City Manager/General Manager | 334 Front Street, Ketchikan AK 99901 | (907)228-5603

TRANSMITTAL MEMORANDUM

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TO:	The Honorable Mayor & City Council	Initials:	
FROM:	Lacey G. Simpson, Acting General Manager	File #:	MGR25-269
DATE:	April 25, 2025	Mtg. #:	05/01/25 NBe
RE:	**Budget Transfer and Authorization of Contract for Ketchikan Lakes Dam Low-Level Outlet Design – McMillen, Inc.**		

The motion below was prepared at the request of Electric Division CDSE/Regulatory Compliance Manager Jennifer Holstrom, who asked that it be placed before the City Council for consideration at its meeting of May 1, 2025. If adopted, the motion provides for a budget transfer to establish a new capital project account and authorizing a contract between the City and McMillen, Inc. for design of a low-level outlet for the Ketchikan Lakes Dam.

The attached transmittal memorandum from Ms. Holstrom is self-explanatory, and little elaboration from the General Manager's office is needed. As stated, the Electric Division is currently contracted with McMillen, Inc. to provide FERC relicensing support for the Ketchikan Lakes hydroelectric project. The Ketchikan Lakes Dam was constructed without a low-level outlet to allow for a draw-down of the lake for inspections and repairs, which is a requirement of modern dams. Staff has determined that it would be prudent to design and construct a low-level outlet now and in conjunction with the FERC relicensing work currently underway. Construction of an outlet at a later date once relicensing has concluded would be more costly and require more effort and lack efficiency.

Staff has received a proposal from McMillen, Inc. in the amount of $426,020 to perform all tasks necessary to bring the low-level outlet project to full design and publishing for bid. As McMillen, Inc. is currently working with staff on the project's relicensing, is familiar with the dam, and is in the unique position to coordinate the permitting and design with FERC, staff is recommending that McMillen be authorized to be the contractor for the design of a low-level outlet for the Ketchikan Lakes Dam. Pursuant to Ketchikan Municipal Code Section 3.12.051(c)(2)(A), staff is seeking City Council authorization of a contract award in excess of $50,000 to McMillen, Inc. as the firm is clearly the most qualified to perform the work.

As stated in Ms. Holstrom's transmittal memorandum, no funds were budgeted for this project. In adopting the 2025 Ketchikan Public Utilities Operating & Capital Budget, $1,500,000 were appropriated to the Whitman Tailrace Modification capital project. Excess funding is available in the Electric Division's 2025 Whitman Tailrace Modification capital project account, which will not be needed for that project. Staff is requesting a budget transfer to establish a new capital account to fund the low-level outlet design.

With ample funding available and a qualified contractor identified, I concur with Ms. Holstrom's recommendation to award a contract to McMillen, Inc.

A motion has been prepared for City Council consideration.

Recommended Motion:

Pursuant to subparagraphs (a)(5) and (c)(2)(A) of Section 3.12.050 of the Ketchikan Municipal Code, I move the City Council exempt the procurement of Ketchikan Lakes Dam Low-Level Outlet Design from the solicitation of proposals requirement of the Ketchikan Municipal Code; authorize the Acting General Manager to enter into an agreement with McMillen, Inc. for Ketchikan Lakes Dam Low-Level Outlet Design in the amount of $426,020; approve a budget transfer in the amount of $426,020 from the Electric Division's 2025 Whitman Tailrace Modification capital account to a newly established Ketchikan Lakes Dam Low-Level Outlet capital account; and authorize funding in the amount of $426,020 from the new Ketchikan Lakes Dam Low-Level Outlet Design capital account to McMillen, Inc.

KPU
Your Community, Your Utility

Electric Division
1065 Fair Street
Ketchikan, AK 99901

Phone (907) 225-5505
Fax (907) 247-0755

Memorandum

TO: Lacey G. Simpson, Acting General Manager

FROM: Jennifer Holstrom, CDSE/Regulatory Compliance Manager

DATE: April 22, 2025

SUBJECT: Budget Transfer and Authorization of Contract for Ketchikan Lakes Dam Low-Level Outlet Design

Background and Necessity for a Low-Level Outlet

The current Ketchikan Lakes Dam was constructed by Ketchikan Public Utilities in 1957 to impound water for the dual uses of drinking water and hydroelectric generation. All project facilities are shared: Ketchikan Lakes reservoir and Granite Basin Creek diversion dam, Fawn Lake forebay, pipes, and tunnels. It is only just upstream of the powerhouse that a pair of pipes divert water from the power tunnel to the treatment plant.

As the facilities age and regulations change, KPU is facing multiple challenges at the Ketchikan Lakes Project. Among these are:

1. The inability to inspect or repair the existing tunnel/penstock/valve system without completely shutting off the water supply to the City. The tunnels and valves date to the 1920's. The valves are well beyond their expected service life, are leaking badly and require repair or replacement.
2. Storm runoff from the Granite Basin watershed is frequently turbid and contains unacceptable levels of fecal coliform. In recent years, to avoid exceeding EPA limits, KPU has diverted or "wasted" water from Granite Basin Creek during high flow events. This results in lost power generation and reduced water storage in Ketchikan Lakes.
3. Modern dams must be constructed with low-level outlets that allow the reservoir to be drawn down to permit inspection, to make needed repairs, or to regulate flood flows. Ketchikan Lakes Dam has no low-level outlet for reservoir control; water must either pass through the entire system and be discharged through the powerhouse, or it must pass uncontrolled over the ungated spillway.

The KPU Water Division has studied the feasibility of installing an alternate raw water supply pipeline along Ketchikan Creek, bypassing the tunnels and forebay, and connecting to the existing pipe just downstream of the Ketchikan Lakes Dam. Construction of an alternate pipeline will allow KPU Electric Division to perform inspection and maintenance on project facilities, replace ageing infrastructure, and utilize now-wasted water from the Granite Basin watershed. It will provide critical redundancy to the municipal water system and will reduce water quality issues.

Timeline

Design of the alternate raw water supply pipeline has not yet started. It will take several years, at minimum, for its design, permitting and construction.

Meanwhile, KPU has just initiated the Federal Energy Regulatory Commission (FERC) re-licensing process for the Ketchikan Lakes Hydroelectric Project, filing a NOI and Preliminary Application Document on March 31, 2025. The next steps are study plan development (2025) and study implementation (2026).

The KPU Electric Division recommends proceeding immediately with design and construction of a low-level outlet at Ketchikan Lakes Dam that incorporates a connection point for a future raw-water pipeline. If done now, concurrent with the FERC relicensing process, this outlet can be included in ongoing environmental studies and stakeholder consultations. If done later, it will require a FERC license amendment, further consultations, studies, etc., at significant additional effort and cost.

Ideally, design of the low level outlet and future raw water connection will be completed in early 2026 with construction to follow later in 2026.

Recommended Engineering Firm

In 2024, through the City's Request for Proposal process, KPU selected McMillen, Inc. to provide FERC relicensing services for the Ketchikan Lakes hydro project. Because the permitting and design of the low-level outlet must be very closely coordinated, KPU strongly recommends working with McMillen engineers for the outlet design.

Ketchikan Municipal Code Section 3.12.050(a)(5) allows that services of a professional nature, such as engineering, may be purchased or contracted for without competitive bidding or soliciting quotations. The provisions of Section 3.12.051(c)(2)(A) allow the council to award a professional services contract in excess of $50,000 without the solicitation of proposals when "the manager demonstrates to the council that there is a single source of the expertise or knowledge required, or that one person or firm can clearly perform the required tasks more satisfactorily because of the person's or firm's prior work."

Scope and Estimated Cost of Services

The attached proposal from McMillen describes in detail the anticipated work, from preliminary design to bid support, and estimated fees for time and materials, which are summarized below:

Task		Est. Cost
1	Project Management	$84,770
2	Preliminary Design	$131,940
3	60% Design	$90,330
4	90% Design	$88,210
5	IFC Design and Bid Support	$30,770
	Total Cost	**$426,020**

Additional on-site or remote support during construction may be added through the KPU change order process.

Funding

Funding this work will require a budget transfer from the KPU Electric Division 2025 Whitman Tailrace Modification capital account. (Construction of the Whitman Tailrace Modification project is in progress; costs to date have been significantly under budget.)

Recommendation

Pursuant to subparagraphs (a)(5) and (c)(2)(A) of Section 3.12.050 of the Ketchikan Municipal Code, it is recommended that the City Council adopt a motion exempting the procurement of Ketchikan Lakes Dam Low-Level Outlet Design from the solicitation of proposals requirement of the Ketchikan Municipal Code; authorizing the General Manager to enter into an agreement with McMillen, Inc. for Ketchikan Lakes Dam Low-Level Outlet Design in the amount of $426,020; and approving a budget transfer in the amount of $426,020 from the Electric Division's 2025 Whitman Tailrace Modification capital account to a new Ketchikan Lakes Dam Low Level Outlet capital account.

Attachments:

1. McMillen Proposal dated April 15, 2025

April 15, 2025

Jennifer Holstrom
Ketchikan Public Utilities
1065 Fair Street
Ketchikan, AK 99901

Subject: Ketchikan Lakes Dam
Re: Proposal for Design of New Low-Level Outlet

Dear Ms. Holstrom

McMillen, Inc. (McMillen) appreciates the opportunity to work with Ketchikan Public Utilities (KPU) on the Ketchikan Lakes Dam Low Level Outlet (Project). We have developed the following detailed scope of work (SOW) and budget for your review and negotiation for the concept design, and design of the Project.

PROJECT UNDERSTANDING

The Ketchikan Lakes dam, water conveyance, powerhouse, and access (system) work together to supply both drinking water and hydropower for the City of Ketchikan (city) successfully in different configurations since 1905. The system has evolved and been updated based on current and anticipated future needs for the city to its current configuration. The current system has several current needs which cannot be met at all or fully realized. The system is utilized for both drinking water and hydropower in the same conveyance. The tradeoff with this approach is that Granite Creek water quality often does not meet required standards however that water is needed to maximize generation at the KPU powerhouse. Consequently, Granite Creek is typically not introduced into the system and generation is lost.

The second primary issue is there is no reasonable way to draw down Ketchikan Lakes Dam (dam) to inspect or repair the lower portions of the dam. The third issue is if the water conveyance was ever dewatered to conduct inspections or repairs this would cut off KPU drinking water supply with no other reliable or cost-effective replacement. These issues are known and have been studied previously by KPU. The current preferred overall approach is to install a low-level outlet structure near the dam on one or both 54-inch water conveyance

pipes which would be able to drain Ketchikan Lake water into Ketchikan Creek which would allow a reasonable drawdown for dam repairs and inspections. This would also provide a convenient and functional location to allow a new parallel water supply only pipe to the KPU water treatment plant which would allow the water conveyances downstream to be dewatered for inspections and repairs. This solution would also allow the use of Granite Creek water for increased power generation without compromising KPU drinking water quality.

PROJECT GENERAL ASSUMPTIONS AND CLARIFICATIONS

Based on the information provided by KPU and our Project Understanding as identified above, the following assumptions have been made in the development of this SOW. These assumptions impact the overall Project and budget. However, McMillen will gladly entertain any discussion on these assumptions to ensure they align with KPU goals.

- KPU review periods will be 10 business days unless noted otherwise. Longer durations will affect schedule.
- All deliverables will be submitted electronically using McMillen provided SharePoint site.
- All virtual meetings will take place using Microsoft Teams unless otherwise specified.
- Based on the KPU provided schedule, desired construction of spring 2027 would require a complete design package by spring 2026 to account for permitting, KPU contracting process, award and notice to proceed, and preconstruction activities.
- McMillen has included refundable airfare within the budget to protect our clients and our team in case meetings need to be rescheduled.
- Permitting and regulatory are assumed to be covered under the relicensing scope of work McMillen is currently performing for KPU.
- Based on information currently available to McMillen, we believe KPU will have adequate data to characterize the ground in the downstream of the dam where the LLO would be placed. Consequently, we are proposing no costs or schedule for geotechnical exploration.
- To account for subconsultant coordination, added insurance costs, and increased liability, a 5% markup will be added to the budget for each subconsultant managed by McMillen.
- A Topographic Survey budget is included but McMillen understands this may not be needed.

- McMillen will be using McMillen's master specifications and drafting standards unless KPU specifically requires the use of their specifications and standards. Note that client-specific specifications, standards, and templates will increase the budget.
- McMillen assumes Specifications Divisions 00 & 01– Procurement and Contracting Requirements will be provided by KPU as part of the overall construction contract.
- McMillen assumes the Project's Notice to Proceed to be granted within three months of submitting this proposal. If the award process is prolonged, the Project's total budget will need to be reassessed for potential adjustments due to the delay.
- Based on preliminary conversations with KPU we understand there may be some desire or future projects to bring power to the dam. However, for this project we are assuming there will be minimal power, controls, and instrumentation (electrical engineering) work required and have budgeted accordingly. If significant electrical engineering design is needed the budgets for the 60%, 90%, and IFC tasks will need to be adjusted higher.
- No engineering support during construction (SDC) or construction management (CM) effort is included in this proposal.
- This low level is outlet is away from the dam and will not require the FERC dam safety review process and therefore no labor is budgeted for this work.

PROJECT APPROACH

McMillen's project approach is identified in the following tasks and activities. The Tasks will be completed in the order described, excluding Project Management, which is included for the duration of the Project.

- Task 1 – Project Management
- Task 2 – Preliminary Design
- Task 3 – 60% Design
- Task 4 – 90% Design
- Task 5 – IFC Design and Bid Support

Within each of these tasks there are several subtasks to be completed. Each task described below provides the anticipated deliverables and the assumptions used for each task.

TASK 1: PROJECT MANAGEMENT

Kristy Fortuny will serve as the Project Manager for the duration of the Project and will provide management and oversight of all in-house team members. Kristy's responsibilities will include

contracting, monitoring budgets and schedules, and ensuring the work performed is within the contract scope, schedule, and budget. Kristy will also perform required general project management tasks such as meeting coordination, meeting minutes, quality control, and reporting. McMillen will set up a reoccurring meeting every two weeks to coordinate Project components, provide updates on the schedule, identify any data needs, etc. A SharePoint site will be provided for data sharing and Project submittals.

Clear and concise communication is imperative to accomplish smooth and efficient Project delivery. Throughout Project life, we will continue to maintain a strong and integrated team that includes key individuals from the McMillen and KPU team. This core Project Team will provide valuable input and criteria to guide the Project to successful completion. Close communication within this team will provide the foundation for the successful execution of the Project.

All documents will be reviewed internally, and comments will be incorporated before submitting them to KPU. Review by the QA/QC team will be required for all technical documents such as detailed reports, technical memorandums, drawings, and construction cost estimates. As part of the overall quality control process, our Project Manager will identify those team members who are qualified and available to complete reviews of each of the identified deliverables.

Comments on these deliverables will be provided to Kristy on our QA/QC Comment/Response Form. Kristy will compile all the comments and provide them with the design team, and they will review and add their responses to the same form. The responses will be reviewed by the QA/QC team. All comments/responses will be reconciled within the internal team before submission to KPU. Once the modifications have been made, Kristy will review the deliverable documents to ensure that all comments have been incorporated. Kristy will then complete the Comment/Response Form, documenting the quality control process.

Deliverables

- Meeting agendas and meeting minutes
- Monthly invoices and progress reports
- Quarterly schedule updates.

Assumptions

- Duration for the work will be approximately 9 months.
- Biweekly client meetings will occur between McMillen and KPU

TASK 2: PRELIMINARY DESIGN

Preliminary design will perform preliminary design tasks to better understand the system operations and conditions which need to be solved. This step will define operational requirements, design criteria and constraints and ensure the project is fully scoped.

Although the low-level outlet has been considered and studied at a high level previously, it did not focus on specific design elements from the low-level outlet function specifically. For this reason, McMillen recommends dedicating preliminary feasibility studies on different design elements to ensure the functional requirements are fully defined and to explore sub alternatives such as placement, access, automation/instrumentation/power, and outlet configuration. The output of this report will result in a final configuration that will be treated as a 30% design[1] for future development. This work will ensure that the correct problem is being addressed and KPU is fully aware and bought in on the solution and preliminary configuration.

Deliverables

- Systems Operation and Design Criteria Memo
- Alternative workshop agenda and Minutes
- Feasibility Report with 30% Design
    - Feasibility report including engineer's estimates for alternative cost impacts
    - System Process and Instrumentation Diagram (P&ID)
    - 30% Design sheets (10-15 sheets)
    - Specifications index
    - QA/QC Comments spreadsheet with comments addressed
- Survey results, if the survey is deemed necessary

Assumptions

- The feasibility report and 30% design is a single deliverable

TASK 3: 60% DESIGN

The 60% design will take the 30% design and further detail primary elements to determine main design features including location and alignments, hydraulic sizing and selection of primary components, structural sizing, preliminary grading, and electrical one lines, if

[1] 30% design is defined as a conceptual design intended to provide overall concept and function but will have some undefined features and limited detail.

applicable. Specifications will be tailored but not finalized and most drawing sheets will be present, but detail sheets will not be included until the 90% deliverable.

Deliverables

- 60% Design sheets (20-25 sheets)
- Technical specifications sections (Division 2-48 as applicable) estimating 10-15 sections
- Class 3 Opinion of Probable Construction Cost (OPCC) with anticipated construction schedule.
- Design Documentation Report (DDR)
- 30% QA/QC Comments spreadsheet with comments addressed

Assumptions

- KPU will provide division 00 and 01 front end specifications section. McMillen will contribute to the schedule and summary of work sections.

TASK 4: 90% DESIGN

This task will provide a complete design package where all design features will be fully analyzed and detailed. All drawings, specifications and DDR will be essentially final. Future changes will be clean-up and addressing comments from KPU and ITR reviews.

Deliverables

- 90% Design sheets (all sheets)
- 90% Technical specifications sections (Division 2-48 as applicable) estimating 10-15 sections
- 90% Design documentation report
- Final KPU system P&ID
- Draft Bid schedule
- Class 1-2 Opinion of Probable Construction Cost (OPCC) and an updated construction schedule.
- 60% QA/QC Comments spreadsheet with comments addressed

Assumptions

- KPU will provide division 0 and 1 front end specifications section. McMillen will contribute to the schedule and summary of work sections.

TASK 5: IFC DESIGN AND BID SUPPORT

This task will finalize the Issued for Bid (IFB) bid package and will incorporate KPU front end sections, stamped design documents. Completion of the design tasks will take the 90% review comments and update and do a final polishing of the package.

Additionally, McMillen will provide bid support including a bid site walk with McMillen staff, the answering of RFIs, addendum to the bid package, and technical evaluation of proposals if needed by KPU.

Deliverables

- IFC Design sheets (all sheets)
- IFC Technical specifications sections (Division 2-48 as applicable) estimating 10-15 sections
- IFC Design documentation report
- Native file formats for CAD files
- Final Bid schedule
- QA/QC Comments spreadsheet with all comments addressed and QA/QC certification.
- RFI answers from prospective bidders
- Package addendums

Assumptions

- McMillen will answer up to six RFIs
- McMillen will provide one bid package addendum
- Technical bid evaluation will be limited to 8 hours total labor and be performed virtually.

SCHEDULE

The anticipated project schedule is listed in the table below. Based on discussions with KPU for a 2027 construction window, with the proposed schedule there is approximately 6 months of float. McMillen recommends bidding the project in fall of 2026 to get maximum interest from the suitable contractors and provide adequate time for preconstruction activities.

Table 1. Project Schedule

Milestone	Time (Business Days)	Start	End
Notice to Proceed		5/1/2025	
1.0 Project Management			
Project Management	220	5/1/2025	3/5/2026
2.0 Preliminary Design			
Review of Literature and Data	5	5/1/2025	5/5/2025
Systems Operations and Design Criteria Memo	15	5/8/2025	5/26/2025
Develop Alternatives	10	5/29/2025	6/7/2025
Report and 30% Design	35	6/9/2025	7/25/2025
Internal Design and Fixup	7	7/27/2025	8/2/2025
Client Review	10	7/28/2025	8/8/2025
3.0 60% Design			
Analysis	10	8/2/2025	8/13/2025
60% Design	60	8/2/2025	10/22/2025
Internal Design and Fixup	7	10/25/2025	10/31/2025
Client Review	10	11/1/2025	11/12/2025
4.0 90% Design			
90% Design	60	10/31/2025	12/29/2025
Internal Design and Fixup	7	12/30/2025	1/5/2026
Client Review	10	1/6/2026	1/17/2026
5.0 IFC Design and Bid Support			
IFC Design	20	1/17/2026	2/11/2026
Final Client Review	10	2/12/2026	2/21/2026
Final Fixup	5	2/12/2026	2/16/2026
Stamp IFB package	2	2/22/2026	2/23/2026
KPU Prep for bid	60	2/24/2026	4/24/2026
Bid Period	30	4/25/2026	5/24/2026
Bid Evaluation	20	5/25/2026	6/13/2026

BUDGET

The budget includes all McMillen activities listed in the scope from NTP to IFB package award as detailed in this proposal. See detailed budget breakdown for details on work breakdown structure and levels of effort for each team member.

Table 2. Proposed Project Budget

Task	Table Head Row	Table Head Row
1.0	Project Management	$84,770
2.0	Preliminary Design	$131,940
3.0	60% Design	$90,330
4.0	90% Design	$88,210
5.0	IFC Design and Bid Support	$30,770
	Project Total	**$426,020**

CONCLUSION

We appreciate the opportunity to provide you with a detailed SOW, time and materials cost breakdown, and schedule for execution of the Ketchikan Lakes Low Level Outlet Design. If you have any questions or need additional information, please contact Kristy Fortuny at 503-867-6238 or fortuny@mcmillen.com. We look forward to serving KPU on this project.

Sincerely,

James Boag, PE
Principal Mechanical Engineer, Dams Market Lead

cc File
Encl. Detailed Budget Sheet

McMillen

Budget

Ketchikan Lakes Low Level Outlet
Ketchikan Public Utilities

Staff	QA/QC	PM Kristy Fortuny	Structural, Kevin Friesen	Mech, Foster Newberg	Elec, Casey Coulson	Civil/Hydraulics, Andrew Leman	Geotech Bryant Ward	Cost Est, TBD	CAD	Tech Writer	Admin		Expenses					Total	
Rates	$	$	$	285 $	275 $	$ 185	185 $	200 $	$ 185	195 $	105		Airfare	Hotel/Car	Meals	Others	Surveyor		Expenses T
1.0 Project Management				-		124	70	50	50	24	$	24	$	- $	- $	- $	-	$ -	- 84,770
Invoicing and Admin (24 months)		24								24	$	24	12,360					$	- 12,360
Coordination Meetings (24 months)		60	40	30	30	16	4	12			$		41,830					$	- 41,830
Internal and Other Meetings (24 months)		40	30	20	20	12	2	2	20		$		30,580					$	- 30,580
2.0 Preliminary Design					32	120	99	79	46	65	89 16	$ 4	2	$	$	2,500 $	117	840 600 1,000 - $	10,000 $ 14,100 131,940
Kickoff Site Visit		30	30			30	30					$		2,500	25,200	1000	600		$	$ 4,100 29,300
Survey		10				4						$	2	3,740				$	$	10,000 10,000 13,740
Data Review		12	8	8		4	12					$		9,260					$	$ - 9,260
Systems Operations and Design Criteria Memo		12	8	6	4	6	2					$		8,230					$	$ - 8,230
System P&ID				20	20	8			4			$		9,900					$	$ - 9,900
Alternatives Workshop (virtual)		4	3	3		3	3					$		3,350					$	$ - 3,350
Feasibility Report and 30% Design	32	40	48	40	20	32	16	16				$		52,960					$	$ - 52,960
Package and Submit Deliverables		8										$		2,200					$	$ - 2,200
Respond to Client Comments		4	2	2	2	2	2					$		3,000					$	$ - 3,000
3.0 60% Design					30	54	88	62	14	36	44 32	90	12 -	$	$	- 90,330 $	-	$ -	$ - 90,330
Analysis			24	16		8	16					$		11,920					$	$ - 11,920
Drawings (20 sheets)	12	10	40	24	4	16	4		80			$		35,470					$	$ - 35,470
Specifications	8	10	10	10	2	6	4					$		11,040					$	$ - 11,040
Design Documentation Report (DDR)	8	16	8	8	8	8	8			12		$		15,900					$	$ - 15,900
Class 3 Cost Est	2	4	2			2		32				$		9,150					$	$ - 9,150
Package and Submit Deliverables		8										$		2,200					$	$ - 2,200
Respond to Client Comments		6	4	4		4	4					$		4,650					$	$ - 4,650
												$		-					$	$ - -
4.0 90% Design					32	74	76	64	10	20	36 16	98	8-	$	$	- 88,210 $	-	$ -	$ - 88,210
Analysis			20	16		8	8					$		9,700					$	$ - 9,700
Drawings (25 sheets)	12	24	32	24		16			96			$		38,860					$	$ - 38,860
Specifications	8	16	12	8								$		10,380					$	$ - 10,380
Design Documentation Report (DDR)	8	16	8	8	2	8	8			8		$		14,160					$	$ - 14,160
Class 1 Cost Est	4	3						16				$		5,325					$	$ - 5,325
Package and Submit Deliverables		6										$		1,650					$	$ - 1,650
Respond to Client Comments		6	4	4	4	4	4					$		5,450					$	$ - 5,450
Final P&ID		3		4	4				2			$		2,685					$	$ - 2,685
												$		-					$	$ - -
5.0 IFC Design and Bid Support				-		45	19	19-		2-17		38 -	-	$	$	1,000 $	29,17	200 $ 400 $-	- $ 1,600 30,770
Analysis			2	2								$		740					$	$ 740
Drawings (25 sheets)		4	4	4		4			32			$		8,480					$	$ - 8,480
Specifications		4	4	4		4						$		3,360					$	$ - 3,360
Design Documentation Report (DDR)		2	2	2		2	2					$		2,050					$	$ - 2,050
Package and Stamp		4	2	2		2			2			$		2,550					$	$ - 2,550
Bid job walk		20										$		1000	5,500	400	200		$	$ 1,600 7,100
Bid RFIs (6)		8	3	3		3						$		3,895					$	$ - 3,895
Bid addendum (1)		3	2	2		2			4			$		2,595					$	$ - 2,595
Total Hours	94	417	352	274	120	214	129	78	240	44	26			3,500	1,400	800	-	10,000	
Total Budget	26,790	114,675	65,120	50,690	24,000	41,730	23,865	16,380	38,400	5,940	2,730	$ 410,320.00							$ 15,700.00 $ 426,020.00