



ATTACHMENT B


 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG Waukegan	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-by-Removal	SHEET: Cost Summary	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: West Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Cost Summary: Close-by-Removal Cost Estimate for CCR Impoundment	CLOSURE OPTION: West - Closure-by-Removal	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/4/2021	REVIEWED BY: Rob Boeing

Waukegan West Ash Basin: Closure by Removal Closure & Post-Closure Cost Summary	
Close-by-Removal Tasks	Cost (2021 Dollars)
Mobilization / Site Prep / Demobilization	\$1,247,924
Achieve Closure-by-Removal / Convey Material	\$7,245,000
Stormwater Management / E&S Controls / Site Restoration	\$294,135
Contingency (25%)	\$2,196,765
Engineering Support (Design & CQA)	\$5,000,000
Total Closure Cost of CCR Impoundment =	\$15,983,824
Post-Closure Tasks	Cost (2021 Dollars)
Groundwater Monitoring	\$150,000
Operations & Maintenance (O&M)	\$0
Contingency (25%)	\$37,500
Engineering Costs (10%)	\$18,750
Total Post-Closure of CCR Impoundment =	\$206,250
Total Closure & Post-Closure of CCR Impoundment Cost = \$16,190,074	

 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG Waukegan	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-by-Removal	SHEET: Closure-by-Removal Costs	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: West Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Close-by-Removal Costs: Closure-by-Removal Cost Estimate for CCR Impoundment	CLOSURE OPTION: West - Closure-by-Removal	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing


BASIS OF THE ESTIMATE				
YEAR COST BASIS	2021		AREA OF OPEN FREE WATER IN IMPOUNDMENT (AC)	6
TOTAL AREA TO BE RESTORED (AC)	11		AVG. DEPTH OF FREE WATER (FT)	2
TOTAL CLOSURE-BY-REMOVAL AREA (AC)	11		VOLUME OF FREE WATER IN IMPOUNDMENT (GAL)	3,910,000
VOLUME OF ASH IN CLOSURE-BY-REMOVAL AREA (CY)	93,000		PERIMETER OF CLOSURE-BY-REMOVAL AREA (L.F.)	3,000

CLOSE-BY-REMOVAL ESTIMATED COSTS							
TASK	ITEM	UNIT	QUANTITY	INSTALLED UNIT COST	IMPOUNDMENT CLOSURE COST	NOTES	
MOBILIZATION / SITE PREP / DEMOBILIZATION							
MOBILIZATION / SITE PREP / DEMOBILIZATION	1	MOBILIZATION / DEMOBILIZATION	LS	1	\$97,924	\$97,924	Mob/Demob & insurance: (1% of Total EPC Bid Price) includes administration (mtgs, health & safety, trailer, phone/fax/electricity, temporary facilities, utilities, roll off boxes, waste disposal, and cleanup).
	2	MODIFICATIONS OF OUTLET STRUCTURES / PIPING	LS	1	\$250,000	\$250,000	Assume outlet structures and piping will be modified.
	3	REMOVAL & FILTRATION OF FREE WATER	MONTHS	9	\$100,000	\$900,000	Based on Initiation time
ACHIEVE CLOSURE-BY-REMOVAL / CONVEY MATERIAL							
ACHIEVE CLOSURE BY-REMOVAL / CONVEY MATERIAL	4	REMOVAL & TREATMENT OF PORE WATER WITHIN ASH	MONTHS	12	\$100,000	\$1,200,000	STEP 1: Start dewatering for Construction time. Based on Construction Time.
	5	EXCAVATE ASH FOR CLOSURE-BY-REMOVAL / STOCKPILE ASH	CY	93,000	\$8.00	\$744,000	Step 2: Assume CCR material must be stockpiled within impoundment area to decant prior to loading. Done in conjunction with Step 1. Decant water collected and treated along with pore water from Step 1.
	8	EXCAVATE / LOAD / HAUL CCR MATERIAL (OFF-SITE LF)	CY	93,000	\$57.00	\$5,301,000	Assume disposal of CCRs at an off-site landfill (assume density of 1.2 tons/cy).
STORMWATER MANAGEMENT / E&S CONTROLS / SITE RESTORATION							
STORMWATER MANAGEMENT / E&S CONTROLS / SITE RESTORATION	9	SITE EROSION AND SEDIMENT CONTROL	ACRE	11	\$2,000	\$22,000	Assume total area to be restored will require site erosion and sediment control.
	10	TOPSOIL	CY	17,746	\$13.00	\$230,698	Assume 12 inches of top soil needed (obtained off-site) to establish vegetative stabilization over total closed-by-removal area and not covered by the Industrial Landfill
	11	SEED / FERTILIZE / MULCH	ACRE	11	\$3,767.00	\$41,437	Assume total area of disturbance will be mulched, fertilized, and seeded.

 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG Waukegan	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-by-Removal	SHEET: Closure-by-Removal Costs	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: West Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Close-by-Removal Costs: Closure-by-Removal Cost Estimate for CCR Impoundment	CLOSURE OPTION: West - Closure-by-Removal	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing


BASIS OF THE ESTIMATE			
YEAR COST BASIS	2021	AREA OF OPEN FREE WATER IN IMPOUNDMENT (AC)	6
TOTAL AREA TO BE RESTORED (AC)	11	AVG. DEPTH OF FREE WATER (FT)	2
TOTAL CLOSURE-BY-REMOVAL AREA (AC)	11	VOLUME OF FREE WATER IN IMPOUNDMENT (GAL)	3,910,000
VOLUME OF ASH IN CLOSURE-BY-REMOVAL AREA (CY)	93,000	PERIMETER OF CLOSURE-BY-REMOVAL AREA (L.F.)	3,000

CLOSE-BY-REMOVAL ESTIMATED COSTS							
TASK	ITEM	UNIT	QUANTITY	INSTALLED UNIT COST	IMPOUNDMENT CLOSURE COST	NOTES	
CONTINGENCY / ENGINEERING SUPPORT							
CONTINGENCY / ENGINEERING SUPPORT	12	CONTINGENCY (25%)	LS	1	\$2,196,765	\$2,196,765	
	13	ENGINEERING SUPPORT (DESIGN AND CQA 10%)	LS	1	\$1,103,253	\$1,103,253	
POST-CLOSURE							
POST-CLOSURE	14	GROUNDWATER MONITORING	ANNUAL	3	\$50,000	\$150,000	Annual groundwater monitoring costs for each CCR impoundment are based on current groundwater monitoring system.
	15	OPERATIONS & MAINTENANCE (O&M)	ANNUAL	0	\$27,500	\$0	Annual O&M costs are \$2500/acre/yr (includes leachate collection system maintenance). Based on Q3 2018 Post Closure Maintenance data.
CONTINGENCY / ENGINEERING COST							
POST CLOSURE CONTINGENCY / ENGINEERING COST	16	CONTINGENCY (25%)	LS	1	\$37,500	\$37,500	
	17	ENGINEERING COST (10%)	LS	1	\$18,750	\$18,750	
	TOTAL					\$12,293,327	


 CALCULATION SHEET	PROJECT CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG Waukegan	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-by-Removal	SHEET Close-by-Removal Assumptions	REV. NO. A
	SUBJECT Preliminary Project Costs Sheets	IMPOUNDMENT NAME: West Ash Basin			AECOM JOB NO. 60669161
	ACTIVITY Close-by-Removal Assumptions	CLOSURE OPTION: West - Closure-by-Removal	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing

KEY ASSUMPTIONS

The following key assumptions and limitations are associated with the project design, implementation and performance:	
1	The cost estimates were prepared using 2021 dollars and do not include any escalation.
2	A 25% contingency has been included for this cost estimate.
3	Engineering design and CQA cost has been included for this cost estimate based on reasonable assumptions.
4	Interstitial water treatment was assumed to continue until construction is completed.
5	Assumed all CCR material excavated must be stockpiled in close proximity to the impoundment to be decanted. After decanting, the material will be excavated, loaded, and hauled off-site for disposal.
6	Groundwater monitoring costs are for a reduced groundwater network system as compared to the existing system. Groundwater monitoring costs do not include costs incurred for any additional well installation. Maintenance costs for wells are included in post-closure O&M costs.
7	O&M costs include, but are not limited to, the maintenance/repair of the groundwater monitoring system and general maintenance of the former CCR impoundment area.
8	Statements of Probable Construction Cost prepared by AECOM represent AECOM's judgment as a design professional familiar with the construction industry. It is recognized, however, that neither AECOM nor the Owner has control over the cost of labor, materials or equipment nor over the contractor's methods of determining the bid price or other competitive bidding, market, or negotiating conditions. Accordingly, AECOM cannot and does not warrant or represent that proposals, bids or actual construction costs will not vary from any statement of Probable Construction Cost or other estimates or evaluations prepared by AECOM.


 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-in-Place	SHEET: Cost Summary	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: West Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Cost Summary: Close-in-Place Cost Estimate for CCR Impoundment	CLOSURE OPTION: Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/4/2021	REVIEWED BY: Rob Boeing

Waukegan West Ash Basin: Close-in-Place Closure & Post-Closure Cost Summary	
Close-in-Place Tasks	Cost (2021 Dollars)
Mobilization / Site Prep	\$1,242,064
Dewatering / Earthwork / Subgrade Prep.	\$2,348,700
Closure System Construction	\$1,158,751
Stormwater Management / E&S Controls / Site Restoration	\$3,513,737
Contingency (25%)	\$2,065,813
Engineering Support (Design & CQA)	\$2,900,000
Total Closure Cost of CCR Impoundment =	\$13,229,065
Post-Closure Tasks	Cost (2021 Dollars)
Groundwater Monitoring	\$1,500,000
Operations & Maintenance (O&M)	\$825,000
Contingency (25%)	\$581,250
Engineering Costs (10%)	\$290,625
Total Post-Closure of CCR Impoundment =	\$3,196,875
Total Closure & Post-Closure of CCR Impoundment Cost = \$16,425,940	

 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Close-in-Place	SHEET: Close-in-Place Costs	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: West Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Cost Summary: Close-in-Place Cost Estimate for CCR Impoundment	CLOSURE OPTION: Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing

BASIS OF THE ESTIMATE				
YEAR COST BASIS	2021		AREA OF OPEN FREE WATER IN IMPOUNDMENT (AC)	3
TOTAL AREA TO BE RESTORED (AC)	11		AVG. DEPTH OF FREE WATER (FT)	2
TOTAL IMPOUNDMENT AREA (AC)	11		VOLUME OF FREE WATER IN IMPOUNDMENT (GAL)	3,910,000
VOLUME OF ASH IN IMPOUNDMENT (CY)	93,000		PERIMETER OF IMPOUNDMENT (L.F.)	3,100

CLOSE-IN-PLACE ESTIMATED COSTS							
TASK	ITEM	UNIT	QUANTITY	INSTALLED UNIT COST	IMPOUNDMENT CLOSURE COST	NOTES	
MOBILIZATION / SITE PREP							
MOBILIZATION / SITE PREP	1	MOBILIZATION	LS	1	\$92,064	\$92,064	Mob/Demob & insurance: (1% of Total EPC Bid Price includes administration (mtgs, health & safety, trailer, phone/fax/electricity, temporary facilities, utilities, roll off boxes, waste disposal, and cleanup).
	2	MODIFY OUTLET STRUCTURES / PIPING	LS	1	\$250,000	\$250,000	Final existing outlet structures and piping.
	3	REMOVAL & FILTRATION OF FREE WATER	MONTHS	9	\$100,000	\$900,000	
DEWATERING / EARTHWORK / SUBGRADE PREP							
DEWATERING / EARTHWORK / SUBGRADE PREP	4	REMOVAL & TREATMENT OF PORE WATER WITHIN ASH	MONTHS	12	\$100,000	\$1,200,000	Based on Construction Time
	5	ASH REGRADING TO ESTABLISH CROWN	CY	117,000	\$9.50	\$1,111,500	Quantity of earthwork (cut-to-fill) using existing ash to achieve positive slope prior to installation of closure system. Quantity calculated using AutoCAD.
	6	PERIMETER DITCH / TEMP. DIVERSION BERM GRADING	L.F.	3,100	\$12.00	\$37,200	Linear feet around the perimeter of impoundment.
	7	CONTACT STORM WATER TREATMENT	GAL				
CLOSURE SYSTEM CONSTRUCTION							
CLOSURE SYSTEM CONSTRUCTION	8	24" FINAL COVER SOIL	CY	35,493	\$11.00	\$390,427	24 inches of common soil placed over close-in-place area (assume on-site soils available)
	9	12" TOPSOIL	CY	17,747	\$13.00	\$230,707	12 inches of topsoil (obtained off-site) placed over closure-by-removal area.
	10	FLEXIBLE MEMBRANE LINER (FML)	SQ. FT.	527,076	\$0.42	\$221,372	Alternate Cap System Only: Flexible membrane liner placed over close-in-place area. Assume quantity needed is 10% more than close-in-place area.
	11	GEOCOMPOSITE DRAINAGE LAYER	SQ. FT.	527,076	\$0.60	\$316,246	Alternate Cap System Only: Geocomposite drainage layer placed over close-in-place area. Assume quantity needed is 10% more than close-in-place area.

 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Close-in-Place	SHEET: Close-in-Place Costs	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: West Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Cost Summary: Close-in-Place Cost Estimate for CCR Impoundment	CLOSURE OPTION: Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing

BASIS OF THE ESTIMATE				
YEAR COST BASIS	2021		AREA OF OPEN FREE WATER IN IMPOUNDMENT (AC)	3
TOTAL AREA TO BE RESTORED (AC)	11		AVG. DEPTH OF FREE WATER (FT)	2
TOTAL IMPOUNDMENT AREA (AC)	11		VOLUME OF FREE WATER IN IMPOUNDMENT (GAL)	3,910,000
VOLUME OF ASH IN IMPOUNDMENT (CY)	93,000		PERIMETER OF IMPOUNDMENT (L.F.)	3,100


CLOSE-IN-PLACE ESTIMATED COSTS							
TASK	ITEM	UNIT	QUANTITY	INSTALLED UNIT COST	IMPOUNDMENT CLOSURE COST	NOTES	
	STORMWATER MANAGEMENT / E&S CONTROLS / SITE RESTORATION						
STORMWATER MANAGEMENT / E&S CONTROLS / SITE RESTORATION	12	SITE EROSION AND SEDIMENT CONTROL	ACRE	11	\$2,000	\$22,000	Assume total area to be restored will require site erosion and sediment control.
	13	STORMWATER MANAGEMENT / CHANNELS / LET-DOWNS	L.F.	4,650	\$742	\$3,450,300	Assume rip-rap lined stormwater conveyance channels and rip-rap lined let-downs off of cap. Assume 3500 LF of stormwater channels / let downs.
	14	SEED / FERTILIZE / MULCH	ACRE	11	\$3,767	\$41,437	Assume total area to be restored will be mulched, fertilized, and seeded.
	CONTINGENCY / ENGINEERING SUPPORT						
CONTINGENCY / ENGINEERING SUPPORT	15	CONTINGENCY (25%)	LS	1	\$2,065,813	\$2,065,813	
	16	ENGINEERING SUPPORT (DESIGN AND CQ 10%)	LS	1	\$1,035,237	\$1,035,237	
	POST-CLOSURE						
POST-CLOSURE	17	GROUNDWATER MONITORING FOR ASH BASIN	ANNUAL	30	\$50,000	\$1,500,000	Annual groundwater monitoring costs for each CCR impoundment
	18	OPERATIONS & MAINTENANCE (O&M) FOR CLOSURE-IN-PLACE CAP AREA	ANNUAL	30	\$27,500	\$825,000	Annual O&M costs are \$2500/acre/yr for the total closed area with cap.
	POST CLOSURE CONTINGENCY / ENGINEERING COST						
POST CLOSURE CONTINGENCY / ENGINEERING COST	19	CONTINGENCY (25%)	LS	1	\$581,250	\$581,250	
	20	ENGINEERING COST (10%)	LS	1	\$290,625	\$290,625	
		TOTAL				\$14,561,177	

 CALCULATION SHEET	PROJECT CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-in-Place	SHEET Close-in-Place Assumptions	REV. NO. A
	SUBJECT Preliminary Project Costs Sheets	IMPOUNDMENT NAME: West Ash Basin			AECOM JOB NO. 60669161
	ACTIVITY Close-in-Place Assumptions	CLOSURE OPTION: Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing


KEY ASSUMPTIONS

The following key assumptions and limitations are associated with the project design, implementation and performance:

1	The cost estimates were prepared using 2021 dollars and do not include any escalation.
2	A 25% contingency has been included for this cost estimate.
3	Engineering design and CQA cost has been included for this cost estimate based on reasonable assumptions.
4	Interstitial water treatment was assumed to continue until construction is completed.
5	To establish the positive slopes, assume existing ash will be utilized to establish crown.
6	Cap cross section for the CCR impoundment will consist of flexible membrane liner, geocomposite drainage layer, and 24-inches of final cover soil overlain by 12-inches of topsoil.
7	Final cover soil assumed to be available onsite and topsoil would come from offsite
8	Groundwater monitoring costs are for the existing network system. Groundwater monitoring costs do not include costs incurred for any additional well installation. Maintenance costs for wells are included in post-closure O&M costs.
9	O&M costs include, but are not limited to, the monitoring and maintenance/repair of the groundwater monitoring system, cap system, and storm water controls.
10	Statements of Probable Construction Cost prepared by AECOM represent AECOM's judgment as a design professional familiar with the construction industry. It is recognized, however, that neither AECOM nor the Owner has control over the cost of labor, materials or equipment nor over the contractor's methods of determining the bid price or other competitive bidding, market, or negotiating conditions. Accordingly, AECOM cannot and does not warrant or represent that proposals, bids or actual construction costs will not vary from any statement of Probable Construction Cost or other estimates or evaluations prepared by AECOM.

 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-by-removal	SHEET: Cost Summary	REV. NO.: A	
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO.: 60669161	
	ACTIVITY: Cost Summary: Close-by-Removal Cost Estimate for CCR Impoundment	CLOSURE OPTION: East - Closure-by-Removal	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/4/2021	REVIEWED BY: Rob Boeing	

Waukegan East Ash Basin: Closure-by-Removal Closure & Post-Closure Cost Summary	
Close-by-Removal Tasks	Cost (2021 Dollars)
Mobilization / Site Prep / Demobilization	\$1,248,093
Achieve Closure-by-Removal / Convey Material	\$7,259,984
Stormwater Management / E&S Controls / Site Restoration	\$294,135
Contingency (25%)	\$2,200,553
Engineering Support (Design & CQA)	\$5,000,000
Total Closure Cost of CCR Impoundment =	\$16,002,765
Post-Closure Tasks	Cost (2021 Dollars)
Groundwater Monitoring	\$150,000
Operations & Maintenance (O&M)	\$0
Contingency (25%)	\$37,500
Engineering Costs (10%)	\$18,750
Total Post-Closure of CCR Impoundment =	\$206,250
Total Closure & Post-Closure of CCR Impoundment Cost = \$16,209,015	

 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-by-removal	SHEET: Closure-by-Removal Costs	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY Close-by-Removal Costs: Closure-by-Removal Cost Estimate for CCR Impoundment	CLOSURE OPTION: East - Closure-by-Removal	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing


BASIS OF THE ESTIMATE			
YEAR COST BASIS	2021	AREA OF OPEN FREE WATER IN IMPOUNDMENT (AC)	3
TOTAL AREA TO BE RESTORED (AC)	11	AVG. DEPTH OF FREE WATER (FT)	1.5
TOTAL CLOSURE-BY-REMOVAL AREA (AC)	11	VOLUME OF FREE WATER IN IMPOUNDMENT (GAL)	2,000,000
VOLUME OF ASH IN CLOSURE-BY-REMOVAL AREA (CY)	70,000	PERIMETER OF CLOSURE-BY-REMOVAL AREA (L.F.)	3,100

CLOSE-BY-REMOVAL ESTIMATED COSTS							
TASK	ITEM	UNIT	QUANTITY	INSTALLED UNIT COST	IMPOUNDMENT CLOSURE COST	NOTES	
MOBILIZATION / SITE PREP / DEMOBILIZATION	MOBILIZATION / SITE PREP / DEMOBILIZATION						
	1	MOBILIZATION / DEMOBILIZATION	LS	1	\$98,093	\$98,093	Mob/Demob & insurance: (1% of Total EPC Bid Price) includes administration (mtgs, health & safety, trailer, phone/fax/electricity, temporary facilities, utilities, roll off boxes, waste disposal, and cleanup).
	2	MODIFICATIONS OF OUTLET STRUCTURES / PIPING	LS	1	\$250,000	\$250,000	Assume outlet structures and piping will be modified.
	3	REMOVAL & FILTRATION OF FREE WATER	MONTHS	9	\$100,000	\$900,000	
ACHIEVE CLOSURE-BY- REMOVAL / CONVEY MATERIAL	ACHIEVE CLOSURE-BY-REMOVAL / CONVEY MATERIAL						
	4	REMOVAL & TREATMENT OF PORE WATER WITHIN ASH	MONTHS	12	\$225,832	\$2,709,984	STEP 1: Start dewatering for Construction time. Based on Construction Time.
	5	EXCAVATE ASH FOR CLOSURE-BY-REMOVAL / STOCKPILE ASH	CY	70,000	\$8.00	\$560,000	Step 2: Assume CCR material must be stockpiled within impoundment area to decant prior to loading. Done in conjunction with Step 1. Decant water collected and treated along with pore water from Step 1.
	6	EXCAVATE / LOAD / HAUL CCR MATERIAL (OFF-SITE LF)	CY	70,000	\$57.00	\$3,990,000	Assume disposal of CCRs at an off-site landfill (assume density of 1.2 tons/cy).


AECOM CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-by-removal	SHEET: Close-by-Removal Costs	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO.: 60669161
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BASIS OF THE ESTIMATE			
YEAR COST BASIS	2021	AREA OF OPEN FREE WATER IN IMPOUNDMENT (AC)	3
TOTAL AREA TO BE RESTORED (AC)	11	AVG. DEPTH OF FREE WATER (FT)	1.5
TOTAL CLOSURE-BY-REMOVAL AREA (AC)	11	VOLUME OF FREE WATER IN IMPOUNDMENT (GAL)	2,000,000
VOLUME OF ASH IN CLOSURE-BY-REMOVAL AREA (CY)	70,000	PERIMETER OF CLOSURE-BY-REMOVAL AREA (L.F.)	3,100


CLOSE-BY-REMOVAL ESTIMATED COSTS							
TASK	ITEM	UNIT	QUANTITY	INSTALLED UNIT COST	IMPOUNDMENT CLOSURE COST	NOTES	
STORMWATER MANAGEMENT / E&S CONTROLS / SITE RESTORATION	STORMWATER MANAGEMENT / E&S CONTROLS / SITE RESTORATION						
	7	SITE EROSION AND SEDIMENT CONTROL	ACRE	11	\$2,000	\$22,000	Assume total area to be restored will require site erosion and sediment control.
	8	TOPSOIL	CY	17,746	\$13.00	\$230,698	Assume 12 inches of top soil needed (obtained off-site) to establish vegetative stabilization over total closed-by-removal area and not covered by the Industrial Landfill
	9	SEED / FERTILIZE / MULCH	ACRE	11	\$3,767	\$41,437	Assume total area of disturbance will be mulched, fertilized, and seeded.
CONTINGENCY / ENGINEERING SUPPORT	CONTINGENCY / ENGINEERING SUPPORT						
	10	CONTINGENCY (25%)	LS	1	\$2,200,553	\$2,200,553	
	11	ENGINEERING SUPPORT (DESIGN AND CQA)	LS	1	\$1,105,145	\$1,105,145	
POST-CLOSURE	POST-CLOSURE						
	12	GROUNDWATER MONITORING	ANNUAL	3	\$50,000	\$150,000	Annual groundwater monitoring costs for each CCR impoundment are based on current groundwater monitoring system.
	13	OPERATIONS & MAINTENANCE (O&M)	ANNUAL	0	\$27,500	\$0	Annual O&M costs are \$2,500/acre/yr for the landfill cap area (includes leachate collection system maintenance). Based on Q3 2018 Post Closure Maintenance data.
POST CLOSURE CONTINGENCY / ENGINEERING COST	CONTINGENCY / ENGINEERING COST						
	14	CONTINGENCY (25%)	LS	1	\$37,500	\$37,500	
	15	ENGINEERING COST (10%)	LS	1	\$18,750	\$18,750	
		TOTAL				\$12,314,160	

 CALCULATION SHEET	PROJECT CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-by-removal	SHEET Close-by-Removal Assumptions	REV. NO. A
	SUBJECT Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO. 60669161
	ACTIVITY Close-by-Removal Assumptions	CLOSURE OPTION: East - Closure-by-Removal	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing

KEY ASSUMPTIONS	
The following key assumptions and limitations are associated with the project design, implementation and performance:	
1	The cost estimates were prepared using 2021 dollars and do not include any escalation.
2	A 25% contingency has been included for this cost estimate.
3	Engineering design and CQA cost has been included for this cost estimate based on reasonable assumptions.
4	Interstitial water treatment was assumed to continue until construction is completed.
5	Assumed all CCR material excavated must be stockpiled in close proximity to the impoundment to be decanted. After decanting, the material will be excavated, loaded, and hauled off-site for disposal.
6	Groundwater monitoring costs are for a reduced groundwater network system as compared to the existing system. Groundwater monitoring costs do not include costs incurred for any additional well installation. Maintenance costs for wells are included in post-closure O&M costs.
7	O&M costs include, but are not limited to, the maintenance/repair of the groundwater monitoring system and general maintenance of the former CCR impoundment area.
8	Statements of Probable Construction Cost prepared by AECOM represent AECOM's judgment as a design professional familiar with the construction industry. It is recognized, however, that neither AECOM nor the Owner has control over the cost of labor, materials or equipment nor over the contractor's methods of determining the bid price or other competitive bidding, market, or negotiating conditions. Accordingly, AECOM cannot and does not warrant or represent that proposals, bids or actual construction costs will not vary from any statement of Probable Construction Cost or other estimates or evaluations prepared by AECOM.


 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-in-Place	SHEET: Cost Summary	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Cost Summary: Close-in-Place Cost Estimate for CCR Impoundment	CLOSURE OPTION: Option 1 - Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/4/2021	REVIEWED BY: Rob Boeing

Waukegan East Ash Basin: Close-in-Place Option 1 Closure & Post-Closure Cost Summary	
Close-in-Place Tasks	Cost (2021 Dollars)
Mobilization / Site Prep	\$1,241,067
Dewatering / Earthwork / Subgrade Prep.	\$2,263,200
Closure System Construction	\$1,158,751
Stormwater Management / E&S Controls / Site Restoration	\$3,513,737
Contingency (25%)	\$2,044,189
Engineering Support (Design & CQA)	\$2,900,000
Total Closure Cost of CCR Impoundment =	\$13,120,943
Post-Closure Tasks	Cost (2021 Dollars)
Groundwater Monitoring	\$1,500,000
Operations & Maintenance (O&M)	\$825,000
Contingency (25%)	\$581,250
Engineering Costs (10%)	\$290,625
Total Post-Closure of CCR Impoundment =	\$3,196,875
Total Closure & Post-Closure of CCR Impoundment Cost = \$16,317,818	

 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-in-Place	SHEET: Close-in-Place Costs	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Cost Summary: Close-in-Place Cost Estimate for CCR Impoundment	CLOSURE OPTION: Option 1 - Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing


BASIS OF THE ESTIMATE			
YEAR COST BASIS	2021	AREA OF OPEN FREE WATER IN IMPOUNDMENT (AC)	3
TOTAL AREA TO BE RESTORED (AC)	11	AVG. DEPTH OF FREE WATER (FT)	1.5
TOTAL IMPOUNDMENT AREA (AC)	11	VOLUME OF FREE WATER IN IMPOUNDMENT (GAL)	2,000,000
VOLUME OF ASH IN IMPOUNDMENT (CY)	70,000	PERIMETER OF IMPOUNDMENT (L.F.)	3,100

CLOSE-IN-PLACE ESTIMATED COSTS							
TASK	ITEM	UNIT	QUANTITY	INSTALLED UNIT COST	IMPOUNDMENT CLOSURE COST	NOTES	
MOBILIZATION / SITE PREP	MOBILIZATION / SITE PREP						
	1	MOBILIZATION	LS	1	\$91,067	\$91,067	Mob/Demob & insurance: (1% of Total EPC Bid Price includes administration (mtgs, health & safety, trailer, phone/fax/electricity, temporary facilities, utilities, roll off boxes, waste disposal, and cleanup).
	2	MODIFY OUTLET STRUCTURES / PIPING	LS	1	\$250,000	\$250,000	Modify existing outlet structures and piping.
	3	REMOVAL & FILTRATION OF FREE WATER	MONTHS	9	\$100,000	\$900,000	
DEWATERING / EARTHWORK / SUBGRADE PREP	DEWATERING / EARTHWORK / SUBGRADE PREP						
	4	REMOVAL & TREATMENT OF PORE WATER WITHIN ASH	MONTHS	12	\$100,000	\$1,200,000	Based on Construction Time
	5	ASH REGRADING TO ESTABLISH CROWN	CY	108,000	\$9.50	\$1,026,000	Quantity of earthwork (cut-to-fill) using existing ash to achieve positive slope prior to installation of closure system. Quantity calculated using AutoCAD.
	6	PERIMETER DITCH / TEMP. DIVERSION BERM GRADING	L.F.	3,100	\$12.00	\$37,200	Linear feet around the perimeter of impoundment.
	7	CONTACT STORM WATER TREATMENT	GAL				
CLOSURE SYSTEM CONSTRUCTION	CLOSURE SYSTEM CONSTRUCTION						
	8	24" FINAL COVER SOIL	CY	35,493	\$11.00	\$390,427	24 inches of common soil placed over close-in-place area (assume on-site soils available)
	9	12" TOPSOIL	CY	17,747	\$13.00	\$230,707	12 inches of topsoil (obtained off-site) placed over closure-by-removal area.
	10	FLEXIBLE MEMBRANE LINER (FML)	SQ. FT.	527,076	\$0.42	\$221,372	Alternate Cap System Only: Flexible membrane liner placed over close-in-place area. Assume quantity needed is 10% more than close-in-place area.
	11	GEOCOMPOSITE DRAINAGE LAYER	SQ. FT.	527,076	\$0.60	\$316,246	Alternate Cap System Only: Geocomposite drainage layer placed over close-in-place area. Assume quantity needed is 10% more than close-in-place area.

 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-in-Place	SHEET: Close-in-Place Costs	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Cost Summary: Close-in-Place Cost Estimate for CCR Impoundment	CLOSURE OPTION: Option 1 - Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing

BASIS OF THE ESTIMATE			
YEAR COST BASIS	2021	AREA OF OPEN FREE WATER IN IMPOUNDMENT (AC)	3
TOTAL AREA TO BE RESTORED (AC)	11	AVG. DEPTH OF FREE WATER (FT)	1.5
TOTAL IMPOUNDMENT AREA (AC)	11	VOLUME OF FREE WATER IN IMPOUNDMENT (GAL)	2,000,000
VOLUME OF ASH IN IMPOUNDMENT (CY)	70,000	PERIMETER OF IMPOUNDMENT (L.F.)	3,100

CLOSE-IN-PLACE ESTIMATED COSTS							
TASK	ITEM	UNIT	QUANTITY	INSTALLED UNIT COST	IMPOUNDMENT CLOSURE COST	NOTES	
STORMWATER MANAGEMENT / E&S CONTROLS / SITE RESTORATION	STORMWATER MANAGEMENT / E&S CONTROLS / SITE RESTORATION						
	12	SITE EROSION AND SEDIMENT CONTROL	ACRE	11	\$2,000	\$22,000	Assume total area to be restored will require site erosion and sediment control.
	13	STORMWATER MANAGEMENT / CHANNELS / LET-DOWNS	L.F.	4,650	\$742	\$3,450,300	Assume rip-rap lined stormwater conveyance channels and rip-rap lined let-downs off of cap. Assume 1.5* length of perimeter LF of stormwater channels / let downs.
	14	SEED / FERTILIZE / MULCH	ACRE	11	\$3,767	\$41,437	Assume total area to be restored will be mulched, fertilized, and seeded.
CONTINGENCY / ENGINEERING SUPPORT	CONTINGENCY / ENGINEERING SUPPORT						
	15	CONTINGENCY (25%)	LS	1	\$2,044,189	\$2,044,189	
	16	ENGINEERING SUPPORT (DESIGN AND CQA 10%)	LS	1	\$1,021,000	\$1,021,000	
POST-CLOSURE	POST-CLOSURE						
	17	GROUNDWATER MONITORING FOR ASH BASIN	ANNUAL	30	\$50,000	\$1,500,000	Annual groundwater monitoring costs for each CCR impoundment
	18	OPERATIONS & MAINTENANCE (O&M) FOR CLOSURE-IN-PLACE CAP AREA	ANNUAL	30	\$27,500	\$825,000	Annual O&M costs are \$2500/acre/yr for the total closed area with cap. Based on Q3 2018 Post Closure Maintenance data
CONTINGENCY / ENGINEERING COST	CONTINGENCY / ENGINEERING COST						
	19	CONTINGENCY (25%)	LS	1	\$581,250	\$581,250	
	20	ENGINEERING COST (10%)	LS	1	\$290,625	\$290,625	
	TOTAL				\$14,438,818		


 CALCULATION SHEET	PROJECT CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-in-Place	SHEET Close-in-Place Assumptions	REV. NO. A
	SUBJECT Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO. 60669161
	ACTIVITY Close-in-Place Assumptions	CLOSURE OPTION: Option 1 - Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing

KEY ASSUMPTIONS

The following key assumptions and limitations are associated with the project design, implementation and performance:	
1	The cost estimates were prepared using 2021 dollars and do not include any escalation.
2	A 25% contingency has been included for this cost estimate.
3	Engineering design and CQA cost has been included for this cost estimate based on reasonable assumptions.
4	Interstitial water treatment was assumed to continue until construction is completed.
5	To establish positive slopes, assume existing ash and on-site fill will be utilized to establish crown
6	Cap cross section for the CCR impoundment will consist of flexible membrane liner, geocomposite drainage layer, and 24-inches of final cover soil overlain by 12-inches of topsoil.
7	Final cover soil assumed to be available onsite and topsoil would come from offsite.
8	Groundwater monitoring costs are for the existing network system. Groundwater monitoring costs do not include costs incurred for any additional well installation. Maintenance costs for wells are included in post-closure O&M costs.
9	O&M costs include, but are not limited to, the monitoring and maintenance/repair of the groundwater monitoring system, cap system, and storm water controls.
10	Statements of Probable Construction Cost prepared by AECOM represent AECOM's judgment as a design professional familiar with the construction industry. It is recognized, however, that neither AECOM nor the Owner has control over the cost of labor, materials or equipment nor over the contractor's methods of determining the bid price or other competitive bidding, market, or negotiating conditions. Accordingly, AECOM cannot and does not warrant or represent that proposals, bids or actual construction costs will not vary from any statement of Probable Construction Cost or other estimates or evaluations prepared by AECOM.


 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-in-Place	SHEET: Cost Summary	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Cost Summary: Close-in-Place Cost Estimate for CCR Impoundment	CLOSURE OPTION: Option 2 - Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/4/2021	REVIEWED BY: Rob Boeing

Waukegan East Ash Basin: Close-in-Place Option 2 Closure & Post-Closure Cost Summary	
Close-in-Place Tasks	Cost (2021 Dollars)
Mobilization / Site Prep	\$1,270,846
Dewatering / Earthwork / Subgrade Prep.	\$4,904,200
Closure System Construction	\$1,158,751
Stormwater Management / E&S Controls / Site Restoration	\$3,513,737
Contingency (25%)	\$2,711,883
Engineering Support (Design & CQA)	\$2,900,000
Total Closure Cost of CCR Impoundment =	\$16,459,417
Post-Closure Tasks	Cost (2021 Dollars)
Groundwater Monitoring	\$1,500,000
Operations & Maintenance (O&M)	\$825,000
Contingency (25%)	\$581,250
Engineering Costs (10%)	\$290,625
Total Post-Closure of CCR Impoundment =	\$3,196,875
Total Closure & Post-Closure of CCR Impoundment Cost = \$19,656,292	

 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-in-Place	SHEET: Close-in-Place Costs	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Cost Summary: Close-in-Place Cost Estimate for CCR Impoundment	CLOSURE OPTION: Option 2 - Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing


BASIS OF THE ESTIMATE				
YEAR COST BASIS	2021		AREA OF OPEN FREE WATER IN IMPOUNDMENT (AC)	3
TOTAL AREA TO BE RESTORED (AC)	11		AVG. DEPTH OF FREE WATER (FT)	1.5
TOTAL IMPOUNDMENT AREA (AC)	11		VOLUME OF FREE WATER IN IMPOUNDMENT (GAL)	2,000,000
VOLUME OF ASH IN IMPOUNDMENT (CY)	70,000		PERIMETER OF IMPOUNDMENT (L.F.)	3,100

CLOSE-IN-PLACE ESTIMATED COSTS							
TASK	ITEM	UNIT	QUANTITY	INSTALLED UNIT COST	IMPOUNDMENT CLOSURE COST	NOTES	
MOBILIZATION / SITE PREP	MOBILIZATION / SITE PREP						
	1	MOBILIZATION	LS	1	\$120,846	\$120,846	Mob/Demob & insurance: (1% of Total EPC Bid Price includes administration (mtgs, health & safety, trailer, phone/fax/electricity, temporary facilities, utilities, roll off boxes, waste disposal, and cleanup).
	2	MODIFY OUTLET STRUCTURES / PIPING	LS	1	\$250,000	\$250,000	Modify existing outlet structures and piping.
	3	REMOVAL & FILTRATION OF FREE WATER	MONTHS	9	\$100,000	\$900,000	
DEWATERING / EARTHWORK / SUBGRADE PREP	DEWATERING / EARTHWORK / SUBGRADE PREP						
	4	REMOVAL & TREATMENT OF PORE WATER WITHIN ASH	MONTHS	12	\$100,000	\$1,200,000	Based on Construction Time
	5	ASH REGRADING TO ESTABLISH CROWN	CY	386,000	\$9.50	\$3,667,000	Quantity of earthwork (cut-to-fill) using existing ash to achieve positive slope prior to installation of closure system. Quantity calculated using AutoCAD.
	6	PERIMETER DITCH / TEMP. DIVERSION BERM GRADING	L.F.	3,100	\$12.00	\$37,200	Linear feet around the perimeter of impoundment.
	7	CONTACT STORM WATER TREATMENT	GAL				
CLOSURE SYSTEM CONSTRUCTION	CLOSURE SYSTEM CONSTRUCTION						
	8	24" FINAL COVER SOIL	CY	35,493	\$11.00	\$390,427	24 inches of common soil placed over close-in-place area (assume on-site soils available)
	9	12" TOPSOIL	CY	17,747	\$13.00	\$230,707	12 inches of topsoil (obtained off-site) placed over closure-by-removal area.
	10	FLEXIBLE MEMBRANE LINER (FML)	SQ. FT.	527,076	\$0.42	\$221,372	Alternate Cap System Only: Flexible membrane liner placed over close-in-place area. Assume quantity needed is 10% more than close-in-place area.
	11	GEOCOMPOSITE DRAINAGE LAYER	SQ. FT.	527,076	\$0.60	\$316,246	Alternate Cap System Only: Geocomposite drainage layer placed over close-in-place area. Assume quantity needed is 10% more than close-in-place area.

 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-in-Place	SHEET: Closure-in-Place Costs	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Cost Summary: Close-in-Place Cost Estimate for CCR Impoundment	CLOSURE OPTION: Option 2 - Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing

BASIS OF THE ESTIMATE				
YEAR COST BASIS	2021		AREA OF OPEN FREE WATER IN IMPOUNDMENT (AC)	3
TOTAL AREA TO BE RESTORED (AC)	11		AVG. DEPTH OF FREE WATER (FT)	1.5
TOTAL IMPOUNDMENT AREA (AC)	11		VOLUME OF FREE WATER IN IMPOUNDMENT (GAL)	2,000,000
VOLUME OF ASH IN IMPOUNDMENT (CY)	70,000		PERIMETER OF IMPOUNDMENT (L.F.)	3,100

CLOSE-IN-PLACE ESTIMATED COSTS							
TASK	ITEM	UNIT	QUANTITY	INSTALLED UNIT COST	IMPOUNDMENT CLOSURE COST	NOTES	
STORMWATER MANAGEMENT / E&S CONTROLS / SITE RESTORATION							
STORMWATER MANAGEMENT / E&S CONTROLS / SITE RESTORATION	12	SITE EROSION AND SEDIMENT CONTROL	ACRE	11	\$2,000	\$22,000	Assume total area to be restored will require site erosion and sediment control.
	13	STORMWATER MANAGEMENT / CHANNELS / LET-DOWNS	L.F.	4,650	\$742	\$3,450,300	Assume rip-rap lined stormwater conveyance channels and rip-rap lined let-downs off of cap. Assume 1.5" length of perimeter LF of stormwater channels / let downs.
	14	SEED / FERTILIZE / MULCH	ACRE	11	\$3,767	\$41,437	Assume total area to be restored will be mulched, fertilized, and seeded.
CONTINGENCY / ENGINEERING SUPPORT							
CONTINGENCY / ENGINEERING SUPPORT	15	CONTINGENCY (25%)	LS	1	\$2,711,883	\$2,711,883	
	16	ENGINEERING SUPPORT (DESIGN AND CQA 10%)	LS	1	\$1,357,869	\$1,357,869	
POST-CLOSURE							
POST-CLOSURE	17	GROUNDWATER MONITORING FOR ASH BASIN	ANNUAL	30	\$50,000	\$1,500,000	Annual groundwater monitoring costs for each CCR impoundment
	18	OPERATIONS & MAINTENANCE (O&M) FOR CLOSURE-IN-PLACE CAP AREA	ANNUAL	30	\$27,500	\$825,000	Annual O&M costs are \$2500/acre/yr for the total closed area with cap.
POST CLOSURE CONTINGENCY / ENGINEERING COST							
POST CLOSURE CONTINGENCY / ENGINEERING COST	19	CONTINGENCY (25%)	LS	1	\$581,250	\$581,250	
	20	ENGINEERING COST (10%)	LS	1	\$290,625	\$290,625	
	TOTAL					\$18,114,161	


 CALCULATION SHEET	PROJECT CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-in-Place	SHEET Close-in-Place Assumptions	REV. NO. A
	SUBJECT Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO. 60669161
	ACTIVITY Close-in-Place Assumptions	CLOSURE OPTION: Option 2 - Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing

KEY ASSUMPTIONS

The following key assumptions and limitations are associated with the project design, implementation and performance:	
1	The cost estimates were prepared using 2021 dollars and do not include any escalation.
2	A 25% contingency has been included for this cost estimate.
3	Engineering design and CQA cost has been included for this cost estimate based on reasonable assumptions.
4	Interstitial water treatment was assumed to continue until construction is completed.
5	To establish the positive slopes, assume existing ash and on-site fill will be utilized to establish crown.
6	Cap cross section for the CCR impoundment will consist of flexible membrane liner, geocomposite drainage layer, and 24-inches of final cover soil overlain by 12-inches of topsoil.
7	Final cover soil assumed to be available onsite and topsoil would come from offsite
8	Groundwater monitoring costs are for the existing network system. Groundwater monitoring costs do not include costs incurred for any additional well installation. Maintenance costs for wells are included in post-closure O&M costs.
9	O&M costs include, but are not limited to, the monitoring and maintenance/repair of the groundwater monitoring system, cap system, and storm water controls.
10	Statements of Probable Construction Cost prepared by AECOM represent AECOM's judgment as a design professional familiar with the construction industry. It is recognized, however, that neither AECOM nor the Owner has control over the cost of labor, materials or equipment nor over the contractor's methods of determining the bid price or other competitive bidding, market, or negotiating conditions. Accordingly, AECOM cannot and does not warrant or represent that proposals, bids or actual construction costs will not vary from any statement of Probable Construction Cost or other estimates or evaluations prepared by AECOM.


 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-in-Place	SHEET: Cost Summary	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Cost Summary: Close-in-Place Cost Estimate for CCR Impoundment	CLOSURE OPTION: Option 3 - Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/4/2021	REVIEWED BY: Rob Boeing

Waukegan East Ash Basin: Close-in-Place Option 3 Closure & Post-Closure Cost Summary	
Close-in-Place Tasks	Cost (2021 Dollars)
Mobilization / Site Prep	\$1,268,991
Dewatering / Earthwork / Subgrade Prep.	\$4,372,200
Closure System Construction	\$1,617,165
Stormwater Management / E&S Controls / Site Restoration	\$3,461,834
Contingency (25%)	\$2,680,047
Engineering Support (Design & CQA)	\$2,900,000
Total Closure Cost of CCR Impoundment =	\$16,300,237
Post-Closure Tasks	Cost (2021 Dollars)
Groundwater Monitoring	\$1,500,000
Operations & Maintenance (O&M)	\$825,000
Contingency (25%)	\$581,250
Engineering Costs (10%)	\$290,625
Total Post-Closure of CCR Impoundment =	\$3,196,875
Total Closure & Post-Closure of CCR Impoundment Cost = \$19,497,112	

 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Close-in-Place	SHEET: Close-in-Place Costs	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Cost Summary: Close-in-Place Cost Estimate for CCR Impoundment	CLOSURE OPTION: Option 3 - Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing

BASIS OF THE ESTIMATE				
YEAR COST BASIS	2021		AREA OF OPEN FREE WATER IN IMPOUNDMENT (AC)	3
TOTAL AREA TO BE RESTORED (AC)	11		AVG. DEPTH OF FREE WATER (FT)	1.5
TOTAL IMPOUNDMENT AREA (AC)	11		VOLUME OF FREE WATER IN IMPOUNDMENT (GAL)	2,000,000
VOLUME OF ASH IN IMPOUNDMENT (CY)	70,000		PERIMETER OF IMPOUNDMENT (L.F.)	3,100

CLOSE-IN-PLACE ESTIMATED COSTS							
TASK	ITEM	UNIT	QUANTITY	INSTALLED UNIT COST	IMPOUNDMENT CLOSURE COST	NOTES	
MOBILIZATION / SITE PREP							
MOBILIZATION / SITE PREP	1	MOBILIZATION	LS	1	\$118,991	\$118,991	Mob/Demob & insurance: (1% of Total EPC Bid Price includes administration (mtgs, health & safety, trailer, phone/fax/electricity, temporary facilities, utilities, roll off boxes, waste disposal, and cleanup).
	2	MODIFY OUTLET STRUCTURES / PIPING	LS	1	\$250,000	\$250,000	Modify existing outlet structures and piping.
	3	REMOVAL & FILTRATION OF FREE WATER	MONTHS	9	\$100,000	\$900,000	
DEWATERING / EARTHWORK / SUBGRADE PREP							
DEWATERING / EARTHWORK / SUBGRADE PREP	4	REMOVAL & TREATMENT OF PORE WATER WITHIN ASH	MONTHS	12	\$100,000	\$1,200,000	Based on Construction Time
	5	ASH/ON-SITE SOIL REGRADING TO ESTABLISH CROWN	CY	330,000	\$9.50	\$3,135,000	Quantity of earthwork (cut-to-fill) using existing ash and on-site soil to achieve positive slope prior to installation of closure system. Quantity calculated using AutoCAD.
	6	PERIMETER DITCH / TEMP. DIVERSION BERM GRADING	L.F.	3,100	\$12.00	\$37,200	Linear feet around the perimeter of impoundment.
	7	CONTACT STORM WATER TREATMENT	GAL				
CLOSURE SYSTEM CONSTRUCTION							
CLOSURE SYSTEM CONSTRUCTION	8	FINAL COVER SYSTEM - ENGINEERED TURF	SF	588,060	\$2.75	\$1,617,165	24 inches of common soil placed over close-in-place area (assume on-site soils available)
STORMWATER MANAGEMENT / E&S CONTROLS / SITE RESTORATION							

 CALCULATION SHEET	PROJECT: CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-in-Place	SHEET: Close-in-Place Costs	REV. NO.: A
	SUBJECT: Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO.: 60669161
	ACTIVITY: Cost Summary: Close-in-Place Cost Estimate for CCR Impoundment	CLOSURE OPTION: Option 3 - Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing

BASIS OF THE ESTIMATE				
YEAR COST BASIS	2021		AREA OF OPEN FREE WATER IN IMPOUNDMENT (AC)	3
TOTAL AREA TO BE RESTORED (AC)	11		AVG. DEPTH OF FREE WATER (FT)	1.5
TOTAL IMPOUNDMENT AREA (AC)	11		VOLUME OF FREE WATER IN IMPOUNDMENT (GAL)	2,000,000
VOLUME OF ASH IN IMPOUNDMENT (CY)	70,000		PERIMETER OF IMPOUNDMENT (L.F.)	3,100

CLOSE-IN-PLACE ESTIMATED COSTS							
TASK	ITEM	UNIT	QUANTITY	INSTALLED UNIT COST	IMPOUNDMENT CLOSURE COST	NOTES	
STORMWATER MANAGEMENT / E&S CONTROLS / SITE RESTORATION	12	SITE EROSION AND SEDIMENT CONTROL	ACRE	2	\$2,000	\$4,000	Assume total area to be restored will require site erosion and sediment control.
	13	STORMWATER MANAGEMENT / CHANNELS / LET-DOWNS	L.F.	4,650	\$742	\$3,450,300	Assume rip-rap lined stormwater conveyance channels and rip-rap lined let-downs off of cap. Assume 1.5" length of perimeter LF of stormwater channels / let downs.
	14	SEED / FERTILIZE / MULCH	ACRE	2	\$3,767	\$7,534	Assume total area to be restored will be mulched, fertilized, and seeded.
CONTINGENCY / ENGINEERING SUPPORT	CONTINGENCY / ENGINEERING SUPPORT						
	18	CONTINGENCY (25%)	LS	1	\$2,680,047	\$2,680,047	
	19	ENGINEERING SUPPORT (DESIGN AND CQA 10%)	LS	1	\$1,297,900	\$1,297,900	
POST-CLOSURE	POST-CLOSURE						
	20	GROUNDWATER MONITORING FOR ASH BASIN	ANNUAL	30	\$50,000	\$1,500,000	Annual groundwater monitoring costs for each CCR impoundment
	21	OPERATIONS & MAINTENANCE (O&M) FOR CLOSURE-IN-PLACE CAP AREA	ANNUAL	30	\$27,500	\$825,000	Annual O&M costs are \$2500/acre/yr for the total closed area with cap.
POST CLOSURE CONTINGENCY / ENGINEERING COST	POST CLOSURE CONTINGENCY / ENGINEERING COST						
	22	CONTINGENCY (25%)	LS	1	\$581,250	\$581,250	
	23	ENGINEERING COST (10%)	LS	1	\$290,625	\$290,625	
	TOTAL					\$17,895,012	

 CALCULATION SHEET	PROJECT CCR IMPOUNDMENT CLOSURE ESTIMATES FOR MWG WAUKEGAN	PLANT NAME: Waukegan	CLOSURE TYPE: Closure-in-Place	SHEET Close-in-Place Assumptions	REV. NO. A
	SUBJECT Preliminary Project Costs Sheets	IMPOUNDMENT NAME: East Ash Basin			AECOM JOB NO. 60669161
	ACTIVITY Close-in-Place Assumptions	CLOSURE OPTION: Option 3 - Close-in-Place	LAST UPDATED BY: PAK	DATE LAST MODIFIED: 11/04/21	REVIEWED BY: Rob Boeing

KEY ASSUMPTIONS

The following key assumptions and limitations are associated with the project design, implementation and performance:

1	The cost estimates were prepared using 2021 dollars and do not include any escalation.
2	A 25% contingency has been included for this cost estimate.
3	Engineering design and CQA cost has been included for this cost estimate based on reasonable assumptions.
4	Interstitial water treatment was assumed to continue until construction is completed.
5	To establish the positive slopes, assume existing ash and on-site fill will be utilized to establish crown.
6	Cap cross section for the CCR impoundment will consist of engineered turf system.
7	Groundwater monitoring costs are for the existing network system. Groundwater monitoring costs do not include costs incurred for any additional well installation. Maintenance costs for wells are included in post-closure O&M costs.
8	O&M costs include, but are not limited to, the monitoring and maintenance/repair of the groundwater monitoring system, cap system, and storm water controls.
9	Statements of Probable Construction Cost prepared by AECOM represent AECOM's judgment as a design professional familiar with the construction industry. It is recognized, however, that neither AECOM nor the Owner has control over the cost of labor, materials or equipment nor over the contractor's methods of determining the bid price or other competitive bidding, market, or negotiating conditions. Accordingly, AECOM cannot and does not warrant or represent that proposals, bids or actual construction costs will not vary from any statement of Probable Construction Cost or other estimates or evaluations prepared by AECOM.