,721			(42,715)	26,005
ACCOUNT B			DEMOLITION ACCOUNT B									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - TOP PORTION: WEIR, GATE WALLS & HEAD WALL	6,720.00 CY	8,317	89.94 /MH	748,016		-	-	748,016
			CONCRETE			8,317		748,016				748,016
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	TAINTER GATES STRUCTURE AND WALKWAY	33.00 TN	37	79.62 /MH	2,937		-	-	2,937
			STEEL			37		2,937				2,937
		10.31.00	MECHANICAL EQUIPMENT									
			60 KW PROPANE ELECTRIC GENERATOR		1.50 TN	3	121.33 /MH	405		-		405
			TAINTER GATES	11 AT 5 TONS EACH	55.00 TN	123	121.33 /MH	14,866		-		14,866
			TAINTER HEADGATES	4 AT 5 TONS EACH	20.00 TN	45	121.33 /MH	5,406		-		5,406
			MECHANICAL EQUIPMENT			170		20,677				20,677
		10.41.00	ELECTRICAL EQUIPMENT									
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 1500KVA (STEEL)	6.00 TN	18	80.14 /MH	1,413		-	-	1,413
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 1500 KVA (CU)	3.00 TN	9	80.14 /MH	707		-	-	707
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 2500KVA (STEEL)	7.25 TN	21	80.14 /MH	1,708		-	-	1,708
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 2500 KVA (CU)	4.90 TN	14	80.14 /MH	1,154		-	-	1,154
			GENERATOR BUS TRANSFORMERS	AUTO TRANSFORMER 27/33 KV, 7500KVA (STEEL)	9.60 TN	28	80.14 /MH	2,261		-	-	2,261
			GENERATOR BUS TRANSFORMERS	AUTO TRANSFORMER 27/33 KV, 7500KVA (CU)	4.60 TN	14	80.14 /MH	1,084		-	-	1,084
			MISCELLANEOUS ELECTRICAL EQUIPMENT		8.00 TN	24	80.14 /MH	1,885		-	-	1,885
			ELECTRICAL EQUIPMENT			127		10,212				10,212
			WHOLE PLANT DEMOLITION			8,652		781,842				781,842
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	60 KW PROPANE ELECTRIC GENERATOR	-1.50 TN		79.62 /MH		-	-	(177)	(177)
			MIXED STEEL	TAINTER GATES	-55.00 TN		79.62 /MH		-	-	(6,494)	(6,494)

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
		18.10.00	MIXED STEEL									
			MIXED STEEL	TAINTER HEADGATES	-20.00 TN		79.62 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL	4.16 to 34.5 KV, 1500KVA (STEEL)	-6.00 TN		79.62 /MH		-	-	(708)	(708)
			MIXED STEEL	4.16 to 34.5 KV, 2500KVA (STEEL)	-7.25 TN		79.62 /MH		-	-	(856)	(856)
			MIXED STEEL	AUTO TRANSFORMER 27/33 KV, 7500KVA (STEEL)	-4.60 TN		79.62 /MH		-	-	(543)	(543)
			MIXED STEEL	TAINTER GATES STRUCTURE AND WALKWAY	-33.00 TN		79.62 /MH		-	-	(3,897)	(3,897)
			MIXED STEEL								(15,037)	(15,037)
		18.30.00	COPPER									
			COPPER	CABLE	-10.00 TN		79.62 /MH		-	-	(31,800)	(31,800)
			COPPER	MISC. TRANSFORMERS & MOTORS UNIT 1	-6.00 TN		79.62 /MH		-	-	(19,080)	(19,080)
			COPPER	4.16 to 34.5 KV, 1500 KVA (CU)	-3.00 TN		79.62 /MH		-	-	(9,540)	(9,540)
			COPPER	4.16 to 34.5 KV, 2500 KVA (CU)	-4.90 TN		79.62 /MH		-	-	(15,582)	(15,582)
			COPPER	AUTO TRANSFORMER 27/33 KV, 7500KVA (CU)	-4.60 TN		79.62 /MH		-	-	(14,628)	(14,628)
			COPPER								(90,630)	(90,630)
			SCRAP VALUE								(105,667)	(105,667)
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR RIPRAP	115.00 CY	22	88.08 /MH	1,894		-	-	1,894
			EXCAVATION			22		1,894				1,894
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	FOR CAUSEWAYS INSTALLATION	9,778.00 CY	4,314	74.10 /MH	319,631	399,920	-	-	719,551
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	NEW STONE REQD IF CAUSEWAY STONE IS REUSED (39420-9778)	29,642.00 CY	9,682	74.10 /MH	717,418	1,212,358	-	-	1,929,775
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RELOCATE CAUSE WAY STONE FOR RIVER BEND PR0TECTION	9,778.00 CY	3,194	74.10 /MH	236,654		-	-	236,654
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT FLOOR SLABS TO REMAIN IN PLACE	115.00 CY	38	74.10 /MH	2,783	4,704	-	-	7,487
			Erosion and Sedimentation Control			17,227		1,276,486	1,616,982			2,893,468
		21.47.00	LANDSCAPING									
			HYDRO OR AIR SEED & MULCH & FERTILIZER	RIVERBAND STABILIZATIION	299.00 AC	4,243	74.64 /MH	316,715	456,424	-	-	773,139
			LANDSCAPING			4,243		316,715	456,424			773,139
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING	2,639.00 CY		196.64 /MH			105,560	-	105,560
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX (5278+2639)	7,917.00 CY		196.64 /MH			475,020	-	475,020
			REMOVAL OF LOCALIZED SILT AT HEADGATE	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX 926+463	1,389.00 CY		196.64 /MH			83,340	-	83,340
			Soil Remediation							663,920		663,920
			CIVIL WORK			21,491		1,595,096	2,073,405	663,920		4,332,421
			ACCOUNT B DEMOLITION ACCOUNT B			**30,143**		**2,376,937**	**2,073,405**	**663,920**	**(105,667)**	**5,008,595**
ACCOUNT C			**DEMOLITION ACCOUNT C**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - BOTTOM PORTION : APRON AND THROAT	3,580.00 CY	4,431	89.94 /MH	398,497		-	-	398,497
			EQUIPMENT/ BUILDING FOUNDATION	GENERATOR HOUSE	6,582.00 CY	8,146	89.94 /MH	732,655		-	-	732,655
			CONCRETE			12,577		1,131,151				1,131,151
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	GENERATOR HOUSE	111.80 TN	125	79.62 /MH	9,949		-	-	9,949
			STEEL			125		9,949				9,949
		10.24.00	ARCHITECTURAL									
			GENERATOR HOUSE	TALL	447,520.00 CF	1,920	89.81 /MH	172,440		-	-	172,440
			ARCHITECTURAL			1,920		172,440				172,440
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO 1.44 MW PENSTOCKS	1 AT 20000# EA	10.00 TN	110	85.53 /MH	9,409		-		9,409
			DEMO 1.00 MW PENSTOCKS	2 GENERATORS AT 8 TN EA	16.00 TN	176	85.53 /MH	15,055		-		15,055

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
			MECHANICAL EQUIPMENT			286		24,464				24,464
		10.86.00	WASTE									
			WASTE - USER DEFINED	MISC	1.00 LS	0	121.33 /MH	13		10,000		10,013
			WASTE			0		13		10,000		10,013
			WHOLE PLANT DEMOLITION			14,908		1,338,018		10,000		1,348,018
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	DEMO 1.44 MW PENSTOCKS	-10.00 TN		79.62 /MH		-	-	(1,181)	(1,181)
			MIXED STEEL	DEMO 1.00 MW PENSTOCKS	-19.00 TN		79.62 /MH		-	-	(2,244)	(2,244)
			MIXED STEEL	GENERATOR HOUSE	-111.80 TN		79.62 /MH		-	-	(13,201)	(13,201)
			MIXED STEEL								(16,626)	(16,626)
			SCRAP VALUE								(16,626)	(16,626)
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	EARTHWORK CUT AT DAM ABUTMENTS (330-115)	215.00 CY	40	88.08 /MH	3,542		-	-	3,542
			EXCAVATION			40		3,542				3,542
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT ABUTMENTS TO REMAIN IN PLACE (395-115)	280.00 CY	91	74.10 /MH	6,777	11,452	-	-	18,229
			Erosion and Sedimentation Control			91		6,777	11,452			18,229
		21.47.00	LANDSCAPING									
			HYDRO OR AIR SEED & MULCH & FERTILIZER	CREDIT (299-290)	-9.00 AC	-128	74.64 /MH	(9,533)	(13,738)	-	-	(23,272)
			LANDSCAPING			-128		(9,533)	(13,738)			(23,272)
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING (5278-2639)	2,639.00 CY		196.64 /MH			105,560	-	105,560
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX CREDIT 16284-7917)	8,367.00 CY		196.64 /MH			502,020	-	502,020
			Soil Remediation							607,580		607,580
			CIVIL WORK			4		785	(2,286)	607,580		606,079
	22.00.00		CONCRETE									
		22.13.00	Concrete									
			FLOWABLE FILL, 1500 PSI	FILL PENSTOCKS TO PREVENT BYPASS FLOW	294.00 CY	162	76.27 /MH	12,334	27,930	-	-	40,264
			Concrete			162		12,334	27,930			40,264
			CONCRETE			162		12,334	27,930			40,264
			ACCOUNT C DEMOLITION ACCOUNT C			**15,074**		**1,351,137**	**25,644**	**617,580**	**(16,626)**	**1,977,735**

EXHIBIT 3
Elkhart Hydroelectric Plant
Asbestos Removal Conceptual Cost Estimate No. 33740B

AEP ELKHART
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	ELKHART
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33740B
Estimate Class	Conceptual
Cost index	INSOU

AEP ELKHART
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

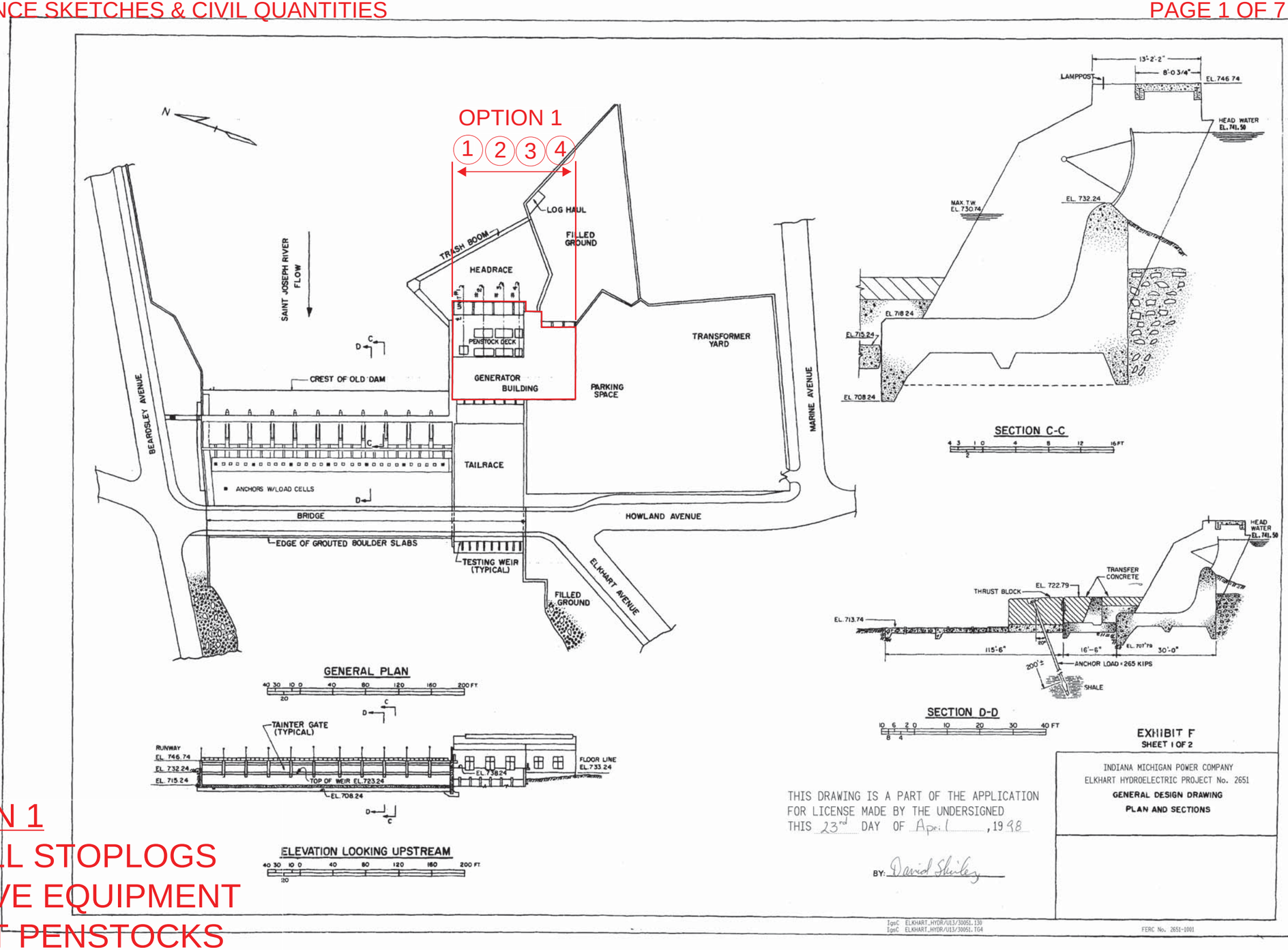
Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ASBESTOS	ASBESTOS REMOVAL	275,500					275,500
	TOTAL DIRECT	275,500					275,500

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor			
Material			
Subcontract	275,500		
Scrap Value			
	275,500	**275,500**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		275,500	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	27,550		
93-8 EPC Fee			
	27,550	**303,050**	
Contingency:			
94-1 Contingency on Material			
94-2 Contingency on Labor			
94-3 Contingency on Sub.	55,100		
94-6 Contingency on Scrap			
94-5 Contingency on Indirect	5,510		
	60,610	**363,660**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		363,660	
		363,660	
Total		***363,660***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ASBESTOS			ASBESTOS REMOVAL									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.37.00	ASBESTOS REMOVAL									
			ASBESTOS REMOVAL - MISC MATERIALS	WINDOW CAULKING MISC MATERIALS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL - 4 KV CUBICLES	18-4 KV CUBICLES	134.00 CY		121.33 /MH			254,600	-	254,600
			ASBESTOS REMOVAL - 9 - CONTROL AND INSTRUMENT PANELS	9 PANELS 3'X1'X9'	9.00 CY		121.33 /MH			17,100	-	17,100
			ASBESTOS REMOVAL							275,500		275,500
			WHOLE PLANT DEMOLITION							275,500		275,500
			ASBESTOS ASBESTOS REMOVAL							275,500		275,500

EXHIBIT 4
Elkhart Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

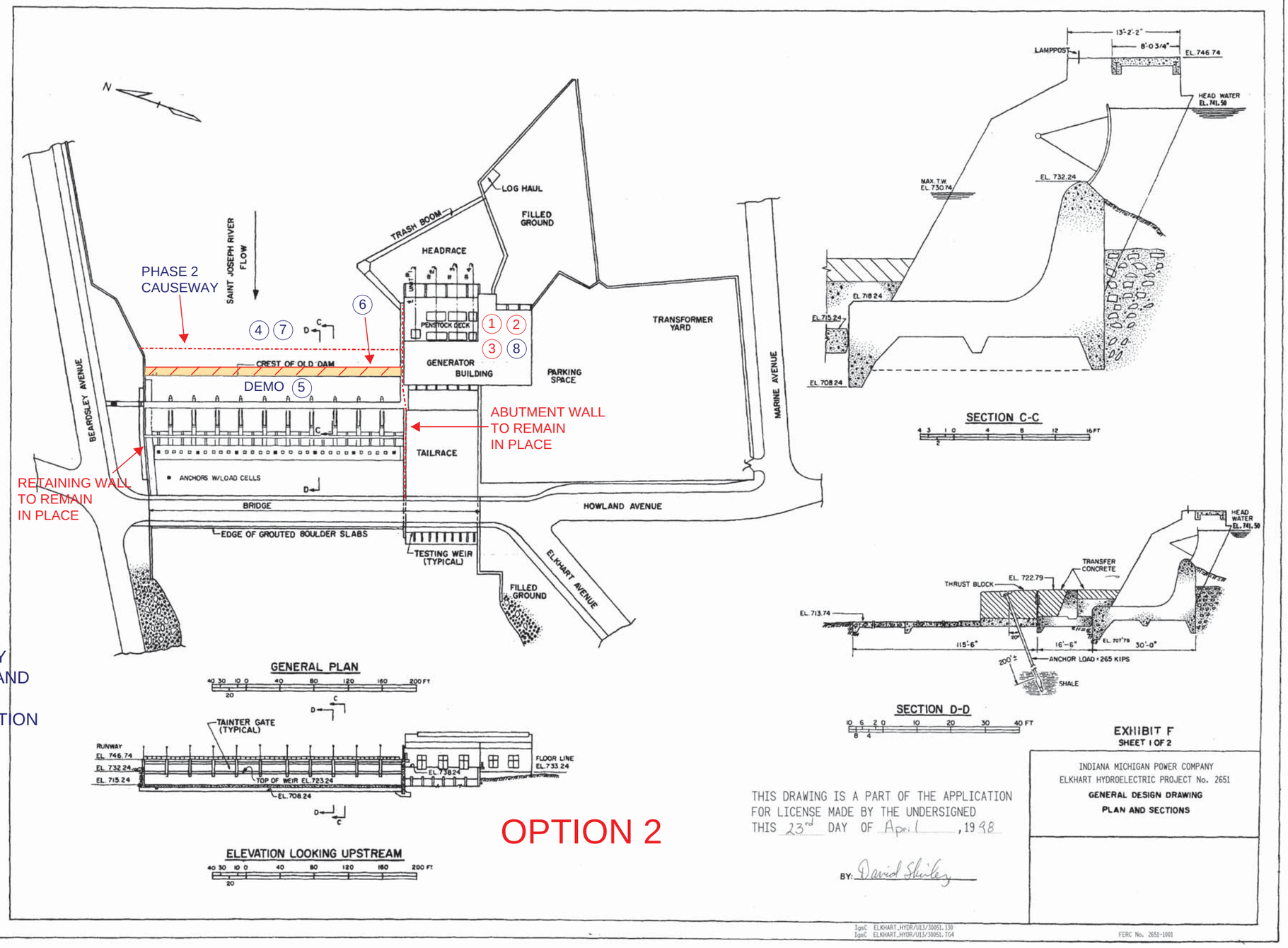


OPTION 1

1. INSTALL STOPLOGS
2. REMOVE EQUIPMENT
3. GROUT PENSTOCKS
4. REMOVE STOPLOGS

PHASE 1
1. INSTALL STOPLOGS
2. REMOVE EQUIPMENT
3. REMOVE STOPLOGS

PHASE 2
4. CONSTRUCT CAUSEWAY
5. DEMO TAINTER GATES AND SPILLWAY SECTIONS
6. PLACE RIPRAP PROTECTION
7. REMOVE CAUSEWAY
8. GROUT PENSTOCKS



OPTION 2

THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 23rd DAY OF April, 1998

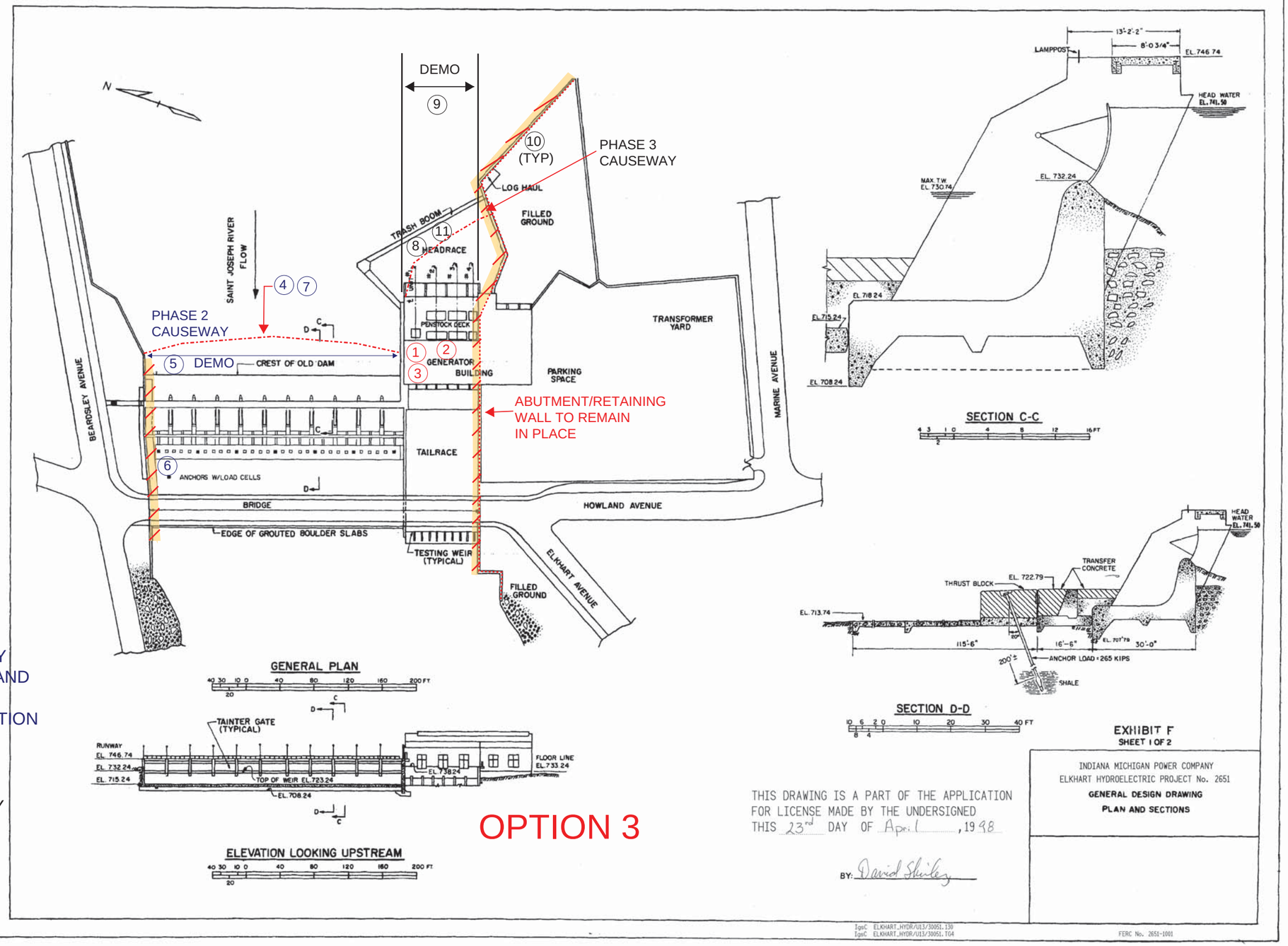
BY: David Shirley

EXHIBIT F
SHEET 1 OF 2

INDIANA MICHIGAN POWER COMPANY
ELKHART HYDROELECTRIC PROJECT No. 2651
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

IgsC ELKHART_HYDR/UI3/30051.I30
IgsC ELKHART_HYDR/UI3/30051.TG4

FERC No. 2651-1001



PHASE 1
1. INSTALL STOPLOGS
2. REMOVE EQUIPMENT
3. REMOVE STOPLOGS

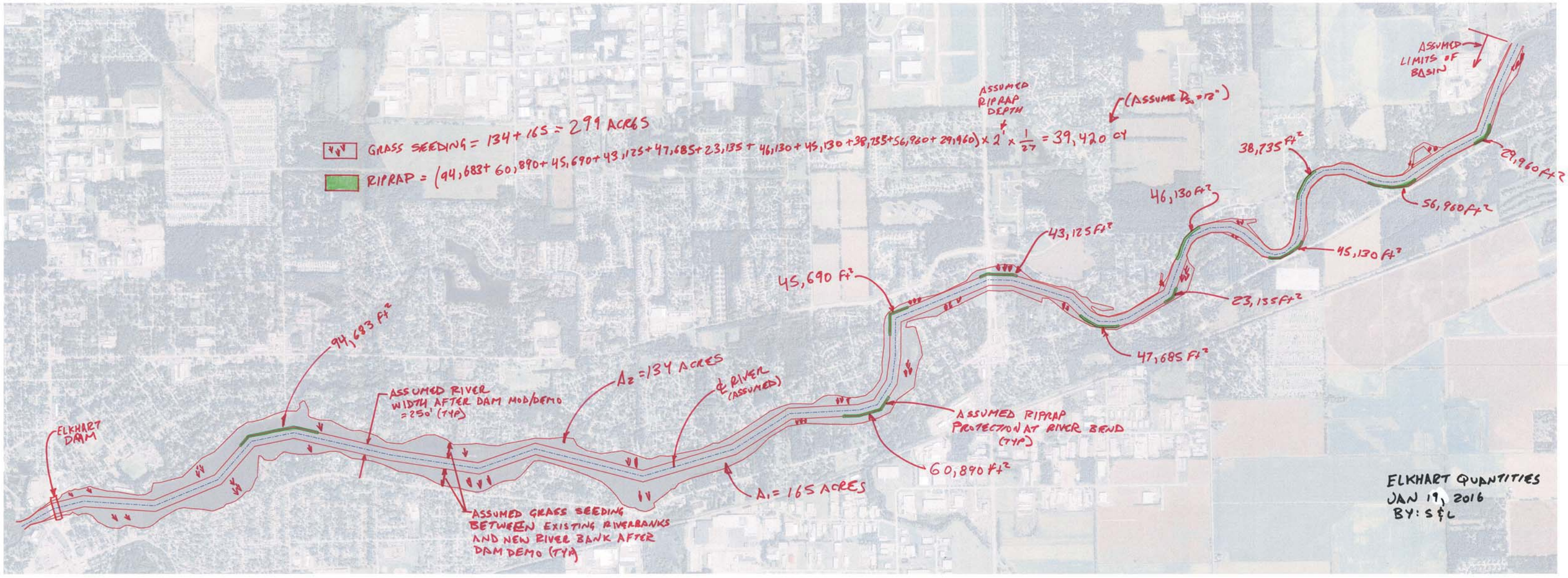
PHASE 2
4. CONSTRUCT CAUSEWAY
5. DEMO TAINTER GATES AND SPILLWAY SECTIONS
6. PLACE RIPRAP PROTECTION AT RETAIINING WALL
7. REMOVE CAUSEWAY

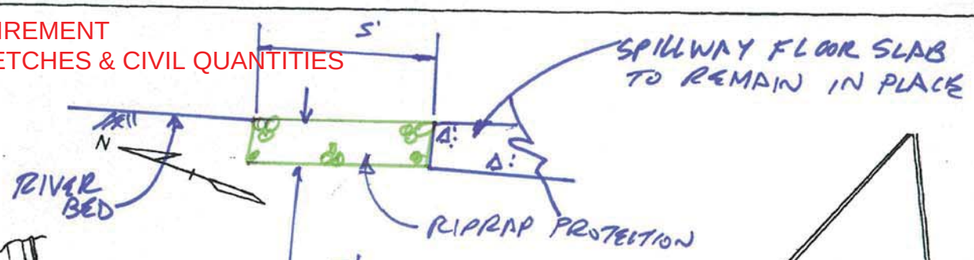
PHASE 3
8. CONSTRUCT CAUSEWAY
9. DEMO GENERATION BUILDING
10. PLACE RIPRAP AT ABUTMENT
11. REMOVE CAUSEWAY

ELKHART			
OPTION 2			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	299	ACRE	
RIPRAP PROTECTION	39,420	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	115	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT SPILLWAY FLOOR SLAB	115	CY	2 ft riprap protection @ D(50)=12"

OPTION 3			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	290	ACRE	
RIPRAP PROTECTION AT RIVER BENDS	39,420	CY	2 ft riprap protection @ D(50)=12"
RIPRAP PROTECTION AT DAM ABUTMENTS	395	CY	2 ft riprap protection @ D(50)=12"
EARTHWORK CUT AT DAM ABUTMENTS	330	CY	Riverbed removal for riprap placement

Note: Localized miscellaneous silt removal and earthwork as part of dam demolition by Brandenburg

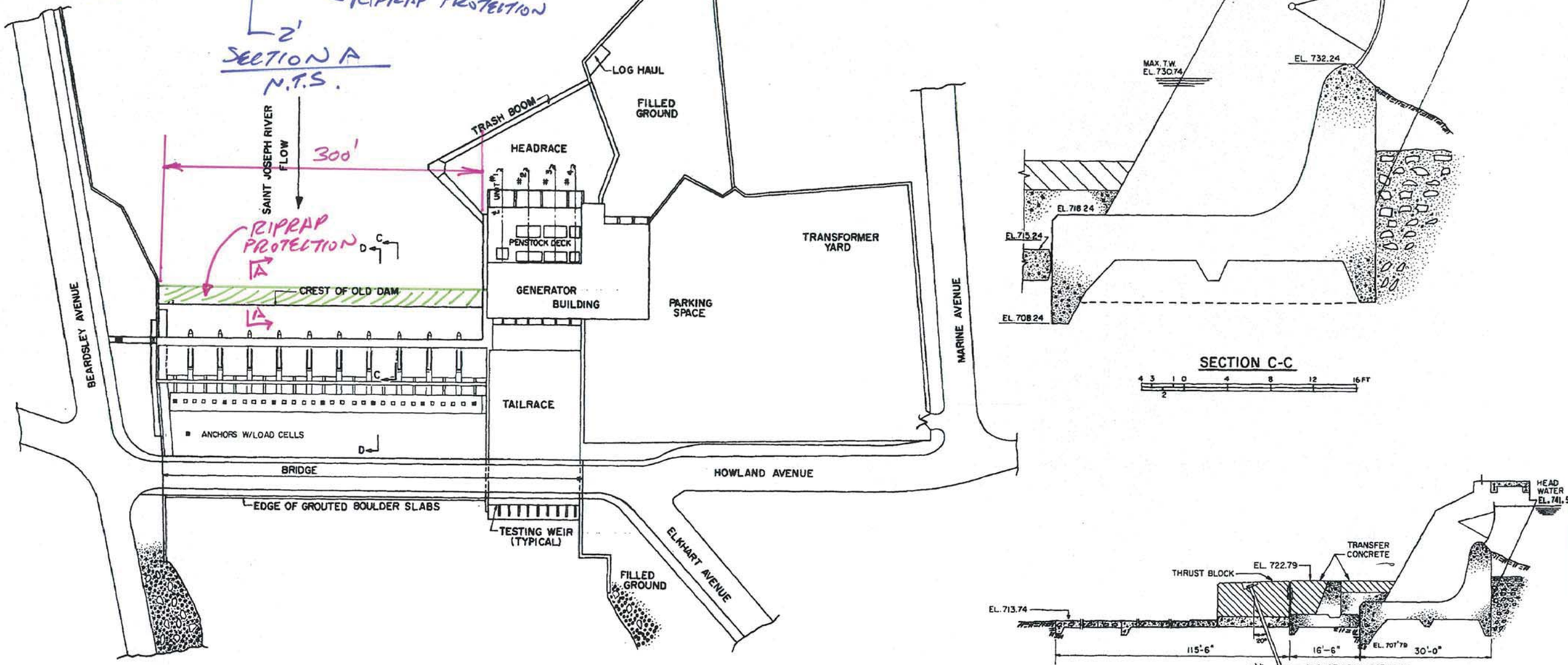

GRASS SEEDING = 134 + 165 = 299 ACRES
RIPRAP = (94,683 + 60,890 + 45,690 + 43,125 + 47,685 + 23,135 + 46,130 + 45,130 + 38,735 + 56,960 + 29,960) x 2' x 1/27 = 39,420 CY
ASSUMED RIPRAP DEPTH
(ASSUME D50 = 12")
ASSUMED LIMITS OF BASIN
94,683 Ft²
45,690 Ft²
43,125 Ft²
46,130 Ft²
38,735 Ft²
29,960 Ft²
56,960 Ft²
45,130 Ft²
23,135 Ft²
47,685 Ft²
60,890 Ft²
ELKHART DAM
ASSUMED RIVER WIDTH AFTER DAM MOD/DEMO = 250' (TYP)
A2 = 134 ACRES
℄ RIVER (ASSUMED)
A1 = 165 ACRES
ASSUMED RIPRAP PROTECTION AT RIVER BEND (TYP)
ASSUMED GRASS SEEDING BETWEEN EXISTING RIVERBANKS AND NEW RIVER BANK AFTER DAM DEMO (TYP)
ELKHART QUANTITIES
JAN 19, 2016
BY: S&L
1000' 0 1000' 2000'
GRAPHIC SCALE



SECTION A
N.T.S.

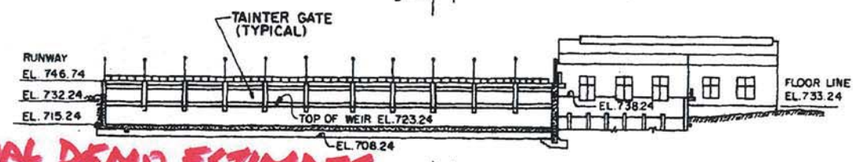
$V_{RIPRAP} = (2 \times 5)(300)\left(\frac{1}{27}\right) \simeq 115\ CY$

$V_{CUT} = V_{RIPRAP} \simeq 115\ CY$



GENERAL PLAN

40 30 10 0 40 80 120 160 200 FT
20



ELEVATION LOOKING UPSTREAM

40 30 10 0 40 80 120 160 200 FT
20

SECTION C-C

4 3 2 1 0 4 8 12 16 FT

SECTION D-D

10 6 2 0 10 20 30 40 FT
8 4

1¢M CONCEPTUAL DEMO ESTIMATE
ELKHART RETIREMENT OPTION 2
CIVIL QUANTITIES

EXHIBIT F
SHEET 1 OF 2

THIS DRAWING IS A PART OF THE APPLICATION FOR LICENSE MADE BY THE UNDERSIGNED THIS 23rd DAY OF April, 1998

BY: David Shirley

INDIANA MICHIGAN POWER COMPANY
ELKHART HYDROELECTRIC PROJECT No. 2651
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

IgsC ELKHART_HYDR/U13/30051.130
IgsC ELKHART_HYDR/U13/30051.TG4

FERC No. 2651-1001

RETAINING WALL TO REMAIN IN PLACE

RIPRAP PROTECTION (TYP)

640'

240'

N

SAINT JOSEPH RIVER FLOW

BEARDSLEY AVENUE

LOG HAUL

TRASH BOOM

FILLED GROUND

HEADRACE

PENSTOCK DECK

GENERATOR BUILDING

TRANSFORMER YARD

PARKING SPACE

MARINE AVENUE

CREST OF OLD DAM

TAILRACE

ANCHORS W/LOAD CELLS

BRIDGE

EDGE OF GROUTED BOULDER SLABS

TESTING WEIR (TYPICAL)

FILLED GROUND

ELKHART AVENUE

HOWLAND AVENUE

GENERAL PLAN

40 30 10 0 40 80 120 160 200 FT
20

TAINTER GATE (TYPICAL)

RUNWAY EL. 746.74
EL. 732.24
EL. 715.24

TOP OF WEIR EL. 723.24

EL. 738.24

FLOOR LINE EL. 733.24

EL. 708.24

ELEVATION LOOKING UPSTREAM

40 30 10 0 40 80 120 160 200 FT
20

IF M CONCEPTUAL DEMO ESTIMATE
ELKHART RETIREMENT OPTION 3
CIVIL QUANTITIES

RIPRAP PROTECTION

RIVER BED

SECTION A-A T.S.

2'
3'
2'
2'

$V_{RIPRAP} = (12)(640+240) \times \left(\frac{1}{27}\right) \approx 395\ CY$ (ft², ft)

$V_{CUT} = (10)(640+240)\left(\frac{1}{27}\right) \approx 330\ CY$

LAMPPOST

13'-2'-2"
8'-03/4"

EL. 746.74

HEAD WATER EL. 741.50

MAX. T.W. EL. 730.74

EL. 732.24

EL. 718.24

EL. 713.24

EL. 708.24

SECTION C-C

4 3 2 1 0 4 8 12 16 FT

HEAD WATER EL. 741.50

TRANSFER CONCRETE

THRUST BLOCK

EL. 722.79

EL. 713.74

115'-6"

16'-6"

EL. 707.79

30'-0"

200'±

ANCHOR LOAD = 265 KIPS

SHALE

SECTION D-D

10 6 2 0 10 20 30 40 FT
8 4

EXHIBIT F
SHEET 1 OF 2

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BY: David Shirley

INDIANA MICHIGAN POWER COMPANY
ELKHART HYDROELECTRIC PROJECT No. 2651
GENERAL DESIGN DRAWING
PLAN AND SECTIONS

IgsC ELKHART_HYDR/U13/30051.130
IgsC ELKHART_HYDR/U13/30051.TG4

FERC No. 2651-1001

Mottville Hydroelectric Plant

CONCEPTUAL DEMOLITION COST ESTIMATE

Prepared for:
Indiana Michigan Power Company (Owner)
and American Electric Power Service Corporation

Project No. 13465-000
February 12, 2016
Revision 0

55 East Monroe Street
Chicago, IL 60603-5780 USA

Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	02/02/16	Comments	R. C. Kinsinger	A.D. Chapin D. F. Franczak	M. N. Ozan	All
0	02/12/16	Use	R. C. Kinsinger RKinsinger AC	A.D. Chapin AChapin D. F. Franczak D. F. Franczak	T. J. Meehan	All

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1.0 INTRODUCTION

The Mottville Hydroelectric Plant located in the City of Mottville, Michigan is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of (from right to left referenced facing downstream) an earth embankment right of the powerhouse, an integral intake and powerhouse, a gated reinforced concrete spillway and an earth embankment to the left of the spillway. An abandoned fish ladder, separate the powerhouse and spillway. The spillway is equipped with ten (10) tainter gates which regulate headwater. The combined intake-powerhouse is situated to the right of the spillway. The powerhouse contains four (4) vertical shaft operating Allis-Chalmers turbine generators. Each unit is rated at 0.42 MW and were installed in 1923.

AEP recently contracted S&L to prepare conceptual demolition cost estimates considering three (3) retirement options defined as follows: (1) Option 1, Non-Power Operation, (2) Option 2, Partial Removal of the Dam Structures, and (3) Option 3, Complete Removal of the Dam and Powerhouse. Also, in addition S&L was requested to prepare a separate Asbestos Removal Conceptual Cost Estimate.

The objective of the conceptual demolition cost estimates is to determine the gross demolition costs for Mottville Hydroelectric Plant (including gross salvage credits and any other benefits), in support of documenting a component of future AEP book depreciation rates to be approved by the I&M's state commissions and potential future inclusion in submittal of a rate case to the state commissions, and other potential uses. The cost estimate considers the demolition/dismantlement methodology which complies with current OSHA rules and regulations.

2.0 COST ESTIMATE SUMMARY

Conceptual Demolition Cost Estimate No. 33709B, dated February 12, 2016, was prepared and is included as Exhibit 2. This cost estimate was prepared for retirement option 3, but includes accounts allowing the determination of cost estimates for retirement options 1 and 2 as well. A summary of the conceptual demolition cost estimates for all three (3) retirement options is provided in Exhibit 1 and detailed in the following tables.

The cost estimate is structured into a code of accounts as identified in Table 2-1.

Table 2-1
Cost Estimate Code of Accounts

Account Number	Description
10, 21, 22	Demolition Costs (including steel, equipment & piping scrap value)
18	Scrap Value Costs
91	Other Direct & Construction Indirect Costs
93	Indirect Costs
94	Contingency Costs
96	Escalation Costs

The results of the cost estimate for retirement option 3 are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary
Retirement Option 3

Description	Total Cost
Demolition Cost	$4,889,193
Scrap Value	($85,278)
Direct Cost Subtotal	$4,803,914
Indirect Cost	$489,000
Contingency Cost	$1,089,000
Escalation Cost	$0
Total Project Cost	$6,381,915

The results of the cost estimate for retirement option 1 are provided in Table 2-3 below.

Table 2-3
Cost Estimate Results Summary
Retirement Option 1

Description	Total Cost
Demolition Cost	$65,833
Scrap Value	($28,733)
Direct Cost Subtotal	$37,100
Indirect Cost	$4,000
Contingency Cost	$18,200
Escalation Cost	$0
Total Project Cost	$59,300

The results of the cost estimate for retirement option 2 are provided in Table 2-4 below.

Table 2-4
Cost Estimate Results Summary
Retirement Option 2

Description	Total Cost
Demolition Cost	$4,337,930
Scrap Value	($34,814)
Direct Cost Subtotal	$4,303,116
Indirect Cost	$438,000
Contingency Cost	$961,000
Escalation Cost	$0
Total Project Cost	$5,702,116

Asbestos Removal Conceptual Cost Estimate No. 33741B, dated February 12, 2016, was prepared and is included as Exhibit 3. The total estimated cost for asbestos removal prior to plant dismantlement is $5,100. Quantities were derived from drawings and past experience. Asbestos removal applies to the powerhouse, thus the removal cost applies to all three (3) retirement options. The cost of asbestos removal is excluded from the total conceptual demolition cost estimates for each retirement option detailed in the tables above.

3.0 TECHNICAL BASIS

The scope of dismantlement is based on three (3) retirement options, as requested by AEP, as follows:

Retirement Option 1, Non-Power Operation: This scenario would consider leaving intact all of the existing water-impounding structures and the powerhouse. Only the electric generating units and their auxiliary equipment would be removed so as to preclude the generation of electricity by the former hydroelectric plant. In addition, the spillway would be modified as required in order to pass river flows and maintain the impoundment's water surface elevation at the current conditions.

Retirement Option 2, Partial Removal of the Dam Structures: This scenario would consider demolition and removal of certain elements of the hydroelectric site in order to drain the existing impoundment and create a natural river channel through the dam site. This would generally include removal of the generating units and powerhouse and possibly but not inclusively demolition and removal of substantial portions of concrete spillway structures. This option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

Retirement Option 3, Complete Removal of the Dam and Powerhouse: This scenario would consider complete removal of the electric generating components and powerhouse and complete removal of the dam. Similar to option 2, this option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

The scope of dismantlement for each retirement option, as interpreted from the definitions above, are identified on marked plant drawings included as Exhibit 4. The scope of dismantlement and the sequence of demolition for each retirement option are defined on these sketches.

Retirement options 2 and 3 include the same demolition work as retirement option 1, removal of the generating unit components from the powerhouse. The powerhouse is not removed in retirement option 1, but is removed in retirement option 3. For retirement option 2 the powerhouse may or may not be removed, depending on if removal of portions of the dam can restore river flow to natural flow without removing the powerhouse (refer to Exhibit 4).

For each of the retirement options the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of all sediment potentially disturbed by the partial or complete removal of the dam. The subcontractor costs included in retirement options 2 and 3 are for lime stabilization of the sediment and removal of the sediment and other wastes (such as timber) to the waste disposal site. These costs do not apply to retirement option 1 since only generating unit components in the powerhouse are removed and this material has scrap value.

Retirement options 2 and 3 include the stabilization of newly exposed riverbanks, which include the dam area and areas upstream of the dam. The extent of stabilization for retirement option 3 may be slightly more than retirement option 2, since the entire dam is being removed in retirement option 3.

The following are excluded from the scope of the conceptual demolition cost estimates:

- Asbestos removal (separate cost estimate prepared).
- The conceptual demolition cost estimate includes the cost to remove the one (1) main power transformer located in the switchyard, but not the cost to remove the switchyard itself (and remaining components in the switchyard).
- Evaluation of the effect of the complete removal of the series of dams on the river watershed.
- Evaluation of the effect of the removal of any one dam, on either the upstream or downstream side dam and reservoir, after removal of the dam.
- Potential social or environmental impact of the draining of the reservoirs and the impact on property values or other community impact.
- The conceptual demolition cost estimate excludes any costs related to performing surveys to quantify the amount of sediment and chemical testing of the sediment. The quantity of sediment to be removed was estimated for retirement options 2 and 3 and the cost to remove the sediment is included in the conceptual demolition cost estimate. As stated above, the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of the sediment potentially disturbed by the partial or complete removal of the dam.

The scope of the demolition cost estimate was reaffirmed during a review of the facility by two S&L employees in conjunction with a representative from Bradenburg Industrial Service Co. and AEP corporate and plant personnel. The facility review was held on Tuesday December 15, 2015.

4.0 COMMERCIAL BASIS

4.1 General Information

The Conceptual Demolition Cost Estimates prepared for the Mottville Hydroelectric Plant is a conceptual estimate of the cost to dismantle the powerhouse and dam in accordance with the scope defined for each of the three (3) retirement options. Costs were calculated for (1) demolition of existing plant structures and equipment and associated site restoration costs, (2) scrap value of steel, copper and stainless steel, as applicable, (3) associated indirect costs, and (4) contingency.

All units used in the cost estimate are U.S. Standard and all costs are in US Dollars (4th Quarter 2015 levels). A three (3) year demolition schedule is anticipated for retirement option 3 including asbestos removal (to be performed prior to start of demolition work). The schedule takes into consideration environmental permitting, asbestos removal which includes mapping out all asbestos contamination throughout the powerhouse and associated abatement, followed by total plant demolition and site restoration. The schedule for the other two (2) retirement options would be correspondingly less.

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in the cost estimates were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the hydroelectric plant drawings and data provided by AEP, and the information obtained from Plant personnel during the facility review.

4.3 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate were calculated as Union Labor rates for South Bend, Indiana, based on 2015, R. S. Means “Labor Rates for the Construction Industry”. The craft rates were incorporated into work crews appropriate for the activities by adding allowances for small tools, construction equipment, insurance, and site overheads to arrive at crew hourly rates detailed in the cost estimate. A 1.10 regional labor productivity multiplier was included based on Compass International Global Construction Yearbook, 2015 Edition, for union work in Indiana. National Maintenance

Agreement Rates (typically negotiated by AEP) do not apply as this work is assumed to be performed as a lump sum contract.

4.3.1 Labor Work Schedule and Incentives

The estimate assumed a 5x8 work week. No per diem or other labor incentives are included.

4.3.2 Construction Indirects

Allowances were included in the cost estimate as direct costs as noted for the following:

- Freight: Material and scrap freight included in the material and scrap costs.
- Additional Crane Allowance: None included. Cost of cranes and construction machinery are included in the labor wage rates.
- Mobilization and Demobilization: Included in labor wage rates.
- Scaffolding: Included in labor wage rates.
- Consumables: Included in material and labor costs.
- Per Diem Costs: Excluded from the estimate.
- Contractor's General and Administrative Costs and Profit: Included in the labor wage rates.

4.4 Scrap Value

The value of scrap was determined by a 3 month average (November and December 2015 and January 2016) using Zone 4 (USA Midwest) of the "Scrap Metals Market Watch" (www.americanrecycler.com).

Since the values obtained are delivered pieces, 25% of the values obtained were deducted to pay for separation, preparation and shipping to the mills. This resulted in realized prices of:

- Mixed Steel Value @ $118/Ton
- Copper Value @ $3,180/Ton
- Stainless Steel @ $675/Ton

Note: 1 Ton = 2,000 Lbs

All steel is considered to be mixed steel unless otherwise noted.

4.5 Indirect Costs

Allowances were included in the cost estimate as indirect costs as noted for the following:

- Engineering, Procurement and Project Services: None included.
- Construction Management Support: None included.
- Owners Cost: Included as 10.0% of the total direct cost. Owners Costs include owner project engineering, administration and construction management, permits and fees, legal expenses, taxes, removal of chemicals, etc.

4.6 Escalation

No allowance for escalation was included in the cost estimate. All costs are determined in 4th Quarter 2015 levels.

4.7 Contingency

Allowances were included in the cost estimate as contingency as noted for the following:

- Scrap Value: Included as 15.0% reduction in the salvage value resulting in a total net reduction in the salvage value. The contingency assumes a potential drop in salvage value thus increasing the project cost. Scrap costs are very volatile but by taking a 3-month average some of the effect of volatility is reduced. However there are other variables that affect scrap pricing such as the quantity and processing fees. The contingency applied is based on the estimators confidence in scrap pricing used in the demolition cost estimate.
- Material: Included as 20.0% of the total material cost.
- Labor: Included as 20.0% of the total labor cost.
- Indirect: Included as 20.0% of the total indirect cost.
- Subcontractor: Included as 20.0% of the total subcontractor cost.

4.8 Assumptions

The following assumptions apply to the cost estimates.

- The cost estimate for each retirement option is based on the scope and the demolition sequences defined on the sketches provided in Exhibit 4.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.

- All electrical equipment and wiring is de-energized prior to start of dismantlement, except for that required for remote operation of two (2) of the tainter gates after demolition is completed for retirement option 1.
- No extraordinary environmental costs for demolition have been included.
- Handling, on-site and off-site disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- The window glazing in the powerhouse may be asbestos contaminated and an allowance for removal and disposal is included in the asbestos removal cost estimate. There is no building or pipe insulation in the facility and consequently no insulation related asbestos contamination.
- Switchyards within the plant boundaries are not part of the scope, neither are access roads to these facilities. Fences and gates needed to protect the switchyard will be left in place.
- All demolished materials are considered debris, except for organic combustibles and non-embedded metals which have scrap value.
- The basis for salvage estimating is for scrap value only. No resale of equipment or material is included.
- Sediment removed due to demolition work is treated with lime and hauled offsite to an approved waste disposal facility.

5.0 REFERENCES

5.1 Mottville Plant Drawings: One-Line Diagrams, No. E-1000, Revision 16 and No. 14-12001-2, 12/17/91.

5.2 American Electric Power, Supporting Technical Information Document, Mottville Hydroelectric Project, September, 2007.

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EXHIBIT 1
Mottville Hydroelectric Plant
Conceptual Demolition Cost Estimate Summary

Mottville Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Estimate Number: 33709B

	Retirement Option 1	Retirement Option 2	Retirement Option 3
Demolition Cost	$ 65,833	$ 4,337,930	$ 4,889,193
Scrap Value	$ (28,733)	$ (34,814)	$ (85,278)
Direct Cost Subtotal	$ 37,100	$ 4,303,116	$ 4,803,914
Indirect Cost	$ 4,000	$ 438,000	$ 489,000
Contingency Cost	$ 18,200	$ 961,000	$ 1,089,000
Escalation Cost	$ -	$ -	$ -
Total Demolition Cost	$ 59,300	$ 5,702,116	$ 6,381,915

EXHIBIT 2
Mottville Hydroelectric Plant
Conceptual Demolition Cost Estimate No. 33709B

AEP MOTTVILLE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	ELKHART
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33709B
Estimate Class	Conceptual
Cost index	INSOU

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ACCOUNT A	DEMOLITION ACCOUNT A		(28,733)	11,020	587	54,813	37,100
ACCOUNT B	DEMOLITION ACCOUNT B	506,220	(6,081)	2,248,154	20,696	1,517,723	4,266,016
ACCOUNT C	DEMOLITION ACCOUNT C	135,460	(50,464)		4,820	415,803	500,798
	TOTAL DIRECT	641,680	(85,278)	2,259,174	26,103	1,988,339	4,803,915

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	1,988,339		26,103
Material	2,259,174		
Subcontract	641,680		
Scrap Value	(85,278)		
	4,803,915	**4,803,915**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		4,803,915	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	489,000		
93-8 EPC Fee			
	489,000	**5,292,915**	
Contingency:			
94-1 Contingency on Material	452,000		
94-2 Contingency on Labor	398,000		
94-3 Contingency on Sub.	128,000		
94-6 Contingency on Scrap	13,000		
94-5 Contingency on Indirect	98,000		
	1,089,000	**6,381,915**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		6,381,915	
		6,381,915	
Total		***6,381,915***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ACCOUNT A			DEMOLITION ACCOUNT A									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO .4 MW GENERATOR	4 GENERATORS AT 7500# EA	15.00 TN	149	83.69 /MH	12,429		-		12,429
			DEMO TURBINE AND GEARS	4 TUBINES & GEARS AT 11000# EA	22.00 TN	218	83.69 /MH	18,230		-		18,230
			TURBINE ROOM 15 TON BRIDGE CRANE	15 TON BRIDGE CRANE	11.30 TN	112	122.82 /MH	13,741		-		13,741
			BAR RACKS	4 AT 5 TONS EACH	20.00 TN	45	122.82 /MH	5,472		-		5,472
			MECHANICAL EQUIPMENT			523		49,872				49,872
			WHOLE PLANT DEMOLITION			523		49,872				49,872
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	.4 MW GENERATOR, 4 @4,125# EA	-8.25 TN		77.78 /MH		-	-	(974)	(974)
			MIXED STEEL	4 TUBINES & GEARS AT 11000# EA	-22.00 TN		77.78 /MH		-	-	(2,598)	(2,598)
			MIXED STEEL	TURBINE ROOM 15 TON BRIDGE CRANE	-11.30 TN		77.78 /MH		-	-	(1,334)	(1,334)
			MIXED STEEL	BAR RACKS	-20.00 TN		77.78 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL								(7,268)	(7,268)
		18.30.00	COPPER									
			COPPER	4 GENERATORS AT 3375# EA	-6.75 TN		77.78 /MH		-	-	(21,465)	(21,465)
			COPPER								(21,465)	(21,465)
			SCRAP VALUE								(28,733)	(28,733)
	22.00.00		CONCRETE									
		22.13.00	Concrete									
			FLOWABLE FILL, 1500 PSI	FILL PENSTOCKS TO PREVENT BYPASS FLOW	116.00 CY	64	77.44 /MH	4,941	11,020	-	-	15,961
			Concrete			64		4,941	11,020			15,961
			CONCRETE			64		4,941	11,020			15,961
			ACCOUNT A DEMOLITION ACCOUNT A			587		54,813	11,020		(28,733)	37,100
ACCOUNT B			DEMOLITION ACCOUNT B									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	FISH LADDER	113.00 CY	140	85.21 /MH	11,917		-	-	11,917
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - OGEE SECTION	245.00 CY	303	85.21 /MH	25,837		-	-	25,837
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - BUTTRESSES	301.00 CY	373	85.21 /MH	31,743		-	-	31,743
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE - WEIR AND STILLING POND	255.00 CY	316	85.21 /MH	26,892		-	-	26,892
			CONCRETE			1,131		96,389				96,389
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	TAINTER GATES STRUCTURE AND WALKWAY	50.00 TN	56	77.78 /MH	4,347		-	-	4,347
			STEEL			56		4,347				4,347
		10.31.00	MECHANICAL EQUIPMENT									
			60 KW PROPANE ELECTRIC GENERATOR	60 KW PROPANE ELECTRIC GENERATOR	1.50 TN	3	122.82 /MH	410		-		410
			MECHANICAL EQUIPMENT			3		410				410
			WHOLE PLANT DEMOLITION			1,190		101,146				101,146
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	60 KW PROPANE ELECTRIC GENERATOR	-1.50 TN		77.78 /MH		-	-	(177)	(177)
			MIXED STEEL	TAINTER GATES & WALKWAY	-50.00 TN		77.78 /MH		-	-	(5,904)	(5,904)
			MIXED STEEL								(6,081)	(6,081)
			SCRAP VALUE								(6,081)	(6,081)
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR RIPRAP	90.00 CY	17	84.18 /MH	1,417		-	-	1,417
			EXCAVATION			17		1,417				1,417
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	NEW STONE REQD IF CAUSEWAY STONE IS REUSED (46850-3408)	43,444.00 CY	14,190	71.48 /MH	1,014,287	1,776,860	-	-	2,791,146
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	FOR CAUSEWAYS	3,408.00 CY	1,113	71.48 /MH	79,567	139,387	-	-	218,954
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RELOCATE CAUSE WAY STONE FOR RIVER	3,408.00 CY	1,113	71.48 /MH	79,567		-	-	79,567

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	BEND PR0TECTION	3,408.00 CY	1,113	71.48 /MH	79,567		-	-	79,567
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT FLOOR SLABS TO REMAIN IN PLACE	90.00 CY	29	71.48 /MH	2,101	3,681	-	-	5,782
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT ABUTMENTS TO REMAIN IN PLACE (240-90)	150.00 CY	49	71.48 /MH	3,502	6,135	-	-	9,637
			Erosion and Sedimentation Control			16,494		1,179,023	1,926,063			3,105,086
		21.47.00	LANDSCAPING									
			HYDRO OR AIR SEED & MULCH & FERTILIZER		211.00 AC	2,994	78.86 /MH	236,138	322,092	-	-	558,229
			LANDSCAPING			2,994		236,138	322,092			558,229
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING	2,301.00 CY		187.65 /MH			92,040	-	92,040
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX (4602+2301)	6,903.00 CY		187.65 /MH			414,180	-	414,180
			Soil Remediation							506,220		506,220
			CIVIL WORK			19,506		1,416,577	2,248,154	506,220		4,170,952
			ACCOUNT B DEMOLITION ACCOUNT B			20,696		1,517,723	2,248,154	506,220	(6,081)	4,266,016
ACCOUNT C			DEMOLITION ACCOUNT C									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	DOWNSTREAM APRON	288.00 CY	356	85.21 /MH	30,372		-	-	30,372
			EQUIPMENT/ BUILDING FOUNDATION	GENERATOR HOUSE -	1,800.00 CY	2,228	85.21 /MH	189,824		-	-	189,824
			EQUIPMENT/ BUILDING FOUNDATION	GENERATOR HOUSE - TAILRACE APRON	200.00 CY	248	85.21 /MH	21,092		-	-	21,092
			CONCRETE			2,832		241,288				241,288
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	GENERATOR HOUSE	65.00 TN	73	77.78 /MH	5,651		-	-	5,651
			STEEL			73		5,651				5,651
		10.24.00	ARCHITECTURAL									
			GENERATOR HOUSE	132.5'x28'x70' TALL	259,700.00 CF	1,114	89.78 /MH	100,035		-	-	100,035
			ARCHITECTURAL			1,114		100,035				100,035
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO PENSTOCKS	4 PENSTOCKS AT 9,300# EA	70.80 TN	701	83.69 /MH	58,666		-		58,666
			STOP LOGS	4 AT 5 TONS EACH	20.00 TN	45	122.82 /MH	5,472		-		5,472
			MECHANICAL EQUIPMENT			746		64,138				64,138
		10.41.00	ELECTRICAL EQUIPMENT									
			GENERATOR BUS TRANSFORMERS	2.4 to 34.5 KV, 2500 KVA (STEEL)	6.65 TN	20	82.70 /MH	1,617		-	-	1,617
			GENERATOR BUS TRANSFORMERS	2.4 to 34.5 KV, 2500 KVA (CU)	1.44 TN	4	82.70 /MH	350		-	-	350
			MISCELLANEOUS ELECTRICAL EQUIPMENT		5.00 TN	15	82.70 /MH	1,215		-	-	1,215
			ELECTRICAL EQUIPMENT			38		3,182				3,182
		10.86.00	WASTE									
			WASTE - USER DEFINED	MISC	1.00 LS	0	122.82 /MH	14		-	10,000	10,014
			WASTE			0		14			10,000	10,014
			WHOLE PLANT DEMOLITION			4,803		414,307			10,000	424,307
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	4 PENSTOCKS AT 9,300# EA	-4.60 TN		77.78 /MH		-	-	(543)	(543)
			MIXED STEEL	STOP LOGS	-20.00 TN		77.78 /MH		-	-	(2,362)	(2,362)
			MIXED STEEL	GENERATOR HOUSE	-65.00 TN		77.78 /MH		-	-	(7,675)	(7,675)
			MIXED STEEL	GENERATOR BUS TRANSFORMERS	-6.65 TN		77.78 /MH		-	-	(785)	(785)
			MIXED STEEL								(11,365)	(11,365)
		18.30.00	COPPER									
			COPPER	CABLE	-10.00 TN		77.78 /MH		-	-	(31,800)	(31,800)
			COPPER	MISC. TRANSFORMERS & MOTORS UNIT 1	-4.00 TN		77.78 /MH		-	-	(12,720)	(12,720)
			COPPER	GENERATOR BUS TRANSFORMERS	-1.44 TN		77.78 /MH		-	-	(4,579)	(4,579)
			COPPER								(49,099)	(49,099)
			SCRAP VALUE								(60,464)	(60,464)

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
	21.00.00		CIVIL WORK									
		21.17.00	EXCAVATION									
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR DAM ABUTMENTS	100.00 CY	19	84.18 /MH	1,574		-	-	1,574
			FOUNDATION EXCAVATION, CLAY USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR RIPRAP CREDIT (85-90)	-5.00 CY	-1	84.18 /MH	(79)		-	-	(79)
			EXCAVATION			18		1,496				1,496
		21.65.00	Soil Remediation									
			REMOVAL OF LOCALIZED SILT AT DAM	LIME ADDITIVE FOR DRYING DELTA (2917-2301)	616.00 CY		187.65 /MH			24,640	-	24,640
			REMOVAL OF LOCALIZED SILT AT DAM	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX DELTA (8750-6903)	1,847.00 CY		187.65 /MH			110,820	-	110,820
			Soil Remediation							135,460		135,460
			CIVIL WORK			18		1,496		135,460		136,956
			ACCOUNT C DEMOLITION ACCOUNT C			**4,820**		**415,803**		**135,460**	**(50,464)**	**500,798**

EXHIBIT 3
Mottville Hydroelectric Plant
Asbestos Removal Conceptual Cost Estimate No. 33741B

AEP MOTTVILLE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	ELKHART
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33741B
Estimate Class	Conceptual
Cost index	INSOU

AEP MOTTVILLE
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ASBESTOS	ASBESTOS REMOVAL	3,800					3,800
	TOTAL DIRECT	3,800					3,800

Estimate Totals

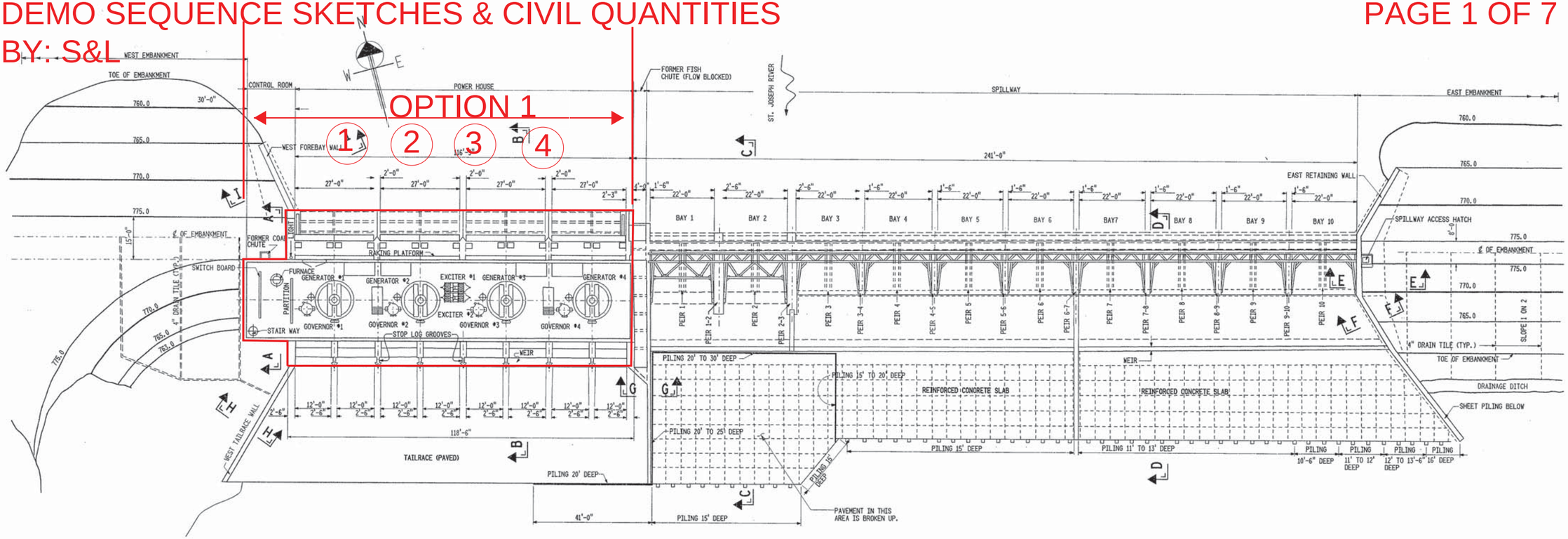
Description	Amount	Totals	Hours
Direct Costs:			
Labor			
Material			
Subcontract	3,800		
Scrap Value			
	3,800	**3,800**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		3,800	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	400		
93-8 EPC Fee			
	400	**4,200**	
Contingency:			
94-1 Contingency on Material			
94-2 Contingency on Labor			
94-3 Contingency on Sub.	800		
94-6 Contingency on Scrap			
94-5 Contingency on Indirect	100		
	900	**5,100**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		5,100	
		5,100	
Total		***5,100***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ASBESTOS			ASBESTOS REMOVAL									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.37.00	ASBESTOS REMOVAL									
			ASBESTOS REMOVAL - MISC MATERIALS	WINDOW CAULKING MISC MATERIALS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL							3,800		3,800
			WHOLE PLANT DEMOLITION							3,800		3,800
			ASBESTOS ASBESTOS REMOVAL							3,800		3,800

EXHIBIT 4
Mottville Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

MOTTVILLE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016



PLAN

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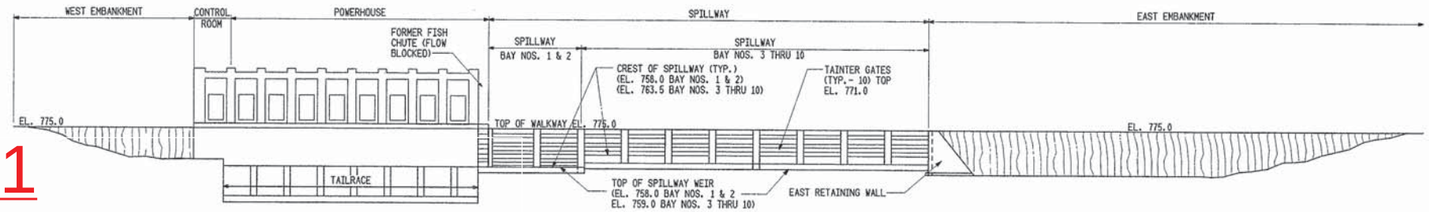


ELEVATION LOOKING UPSTREAM

30 20 10 0 30 FEET

OPTION 1

1. INSTALL STOPLOGS
2. REMOVE EQUIPMENT
3. GROUT DRAFT TUBES
4. REMOVE STOPLOGS

EXHIBIT F - 1

INDIANA MICHIGAN POWER COMPANY
MOTTVILLE HYDROELECTRIC PROJECT
MOTTVILLE MICHIGAN
GENERAL DESIGN DRAWING
PLAN & ELEVATION

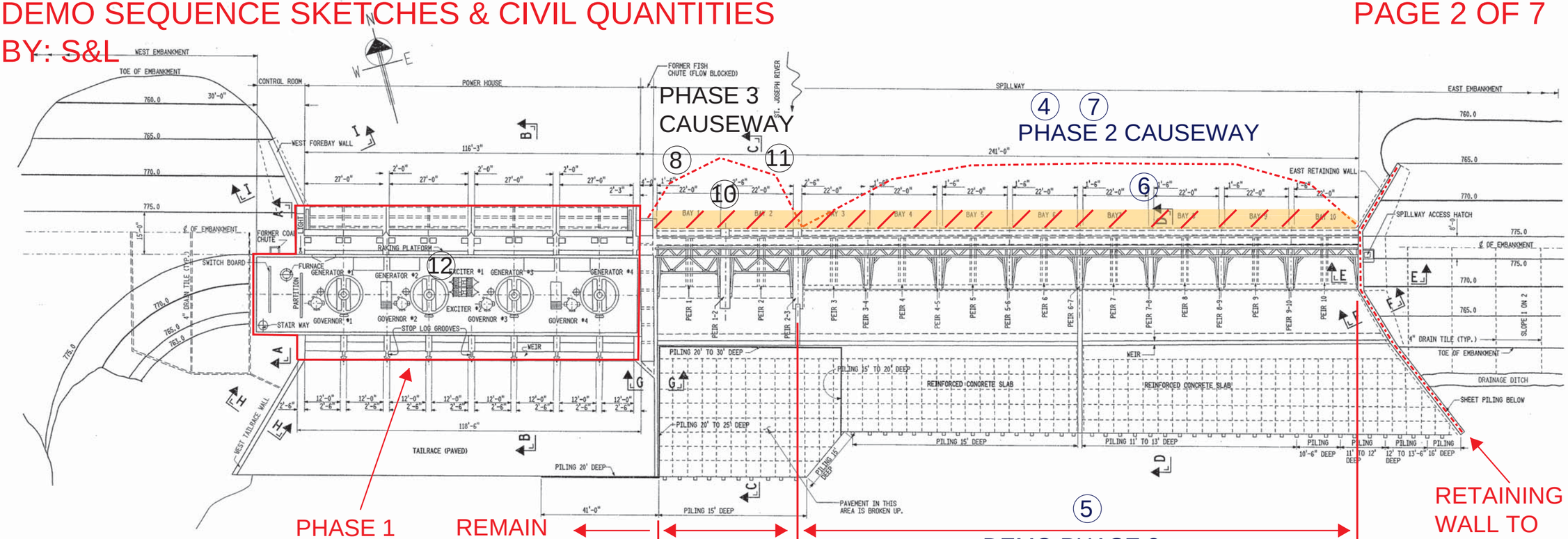
THIS DRAWING, EXHIBIT F-1, IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY

BY: _____

DATE: _____

MOTTVILLE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

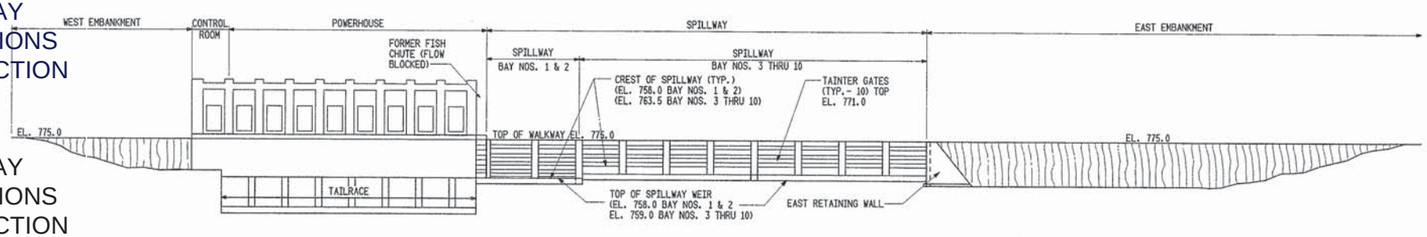
JANUARY 25, 2016
PAGE 2 OF 7



PHASE 1
① INSTALL STOPLOGS
② REMOVE EQUIPMENT
③ REMOVE STOPLOGS

PHASE 2
④ CONSTRUCT CAUSEWAY
⑤ DEMO SPILLWAY SECTIONS
⑥ PLACE RIPRAP PROTECTION
⑦ REMOVE CAUSEWAY

PHASE 3
⑧ CONSTRUCT CAUSEWAY
⑨ DEMO SPILLWAY SECTIONS
⑩ PLACE RIPRAP PROTECTION
⑪ REMOVE CAUSEWAY
⑫ GROUT DRAFT TUBES



OPTION 2

ELEVATION LOOKING UPSTREAM
30 20 10 0 30 FEET

EXHIBIT F - 1

INDIANA MICHIGAN POWER COMPANY
MOTTVILLE HYDROELECTRIC PROJECT
MOTTVILLE MICHIGAN
GENERAL DESIGN DRAWING
PLAN & ELEVATION

THIS DRAWING, EXHIBIT F-1, IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY

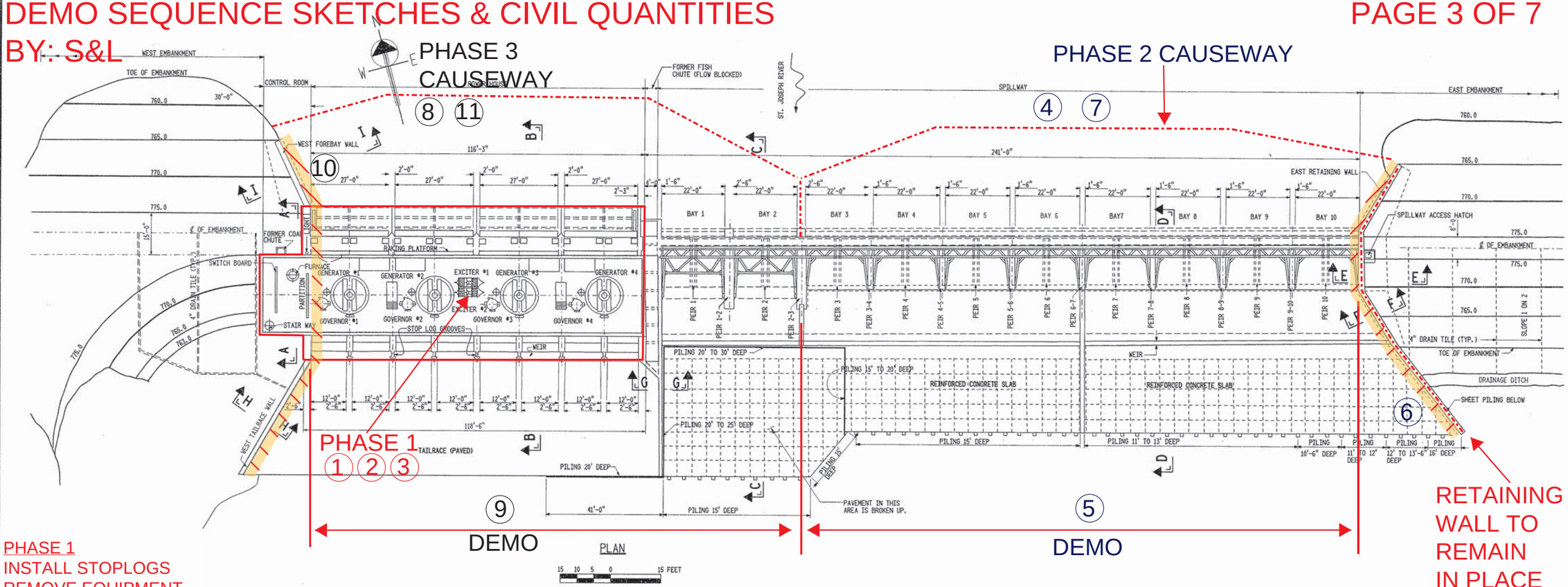
BY: _____

DATE: _____

MOTTVILLE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES

JANUARY 25, 2016
PAGE 3 OF 7

BY: S&L

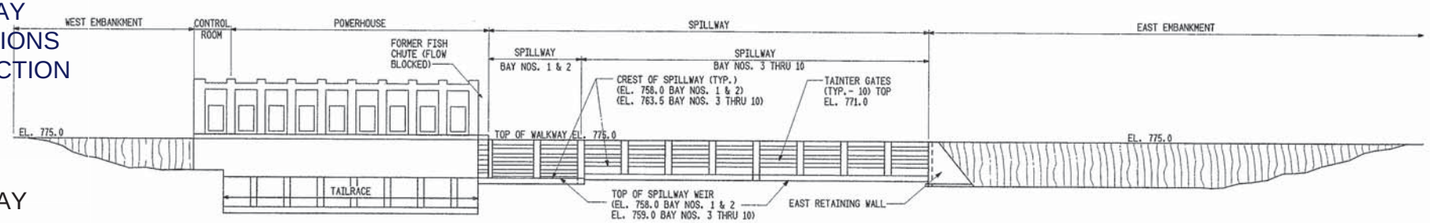


PLAN
15 10 5 0 15 FEET

PHASE 1
① INSTALL STOPLOGS
② REMOVE EQUIPMENT
③ REMOVE STOPLOGS

PHASE 2
④ CONSTRUCT CAUSEWAY
⑤ DEMO SPILLWAY SECTIONS
⑥ PLACE RIPRAP PROTECTION AT RETAINING WALL
⑦ REMOVE SPILLWAY

PHASE 3
⑧ CONSTRUCT CAUSEWAY
⑨ DEMO GENERATION BUILDING AND SPILLWAY SECTIONS
⑩ PLACE RIPRAP PROTECTION AT RETAINING WALL
⑪ REMOVE CAUSEWAY



ELEVATION LOOKING UPSTREAM
30 20 10 0 30 FEET

OPTION 3

EXHIBIT F - 1

INDIANA MICHIGAN POWER COMPANY
MOTTVILLE HYDROELECTRIC PROJECT
MOTTVILLE MICHIGAN
GENERAL DESIGN DRAWING
PLAN & ELEVATION

THIS DRAWING, EXHIBIT F-1, IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY

BY: _____

DATE: _____

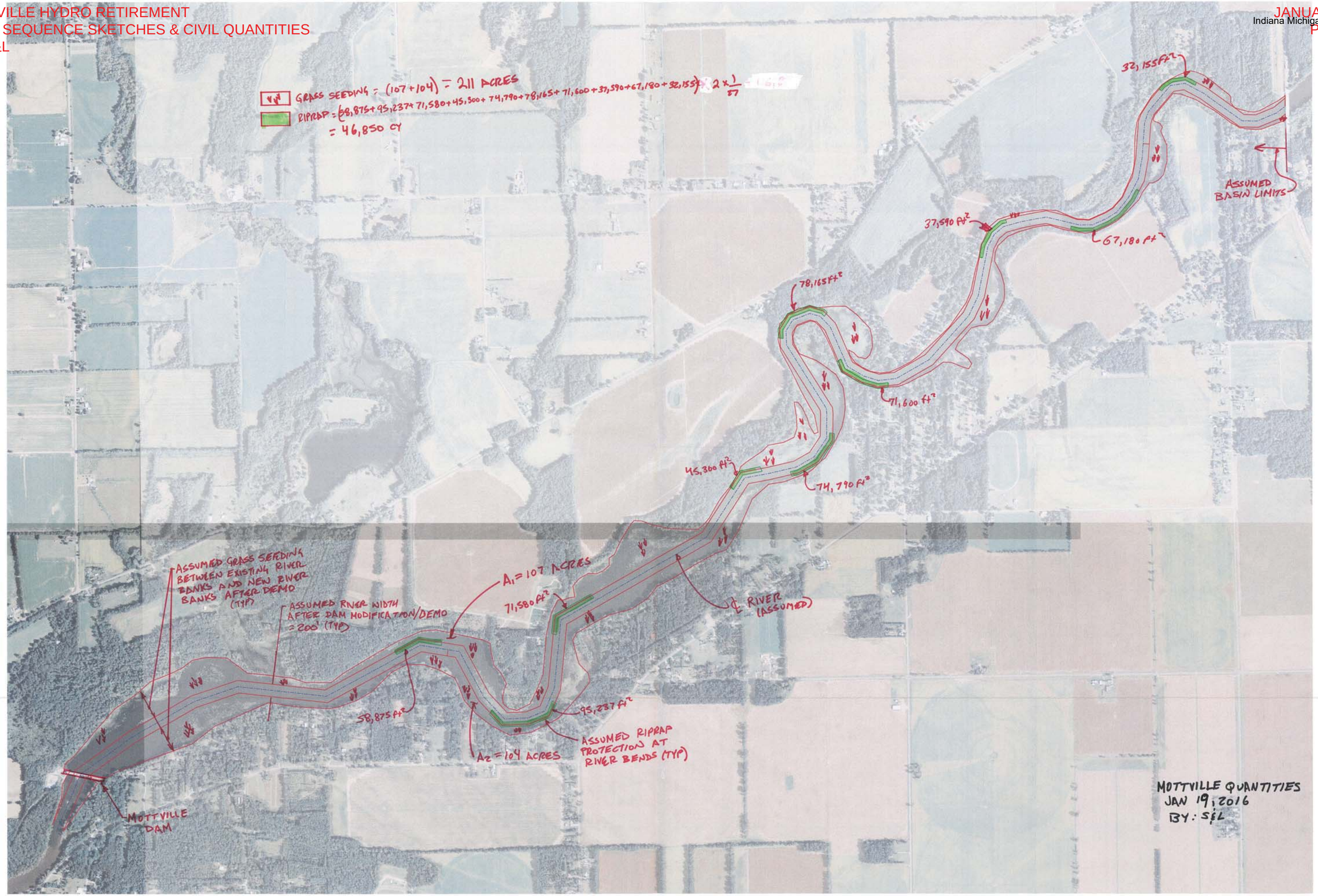
Indiana Michigan Power Company
Attachment JAC-3
Witness; Cash
Page 168 of 205

MOTTVILLE			
OPTION 2			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	211	ACRE	
RIPRAP PROTECTION	46,850	CY	2 ft riprap protection @ D(50)=12"
RIPRAP PROTECTION AT FLOOR SLAB TO REMAIN IN PLACE	90	CY	
RIVERBED EXCAVATION FOR RIPRAP	90	CY	TO BE REPLACED BY RIPRAP

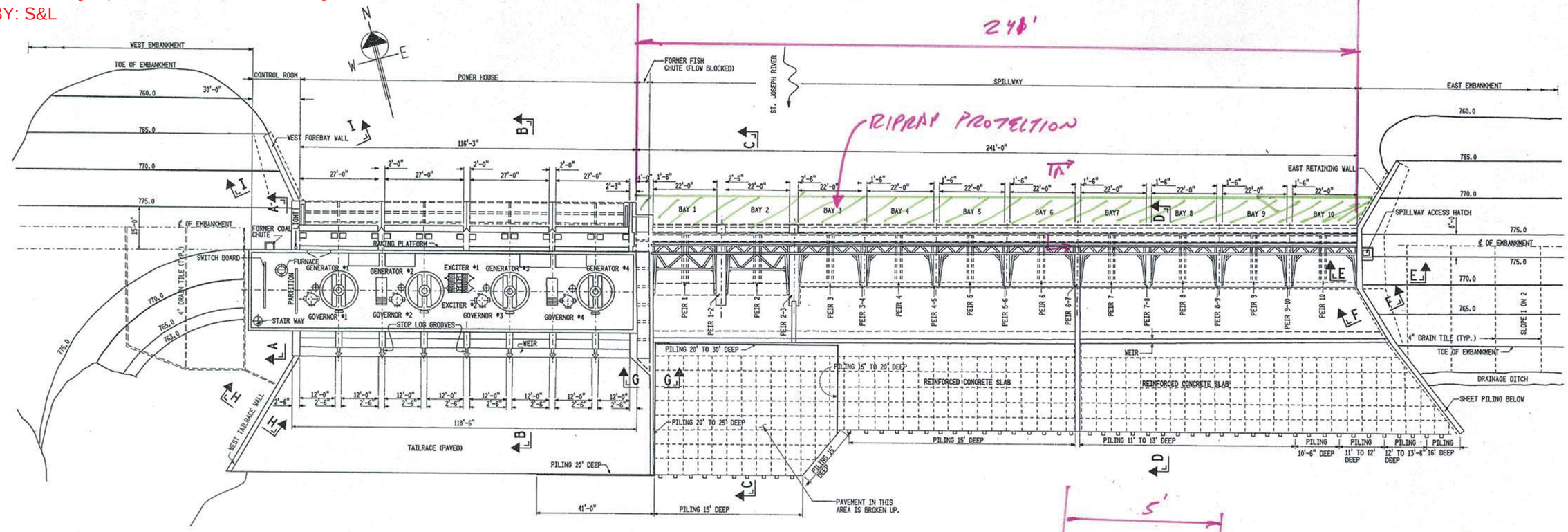
OPTION 3			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	211	ACRE	
RIPRAP PROTECTION AT RIVER BENDS	46,850	CY	2 ft riprap protection @ D(50)=12"
RIPRAP PROTECTION AT DAM ABUTMENTS	100	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	85	CY	TO BE REPLACED BY RIPRAP

Note:

Localized miscellaneous silt removal and earthwork as part of dam demolition by Brandenburg

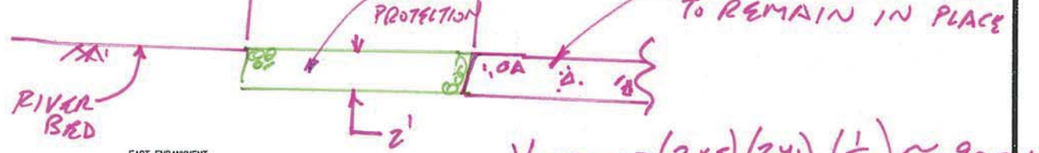

GRASS SEEDING = (107+104) = 211 ACRES
RIPRAP = {68,875+95,237+71,580+45,300+74,790+78,165+71,600+37,590+67,180+32,155} x 2 x 1/27
= 46,850 CY
32,155 Ft²
ASSUMED BASIN LIMITS
37,590 Ft²
67,180 Ft²
78,165 Ft²
71,600 Ft²
45,300 Ft²
74,790 Ft²
ASSUMED GRASS SEEDING BETWEEN EXISTING RIVER BANKS AND NEW RIVER BANKS AFTER DEMO (TYP)
ASSUMED RIVER WIDTH AFTER DAM MODIFICATION/DEMO = 200' (TYP)
A1 = 107 ACRES
71,580 Ft²
℄ RIVER (ASSUMED)
68,875 Ft²
95,237 Ft²
ASSUMED RIPRAP PROTECTION AT RIVER BENDS (TYP)
A2 = 104 ACRES
MOTTVILLE DAM
MOTTVILLE QUANTITIES
JAN 19, 2016
BY: S&L
500' 0' 500' 1000'
GRAPHIC SCALE

MOTTVILLE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L



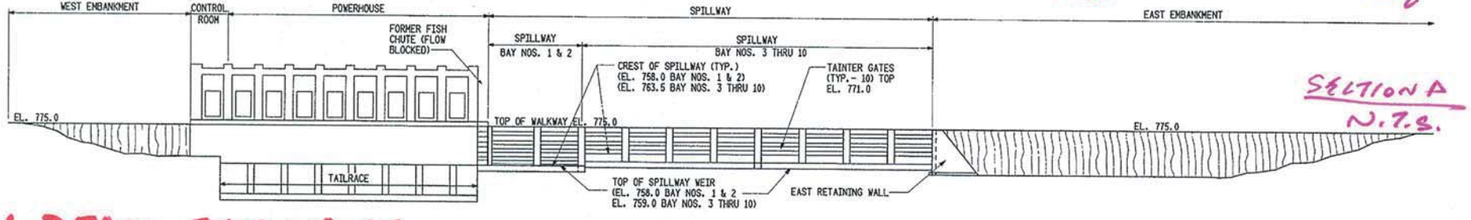
PLAN

15 10 5 0 15 FEET



$V_{RIPRAP} = (2 \times 5)(241)\left(\frac{1}{27}\right) \approx 90\ CY$

$V_{CUT} = V_{RIPRAP} = 90\ CY$



SECTION A
N.T.S.

ELEVATION LOOKING UPSTREAM

30 20 10 0 30 FEET

ITEM CONCEPTUAL DEMO ESTIMATE
MOTTVILLE RETIREMENT OPTION 2
CIVIL QUANTITIES

EXHIBIT F - 1

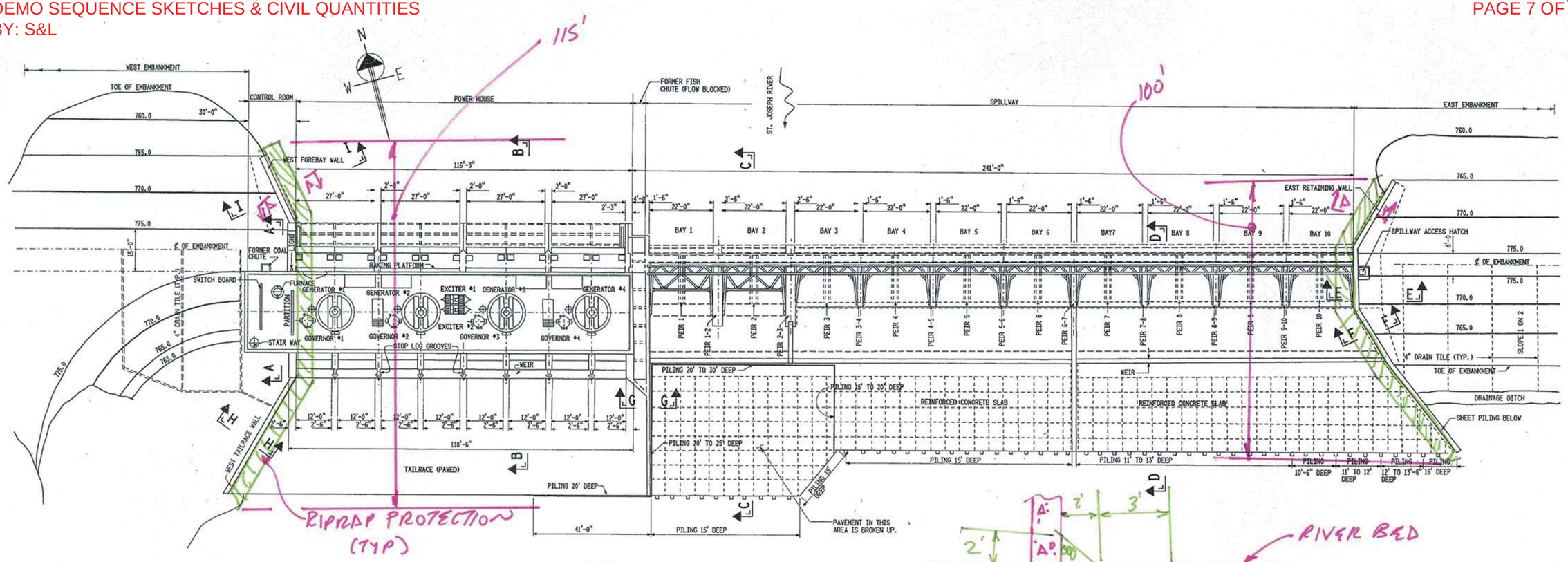
INDIANA MICHIGAN POWER COMPANY
MOTTVILLE HYDROELECTRIC PROJECT
MOTTVILLE MICHIGAN
GENERAL DESIGN DRAWING
PLAN & ELEVATION

THIS DRAWING, EXHIBIT F-1, IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY

BY: _____

DATE: _____

MOTTVILLE HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L



$V_{RIPRAP} = (12ft^2)(115' + 110')\left(\frac{1}{27}\right) = 100\ CY$

$V_{CUT} = (2 \times 5)(115' + 110')\left(\frac{1}{27}\right) \approx 85\ CY$

I&M CONCEPTUAL DEMO ESTIMATE
MOTTVILLE RETIREMENT OPTION 3
CIVIL QUANTITIES

EXHIBIT F - 1

INDIANA MICHIGAN POWER COMPANY
MOTTVILLE HYDROELECTRIC PROJECT
MOTTVILLE MICHIGAN
GENERAL DESIGN DRAWING
PLAN & ELEVATION

THIS DRAWING, EXHIBIT F-1, IS PART OF THE APPLICATION FOR LICENSE MADE BY INDIANA MICHIGAN POWER COMPANY

BY: _____

DATE: _____

Twin Branch Hydroelectric Plant

CONCEPTUAL DEMOLITION COST ESTIMATE

Prepared for:
Indiana Michigan Power Company (Owner)
and American Electric Power Service Corporation

Project No. 13465-000
February 12, 2016
Revision 0

55 East Monroe Street
Chicago, IL 60603-5780 USA

Issue Summary Page

Revision Number	Date	Purpose	Prepared By	Reviewed By	Approved By	Pages Affected
A	02/02/16	Comments	R. C. Kinsinger	A.D. Chapin D. F. Franczak	M. N. Ozan	All
0	02/12/16	Use	R. C. Kinsinger RKinsinger AC	A.D. Chapin AChapin D. F. Franczak D. F. Franczak	T. J. Meehan	All

TABLE OF CONTENTS

1.0 INTRODUCTION

The Twin Branch Hydroelectric Plant located near the City of South Bend, Indiana is owned and operated by Indiana Michigan Power Company (I&M), a subsidiary of American Electric Power (AEP). The plant consists of (from right to left referenced facing downstream) an embankment section referred to as the "saddle dike", the old steam plant intake structure, the right abutment embankment, the spillway, the powerhouse and the left abutment embankment. The spillway is a concrete-capped timber crib structure and consists of two flashboard rollway sections (on either end of the spillway) and a central tainter gate section consisting of seven (7) gates. The powerhouse is located to the left of the south rollway section. The powerhouse contains eight (8) operating vertical shaft Flygt Kaplan turbines equipped with Siemens generators rated at 0.6 MW each. Four (4) of the units were installed in 1989 and four (4) in 1992. There are two (2) in place, non-operating generators inside the powerhouse which have been abandoned.

AEP recently contracted S&L to prepare conceptual demolition cost estimates considering three (3) retirement options defined as follows: (1) Option 1, Non-Power Operation, (2) Option 2, Partial Removal of the Dam Structures, and (3) Option 3, Complete Removal of the Dam and Powerhouse. Also, in addition S&L was requested to prepare a separate Asbestos Removal Conceptual Cost Estimate.

The objective of the conceptual demolition cost estimates is to determine the gross demolition costs for Twin Branch Hydroelectric Plant (including gross salvage credits and any other benefits), in support of documenting a component of future AEP book depreciation rates to be approved by the I&M's state commissions and potential future inclusion in submittal of a rate case to the state commissions, and other potential uses. The cost estimate considers the demolition/dismantlement methodology which complies with current OSHA rules and regulations.

2.0 COST ESTIMATE SUMMARY

Conceptual Demolition Cost Estimate No. 33710B, dated February 12, 2016, was prepared and is included as Exhibit 2. This cost estimate was prepared for retirement option 3, but includes accounts allowing the determination of cost estimates for retirement options 1 and 2 as well. A summary of the conceptual demolition cost estimates for all three (3) retirement options is provided in Exhibit 1 and detailed in the following tables.

The cost estimate is structured into a code of accounts as identified in Table 2-1.

Table 2-1
Cost Estimate Code of Accounts

Account Number	Description
10, 21, 22	Demolition Costs (including steel, equipment & piping scrap value)
18	Scrap Value Costs
91	Other Direct & Construction Indirect Costs
93	Indirect Costs
94	Contingency Costs
96	Escalation Costs

The results of the cost estimate for retirement option 3 are provided in Table 2-2 below.

Table 2-2
Cost Estimate Results Summary
Retirement Option 3

Description	Total Cost
Demolition Cost	$10,506,420
Scrap Value	($166,151)
Direct Cost Subtotal	$10,340,269
Indirect Cost	$1,051,000
Contingency Cost	$2,337,000
Escalation Cost	$0
Total Project Cost	$13,728,269

The results of the cost estimate for retirement option 1 are provided in Table 2-3 below.

Table 2-3
Cost Estimate Results Summary
Retirement Option 1

Description	Total Cost
Demolition Cost	$127,208
Scrap Value	($86,961)
Direct Cost Subtotal	$40,247
Indirect Cost	$5,000
Contingency Cost	$40,000
Escalation Cost	$0
Total Project Cost	$85,247

The results of the cost estimate for retirement option 2 are provided in Table 2-4 below.

Table 2-4
Cost Estimate Results Summary
Retirement Option 2

Description	Total Cost
Demolition Cost	$8,260,082
Scrap Value	($157,447)
Direct Cost Subtotal	$8,102,635
Indirect Cost	$824,000
Contingency Cost	$1,842,000
Escalation Cost	$0
Total Project Cost	$10,768,635

Asbestos Removal Conceptual Cost Estimate No. 33742B, dated February 12, 2016, was prepared and is included as Exhibit 3. The total estimated cost for asbestos removal prior to plant dismantlement is $49,330. Quantities were derived from drawings and past experience. Asbestos removal applies to the powerhouse, thus the removal cost applies to all three (3) retirement options. The cost of asbestos removal is excluded from the total conceptual demolition cost estimates for each retirement option detailed in the tables above.

3.0 TECHNICAL BASIS

The scope of dismantlement is based on three (3) retirement options, as requested by AEP, as follows:

Retirement Option 1, Non-Power Operation: This scenario would consider leaving intact all of the existing water-impounding structures and the powerhouse. Only the electric generating units and their auxiliary equipment would be removed so as to preclude the generation of electricity by the former hydroelectric plant. In addition, the spillway would be modified as required in order to pass river flows and maintain the impoundment's water surface elevation at the current conditions.

Retirement Option 2, Partial Removal of the Dam Structures: This scenario would consider demolition and removal of certain elements of the hydroelectric site in order to drain the existing impoundment and create a natural river channel through the dam site. This would generally include removal of the generating units and powerhouse and possibly but not inclusively demolition and removal of substantial portions of concrete spillway structures. This option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

Retirement Option 3, Complete Removal of the Dam and Powerhouse: This scenario would consider complete removal of the electric generating components and powerhouse and complete removal of the dam. Similar to option 2, this option would address the removal and stabilization of any sediments that have accumulated at the upstream end of the dam and the stabilization of the newly exposed reservoir/riverbanks.

The scope of dismantlement for each retirement option, as interpreted from the definitions above, are identified on marked plant drawings included as Exhibit 4. The scope of dismantlement and the sequence of demolition for each retirement option are defined on these sketches.

Retirement options 2 and 3 include the same demolition work as retirement option 1, removal of the generating unit components from the powerhouse. The powerhouse is not removed in retirement option 1, but is removed in retirement option 3. For retirement option 2 the powerhouse may or may not be removed, depending on if removal of portions of the dam can restore river flow to natural flow without removing the powerhouse (refer to Exhibit 4).

For each of the retirement options the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not complete removal of all sediment potentially disturbed by the partial or complete removal of the dam. The subcontractor costs included in retirement options 2 and 3 are for lime stabilization of the sediment and removal of the sediment and other wastes (such as timber) to the waste disposal site. These costs do not apply to retirement option 1 since only generating unit components in the powerhouse are removed and this material has scrap value.

Retirement options 2 and 3 include the stabilization of newly exposed riverbanks, which include the dam area and areas upstream of the dam. The extent of stabilization for retirement option 3 may be slightly more than retirement option 2, since the entire dam is being removed in retirement option 3.

The following are excluded from the scope of the conceptual demolition cost estimates:

- Asbestos removal (separate cost estimate prepared).
- The conceptual demolition cost estimate includes the cost to remove the one (1) main power transformer located in the switchyard, but not the cost to remove the switchyard itself (and remaining components in the switchyard).
- The old steam plan intake structure serves as a screen house/intake for a nearby industrial building and will remain in place.
- Evaluation of the effect of the complete removal of the series of dams on the river watershed.
- Evaluation of the effect of the removal of any one dam, on either the upstream or downstream side dam and reservoir, after removal of the dam.
- Potential social or environmental impact of the draining of the reservoirs and the impact on property values or other community impact.
- The conceptual demolition cost estimate excludes any costs related to performing surveys to quantify the amount of sediment and chemical testing of the sediment. The quantity of sediment to be removed was estimated for retirement options 2 and 3 and the cost to remove the sediment is included in the conceptual demolition cost estimate. As stated above, the scope of sediment removal is based on the quantity that would be disturbed from the demolition work itself and not

complete removal of the sediment potentially disturbed by the partial or complete removal of the dam.

The scope of the demolition cost estimate was reaffirmed during a review of the facility by two S&L employees in conjunction with a representative from Bradenburg Industrial Service Co. and AEP corporate and plant personnel. The facility review was held on Wednesday December 16, 2015.

4.0 COMMERCIAL BASIS

4.1 General Information

The Conceptual Demolition Cost Estimates prepared for the Twin Branch Hydroelectric Plant is a conceptual estimate of the cost to dismantle the powerhouse and dam in accordance with the scope defined for each of the three (3) retirement options. Costs were calculated for (1) demolition of existing plant structures and equipment and associated site restoration costs, (2) scrap value of steel, copper and stainless steel, as applicable, (3) associated indirect costs, and (4) contingency.

All units used in the cost estimate are U.S. Standard and all costs are in US Dollars (4th Quarter 2015 levels). A three (3) year demolition schedule is anticipated for retirement option 3 including asbestos removal (to be performed prior to start of demolition work). The schedule takes into consideration environmental permitting, asbestos removal which includes mapping out all asbestos contamination throughout the powerhouse and associated abatement, followed by total plant demolition and site restoration. The schedule for the other two (2) retirement options would be correspondingly less.

4.2 Quantities/Material Cost

Quantities of pieces of equipment and/or bulk material commodities used in the cost estimates were intended to be reasonable and representative of projects of this type. Material quantities were estimated from the hydroelectric plant drawings and data provided by AEP, and the information obtained from Plant personnel during the facility review.

4.3 Construction Labor Wages

Craft labor rates (Craft Hourly Rate) for the cost estimate were calculated as Union Labor rates for South Bend, Indiana, based on 2015, R. S. Means “Labor Rates for the Construction Industry”. The craft rates were incorporated into work crews appropriate for the activities by adding allowances for small tools, construction equipment, insurance, and site overheads to arrive at crew hourly rates detailed in the cost

estimate. A 1.10 regional labor productivity multiplier was included based on Compass International Global Construction Yearbook, 2015 Edition, for union work in Indiana. National Maintenance Agreement Rates (typically negotiated by AEP) do not apply as this work is assumed to be performed as a lump sum contract.

4.3.1 Labor Work Schedule and Incentives

The estimate assumed a 5x8 work week. No per diem or other labor incentives are included.

4.3.2 Construction Indirects

Allowances were included in the cost estimate as direct costs as noted for the following:

- Freight: Material and scrap freight included in the material and scrap costs.
- Additional Crane Allowance: None included. Cost of cranes and construction machinery are included in the labor wage rates.
- Mobilization and Demobilization: Included in labor wage rates.
- Scaffolding: Included in labor wage rates.
- Consumables: Included in material and labor costs.
- Per Diem Costs: Excluded from the estimate.
- Contractor's General and Administrative Costs and Profit: Included in the labor wage rates.

4.4 Scrap Value

The value of scrap was determined by a 3 month average (November and December 2015 and January 2016) using Zone 4 (USA Midwest) of the "Scrap Metals Market Watch" (www.americanrecycler.com).

Since the values obtained are delivered pieces, 25% of the values obtained were deducted to pay for separation, preparation and shipping to the mills. This resulted in realized prices of:

- Mixed Steel Value @ $118/Ton
- Copper Value @ $3,180/Ton
- Stainless Steel @ $675/Ton

Note: 1 Ton = 2,000 Lbs

All steel is considered to be mixed steel unless otherwise noted.

4.5 Indirect Costs

Allowances were included in the cost estimate as indirect costs as noted for the following:

- Engineering, Procurement and Project Services: None included.
- Construction Management Support: None included.
- Owners Cost: Included as 10.0% of the total direct cost. Owners Costs include owner project engineering, administration and construction management, permits and fees, legal expenses, taxes, removal of chemicals, etc.

4.6 Escalation

No allowance for escalation was included in the cost estimate. All costs are determined in 4th Quarter 2015 levels.

4.7 Contingency

Allowances were included in the cost estimate as contingency as noted for the following:

- Scrap Value: Included as 15.0% reduction in the salvage value resulting in a total net reduction in the salvage value. The contingency assumes a potential drop in salvage value thus increasing the project cost. Scrap costs are very volatile but by taking a 3-month average some of the effect of volatility is reduced. However there are other variables that affect scrap pricing such as the quantity and processing fees. The contingency applied is based on the estimators confidence in scrap pricing used in the demolition cost estimate.
- Material: Included as 20.0% of the total material cost.
- Labor: Included as 20.0% of the total labor cost.
- Indirect: Included as 20.0% of the total indirect cost.
- Subcontractor: Included as 20.0% of the total subcontractor cost.

4.8 Assumptions

The following assumptions apply to the cost estimates.

- The cost estimate for each retirement option is based on the scope and the demolition sequences defined on the sketches provided in Exhibit 4.
- All chemicals will be removed by the Owner prior to demolition, from the facilities to be demolished.

- All electrical equipment and wiring is de-energized prior to start of dismantlement, except for that required for remote operation of two (2) of the tainter gates after demolition is completed for retirement option 1.
- No extraordinary environmental costs for demolition have been included.
- Handling, on-site and off-site disposal of hazardous materials would be performed in compliance with methods approved by Owner.
- The window glazing in the powerhouse may be asbestos contaminated and an allowance for removal and disposal is included in the asbestos removal cost estimate. There are a number of devices in the powerhouse mounted on transite (asbestos) panels and an allowance for removal and disposal is included in the asbestos removal cost estimate. There is no building or pipe insulation in the facility and consequently no insulation related asbestos contamination.
- Switchyards within the plant boundaries are not part of the scope, neither are access roads to these facilities. Fences and gates needed to protect the switchyard will be left in place.
- All demolished materials are considered debris, except for organic combustibles and non-embedded metals which have scrap value.
- The basis for salvage estimating is for scrap value only. No resale of equipment or material is included.
- Sediment removed due to demolition work is treated with lime and hauled offsite to an approved waste disposal facility.

5.0 REFERENCES

5.1 Twin Branch Plant Drawings: One-Line Diagrams, No. E-1000, Revision 16 and No. 16-12001-2, 2/7/91.

5.2 Findlay Engineering, Inc., Supporting Technical Information Document, Twin Branch Hydroelectric Project, August, 2005.

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EXHIBIT 1
Twin Branch Hydroelectric Plant
Conceptual Demolition Cost Estimate Summary

Twin Branch Hydroelectric Plant
Indiana Michigan Power Company
American Electric Power Service Corporation
Estimate Number: 33710B

	Retirement Option 1	Retirement Option 2	Retirement Option 3
Demolition Cost	$ 127,208	$ 8,260,082	$ 10,506,420
Scrap Value	$ (86,961)	$ (157,447)	$ (166,151)
Direct Cost Subtotal	$ 40,247	$ 8,102,635	$ 10,340,269
Indirect Cost	$ 5,000	$ 824,000	$ 1,051,000
Contingency Cost	$ 40,000	$ 1,842,000	$ 2,337,000
Escalation Cost	$ -	$ -	$ -
Total Demolition Cost	$ 85,247	$ 10,768,635	$ 13,728,269

EXHIBIT 2
Twin Branch Hydroelectric Plant
Conceptual Demolition Cost Estimate No. 33710B

AEP TWIN BRANCH
HYDROELECTRIC PLANT DISMANTLEMENT STUDY
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	TWIN BRANCH
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33710B
Estimate Class	Conceptual
Cost index	INSOU

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ACCOUNT A	DEMOLITION ACCOUNT A		(86,961)		1,464	127,208	40,247
ACCOUNT B	DEMOLITION ACCOUNT B	1,419,180	(70,486)	3,177,934	45,622	3,535,760	8,062,388
ACCOUNT C	DEMOLITION ACCOUNT C	874,760	(8,704)		15,233	1,371,578	2,237,634
	TOTAL DIRECT	**2,293,940**	**(166,151)**	**3,177,934**	**62,319**	**5,034,546**	**10,340,269**

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor	5,034,546		62,319
Material	3,177,934		
Subcontract	2,293,940		
Scrap Value	(166,151)		
	10,340,269	**10,340,269**	
Other Direct & Construction Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		10,340,269	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	1,051,000		
93-8 EPC Fee			
	1,051,000	**11,391,269**	
Contingency:			
94-1 Contingency on Material	636,000		
94-2 Contingency on Labor	1,007,000		
94-3 Contingency on Sub.	459,000		
94-6 Contingency on Scrap	25,000		
94-5 Contingency on Indirect	210,000		
	2,337,000	**13,728,269**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		13,728,269	
Total		***13,728,269***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ACCOUNT A			**DEMOLITION ACCOUNT A**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO .6 MW FLYGT GENERATOR	8 GENERATORS AT 9500# EA	38.00 TN	418	85.53 /MH	35,755		-		35,755
			DEMO FLYGT TURBINE AND GEARS	8 GENERATORS AT 14000# EA	56.00 TN	616	85.53 /MH	52,692		-		52,692
			DEMO HOIZONTAL CAMELBACK GENERATOR	2 GENERATORS AT 14000# EA	14.00 TN	154	85.53 /MH	13,173		-		13,173
			GENERATOR ROOM 20 TON TRAVELING CRANE	CRANE IS NOT MOTORIZED	15.00 TN	33	121.33 /MH	4,054		-		4,054
			BAR RACKS	6 AT 5 TONS EACH	30.00 TN	67	121.33 /MH	8,109		-		8,109
			MECHANICAL EQUIPMENT			1,288		113,783				113,783
			WHOLE PLANT DEMOLITION			1,288		113,783				113,783
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	.6 MW FLYGT GENERATOR, 8 @5,225# EA	-20.90 TN		79.62 /MH		-	-	(2,468)	(2,468)
			MIXED STEEL	DEMO FLYGT TURBINE AND GEARS	-56.00 TN		79.62 /MH		-	-	(6,612)	(6,612)
			MIXED STEEL	DEMO HOIZONTAL CAMELBACK GENERATOR, 2 @ 4.2 TN EA	-14.00 TN		79.62 /MH		-	-	(1,653)	(1,653)
			MIXED STEEL	GENERATOR ROOM 20 TON TRAVELING CRANE	-15.00 TN		79.62 /MH		-	-	(1,771)	(1,771)
			MIXED STEEL	BAR RACKS	-30.00 TN		79.62 /MH		-	-	(3,542)	(3,542)
			MIXED STEEL								(16,047)	(16,047)
		18.30.00	COPPER									
			COPPER	12 - .6 MW FLYGT GENERATOR 8@ 4,275 LB EA	-17.10 TN		79.62 /MH		-	-	(54,378)	(54,378)
			COPPER	DEMO HOIZONTAL CAMELBACK GENERATOR, 2 @ 2.6 TN EA	-5.20 TN		79.62 /MH		-	-	(16,536)	(16,536)
			COPPER								(70,914)	(70,914)
			SCRAP VALUE								(86,961)	(86,961)
	22.00.00		CONCRETE									
		22.13.00	Concrete									
			FLOWABLE FILL, 1500 PSI	INSTALL COVER PLATES IN TURBINE BAY TO PREVENT BYPASS FLOW	1.00 LT	176	76.27 /MH	13,425		-	-	13,425
			Concrete			176		13,425				13,425
			CONCRETE			176		13,425				13,425
			ACCOUNT A DEMOLITION ACCOUNT A			**1,464**		**127,208**			**(86,961)**	**40,247**
ACCOUNT B			**DEMOLITION ACCOUNT B**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE SECTION: WEIR, , GATE WALLS & OGEE	1,522.00 CY	1,884	89.94 /MH	169,417		-	-	169,417
			EQUIPMENT/ BUILDING FOUNDATION	NORTH ROLLWAY SECTION - TIMBER CRIBING, INCL DISPOSAL	3,428.00 CY	3,394	89.94 /MH	305,262		68,560	-	373,822
			EQUIPMENT/ BUILDING FOUNDATION	NORTH ROLLWAY SECTION - CONCRETE OGIVE	457.00 CY	566	89.94 /MH	50,870		-	-	50,870
			EQUIPMENT/ BUILDING FOUNDATION	SOUTH ROLLWAY SECTION - TIMBER CRIBBING INCLUDES DISPOSAL;	3,360.00 CY	3,327	89.94 /MH	299,206		67,200	-	366,406
			CONCRETE			9,170		824,754		135,760		960,514
		10.23.00	STEEL									
			STRUCTURAL AND GIRT STEEL	NORTH ROLLWAY WALKWAY	10.00 TN	11	79.62 /MH	890		-	-	890
			STRUCTURAL AND GIRT STEEL	SOUTH ROLLWAY WALKWAY	10.00 TN	11	79.62 /MH	890		-	-	890
			STRUCTURAL AND GIRT STEEL	GENERATOR HOUSE	89.00 TN	99	79.62 /MH	7,920		-	-	7,920
			STEEL			122		9,700				9,700
		10.31.00	MECHANICAL EQUIPMENT									
			60 KW PROPANE ELECTRIC GENERATOR		1.50 TN	3	121.33 /MH	405		-		405
			TAINTER GATES	7 AT 5 TONS EACH	35.00 TN	78	121.33 /MH	9,460		-		9,460
			MECHANICAL EQUIPMENT			81		9,866				9,866
		10.41.00	ELECTRICAL EQUIPMENT									
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 7500/9375 KVA (STEEL)	5.12 TN	15	80.14 /MH	1,206		-	-	1,206
			GENERATOR BUS TRANSFORMERS	4.16 to 34.5 KV, 6800/9068 KVA (CU)	4.62 TN	14	80.14 /MH	1,088		-	-	1,088
			MISCELLANEOUS ELECTRICAL EQUIPMENT		5.00 TN	15	80.14 /MH	1,178		-	-	1,178
			ELECTRICAL EQUIPMENT			43		3,472				3,472

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
			WHOLE PLANT DEMOLITION			9,417		847,792		135,760		983,552
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	60 KW PROPANE ELECTRIC GENERATOR	-1.50 TN		79.62 /MH		-	-	(177)	(177)
			MIXED STEEL	TAINTER GATES AND WALKWAY	-35.00 TN		79.62 /MH		-	-	(4,133)	(4,133)
			MIXED STEEL	GENERATOR BUS TRANSFORMERS	-5.12 TN		79.62 /MH		-	-	(605)	(605)
			MIXED STEEL								(4,914)	(4,914)
		18.30.00	COPPER									
			COPPER	CABLE	-10.00 TN		79.62 /MH		-	-	(31,800)	(31,800)
			COPPER	MISC. TRANSFORMERS & MOTORS UNIT 1	-6.00 TN		79.62 /MH		-	-	(19,080)	(19,080)
			COPPER	GENERATOR BUS TRANSFORMERS	-4.62 TN		79.62 /MH		-	-	(14,692)	(14,692)
			COPPER								(65,572)	(65,572)
			SCRAP VALUE								(70,486)	(70,486)
	21.00.00		CIVIL WORK									
		21.17.00	Earthwork, Excavation									
			FOUNDATION EXCAVATION, COMMON EARTH USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR RIPRAP	170.00 CY	28	88.08 /MH	2,471		-	-	2,471
			Earthwork, Excavation			28		2,471				2,471
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	54560CY - 7333CY ASSUMING REUSE OF CAUSEWAY STONE	47,227.00 CY	20,834	74.10 /MH	1,543,793	1,931,584	-	-	3,475,377
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	FOR CAUSEWAYS INSTALLATION	7,333.00 CY	3,235	74.10 /MH	239,707	299,920	-	-	539,627
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	REUSE CAUSEWAY RIP RAP FOR BANK PROTECTION	7,333.00 CY	3,235	74.10 /MH	239,707		-	-	239,707
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT SPILLWAY FLOOR SLAB	170.00 CY	75	74.10 /MH	5,557		-	-	5,557
			Erosion and Sedimentation Control			27,379		2,028,764	2,231,504			4,260,268
		21.47.00	LANDSCAPING									
			HYDRO OR AIR SEED & MULCH & FERTILIZER		620.00 AC	8,799	74.64 /MH	656,733	946,430	-	-	1,603,163
			LANDSCAPING			8,799		656,733	946,430			1,603,163
		21.65.00	Soil Remediation									
			REMOVAL OF SOIL - LOCALIZED	LIME ADDITIVE FOR DRYING	5,834.00 CY		196.64 /MH			233,360	-	233,360
			REMOVAL OF SOIL - LOCALIZED	LOAD, MIX AND HAUL LIME AND SEDIMENT MIX 7111+3556	17,501.00 CY		196.64 /MH			1,050,060	-	1,050,060
			Soil Remediation							1,283,420		1,283,420
			CIVIL WORK			36,205		2,687,968	3,177,934	1,283,420		7,149,322
			ACCOUNT B DEMOLITION ACCOUNT B			**45,622**		**3,535,760**	**3,177,934**	**1,419,180**	**(70,486)**	**8,062,388**
ACCOUNT C			**DEMOLITION ACCOUNT C**									
	10.00.00		WHOLE PLANT DEMOLITION									
		10.22.00	CONCRETE									
			EQUIPMENT/ BUILDING FOUNDATION	TAINTER GATE: APRON	838.00 CY	1,037	89.94 /MH	93,279		-	-	93,279
			EQUIPMENT/ BUILDING FOUNDATION	NORTH ROLLWAY SECTION - CONCRETE BASE	488.00 CY	604	89.94 /MH	54,320		-	-	54,320
			EQUIPMENT/ BUILDING FOUNDATION	NORTH ROLLWAY SECTION - PLANK APRON, INCL DISPOSAL	480.00 CY	475	89.94 /MH	42,744		9,600	-	52,344
			EQUIPMENT/ BUILDING FOUNDATION	SOUTH ROLLWAY SECTION - CONCRETE BASE	471.00 CY	583	89.94 /MH	52,428		-	-	52,428
			EQUIPMENT/ BUILDING FOUNDATION	SOUTH ROLLWAY SECTION - PLANK APRON, INCL DISPOSAL	3,360.00 CY	3,327	89.94 /MH	299,206		67,200	-	366,406
			EQUIPMENT/ BUILDING FOUNDATION	GENERATOR ROOM	1,723.00 CY	2,132	89.94 /MH	191,790		-	-	191,790
			EQUIPMENT/ BUILDING FOUNDATION	TURBINE BAY	1,913.00 CY	2,368	89.94 /MH	212,940		-	-	212,940
			EQUIPMENT/ BUILDING FOUNDATION	DRAFT TUBE TUNNEL	2,266.00 CY	2,804	89.94 /MH	252,233		-	-	252,233
			CONCRETE			13,330		1,198,940		76,800		1,275,740
		10.24.00	ARCHITECTURAL									
			GENERATOR HOUSE	40'X181'	353,600.00 CF	1,517	89.81 /MH	136,250		-	-	136,250
			ARCHITECTURAL			1,517		136,250				136,250
		10.31.00	MECHANICAL EQUIPMENT									
			DEMO CAMELBACK PENSTOCKS	2 GENERATORS AT 15 TN EA	30.00 TN	330	85.53 /MH	28,228		-		28,228
			STOP LOGS	6 AT 5 TONS EACH	30.00 TN	67	121.33 /MH	8,109		-		8,109

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
		10.31.00	MECHANICAL EQUIPMENT									
			TURBINE ROOM 15 TON GANTRY CRANE	INTAKE DECK	10.00 TN	22	121.33 /MH	2,703		-		2,703
			MECHANICAL EQUIPMENT			419		39,039				39,039
		10.86.00	WASTE									
			WASTE	MISC	1.00 LS		121.33 /MH			-	10,000	10,000
			WASTE								10,000	10,000
			WHOLE PLANT DEMOLITION			15,267		1,374,230		76,800	10,000	1,461,030
	18.00.00		SCRAP VALUE									
		18.10.00	MIXED STEEL									
			MIXED STEEL	DEMO CAMELBACK PENSTOCKS	-30.00 TN		79.62 /MH		-	-	(3,542)	(3,542)
			MIXED STEEL	STOP LOGS	-30.00 TN		79.62 /MH		-	-	(3,542)	(3,542)
			MIXED STEEL	TURBINE ROOM 15 TON GANTRY CRANE	-10.00 TN		79.62 /MH		-	-	(1,181)	(1,181)
			MIXED STEEL	GENERATOR HOUSE	-88.40 TN		79.62 /MH		-	-	(10,438)	(10,438)
			MIXED STEEL								(18,704)	(18,704)
			SCRAP VALUE								(18,704)	(18,704)
	21.00.00		CIVIL WORK									
		21.17.00	Earthwork, Excavation									
			FOUNDATION EXCAVATION, COMMON EARTH USING 1 CY BACKHOE	RIVERBED EXCAVATION FOR RIPRAP CREDIT (170-100_	-70.00 CY	-12	88.08 /MH	(1,017)		-	-	(1,017)
			Earthwork, Excavation			-12		(1,017)				(1,017)
		21.41.00	Erosion and Sedimentation Control									
			RIPRAP, RANDOM BROKEN STONE, MACHINE PLACED	RIP RAP PROTECTION AT RETAINING WALLS CEDIT(170-120)	-50.00 CY	-22	74.10 /MH	(1,634)		-	-	(1,634)
			Erosion and Sedimentation Control			-22		(1,634)				(1,634)
		21.65.00	Soil Remediation									
			REMOVAL OF SOIL - LOCALIZED	ADDITIONAL LIME ADDITIVE FOR DRYING ACCOUNT (9463-5834)	3,629.00 CY		196.64 /MH			145,160	-	145,160
			REMOVAL OF SOIL - LOCALIZED	ADDITIONAL LOAD, MIX AND HAUL LIME AND SEDIMENT MIX (28389-17501))	10,880.00 CY		196.64 /MH			652,800	-	652,800
			Soil Remediation							797,960		797,960
			CIVIL WORK			-34		(2,652)		797,960		795,308
			ACCOUNT C DEMOLITION ACCOUNT C			**15,233**		**1,371,578**		**874,760**	**(8,704)**	**2,237,634**

EXHIBIT 3
Twin Branch Hydroelectric Plant
Asbestos Removal Conceptual Cost Estimate No. 33742B

AEP TWIN BRANCH
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Client	AEP
Estimator	RCK
Labor rate table	15INSOU
Project No.	13465-000
Station Name	TWIN BRANCH
Unit	ALL
Estimate Date	02/12/2016
Reviewed By	ADC
Approved By	MNO
Estimate No.	33742B
Estimate Class	Conceptual
Cost index	INSOU

AEP TWIN BRANCH
HYDROELECTRIC PLANT DISMANTLEMENT STUDY - ASBESTOS REMOVAL
CONCEPTUAL COST ESTIMATE

Area	Description	Subcontract Cost	Scrap Value	Material Cost	Man Hours	Labor Cost	Total Cost
ASBESTOS	ASBESTOS REMOVAL	37,430					37,430
	TOTAL DIRECT	37,430					37,430

Estimate Totals

Description	Amount	Totals	Hours
Direct Costs:			
Labor			
Material			
Subcontract	37,430		
Scrap Value			
	37,430	**37,430**	
Other Direct & Construction			
Indirect Costs:			
91-1 Scaffolding			
91-2 Cost Due To OT 5-10's			
91-3 Cost Due To OT 6-10's			
91-4 Per Diem			
91-5 Consumables			
91-8 Freight on Material			
91-9 Freight on Process Equip			
91-10 Sales Tax			
91-11 Contractors G&A			
91-12 Contractors Profit			
		37,430	
Indirect Costs:			
93-1 Engineering Services			
93-2 CM Support			
93-3 Start-Up/Commissioning			
93-4 Start-Up/Spare Parts			
93-5 Excess Liability Insur.			
93-6 Sales Tax On Indirects			
93-7 Owners Cost	3,700		
93-8 EPC Fee			
	3,700	**41,130**	
Contingency:			
94-1 Contingency on Material			
94-2 Contingency on Labor			
94-3 Contingency on Sub.	7,500		
94-6 Contingency on Scrap			
94-5 Contingency on Indirect	700		
	8,200	**49,330**	
Escalation:			
96-1 Escalation on Material			
96-2 Escalation on Labor			
96-3 Escalation on Subcontract			
96-4 Escalation on Scrap			
96-5 Escalation on Indirects			
		49,330	
Total		***49,330***	

Area	Group	Phase	Description	Notes	Quantity	Man Hours	Crew Rate	Labor Cost	Material Cost	Subcontract Cost	Scrap Value	Total Cost
ASBESTOS			**ASBESTOS REMOVAL/DISPOSAL**									
	10.00.00		**WHOLE PLANT DEMOLITION**									
		10.37.00	**ASBESTOS REMOVAL**									
			ASBESTOS REMOVAL - MISC MATERIALS	WINDOW CAULKING MISC MATERIALS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL - MISC MATERIALS	CONTROL PANEL APPROX 20' X 9' TALL	6.70 CY		121.33 /MH			12,730	-	12,730
			ASBESTOS REMOVAL - MISC MATERIALS	SWITCHBOARDS	2.00 CY		121.33 /MH			3,800	-	3,800
			ASBESTOS REMOVAL - MISC MATERIALS	UNIDENTIFIED ABANDONED EQUIPMENT	9.00 CY		121.33 /MH			17,100	-	17,100
			ASBESTOS REMOVAL							**37,430**		**37,430**
			WHOLE PLANT DEMOLITION							**37,430**		**37,430**
			ASBESTOS ASBESTOS REMOVAL/DISPOSAL							**37,430**		**37,430**

EXHIBIT 4
Twin Branch Hydroelectric Plant
Retirement Option 1-3 Demolition Scope and Sequence

TWIN BRANCH HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2016
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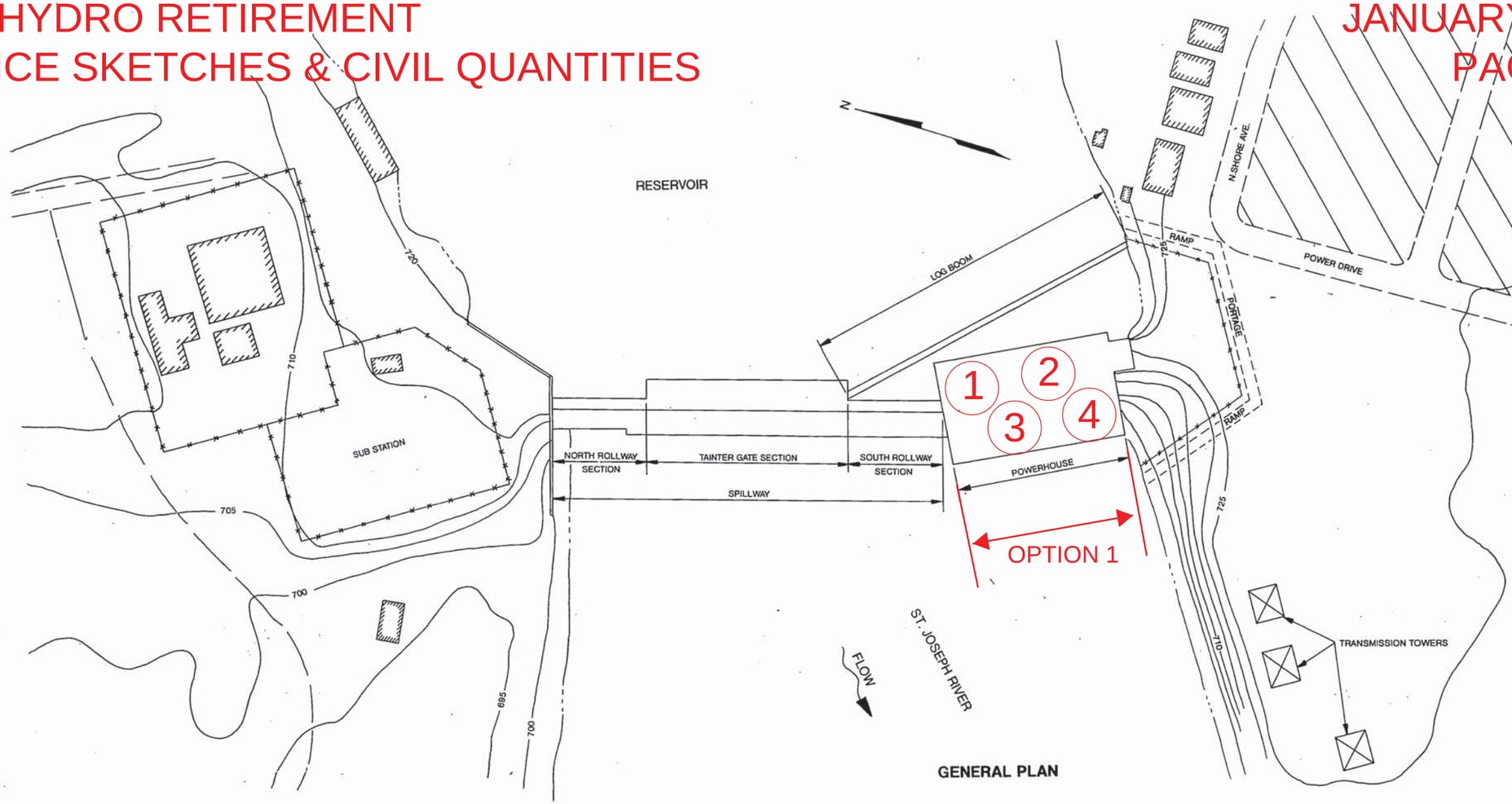
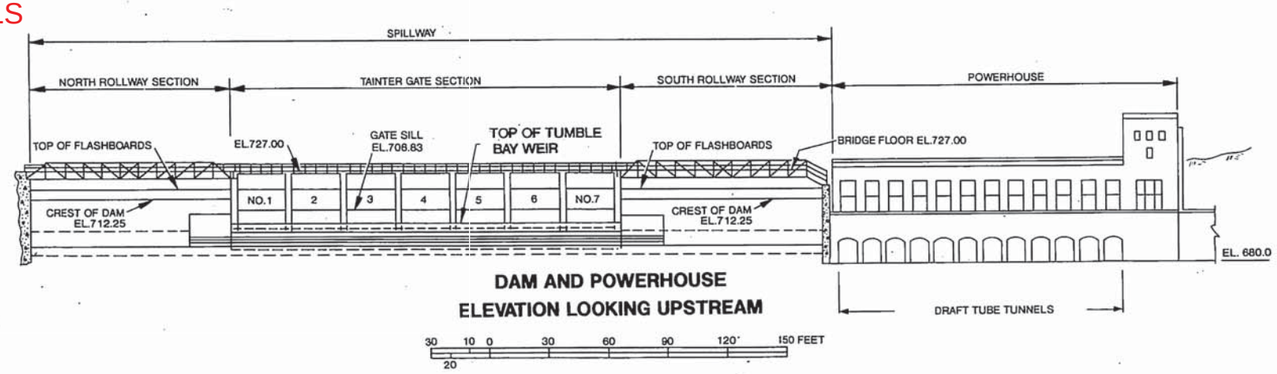


GENERAL PLAN

0 50 100 150 200 FEET

OPTION 1
①INSTALL STOPLOGS
②REMOVE EQUIPMENT
③GROUT DRAFT TUBE TUNNELS
④REMOVE STOPLOGS



DAM AND POWERHOUSE
ELEVATION LOOKING UPSTREAM

30 20 10 0 30 60 90 120 150 FEET

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BY B.H. Bennett

DATE 10/31/91

EXHIBIT F SHEET 1 OF 3

INDIANA MICHIGAN POWER COMPANY
TWIN BRANCH
HYDROELECTRIC PROJECT NO.2579
GENERAL DESIGN DRAWINGS
PLAN AND ELEVATION

FERC NO. 2579 – 010 – 1

TWIN BRANCH HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

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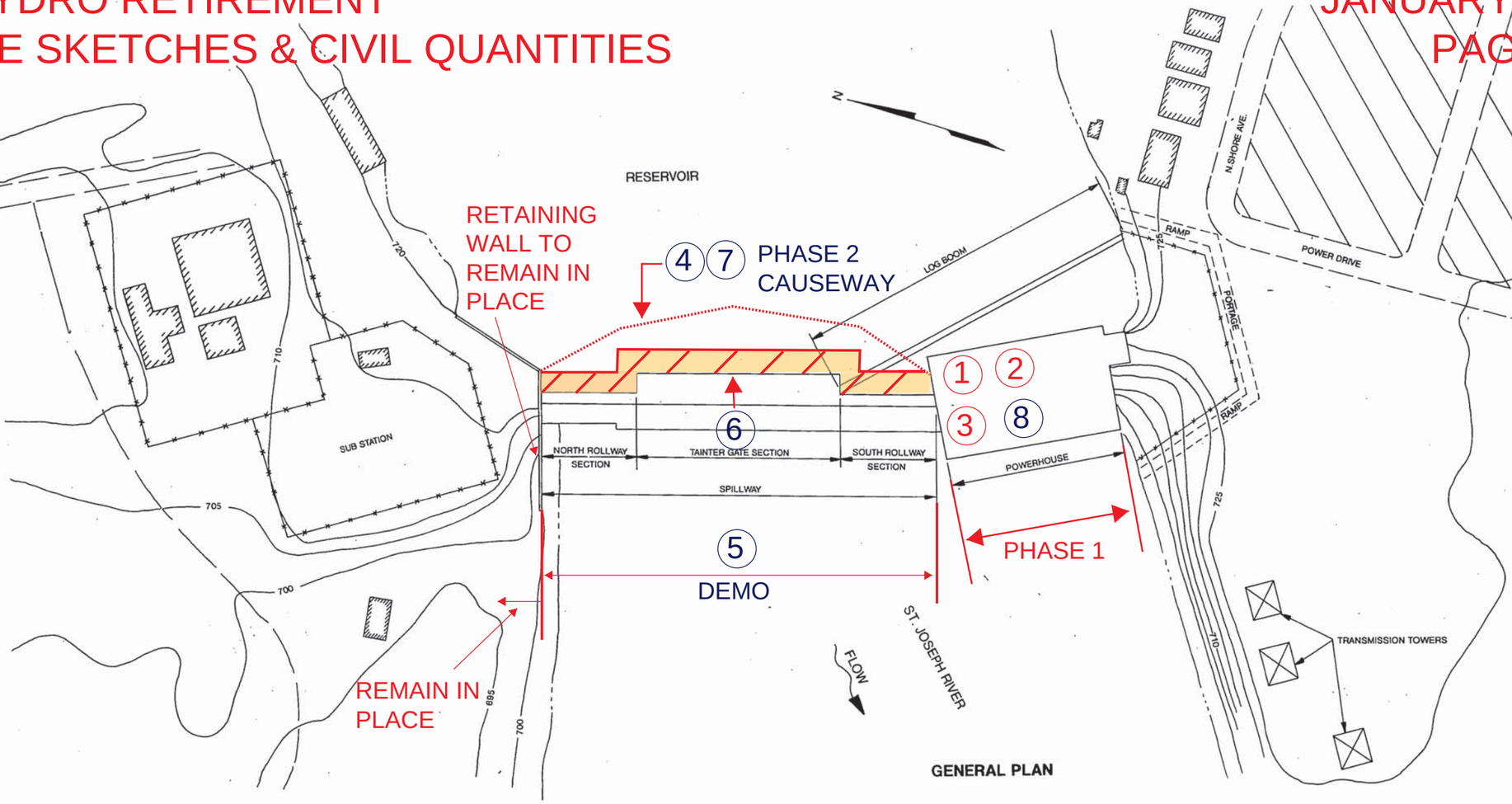
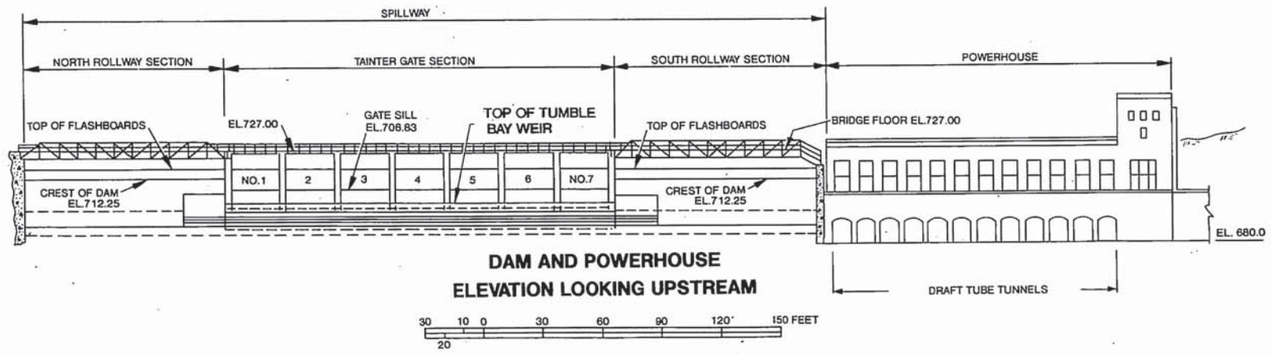


PHASE 1
①INSTALL STOPLOGS
②REMOVE EQUIPMENT
③REMOVE STOPLOGS

PHASE 2
④CONSTRUCT CAUSEWAY
⑤DEMO TAINTER GATE AND ROLLWAY SECTIONS
⑥PLACE RIPRAP PROTECTION
⑦REMOVE CAUSEWAY
⑧GROUT DRAFT TUBES

OPTION 2



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TWIN BRANCH HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

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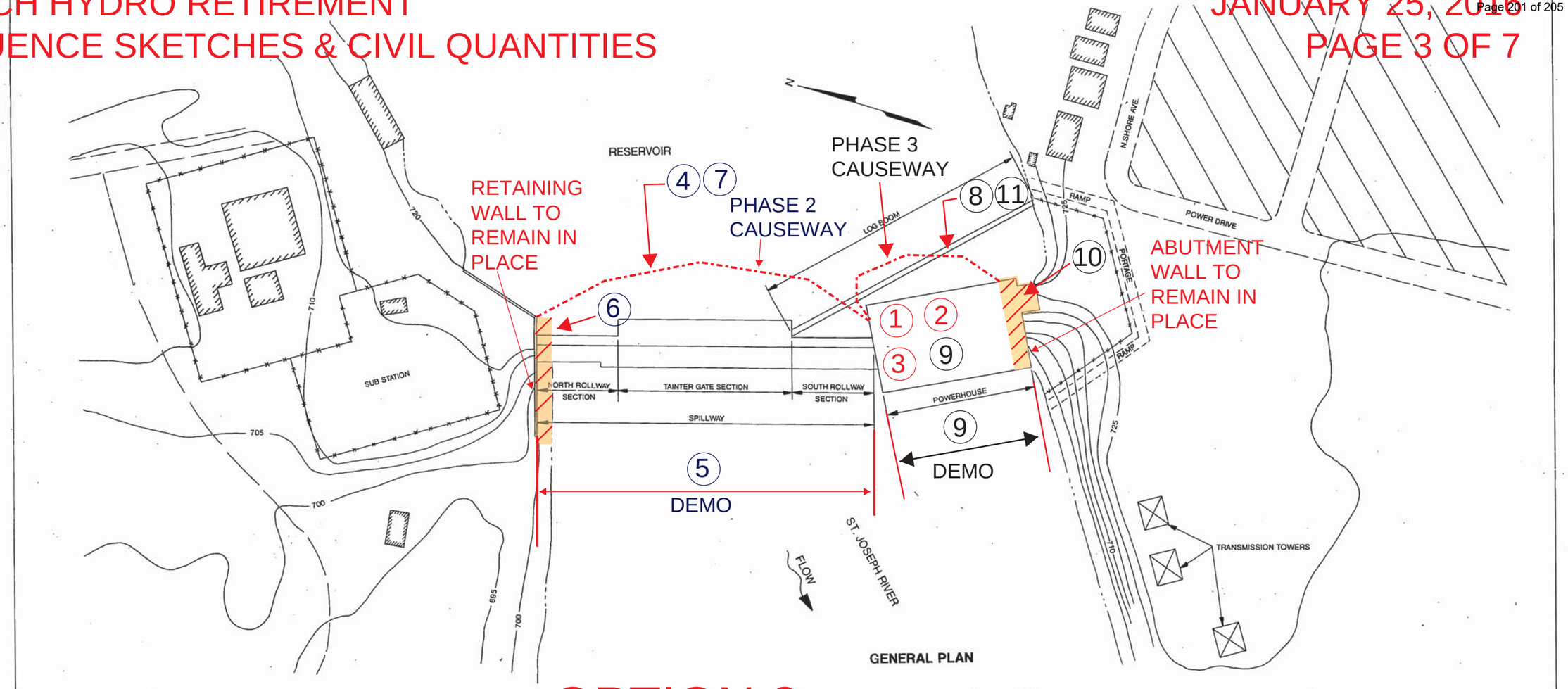
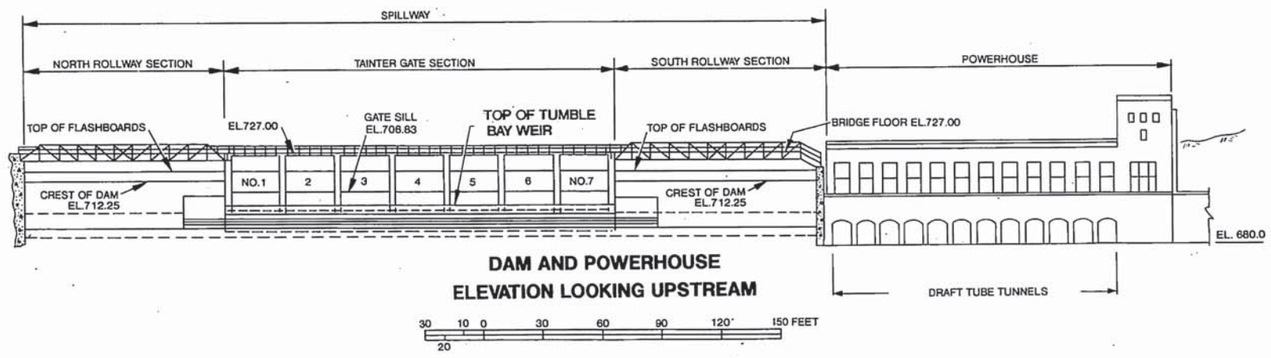


GENERAL PLAN

0 50 100 150 200 FEET

OPTION 3



DAM AND POWERHOUSE
ELEVATION LOOKING UPSTREAM

30 10 0 30 60 90 120 150 FEET
20

PHASE 1
①INSTALL STOPLOGS
②REMOVE EQUIPMENT
③REMOVE STOPLOGS

PHASE 2
④CONSTRUCT CAUSEWAY
⑤DEMO TAINTER GATE AND ROLLWAY SECTIONS
⑥PLACE RIPRAP PROTECTION AT RETAINING WALL
⑦REMOVE CAUSEWAY

PHASE 3
⑧ CONSTRUCT CAUSEWAY
⑨ DEMO POWERHOUSE
⑩ PLACE RIPRAP PROTECTION AT ABUTMENT WALL
⑪ REMOVE CAUSEWAY

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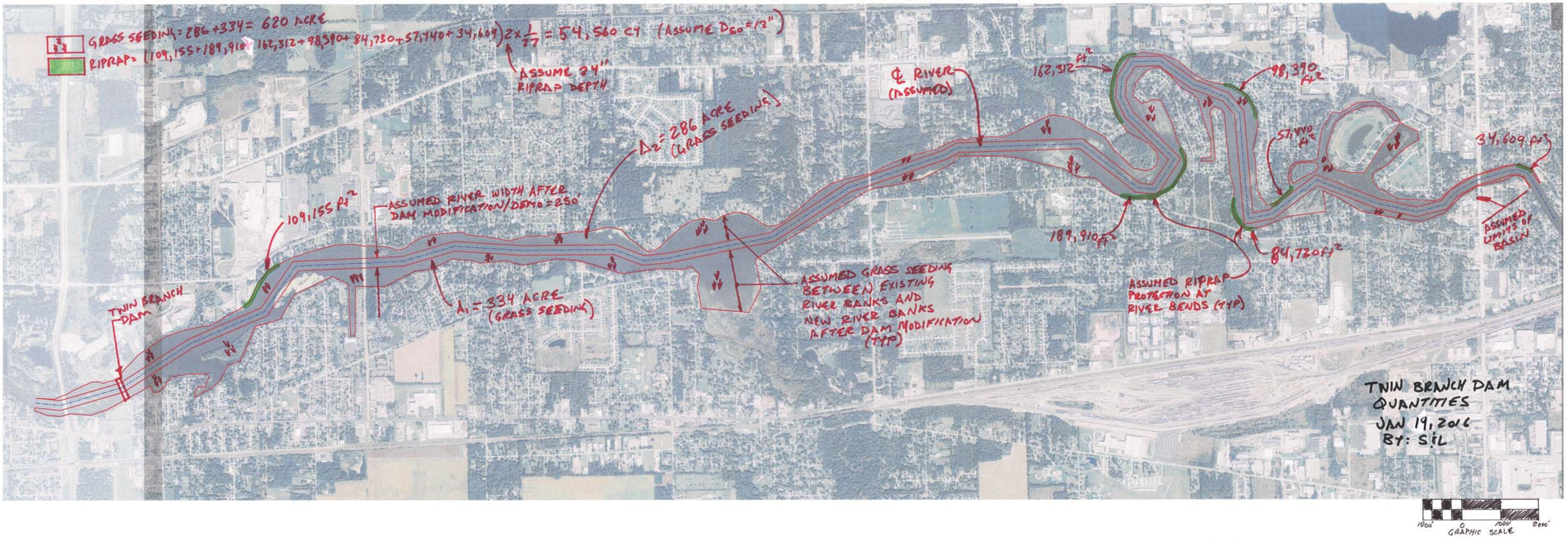
INDIANA MICHIGAN POWER COMPANY
TWIN BRANCH
HYDROELECTRIC PROJECT NO.2579
GENERAL DESIGN DRAWINGS
PLAN AND ELEVATION

FERC NO. 2579 – 010 – 1

TWIN BRANCH			
OPTION 2			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	620	ACRE	
RIPRAP PROTECTION	54,560	CY	2 ft riprap protection @ D(50)=12"
RIVERBED EXCAVATION FOR RIPRAP	170	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT SPILLWAY FLOOR SLAB	170	CY	2 ft riprap protection @ D(50)=12"

OPTION 3			
ITEM	QUANTITY	UNIT	REMARKS
GRASS SEEDING	620	ACRE	
RIPRAP PROTECTION AT RIVER BENDS	54,560	CY	2 ft riprap protection @ D(50)=12"
~~RIPRAP PROTECTION AT DAM ABUTMENTS~~	~~2,120~~	~~CY~~	~~2 ft riprap protection @ D(50)=12"~~
~~EARTHWORK FILL AT DAM ABUTMENTS~~	~~15,305~~	~~CY~~	
RIVERBED EXCAVATION FOR RIPRAP	100	CY	TO BE REPLACED BY RIPRAP
RIPRAP PROTECTION AT RETAINING WALLS	120	CY	2 ft riprap protection @ D(50)=12"


GRASS SEEDING = 286 + 334 = 620 ACRE
RIPRAP = (109,155 + 189,910 + 162,312 + 98,390 + 84,730 + 57,740 + 34,609) 2 x 1/27 = 54,560 CY (ASSUME D50 = 12")
ASSUME 24" RIPRAP DEPTH
℄ RIVER (ASSUMED)
162,312 ft²
98,390 ft²
57,740 ft²
34,609 ft³
189,910 ft²
84,720 ft²
109,155 ft²
ASSUMED RIVER WIDTH AFTER DAM MODIFICATION/DEMO = 250'
A2 = 286 ACRE (GRASS SEEDING)
A1 = 334 ACRE (GRASS SEEDING)
TWIN BRANCH DAM
ASSUMED GRASS SEEDING BETWEEN EXISTING RIVER BANKS AND NEW RIVER BANKS AFTER DAM MODIFICATION (TYP)
ASSUMED RIPRAP PROTECTION AT RIVER BENDS (TYP)
ASSUMED LIMITS OF BASIN
TWIN BRANCH DAM QUANTITIES
JAN 19, 2016
BY: S&L
1000' 0 1000' 2000'
GRAPHIC SCALE
N

TWIN BRANCH HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

JANUARY 25, 2019
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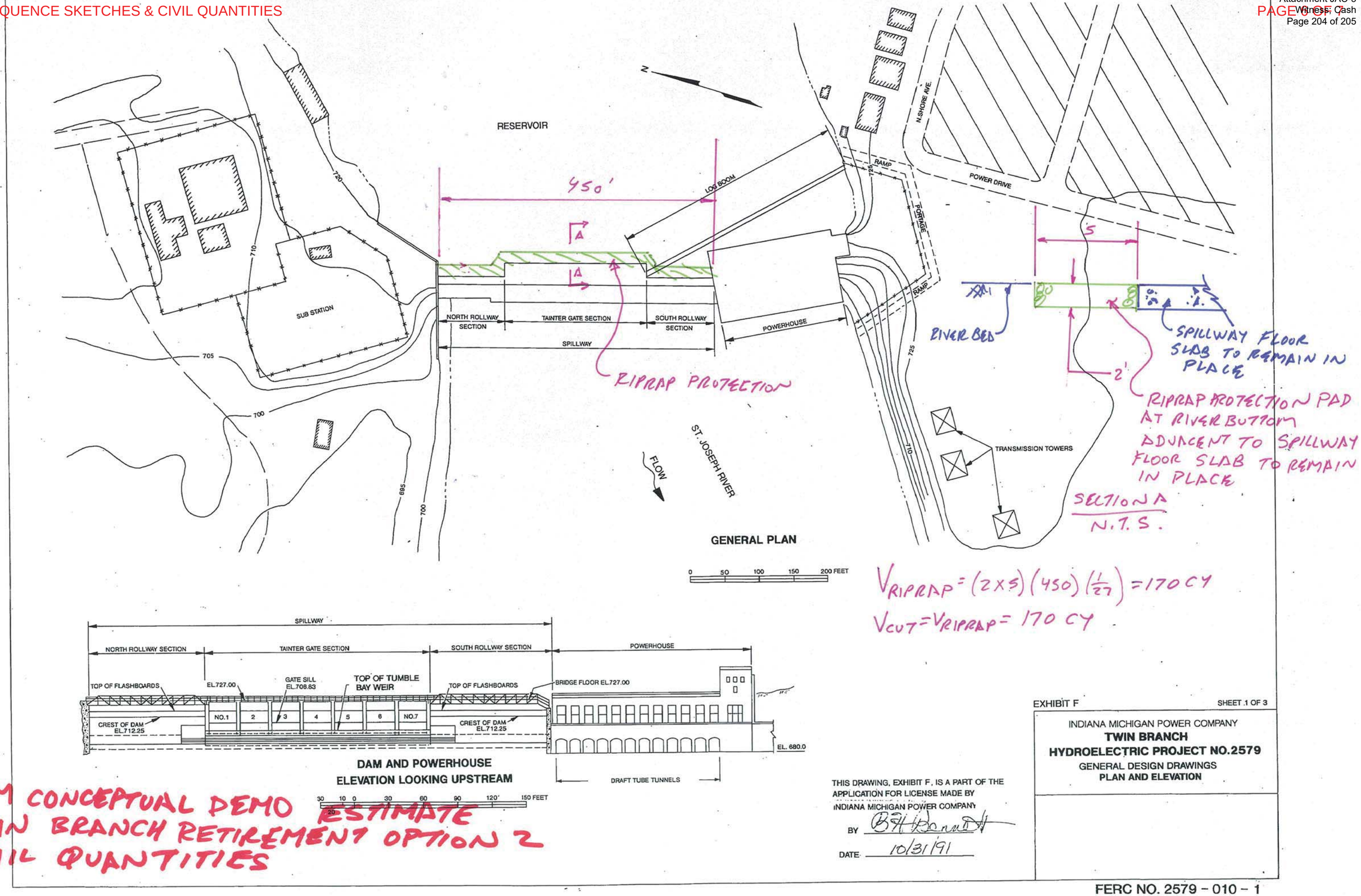

$V_{RIPRAP} = (2 \times 5)(450)\left(\frac{1}{27}\right) = 170\ CY$

$V_{CUT} = V_{RIPRAP} = 170\ CY$

I&M CONCEPTUAL DEMO ESTIMATE
TWIN BRANCH RETIREMENT OPTION 2
CIVIL QUANTITIES

EXHIBIT F SHEET 1 OF 3

INDIANA MICHIGAN POWER COMPANY
TWIN BRANCH
HYDROELECTRIC PROJECT NO.2579
GENERAL DESIGN DRAWINGS
PLAN AND ELEVATION

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BY B.A. Hamilton

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TWIN BRANCH HYDRO RETIREMENT
DEMO SEQUENCE SKETCHES & CIVIL QUANTITIES
BY: S&L

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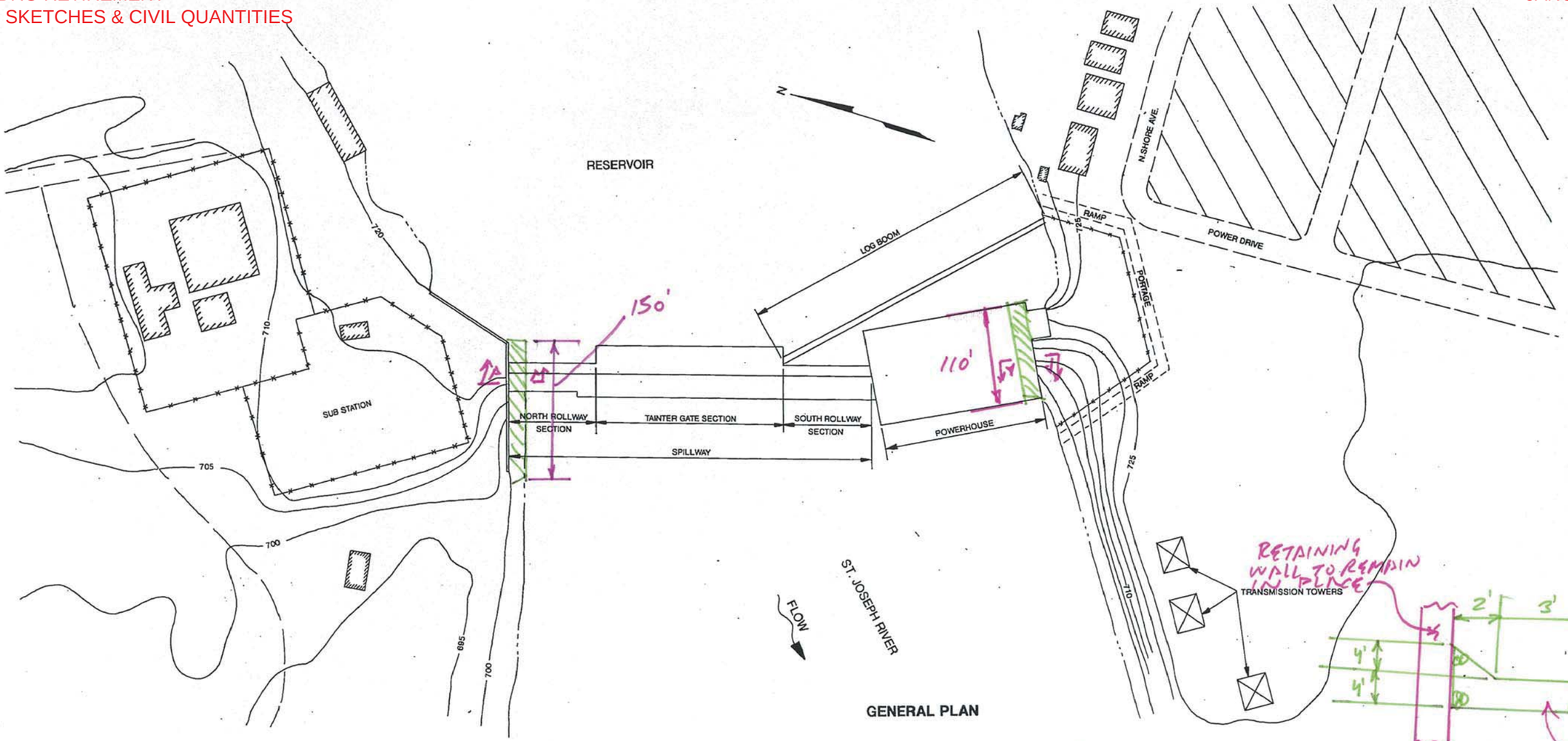
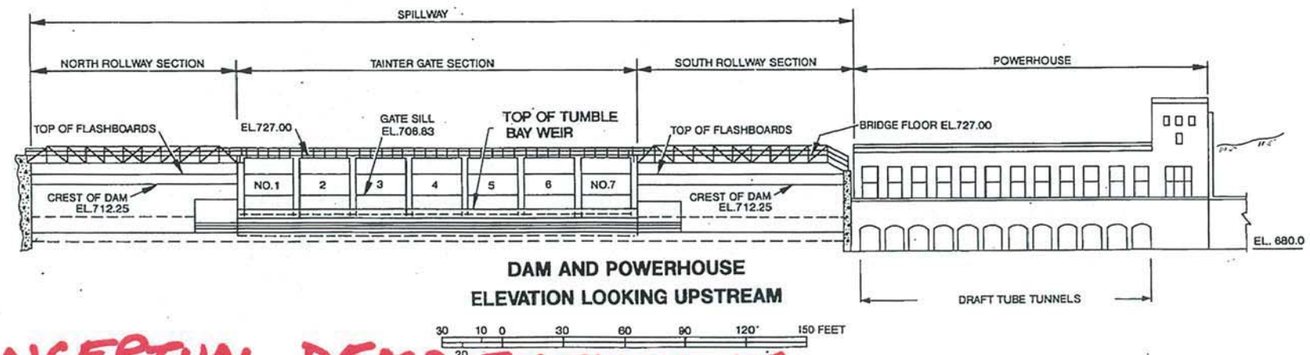
PAGE 1 OF 7



$V_{RIPRAP} = (12Ft^2)(150+110)\left(\frac{1}{27}\right) \approx 170\ CY$

$V_{CUT} = (2 \times 5)(150+110)\left(\frac{1}{27}\right) \approx 100\ CY$



DAM AND POWERHOUSE
ELEVATION LOOKING UPSTREAM

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INDIANA MICHIGAN POWER COMPANY
TWIN BRANCH
HYDROELECTRIC PROJECT NO.2579
GENERAL DESIGN DRAWINGS
PLAN AND ELEVATION

I & M CONCEPTUAL DEMO ESTIMATE
TWIN BRANCH RETIREMENT OPTION 3
CIVIL QUANTITIES