

Project Manual For:

**Kake Bulk Fuel and Rural Power System Upgrades
Project No. 16155**



Alaska Energy Authority on behalf the City of Kake

813 West Northern Lights Blvd.

Advertising Date: June 23, 2016

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Kake Bulk Fuel and Rural Power System Upgrades PROJECT NO. 16155

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REQUEST FOR PROPOSALS

For Construction Contract
Competitive Sealed Proposals

Date **June 23, 2016**

Kake Bulk Fuel and Rural Power System Upgrades Project No. 16155

Location of Project: Kake, Alaska
Contracting Officer: Rich S. Wooten, CDT, CPSM, Contract Compliance Specialist
Issuing Office: Alaska Energy Authority

State Funded [X] Federal Aid [X]

Description of Work:

Construct Bulk Fuel Upgrades-This work includes: site work consisting of survey, clearing, excavation and handling of petroleum contaminated soil, site grading, contaminated material liner installation, unclassified excavation, installing classified fill, crushed aggregate surface course, concrete containment dike, grounding grid system, tank farm liner, drain rock, tank foundation concrete strip footings, truckfill shelter concrete foundation, installing carrier piping at road crossing; furnishing and installing fuel tanks, pumps and appurtenances; installing chain-link fence and signs; construction of a tank farm, pumps and manifold piping; construction of a contained distribution pipeline; furnish and install above grade piping, below grade header piping, cathodic protection, transfer pumps, fuel pumps, truckfill shelter building, vehicle dispenser, marine header and spill response equipment; fuel transfer; decommissioning of existing fuel piping; lighting and controls, and other related work as described in the bid documents.

Construct Rural Power System Upgrades-This work includes: site work consisting of survey, clearing, site grading, unclassified excavation, installing classified fill, crushed aggregate surface course, concrete footings, constructing a new rural power system including; mobilization and installation of the Owner -furnished power plant module; above grade fuel piping, modifications to the existing bulk fuel storage manifold piping, below grade contained fuel piping, electrical conduit, waste heat piping, modifications to the heating and electrical systems in the old power plant building, and related work as described in the bid documents.

The Engineer's Estimate is between **\$5,000,000 and \$7,000,000**

All work shall be substantially completed by November 1, 2017.

Interim Completion dates, if applicable, will be shown in the General Requirements.

Proposers are invited to submit proposals consisting of a Price Proposal and a Technical Proposal (see Section 00022), for furnishing all labor, equipment, and materials and for performing all work for the project described above. Both Price Proposals and Technical Proposals must be received not later than 3:00 p.m. local time, at the Alaska Energy Authority as indicated below, on July 21, 2016. Price Proposals will be opened later, following evaluation and scoring of the Technical Proposals (see Sections 00021, 00022, and 00023).

SUBMISSION OF PROPOSALS

ALL PROPOSALS, INCLUDING ANY AMENDMENTS OR WITHDRAWALS, MUST BE RECEIVED PRIOR TO THE DATE AND TIME STATED. PROPOSALS SHALL BE SUBMITTED ON THE FORMS FURNISHED AND MUST BE IN A SEALED ENVELOPE MARKED AS FOLLOWS:

Proposal for Project: Kake Bulk Fuel and Rural Power System Upgrades Project No. 16155	ATTN: Alaska Energy Authority 813 West Northern Lights Blvd. Anchorage, AK 99504
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Proposals, amendments, or withdrawals transmitted by mail must be received in the above specified office no later than seven hours prior to the scheduled time of bid opening. Hand-delivered Proposals, amendments, or withdrawals must be received at the front desk of the Alaska Energy Authority. Faxed bid amendments must be addressed to the **Rich Wooten**, fax number: 907-771-3044.

A bid guaranty is required with each bid in the amount of 5% of the amount bid. (Alternate bid items as well as supplemental bid items appearing in the bid schedule shall be included as part of the total amount bid when determining the amount of bid guaranty required for the project.)

The Alaska Energy Authority hereby notifies all bidders that it will affirmatively insure that in any contract entered into pursuant to this Invitation, Disadvantaged Business Enterprises (DBEs) will be afforded full opportunity to submit bids and will not be discriminated against on the grounds of race, color, national origin, or sex in consideration for an award.

NOTICE TO PROPOSERS

Proposers are hereby notified that data to assist in preparing Proposals is available as follows:

See attached Special Notice to Proposers.

The Request for Proposals may be ordered from:

Alaska Energy Authority
813 West Northern Lights Blvd., Anchorage, Alaska 99503
Phone: (907) 771-3019

All questions relating to design features, constructability, or other technical aspects of the project should be directed to the following:

Karl Reiche, P.E., Project Manager **E-mail: Kreiche@aidea.org** **Phone: (907) 771-3017**

All questions concerning proposal procedures should be directed to:

Rich S. Wooten, CDT, CPSM, Contract Compliance Specialist **Phone: (907) 771-3019**
813 West Northern Lights Blvd., Anchorage, Alaska 99504

Other Information:

PROPRIETARY INFORMATION: Proposers should not include proprietary information in proposals if such information should not be disclosed to the public. Any language within a submittal purporting to render all or portions of a proposal confidential will be disregarded. Proprietary information which may be provided after selection for contract negotiations will be confidential if expressly agreed to by the Contracting Agency (3 AAC 109.360).

COST INCURRED PRIOR TO CONTRACT: Proposers are specifically advised that a contract shall not be in effect until a written agreement is executed by an authorized agent of the Contracting Agency. The Contracting Agency shall not be liable for any cost incurred by a Proposer in response to this solicitation, including any work done, even in good faith, prior to execution of a contract and issuance of a Notice to Proceed.

MINOR INFORMALITIES: The Contracting Agency expressly reserves the right to waive minor informalities, negotiate changes or reject any and all proposals and to not award the proposed contract, if in its best interest. "Minor Informalities" means matters of form rather than substance which are evident from the submittal, or are insignificant matters that have a negligible effect on price, quantity, quality, delivery, or contractual conditions and can be waived or corrected without prejudice to other Offerors (3 AAC 109.260).

The Bid Calendar, Planholder lists and Bid Results are available on the Internet at:
www.aidea.org under Procurement Opportunities.

Reminder: Alaska Regulation 3 AAC 109.220 requires all Proposers to have a valid Alaska Business License and an Alaska Contractor's Certificate of Registration prior to award.

Special Notice to Proposers

1. A non-mandatory pre-proposal meeting is scheduled for July 7, 2016, 2:00pm in the Willow Conference room.

PROPOSAL EVALUATION PROCEDURE

Proposals will be evaluated by a committee (3 AAC 109.370). Scoring of proposals will be accomplished as follows:

1.1 Each Evaluator will individually read and rate Proposer's response to each criterion, except for Price Proposal as described under Evaluation Criteria (Section 00023). Ratings will be based solely on contents of proposals. Except as may be stated within any criterion description, a rating of "5" indicates the most responsive; ratings of "4-1" indicate progressively less responsiveness; and a rating of "0" indicates Non-responsive. Tie scores are permissible for evaluation criteria addressing schedule. Ratings are multiplied by the assigned weights for each criterion to obtain criterion scores.

1.2 After completion of individual ratings, the Evaluation Committee will meet to discuss proposals. Evaluators may then alter their ratings; however, any changes shall be based solely on the Evaluation Criteria set forth in the RFP. Additional criteria may not be considered.

1.3 During the Evaluation Committee Meeting, Evaluators may discuss factual knowledge of, and may investigate Proposers' and proposed Subcontractors' prior work experience and performance, including projects referenced in proposal, available written evaluations, etcetera, and may contact listed references or other persons knowledgeable of a Contractor's and/or a Subcontractor's past performance. Factors such as overall experience relative to the proposed contract, quality of work, and ability to meet schedules may be addressed. If any issues of significant concern to the proposed contract are discovered, the Committee may:

- a. Provide written recommendations to the Contracting Officer for consideration prior to contract award;
- b. Recommend suspension of the Proposer from consideration for award of the contract if there is probable cause for debarment (3 AAC 109.610); or
- c. Conduct discussions in accordance with paragraph 1.4, below.

1.4 The Committee may decide to conduct discussions (or "interviews") with responsible Proposers whose proposals are determined to be reasonably susceptible of being selected for award for the purpose of clarification to assure full understanding of, and responsiveness to, the solicitation requirements. After discussions, Evaluators will determine the final scoring and ranking for award by evaluating written and oral responses using only the Evaluation Criteria set forth in the Project Manual. Additional criteria may not be considered.

1.5 The Contracting Agency will then open the Price Proposals and calculate scores for price in accordance with Section 00023.

1.6 All Proposers will be advised of the Proposer selected for award after completion of the evaluation process. A Notice of Intent to Award will be provided to all Offerors. TECHNICAL AND PRICE PROPOSALS WILL NOT BE DISCLOSED TO THE PUBLIC OR TO COMPETING OFFERORS UNTIL AFTER A NOTICE OF INTENT TO AWARD IS ISSUED.

(END OF SECTION 00021)

SUBMITTAL CHECKLIST

Competitive Sealed Proposals

Project: Kake Bulk Fuel and Rural Power System Upgrades

Project No.: 16155

EXAMINATION OF WORK SITE AND RFP

- [] 1. Proposers are expected to examine carefully the site of the proposed work and the RFP Documents before submitting a proposal. The submission of a proposal shall be considered prima facie evidence that the Proposer has made such examination and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the Contract Documents.

PREPARATION OF PROPOSALS

- [] 2. Proposers must carefully review the RFP Documents for defects and questionable material and become familiar with submittal requirements before preparing proposals. Any explanation desired by Proposers regarding the meaning or interpretation of any of the project documents provided by the Contracting Agency must be requested in writing as indicated in the Request for Proposals (Document 00020). Substantive issues will be addressed in an addendum to all recipients on record as receiving the RFP Documents. Oral explanations or instructions given before the award of the contract will not be binding. Failure to comply with directions will result in lower score and may eliminate a submittal from consideration. ***Protests based upon any omission, error or content of this solicitation may be disallowed at the discretion of the contracting agency if the protest is not received in writing at least ten agency work days prior to the submittal deadline 3 AAC 109.570.***
- [] 3. Review all parts of the RFP Documents, and then focus on the following documents: RFP, this Submittal Checklist, Evaluation Criteria, and the Proposal Forms.
- [] 4. Review the Evaluation Criteria. Read the criteria in each section in light of the proposed project as portrayed in the RFP Documents. Be aware of the assigned weight for each criterion. Plan your proposal to address the applicable criteria. All criteria Responses shall not exceed the number of pages stated below.
- [] 5. Prepare a distinct Response for each criterion. Failure to respond directly to any criteria will result in an evaluation score of zero for that criterion. Acceptable Responses must be specific and directly related to the proposed project. Marketing brochures and photographs, federal standard forms 330s, marketing resumes, and other non-project specific materials will be discarded without evaluation and should not be submitted.
- [] 6. ***Each criterion Response must be titled, numbered and assembled in the order in which the criteria are listed in Section 00023***, so the criterion to which information applies shall be plainly evident. Material not so identified or assembled may be discarded without evaluation. Responses shall be presented on 8 ½" X 11" paper, except for a minimal number of larger sheets (e.g. 11"x17") that may be used for drawings & schedules if they are folded to 8½ " x 11" size. Larger sheets will be counted as one page in the page count. **CAUTION:** small print or typeface that is difficult to read will negatively influence evaluation of your submittal.
- [] 7. Complete all entries on the Price Proposal Form (Section 00310) and Contractor's Technical Proposal (Section 00313). Note the statutory requirements for Alaska Licenses and be sure to sign and date the Certification.
- [] 8. Attach criteria Responses (**EXCEPT PRICE PROPOSAL**) to the Contractor's Technical Proposal (Section 00313). The maximum number of attached pages (each printed side equals one page) for criteria Responses shall not exceed: **10 pages.**

*Page limit applies solely to the attachments to the Contractor's Technical Proposal form. **CAUTION:** Criteria Responses which exceed the maximum page limit or otherwise do not meet requirements stated herein, may result in disqualification.*

PRICE PROPOSAL

- [] 9. Review the Price Proposal, Bid Schedule, and Bid Bond documents. Prepare a Price Proposal for all labor, materials, equipment and services necessary to complete the Work in the RFP Documents. Complete the three documents on the forms furnished, or copies thereof.
- [] 9.1 The Bid Schedule will provide for quotation of a price or prices for one or more contract items which may include unit price or lump sum items and alternative, optional or supplemental price schedules or a combination thereof which will result in a total proposed price for the work

- [] 9.2 Where required, Proposers must quote on all items and THEY ARE WARNED that failure to do so will disqualify them. When quotations on all items are not required, Proposers should insert the words "no bid" in the space provided for any item not requiring a quotation and for which no quotation is made.
- [] 9.3 On unit price contracts Proposers shall also show the products of the respective unit prices and quantities written in figures in the column provided for the purpose and the total amount of the proposal obtained by adding the amounts of the several items. All the figures shall be in ink or typed.
- [] 9.4 All entries made by Proposers and designating applicable preferences must conform to the requirements of 3 AAC 109 and the instructions on the forms to warrant consideration.
- [] 9.5 Neither conditional nor alternative bids will be considered unless called for.
- [] 9.6 Unless specifically called for, telegraphic or telefacsimile bids will not be considered.
- [] 9.7 The Proposal forms must be signed with ink. If the Proposer is a corporation, the proposal shall be signed by an individual having authority to sign the contract. If the Proposer is a partnership, the proposal shall be signed by any authorized member of the partnership. If the Proposer is a sole proprietorship, the proposal shall be signed by the owner. Any erasure or change on the forms must be initialed by the person signing the proposal.

ACKNOWLEDGEMENT OF ADDENDA

- [] 10. The Price Proposal and Technical Proposal forms provide for acknowledgement individually of all Addenda to the RFP Documents. All addenda shall be acknowledged on these forms or by telegram prior to the scheduled time for submittal of proposals. If no addenda are received, the word "None" should be shown as specified.

REQUIRED DOCUMENTS

- [] 11. Submittals shall consist of the following applicable items assembled as follows and in the order listed. Proposals will not be considered if documents are not completely filled out. Telegraphic or telefacsimile submittals are NOT acceptable.
- [] 11.1 Five (5) copies of Contractor's Technical Proposal Form Section 00313 (at least one copy with original signature) with attached responses to all Evaluation Criteria [**EXCEPT PRICE PROPOSAL**] . Each copy shall be fastened with one staple in the upper left corner. No other form of binding shall be used and no cover and no transmittal letter other than the Contractor's Technical Proposal form will be included. CAUTION: Failure to comply with this instruction will negatively influence evaluation of Submittal.
- [] 11.2 **One copy** of the Price Proposal (Section 00310), with the Bid Schedule (Section 00312, and Bid Bond (Section 00410) attached, with one staple in the upper left corner. The Price Proposal, Bid Schedule and Bid Bond shall be enclosed together in a separate sealed envelope marked on the outside to identify it as **PRICE PROPOSAL** and with the names of the Project and Proposer.

DO NOT place your Technical Proposal Form (Section 00313) in the sealed price proposal envelope.

- [] 11.3 **CAUTION:** If you replicate (other than by photocopy) any form in the Project Manual in lieu of filling out forms provided by the Contracting Agency, provide a signed certification that lists such forms and attests that they are exact replicas of that issued by the Contracting Agency. Changed forms may result in rejection at the Contracting Agency's discretion. Any alteration may be cause for rejection without recourse.

DELIVERY

- [] 12. Deliver **submittals in one sealed package** to the location and before the submittal deadline cited on page 1 of the Request for Proposals. Do not include in the package any proposals or bids for other projects. **Mark the outside of the package** to identify the Project and the Proposer. Proposals must be received prior to the specified date and time. Late proposals will not be opened (3 AAC 109.360).

WITHDRAWAL OR REVISION OF BIDS

- [] 13. A Proposer may withdraw or revise a proposal after it has been delivered to the Contracting Agency, provided that the request for such withdrawal or revision is received by the designated office, in writing, by telegram, or by telefacsimile, before the time set for submittal of proposals. If the Price Proposal is to be changed, the telegraphic or telefacsimile modifications shall include both the modification of the unit bid price and the total modification of each item modified, but shall not reveal the amount of the total original or revised Price Proposal.

(END OF SECTION 00022)

EVALUATION CRITERIA

Competitive Sealed Proposals

Project: Kake Bulk Fuel and Rural Power System Upgrades

Project No. :16155

1. Project Understanding and Methodology

1. Weight: 5

Response must **demonstrate your comprehension of the project objectives, requirements and services**. Identify any pertinent issues and potential problems related to the project. Describe the proposed methodologies to overcome potential problems to achieve project success. Response must demonstrate offeror's approaches to account for unique conditions of the facility.

Response must outline the methods for accomplishing the proposed contract. Describe what, when, where, how, and in what sequence the work will be done both during the periods of the facility being unoccupied and occupied. Describe specific safety and precaution measures to protect students and staff during construction operations during the periods of the facility being unoccupied and occupied. Identify the amount and type of work to be performed by any Subcontractors. Consider how each task may be carried out; what services or interaction required from/with the Contracting Agency; Using Agency; etcetera. Suggest alternatives, if appropriate. Identify any **distinct and substantive qualifications** for undertaking the proposed contract such as the availability of specialized equipment or unique approaches or concepts **relevant to the required services** which the firms may use.

2. Project Management Plan

2. Weight: 5

Response must describe the administrative and operational structures that will be used for performing the proposed contract. For example consider: who will have overall responsibility for the contract? What will the lines of authority be? Describe how communications will be maintained between your Project Staff and the Contracting Agency. Explain how your team will be completely accountable.

3. Experience and Qualifications

3. Weight: 20

Response must describe the **relevant qualifications and experience** of the prime contractor (offeror) and major subcontractors including experience on similar projects (such as school renovation projects) and dates of construction. Describe the relevant qualifications and experience of key employees (of prime and subcontractors) who will actually perform the work. Describe the work to be performed by the individuals you name and detail specific **qualifications and substantive experience directly related to the proposed contract, years of experience and jobs completed with similar size and scope**. A response prepared specifically for this proposal is required. Resumes including non-relevant information may detract from the evaluation of your proposal. Focus on individual's specific duties and responsibilities and how project experience is relevant to the proposed contract.

For each person named, identify: employer, job classification, and state of residency. List at least 3 references (contact persons and telephone numbers) for each person.

If the team is composed of a prime and subcontractors, discuss any prior work relationships among the firms - in particular, regarding projects similar to this project. Discuss each firm's particular responsibilities for prior contracts that were similar to the work proposed in the Project Documents. Indicate which of the firms were involved in such contracts. For each contract, list the contracting entity and a reference (contact person and a telephone number).

4. Schedule

4. Weight: 20

All Basic Bid work shall be Substantially Complete by November 1, 2017. Final Completion of all work shall be December 31, 2017. Provide a schedule that shows key activities and milestones that are needed to successfully complete the project. Describe how you plan to meet or accelerate this schedule.

PRICE EVALUATION

5. Price Proposal

7. Weight: 50

Provide a Price Proposal (as instructed by the Submittal Checklist) for all labor, subcontracts, equipment, expenses, etc., in compliance with the Project Manual. Submit a completed Price Proposal (Section 000310), the Bid Schedule (Section 00312) and Bid Bond (Section 00410).

The Price Proposal score will be calculated as follows:

$$\text{Criterion Score} = \frac{(\text{Lowest Bid Price} \times \text{MPP})}{\text{Offeror's Bid Price}}$$

Wherein: For purpose of scoring, the **Bid Price** will be the Adjusted Total Bid Amount as stated on the Bid Schedule, and:

The **MPP** (Maximum Possible Points) will equal $(5) \times (\# \text{ of Evaluators}) \times (\text{Weight assigned to Criterion})$.

End of Section 00023

INFORMATION TO PROPOSERS

The Contracting Agency is concerned over the manner in which proposals are submitted. Proposers are requested to study and follow the proposal assembly instructions as to the method and form for submitting proposals so there will be no reason to reject a proposal.

EXAMINATION OF CONTRACT REQUIREMENTS

Proposers are expected to examine carefully the Project Manual, Drawings, and all other documents incorporated in the contract to determine the requirements thereof before preparing proposals.

Any explanation desired by proposers regarding the meaning or interpretation of drawings and specifications must be requested in writing and with sufficient time allowed for a reply to reach them before the submission of their proposals. Oral explanations or instructions given before the award of the contract will not be binding. Any interpretation made will be in the form of an addendum to the Project Manual or Drawings and will be furnished to all proposers and its receipt by the proposer shall be acknowledged.

CONDITIONS AT SITE OF WORK

Proposers are expected to visit the site to ascertain pertinent local conditions such as the location, accessibility and character of the site, labor conditions, the character and extent of the existing work within or adjacent thereto, and any other work being performed thereon.

PREPARATION OF PRICE BIDS

- (a) Bids shall be submitted on the forms furnished, and must be manually signed in ink. If erasures or other changes appear on the forms, each such erasure or change must be initialed by the person signing the proposal.
- (b) The bid schedule will provide for quotation of a price or prices for one or more pay items which may include unit price or lump sum items and alternative, optional or supplemental price schedules or a combination thereof which will result in a total bid amount for the proposed construction.

Where required on the bid form, bidders must quote on all items and THEY ARE WARNED that failure to do so will disqualify them. When quotations on all items are not required, bidders should insert the words "no bid" in the space provided for any item not requiring a quotation and for which no quotation is made.

- (c) The bidder shall specify the price or prices bid in figures only. On unit price contracts the bidder shall also show the products of the respective unit prices and quantities written in figures in the column provided for the purpose and the total amount of the proposal obtained by adding the amounts of the several items. All the figures shall be in ink or typed. When provided within the supplements to the bid schedule the Bidder shall specify those Alaska bidder and product preferences applicable to their bid. All entries made by the Bidder and designating applicable preferences must conform to the requirements of 3 AAC 109 and the instructions on the forms to warrant consideration.
- (d) Neither conditional nor alternative bids will be considered unless called for.
- (e) Unless specifically called for, telegraphic or telefacsimile bids will not be considered.
- (f) Bid Schedule form should be enclosed in a separate sealed envelope and enclosed with all other bidding forms required at the opening.

BID SECURITY

All proposals shall be accompanied by a bid security in the form of an acceptable Bid Bond (Form 25D-14), or a certified check, cashier's check or money order made payable to the State of Alaska. The amount of the bid security is specified on the Request for Proposals.

Bid Bonds must be accompanied by a legible Power of Attorney.

If the proposer fails to furnish an acceptable bid security with the bid, the bid shall be rejected as nonresponsive. Telegraphic notification of execution of Bid Bond does not meet the requirements of bid security accompanying the bid. An individual surety will not be accepted as a bid security.

The bid securities of the two highest-scoring proposals will be held by the Contracting Agency until the Contract has been executed, after which such bid securities will be returned. All other bid securities will be returned as soon as practicable.

If all proposals are rejected, all bid securities will be returned as soon as practicable.

PROPOSER'S QUALIFICATIONS

Before a proposal is considered for award, the bidder may be requested by the Contracting Agency to submit a statement of facts, in detail, as to his previous experience in performing comparable work, his business and technical organization, financial resources, and plant available to be used in performing the contemplated work.

SUBMISSION OF PROPOSALS

Proposals must be submitted as directed on the Request for Proposals. Do not include in the envelope any proposals for other work.

ADDENDA REQUIREMENTS

The bid documents provide for acknowledgement individually of all addenda to the drawings and/or specifications on the signature page of the Proposal. All addenda shall be acknowledged on the Proposal or by telegram prior to the scheduled time for receipt of Proposals. If no addenda are received by the proposer, the word "None" should be shown in the acknowledgment block.

Every effort will be made by the Contracting Agency to insure that proposers receive all addenda when issued. Addenda will be issued to the individual or company to whom the Project Manual and Drawings were issued. Addenda may be issued by any reasonable method such as hand delivery, mail, telefacsimile, telegraph, courier and in special circumstances by phone or e-mail. Addenda will be issued to the address, telefacsimile number or phone number as stated on the planholder's list unless picked up in person or included with the Project Manual and Drawings. It is the proposer's responsibility to insure that he has received all addenda affecting the Request for Proposals. No claim or protest will be allowed based on the bidder's allegation that he did not receive all of the addenda for an Request for Proposals.

WITHDRAWAL OR REVISION OF BIDS AND TECHNICAL PROPOSALS

A proposer may withdraw or revise a bid or Technical Proposal after it has been deposited with the Contracting Agency, provided that the request for such withdrawal or revision is received by the designated office, in writing, by telegram, or by telefacsimile, before the scheduled time.

Telegraphic or telefacsimile modifications shall include both the modification of the unit bid price and the total modification of each item modified, but shall not reveal the amount of the total original or revised bids.

RECEIPT AND OPENING OF BIDS AND TECHNICAL PROPOSALS

- (a) All bids and Technical Proposals, including any amendment or withdrawal, must be received by the Contracting Agency prior to the scheduled time. Any bid, amendment, or withdrawal which has not been actually received by the Contracting Agency prior to the scheduled time will not be considered.
- (b) No responsibility will be attached to any officer or employee of the Contracting Agency for the premature opening of, or failure to open, a proposal improperly addressed or identified.

- (c) The Contracting Agency reserves the right to waive any technicality in proposals received when such waiver is in the interest of the Authority.

PROPOSERS INTERESTED IN MORE THAN ONE PROPOSAL

If more than one proposal is offered by any one party, by or in the name of his or their clerk or partner, all such proposals will be rejected. A party who has quoted prices to a proposer is not thereby disqualified from quoting prices to other proposers or from submitting a proposal directly for the work.

REJECTION OF PROPOSALS

The Contracting Agency reserves the right to reject any and all proposals when such rejection is in the best interest of the State; to reject the proposal of a proposer who has previously failed to perform properly, or complete on time, contracts of a similar nature; to reject the proposal of a proposer who is not, in the opinion of the Contracting Officer, in a position to perform the contract; and to reject a bid as nonresponsive where the proposer fails to furnish the required documents, fails to complete required documents in the manner directed, or makes unauthorized alterations to the bid documents.

CONSIDERATION OF PROPOSALS

After the Proposals are opened, they will be compared on the basis identified on the proposal evaluation procedure and the apparent high scoring proposer announced. The apparent high scoring proposer shall, within 5 working days following identification as the apparent high scoring proposer, submit a list of all firms with which the prime CONTRACTOR intends to execute subcontracts for the performance of the Contract. The list shall include the name, business address, Alaska business license number and contractor's registration number of each proposed Subcontractor.

Upon confirmation of the contents of the proposal the high scoring proposer will be identified by the Contracting Agency by telephone and in writing. If the low Bidder differs from the apparent low Bidder then the requirements for Subcontractor listing, as noted above, shall become effective upon the low Bidder at the time of identification.

If a Proposer fails to list a Subcontractor or lists more than one Subcontractor for the same portion of Work and the value of that Work is in excess of one-half of one percent of the total bid, the Proposer agrees that it shall be considered to have agreed to perform that portion of Work without the use of a Subcontractor and to have represented that the Proposer is qualified to perform the Work.

A Proposer who attempts to circumvent the requirements of this section by listing as a Subcontractor another contractor who, in turn, sublets the majority of the Work required under the Contract, violates this section.

If a Contract is awarded to a Proposer who violates this section, the Proposer agrees that the Contracting Officer may:

- (1) cancel the Contract without any damages accruing to the State; or
- (2) after notice and a hearing, assess a penalty on the Bidder in an amount that does not exceed 10 percent of the value of the Subcontract at issue.

A Bidder may replace a listed Subcontractor who:

- (1) fails to comply with AS 08.18;
- (2) files for bankruptcy or becomes insolvent;

- (3) fails to execute a contract with the Bidder involving performance of the Work for which the Subcontractor was listed and the Bidder acted in good faith;
- (4) fails to obtain bonding;
- (5) fails to obtain insurance acceptable to the State;
- (6) fails to perform the Contract with the Bidder involving Work for which the Subcontractor was listed;
- (7) must be substituted in order for the prime CONTRACTOR to satisfy required State and Federal affirmative action requirements;
- (8) refuses to agree or abide with the bidder's labor agreement; or
- (9) is determined by the Contracting Officer to be nonresponsive.

AWARD OF CONTRACT

- (a) The letter of award, if the contract is to be awarded, will be issued to the highest-scoring responsible and responsive Proposer generally within 40 calendar days after opening of proposals.
- (b) All Proposers will be notified of the Contracting Agency's Intent to Award the Contract and the successful Proposer will be requested to execute certain documents, including the Contract form and bonds.
- (c) The contract will be awarded to the successful Proposer following receipt by the Contracting Agency of all required documents, properly executed, within the time specified in the intent to award. Failure to enter into a contract within the specified time shall be grounds for forfeiture of the bid security and consideration of the second highest-scoring bidder for award.

REQUIRED DOCUMENTS

Federally Funded Contracts

REQUIRED FOR PROPOSAL. Proposals will not be considered if the following documents are not completely filled out and submitted at the time proposals are due: Assemble documents in accordance with Section 00022.

1. **Price Proposal (Section 00310)**
 2. **Bid Schedule (Section 00312)**
 3. **Contractor's Technical Proposal (Section 00313)**
 4. **Bid Security (Section 00410 or other permissible form of Security)**
 5. Any bid revisions must be submitted by the bidder prior to proposal due date on the following form:
Bid Modification (Section 00420)
-

REQUIRED AFTER NOTICE OF APPARENT HIGH-SCORING PROPOSER. The apparent highest scoring proposer is required to complete and submit the following document within 5 working days after receipt of written notification:

1. **Subcontractor List (Section 00430)**
-

REQUIRED FOR AWARD. In order to be awarded the contract, the successful highest scoring proposer must completely fill out and submit the following documents within the time specified in the intent to award letter:

1. **Construction Contract (Section 00510).**
2. **Payment Bond (Section 00620)**
3. **Performance Bond (Section 00610)**
4. **Certificate of Insurance** (from carrier)

ALASKA ENERGY AUTHORITY

PRICE PROPOSAL
of

NAME _____

ADDRESS _____

To the CONTRACTING OFFICER, ALASKA ENERGY AUTHORITY:

In compliance with your Request for Proposals dated **June 23, 2016**, the Undersigned proposes to furnish and deliver all the materials and do all the work and labor required in the construction of Project:

**Kake Bulk Fuel and Rural Power System Upgrades
Project No. 16155**

Located at or near **Kake, Alaska**, according to the RFP Documents, **and our Contractor's Technical Proposal (Section 00313)** and for the amount and prices named herein as indicated on the Bid Schedule consisting of 4 pages, which is made a part of this Proposal.

The Undersigned declares that he has carefully examined the contract requirements and that he has made a personal examination of the site of the work; that he understands that the quantities, where such are specified in the Bid Schedule or on the plans for this project, are approximate only and subject to increase or decrease, and that he is willing to perform increased or decreased quantities of work at unit prices bid under the conditions set forth in the Contract Documents.

The Undersigned hereby agrees to execute the said contract and bonds within fifteen calendar days, or such further time as may be allowed in writing by the Contracting Officer, after receiving notification of the acceptance of this proposal, and it is hereby mutually understood and agreed that in case the Undersigned does not, the accompanying bid guarantee shall be forfeited to the Alaska Energy Authority as liquidated damages, and the said Contracting officer may proceed to award the contract to others.

The Undersigned agrees to commence the work within 10 calendar days after the effective date of Notice to Proceed and **substantially complete the Work in accordance with Section 01010.1.02.C**, unless extended in writing by the Contracting Officer.

The Undersigned proposes to furnish Payment Bond in the amount of 100% (of the contract price) and Performance Bond in the amount of 100% (of the contract price), as surety conditioned for the full, complete and faithful performance of this contract.

The Undersigned acknowledges receipt of the following addenda to the drawings and/or specifications (give number and date of each).

Addenda Number	Date Issued

Addenda Number	Date Issued

Addenda Number	Date Issued

NON-COLLUSION AFFIDAVIT

The Undersigned declares, under penalty of perjury under the laws of the United States, that neither he nor the firm, association, or corporation of which he is a member, has, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competition in connection with this proposal.

The Undersigned has read the foregoing proposal and hereby agrees to the conditions stated therein by affixing his signature below:

Signature

Name and Title of Person Signing

Telephone Number

Fax Number

BID SCHEDULE

Kake Bulk Fuel and Rural Power System Upgrades Project No. 16155

Proposers Please Note: Before preparing this bid schedule, read carefully, "Information to Proposers", and the following:

The Proposer shall insert a fixed price in figures opposite each pay item that appears in the bid schedule to furnish all labor, material, equipment, supervision and provide all work for each item listed. No price is to be entered or tendered for any item not appearing in the bid schedule.

Conditioned or qualified bids will be considered non-responsive.

NOTICE: Bids will be compared on the Total Bid Amount (d) and will be evaluated in accordance with Section 00023. Contract award will be made in the amount of the amount (d).

Schedule A: Construct Bulk Fuel Upgrades

Item	Spec No.	Description	Quantity	Unit	Unit Price	Extended Total Amount
A1	02120	Mobilization and Demobilization	1	Lump Sum		
A2	01568	Temporary Erosion and Sediment Control	1	Lump Sum		
A3	All Required	Furnish and Install Carrier Pipe for Road Crossing	1	Lump Sum		
A4	All Required	Demolition and Relocation of Existing Equipment and Materials	1	Lump Sum		
A5	15191	Excavation and Handling of Petroleum Contaminated Material	1	Lump Sum		
A6	All Required	Furnish and Install Structural Fill	1945	Cubic Yard		
A7	All Required	Furnish and Install Crushed Aggregate Surface Course (CASC)	275	Cubic Yard		
A8	All Required	Relocate Remaining Stockpiled Material	6280	Cubic Yard		
A9	All Required	Miscellaneous Site Work, Construct Ditch, and Stabilize Slopes	1	Lump Sum		
A10	All Required	Construct Tank Farm Concrete Dike Walls and Truckfill Shelter Concrete Foundation	1	Lump Sum		

A11	All Required	Furnish 10,000-Gallon Single Wall Gasoline Dispensing Tank	1	Each		
A12	All Required	Furnish 20,000-Gallon, Single Wall, Dual Product (10,000-Gallon Diesel #1, 10,000-Gallon Diesel #2) Dispensing Tank	1	Each		
A13	All Required	Furnish 27,000-Gallon, Single Wall, Horizontal, Gasoline Bulk Fuel Tank	2	Each		
A14	All Required	Furnish 27,000-Gallon, Single Wall, Horizontal, Diesel #1 Bulk Fuel Tank	2	Each		
A15	All Required	Furnish 27,000-Gallon, Single Wall, Horizontal, Diesel #2 Bulk Fuel Tank	2	Each		
A16	All Required	Mobilization of Tanks to Kake, AK	1	Lump Sum		
A17	All Required	Complete Tank Farm Construction	1	Lump Sum		
A18	All Required	Complete Truckfill Shelter Construction	1	Lump Sum		
A19	All Required	Fuel Dispensing and Marine Header Above and Below Grade Piping and Equipment	1	Lump Sum		
A20	All Required	Reconstruct KTC Vehicle Dispenser and Install Marine Dock Onshore Controls	1	Lump Sum		
A21	All Required	Decommission Existing KTC Dispenser and Truckfill	1	Lump Sum		
A22	All Required	Install Perimeter Fencing for City's Equipment Yard	1	Lump Sum		
A23	All Required	Furnish Spill Response Equipment	1	Lump Sum		
A24	All Required	Decommission Existing Tank Farm Piping	1	Lump Sum		
Total Schedule A, sum of items A1-A24 above						\$ _____

Total Bid Schedule A: Construct Bulk Fuel Upgrades (a)\$ _____

Schedule B: Construct Rural Power Systems Upgrades

Item	Spec No.	Description	Quantity	Unit	Unit Price	Extended Total Amount
B1	02120	Mobilization and Demobilization	1	Lump Sum		
B2	01568	Temporary Erosion and Sediment Control	1	Lump Sum		
B3	All Required	Demolition and Relocation of Existing Equipment and Materials	1	Lump Sum		
B4	All Required	Furnish and Install Structural Fill	920	Cubic Yard		
B5	All Required	Furnish and Install Crushed Aggregate Surface Course (CASC)	75	Cubic Yard		
B6	All Required	Miscellaneous Site Work, Construct Ditch, and Stabilize Slopes	1	Lump Sum		
B7	All Required	Construct Concrete Foundations	1	Lump Sum		
B8	All Required	Mobilization of Power Plant Module to Kake, AK	1	Lump Sum		
B9	All Required	Power Plant Module Installation	1	Lump Sum		
B10	All Required	Site Utility Below Ground Mechanical and Electrical Installation, and Modification of Existing Power Plant Building and Bulk Storage Tanks	1	Lump Sum		
Total Schedule B, sum of items B1-B10 above						\$_____

Total Bid Schedule B: Construct Rural Power System Upgrades (b)\$_____

Allowance for City of Kake local hire (AEA funded force account) : (c)\$50,000_____

Total Bid Amount: (d)\$_____

(a + b + c = d)

Contractor's Name (Printed)

Alaska Contractor's Registration #

Expires

Alaska Business License #

Expires

ALASKA ENERGY AUTHORITY

CONTRACTOR's TECHNICAL PROPOSAL
of

NAME _____

ADDRESS _____

To the CONTRACTING OFFICER, ALASKA ENERGY AUTHORITY

With regard to your Request for Proposals (RFP) dated **6/23/2016**, for the construction of the Project: known as:

**Kake Bulk Fuel and Rural Power System Upgrades
Project No. 16155**

located at or near **Kake, Alaska**; the Undersigned understands that a Proposal Evaluation Committee will evaluate all of the Proposals received and select for contract award the proposal which represents the best value to the Alaska Energy Authority. The Undersigned offers for consideration the attached narrative proposal consisting of **Ten** single-sided pages. The narrative addresses each of the evaluation criteria described in Section 00023.

The Undersigned understands that the contract is intended to be awarded to the Proposer with the highest point score considering all of the evaluation criteria described in Section 00023.

ACKNOWLEDGEMENT OF ADDENDA

The undersigned acknowledges receipt of the following addenda to the RFP (give number and date of each).

<u>Addenda</u>	<u>Date Issued</u>	<u>Addenda</u>	<u>Date Issued</u>	<u>Addenda</u>	<u>Date Issued</u>
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

The Undersigned has read the RFP Documents and hereby agrees to the conditions stated therein by affixing his signature below. The Undersigned also certifies the accuracy of statements made in the attached narratives.

Signature

Name and Title of Person Signing

Telephone Number

Fax Number

ALASKA ENERGY AUTHORITY

BID BOND

For

**Kake Bulk Fuel and Rural Power System Upgrades
Project No. 16155**

DATE BOND EXECUTED: _____

PRINCIPAL (Legal name and business address):

TYPE OF ORGANIZATION:

	☐ Individual	☐ Partnership
	☐ Joint Venture	☐ Corporation
STATE OF INCORPORATION:		

SURETY(IES) (Name and business address):

A.	B.	C.
PENAL SUM OF BOND:		DATE OF BID:

We, the PRINCIPAL and SURETY above named, are held and firmly bound to the Alaska Energy Authority, in the penal sum of the amount stated above, for the payment of which sum will be made, we bind ourselves and our legal representatives and successors, jointly and severally, by this instrument.

THE CONDITION OF THE FOREGOING OBLIGATION is that the Principal has submitted the accompanying bid in writing, date as shown above, on the above-referenced Project in accordance with contract documents filed in the office of the Contracting Officer, and under the Invitation for Bids therefor, and is required to furnish a bond in the amount stated above.

If the Principal's bid is accepted and he is offered the proposed contract for award, and if the Principal fails to enter into the contract, then the obligation to the State created by this bond shall be in full force and effect.

If the Principal enters into the contract, then the foregoing obligation is null and void.

PRINCIPAL

Signature(s)	1.	2.	3.
Name(s) & Title(s) (Typed)	1.	2.	3.

Corporate
Seal

See Instructions on Reverse

CORPORATE SURETY(IES)

Surety A	Name of Corporation		State of Incorporation	Liability Limit \$
Signature(s)	1.	2.		Corporate Seal
Name(s) & Titles (Typed)	1.	2.		

Surety B	Name of Corporation		State of Incorporation	Liability Limit \$
Signature(s)	1.	2.		Corporate Seal
Name(s) & Titles (Typed)	1.	2.		

Surety C	Name of Corporation		State of Incorporation	Liability Limit \$
Signature(s)	1.	2.		Corporate Seal
Name(s) & Titles (Typed)	1.	2.		

INSTRUCTIONS

1. This form shall be used whenever a bid bond is submitted.
2. Insert the full legal name and business address of the Principal in the space designated. If the Principal is a partnership or joint venture, the names of all principal parties must be included (e.g., "Smith Construction, Inc. and Jones Contracting, Inc. DBA Smith/Jones Builders, a joint venture"). If the Principal is a corporation, the name of the state in which incorporated shall be inserted in the space provided.
3. Insert the full legal name and business address of the Surety in the space designated. The Surety on the bond may be any corporation or partnership authorized to do business in Alaska as an insurer under AS 21.09. Individual sureties will not be accepted.
4. The penal amount of the bond may be shown either as an amount (in words and figures) or as a percent of the contract bid price (a not-to-exceed amount may be included).
5. The scheduled bid opening date shall be entered in the space marked Date of Bid.
6. The bond shall be executed by authorized representatives of the Principal and Surety. Corporations executing the bond shall also affix their corporate seal.
7. Any person signing in a representative capacity (e.g., an attorney-in-fact) must furnish evidence of authority if that representative is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved.
8. The states of incorporation and the limits of liability of each surety shall be indicated in the spaces provided.
9. The date that bond is executed must not be later than the bid opening date.

ALASKA ENERGY AUTHORITY

BID MODIFICATION
Kake Bulk Fuel and Rural Power System Upgrades
Project No. 16155

Modification Number: _____

Note: All revisions shall be made to the unadjusted bid amount(s).
Changes to the adjusted bid amounts will be computed by the Contracting Agency.

PAY ITEM NO.	PAY ITEM DESCRIPTION	REVISION TO UNIT BID PRICE +/-	REVISION TO BID AMOUNT +/-

TOTAL REVISION: \$ _____

Name of Bidding Firm

Responsible Party Signature

Date

This form may be duplicated if additional pages are needed.

SUBCONTRACTOR LIST
Kake Bulk Fuel and Rural Power System Upgrades
Project No. 16155

The apparent low bidder shall complete this form and submit it so as to be received by the Contracting Officer prior to the close of business on the fifth working day after receipt of written notice from the Contracting Agency.

Failure to submit this form with all required information by the due date will result in the bidder being declared nonresponsive and may result in the forfeiture of the Bid Security.

Scope of work must be clearly defined. If an item of work is to be performed by more than one firm, indicate the portion or percent of work to be done by each.

Check as applicable: ☐ All Work on the above-referenced project will be accomplished without subcontracts greater than ½ of 1% of the contract amount.

OR
☐ Subcontractor List is as follows:

LIST FIRST TIER SUBCONTRACTORS ONLY

FIRM NAME, ADDRESS, PHONE NO.	AK BUSINESS LICENSE NO., CONTRACTOR'S REGISTRATION NO.	SCOPE OF WORK TO BE PERFORMED

CONTINUE SUBCONTRACTOR INFORMATION ON REVERSE

For projects with federal-aid funding, I hereby certify Alaska Business Licenses and Contractor's Registrations will be valid for all subcontractors prior to award of the subcontract. For projects without federal-aid funding (State funding only), I hereby certify the listed Alaska Business Licenses and Contractor's Registrations were valid at the time bids were opened for this project.

Signature of Authorized Company Representative

Title

Company Name

Company Address (Street or PO Box, City, State, Zip)

Date

()
Phone Number

CONSTRUCTION CONTRACT
Kake Bulk Fuel and Rural Power System Upgrades
Project No. 16155

This CONTRACT, between the ALASKA ENERGY AUTHORITY, herein called the Authority, acting by and through its Contracting Officer, and

Company Name

Company Address (Street or PO Box, City, State, Zip)

a/an ☐ Individual ☐ Partnership ☐ Joint Venture ☐ Sole Proprietorship ☐ Corporation incorporated under the laws of the State of _____, its successors and assigns, herein called the Contractor, is effective the date of the signature of the Contracting Officer on this document.

WITNESSETH: That the Contractor, for and in consideration of the payment or payments herein specified and agreed to by the Authority, hereby covenants and agrees to furnish and deliver all the materials and to do and perform all the work and labor required in the construction of the above-referenced project at the prices bid by the Contractor for the respective estimated quantities aggregating approximately the sum of

_____ Dollars
(\$ _____), and such other items as are mentioned in the original Bid, which Bid and prices named, together with the Contract Documents are made a part of this Contract and accepted as such.

It is distinctly understood and agreed that no claim for additional work or materials, done or furnished by the Contractor and not specifically herein provided for, will be allowed by the Authority, nor shall the Contractor do any work or furnish any material not covered by this Contract, unless such work is ordered in writing by the Authority. In no event shall the Authority be liable for any materials furnished or used, or for any work or labor done, unless the materials, work, or labor are required by the Contract or on written order furnished by the Authority. Any such work or materials which may be done or furnished by the Contractor without written order first being given shall be at the Contractor's own risk, cost, and expense and the Contractor hereby covenants and agrees to make no claim for compensation for work or materials done or furnished without such written order.

The Contractor further covenants and agrees that all materials shall be furnished and delivered and all labor shall be done and performed, in every respect, to the satisfaction of the Authority, on or before: _____ or within _____ calendar days. It is expressly understood and agreed that in case of the failure on the part of the Contractor, for any reason, except with the written consent of the Authority, to complete the furnishing and delivery of materials and the doing and performance of the work before the aforesaid date, the Authority shall have the right to deduct from any money due or which may become due the Contractor, or if no money shall be due, the Authority shall have the right to recover _____ Dollars (\$ _____) per day for each calendar day elapsing between the time stipulated for the completion and the actual date of completion in accordance with the terms hereof; such deduction to be made, or sum to be recovered, not as a penalty but as liquidated damages.

The bonds given by the Contractor in the sum of \$_____ Payment Bond, and \$_____ Performance Bond, to secure the proper compliance with the terms and provisions of this Contract, are submitted herewith and made a part hereof.

IN WITNESS WHEREOF, the parties hereto have executed this Contract and hereby agree to its terms and conditions.

CONTRACTOR

Company Name

Signature of Authorized Company Representative

Typed Name and Title

Date

(Corporate Seal)

ALASKA ENERGY AUTHORITY

Signature of Contracting Officer

Typed Name

Date

ALASKA ENERGY AUTHORITY

PERFORMANCE BOND

Bond No. _____

For

**Kake Bulk Fuel and Rural Power System Upgrades
Project No. 16155**

KNOW ALL WHO SHALL SEE THESE PRESENTS:

That _____
of _____ as Principal,
and _____
of _____ as Surety,
firmly bound and held unto the State of Alaska in the penal sum of _____ Dollars

(\$_____) good and lawful money of the United States of America for the payment whereof,
well and truly to be paid to the Alaska Energy Authority, we bind ourselves, our heirs, successors, executors, administrators, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal has entered into a written contract with said State of Alaska, on the _____ of _____ A.D., 20____, for construction of the above-named project, said work to be done according to the terms of said contract.

Now, THEREFORE, the conditions of the foregoing obligation are such that if the said Principal shall well and truly perform and complete all obligations and work under said contract and if the Principal shall reimburse upon demand of the Alaska Energy Authority any sums paid him which exceed the final payment determined to be due upon completion of the project, then these presents shall become null and void; otherwise they shall remain in full force and effect.

IN WITNESS WHEREOF, we have hereunto set our hands and seals at _____, _____ this _____ day of _____ A.D., 20_____.

Principal: _____

Address: _____

By: _____

Contact Name: _____

Phone: () _____

Surety: _____

Address: _____

By: _____

Contact Name: _____

Phone: () _____

The offered bond has been checked for adequacy under the applicable statutes and regulations:

Alaska Energy Authority Authorized Representative

Date

See Instructions on Reverse

INSTRUCTIONS

1. This form shall be used whenever a performance bond is required. There shall be no deviation from this form without approval from the Contracting Officer.
2. The full legal name, business address, phone number, and point of contact of the Principal and Surety shall be typed on the face of the form. Where more than a single surety is involved, a separate form shall be executed for each surety.
3. The penal amount of the bond, or in the case of more than one surety the amount of obligation, shall be typed in words and in figures.
4. Where individual sureties are involved, a completed Affidavit of Individual Surety shall accompany the bond. Such forms are available upon request from the Contracting Officer.
5. The bond shall be signed by authorized persons. Where such person is signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of authority must be furnished.

ALASKA ENERGY AUTHORITY

PAYMENT BOND

Bond No. _____

For

**Kake Bulk Fuel and Rural Power System Upgrades
Project No. 16155**

KNOW ALL WHO SHALL SEE THESE PRESENTS:

That

of _____ as Principal,

and _____

of _____ as Surety,

firmly bound and held unto the State of Alaska in the penal sum of

_____ Dollars

_____ good and lawful money of the United States of America for the payment whereof,

well and truly to be paid to the Alaska Energy Authority we bind ourselves, our heirs, successors, executors, administrators, and assigns, jointly and severally, firmly by these presents.

WHEREAS, the said Principal has entered into a written contract with said Alaska Energy Authority, on the _____ of _____ A.D., 20____, for construction of the above-referenced project, said work to be done according to the terms of said contract.

Now, THEREFORE, the conditions of the foregoing obligation are such that if the said Principal shall comply with all requirements of law and pay, as they become due, all just claims for labor performed and materials and supplies furnished upon or for the work under said contract, whether said labor be performed and said materials and supplies be furnished under the original contract, any subcontract, or any and all duly authorized modifications thereto, then these presents shall become null and void; otherwise they shall remain in full force and effect.

IN WITNESS WHEREOF, we have hereunto set our hands and seals at _____, _____ this _____ day of _____ A.D., 20____.

Principal: _____

Address: _____

By: _____

Contact Name: _____

Phone: () _____

Surety: _____

Address: _____

By: _____

Contact Name: _____

Phone: () _____

The offered bond has been checked for adequacy under the applicable statutes and regulations:

Alaska Energy Authority Authorized Representative

Date

See Instructions on Reverse

INSTRUCTIONS

1. This form, for the protection of persons supplying labor and material, shall be used whenever a payment bond is required. There shall be no deviation from this form without approval from the Contracting Officer.
2. The full legal name, business address, phone number, and point of contact of the Principal and Surety shall be typed on the face of the form. Where more than a single surety is involved, a separate form shall be executed for each surety.
3. The penal amount of the bond, or in the case of more than one surety the amount of obligation, shall be typed in words and in figures.
4. Where individual sureties are involved, a completed Affidavit of Individual Surety shall accompany the bond. Such forms are available upon request from the Contracting Officer.
5. The bond shall be signed by authorized persons. Where such persons are signing in a representative capacity (e.g., an attorney-in-fact), but is not a member of the firm, partnership, or joint venture, or an officer of the corporation involved, evidence of authority must be furnished.

**ALASKA ENERGY AUTHORITY
SECTION 00700
GENERAL CONDITIONS**

- ARTICLE 1 DEFINITIONS
- ARTICLE 2 AUTHORIZATION AND LIMITATIONS
- 2.1 Authorities and Limitations
- 2.2 Evaluations by Contracting Officer
- 2.3 Means and Methods
- 2.4 Visits to Site
- ARTICLE 3 CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE
- 3.1 Incomplete Contract Documents
- 3.2 Copies of Contract Documents
- 3.3 Scope of Work
- 3.4 Intent of Contract Documents
- 3.5 Discrepancy in Contract Documents
- 3.6 Clarifications and Interpretations
- 3.7 Reuse of Documents
- ARTICLE 4 LANDS AND PHYSICAL CONDITIONS
- 4.1 Availability of Lands
- 4.2 Visit to Site
- 4.3 Explorations and Reports
- 4.4 Utilities
- 4.5 Damaged Utilities
- 4.6 Utilities Not Shown or Indicated
- 4.7 Survey Control
- ARTICLE 5 BONDS AND INSURANCE, AND INDEMNIFICATION
- 5.1 Delivery of Bonds
- 5.2 Bonds
- 5.3 Replacement of Bond and Surety
- 5.4 Insurance Requirements
- 5.5 Indemnification
- ARTICLE 6 CONTRACTOR'S RESPONSIBILITIES
- 6.1 Supervision of Work
- 6.2 Superintendence by CONTRACTOR
- 6.3 Character of Workers
- 6.4 CONTRACTOR to Furnish
- 6.5 Materials and Equipment
- 6.6 Anticipated Schedules
- 6.7 Finalizing Schedules
- 6.8 Adjusting Schedules
- 6.9 Substitutes or "Or-Equal" Items
- 6.10 Substitute Means and Methods
- 6.11 Evaluation of Substitution
- 6.12 Dividing the Work
- 6.13 Subcontractors

- 6.14 Use of Premises
- 6.15 Structural Loading
- 6.16 Record Documents
- 6.17 Safety and Protection
- 6.18 Safety Representative
- 6.19 Emergencies
- 6.20 Shop Drawings and Samples
- 6.21 Shop Drawing and Sample Review
- 6.22 Maintenance during Construction
- 6.23 Continuing the Work
- 6.24 Consent to Assignment
- 6.25 Use of Explosives
- 6.26 CONTRACTOR's Records
- 6.27 Load Restrictions

ARTICLE 7 LAWS AND REGULATIONS

- 7.1 Laws to be observed
- 7.2 Permits, Licenses, and Taxes
- 7.3 Patented Devices, Materials and Processes
- 7.4 Compliance of Specifications and Drawings
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ARTICLE 1 - DEFINITIONS

Wherever used in the Contract Documents the following terms, or pronouns in place of them, are used, the intent and meaning, unless a different intent or meaning is clearly indicated, shall be interpreted as set forth below.

The titles and headings of the articles, sections, and subsections herein are intended for convenience of reference.

Terms not defined below shall have their ordinary accepted meanings within the context which they are used. Words which have a well-known technical or trade meaning when used to describe work, materials or equipment shall be interpreted in accordance with such meaning. Words defined in Article 1 are to be interpreted as defined.

Addenda - All clarifications, corrections, or changes issued graphically or in writing by the AUTHORITY after the Advertisement but prior to the opening of Proposals.

Advertisement - The public announcement, as required by law, inviting bids for Work to be performed or materials to be furnished.

Application for Payment - The form provided by the AUTHORITY which is to be used by the CONTRACTOR in requesting progress or final payments and which is to include such supporting documentation as is required by the Contract Documents.

Approved or Approval - Means written approval by the Contracting Officer or his authorized representative as defined in Article 2.1. 'Approved' or 'Approval' as used in this contract document shall mean that the Authority has received a document, form or submittal from the Contractor and that the Authority has taken "No exceptions" to the item submitted. Unless the context clearly indicates otherwise, approved or approval shall not mean that the Authority approves of the methods or means, or that the item or form submitted meets the requirements of the contract or constitutes acceptance of the Contractor's work. Where approved or approval means acceptance, then such approval must be set forth in writing and signed by the contracting officer or his designee.

A.S - Initials which stand for Alaska Statute.

Authority - The Alaska Energy Authority (AEA). References to "Contracting Agency" means the AUTHORITY. The AUTHORITY is acting as an agent for Owner.

Award - The acceptance, by the AUTHORITY, of the successful bid.

Bid Bond - A type of Proposal Guaranty.

Bidder - Any individual, firm, corporation or any acceptable combination thereof, or joint venture submitting a bid for the advertised Work.

Calendar Day - Every day shown on the calendar, beginning and ending at midnight.

Change Order - A written order by the AUTHORITY directing changes to the Contract Documents, within their general scope.

Consultant - The person, firm, or corporation retained directly by the AUTHORITY to prepare Contract Documents, perform construction administration services, or other Project related services. References to Authority's Consultants shall include Engineer.

Contingent Sum Work Item - When the bid schedule contains a Contingent Sum Work Item, the Work covered shall be performed only upon the written Directive of the Project Manager. Payment shall be made as provided in the Directive.

Contract - The written agreement between the AUTHORITY and the CONTRACTOR setting forth the obligations of the parties and covering the Work to be performed, all as required by the Contract Documents.

Contract Documents - The Contract form, Addenda, the bidding requirements and CONTRACTOR's bid (including all appropriate bid tender forms), the bonds, the Conditions of the Contract and all other Contract requirements, the Specifications, and the Drawings furnished by the AUTHORITY to the CONTRACTOR, together with all Change Orders and documents approved by the Contracting Officer, for inclusion, modifications and supplements issued on or after the Effective Date of the Contract.

Contracting Officer - The person authorized by the Executive Director to enter into and administer the Contract on behalf of the AUTHORITY; who has authority to make findings, determinations and decisions with respect to the Contract and, when necessary, to modify or terminate the Contract. The Contracting Officer is identified on the construction Contract.

Contractor - The individual, firm, corporation or any acceptable combination thereof, contracts with the AUTHORITY for performance of the Work.

Contract Price - The total moneys payable by the AUTHORITY to the CONTRACTOR under the terms of the Contract Documents.

CONTRACTOR's Release – CONTRACTOR's written notification to the AUTHORITY specifying final payment due and releasing the AUTHORITY of any and all claims.

Contract Time - The number of Calendar Days following issuance of Notice-to-Proceed in which the project shall be rendered Substantially Complete, or if specified as a calendar date, the Substantial Completion date specified in the Contract Documents.

Controlling Item - Any feature of the Work on the critical path of a network schedule.

Defective - Work that is unsatisfactory, faulty or deficient, or does not conform to the Contract Documents.

Directive - A written communication to the CONTRACTOR from the Contracting Officer interpreting or enforcing a Contract requirement or ordering commencement of an item of Work.

Drawings - The Drawings which show the character and scope of the Work to be performed and which have been furnished by the AUTHORITY and are by reference made a part of the Contract Documents.

Engineer - The person, firm, or corporation retained directly by the AUTHORITY to prepare Contract Documents, perform construction administration services, or other Project related services.

Equipment - All machinery together with the necessary supplies for upkeep and maintenance, and also tools and apparatus necessary for the proper construction and acceptable completion of the work.

Final Completion - The Project has progressed to the point that all required Work is complete..

Furnish - To procure, transport, and deliver to the project site materials, labor, or equipment, for installation or use on the project.

General Requirements - Sections of Division I of the Specifications which contain administrative and procedural requirements as well as requirements for temporary facilities which apply to Specification Divisions 2 through 16.

Holidays - In the State of Alaska, Legal Holidays occur on:

1. New Years Day - January 1
2. Martin Luther King's Birthday - Third Monday in January
3. President's Day - Third Monday in February
4. Seward's Day - Last Monday in March
5. Memorial Day - Last Monday in May
6. Independence Day - July 4
7. Labor Day - First Monday in September
8. Alaska Day - October 18
9. Veteran's Day - November 11
10. Thanksgiving Day - Fourth Thursday in November
11. Christmas Day - December 25
12. Every Sunday
13. Every day designated by public proclamation by the President of the United States or the Governor of the State as a legal Holiday.

If any Holiday listed above falls on a Saturday, Saturday and the preceding Friday are both legal Holidays. If the Holiday should fall on a Sunday, except (12) above, Sunday and the following Monday are both legal Holidays. See Title 44, Alaska Statutes.

Install - Means to build into the Work, ready to be used in complete and operable condition and in compliance with Contract Documents.

Interim Work Authorization - A written order by the Project Manager initiating changes to the Contract within its general scope, until a subsequent Change Order is executed.

Invitation for Bids - A portion of the bidding documents soliciting bids for the Work to be performed.

Materials - Any substances specified for use in the construction of the project.

Notice of Intent to Award - The written notice by the AUTHORITY to all Bidders identifying the apparent successful Bidder and establishing the AUTHORITY's intent to execute the Contract when all conditions required for execution of the Contract are met.

Notice to Proceed - A written notice to the CONTRACTOR to begin the Work and establishing the date on which the Contract Time begins.

Onsite Project Representative - The Engineer's authorized representative assigned to make detailed observations relating to contract performance.

Owner – Means Grantee for whom the ALASKA ENERGY AUTHORITY is acting as an agent of.

Payment Bond - The security furnished by the CONTRACTOR and his Surety to guarantee payment of the debts covered by the bond.

Performance Bond - The security furnished by the CONTRACTOR and his Surety to guarantee performance and completion of the Work in accordance with the Contract.

Pre-construction Conference - A meeting between the CONTRACTOR, Project Manager and the Engineer, and other parties affected by the construction, to discuss the project before the CONTRACTOR begins work.

Project Manager - The authorized representative of the Contracting Officer who is responsible for administration of the Contract.

Procurement Manager/Officer - The person authorized by the Contracting Officer to administer the Contract on behalf of the AUTHORITY; who has authority to make findings, determinations and decisions with respect to the Contract and, when necessary present such to the Contracting Officer, to modify or terminate the Contract.

Project - The total construction, of which the Work performed under the Contract Documents, is the whole or a part, where such total construction may be performed by more than one CONTRACTOR.

Proposal - The offer of a Bidder, on the prescribed forms, to perform the Work at the prices quoted.

Proposal Guaranty - The security furnished with a Proposal to guarantee that the bidder will enter into a Contract if his Proposal is accepted by the AUTHORITY.

Quality Assurance (QA) - Where referred to in the technical specifications (Divisions 2 through 16), Quality Assurance refers to measures to be provided by the CONTRACTOR as specified.

Quality Control (QC) - Tests and inspections by the CONTRACTOR to insure the acceptability of materials incorporated into the work. QC test reports are used as a basis upon which to determine whether the Work conforms to the requirements of the Contract Documents and to determine its acceptability for payment.

Regulatory Requirements - Laws, rules, regulations, ordinances, codes and/or orders.

Schedule of Values - Document submitted by the CONTRACTOR and reviewed by the Contracting Officer, which shall serve as the basis for computing payment and for establishing the value of separate items of Work which comprise the Contract Price.

Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for the CONTRACTOR to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier and submitted by the CONTRACTOR to illustrate

material, equipment, fabrication, or erection for some portion of the Work. Where used in the Contract Documents, "Shop Drawings" shall also mean "Submittals".

Specifications - Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative and procedural details applicable thereto.

Subcontractor - An individual, firm, or corporation to whom the CONTRACTOR or any other Subcontractor sublets part of the Contract.

Substantial Completion - Although not fully completed, the Work (or a specified part thereof) has progressed to the point where it is sufficiently complete, in accordance with the Contract Documents, so that the Work (or specified part) can be utilized for the purposes for which it is intended. The terms "Substantially Complete" and "Substantially Completed" as applied to any Work refer to Substantial Completion thereof.

Supplemental Agreement - A written agreement between the CONTRACTOR and the AUTHORITY covering work that is not within the general scope of the Contract.

Supplementary Conditions - The part of the Contract Documents which amends or supplements these General Conditions.

Supplier - A manufacturer, fabricator, distributor, material man, or vendor of materials or equipment.

Surety - The corporation, partnership, or individual, other than the CONTRACTOR, executing a bond furnished by the CONTRACTOR.

Unit Price Work - Work to be paid for on the basis of unit prices.

Utility - The privately, publicly or cooperatively owned lines, facilities and systems for producing, transmitting or distributing communications, power, electricity, light, heat, gas, oil, crude products, water, steam, waste, storm water not connected with highway or street drainage, and other similar commodities, including publicly owned fire and police signal systems, street lighting systems, and railroads which directly or indirectly serve the public or any part thereof. The term "utility" shall also mean the utility company, inclusive of any wholly owned or controlled subsidiary."

Work - Work is the act of, and the result of, performing services, furnishing labor, furnishing and incorporating materials and equipment into the Project and performing other duties and obligations, all as required by the Contract Documents. Such Work, however incremental, will culminate in the entire completed Project, or the various separately identifiable parts thereof.

ARTICLE 2 – AUTHORIZATION AND LIMITATIONS

2.1 Authorities and Limitations

- 2.1.1 The Contracting Officer alone shall have the power to bind the AUTHORITY and to exercise the rights, responsibilities, authorities and functions vested in the Contracting Officer by the Contract Documents. The Contracting Officer shall have the right to designate in writing authorized representatives to act for him. Wherever any provision of the Contract Documents specifies an individual or organization, whether governmental or private, to perform any act on behalf of or in the interest of the AUTHORITY that individual or organization shall be deemed to be the Contracting Officer's authorized representative under this Contract but only to the extent so specified.
- 2.1.2 The CONTRACTOR shall perform the Work in accordance with any written order (including but not limited to instruction, direction, interpretation or determination) issued by an authorized representative in accordance with the authorized representative's authority to act for the Contracting Officer. The CONTRACTOR assumes all the risk and consequences of performing the Work in accordance with any order (including but not limited to instruction, direction, interpretation or determination) of anyone not authorized to issue such order, and of any order not in writing.
- 2.1.3 The performance or nonperformance of the Contracting Officer or his authorized representative, shall not give rise to any contractual obligation or duty to the CONTRACTOR, any Subcontractor, any Supplier, or any other organization performing any of the Work or any Surety representing them.

2.2 Evaluations by Contracting Officer:

- 2.2.1 The Contracting Officer or his authorized representative will decide all questions which may arise as to:
- a. Quality and acceptability of materials furnished;
 - b. Quality and acceptability of Work performed;
 - c. Compliance with the schedule of progress;
 - d. Interpretation of Contract Documents;
 - e. Acceptable fulfillment of the Contract on the part of the CONTRACTOR.
- 2.2.2 In order to avoid cumbersome terms and confusing repetition of expressions in the Contract Documents the terms "as ordered", "as directed", "as required", "as approved" or terms of like effect or import are used, or the adjectives "reasonable", "suitable", "acceptable", "proper" or "satisfactory" or adjectives of like effect or import are used it shall be understood as if the expression were followed by the words "the Contracting Officer".

When such terms are used to describe a requirement, direction, review or judgment of the Contracting Officer as to the Work, it is intended that such requirement, direction, review or judgment will be solely to evaluate the Work for compliance with the Contract Documents (unless there is a specific statement indicating otherwise).

- 2.2.3 The use of any such term or adjective shall not be effective to assign to the AUTHORITY any duty of authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraphs 2.3 or 2.4.

2.3 Means & Methods:

The means, methods, techniques, sequences or procedures of construction, or safety precautions and the program incident thereto, and the failure to perform or furnish the Work in accordance with the Contract Documents are the sole responsibility of the CONTRACTOR.

2.4 Visits to Site/Place of Business:

The Contracting Officer will make visits to the site and approved remote storage sites at intervals appropriate to the various stages of construction to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. The Contracting Officer may, at reasonable times, inspect that part of the plant or place of business of the CONTRACTOR or Subcontractor that is related to the performance of the Contract. Such observations or the lack of such observations shall in no way relieve the CONTRACTOR from his duty to perform the Work in accordance with the Contract Documents.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, AMENDING, REUSE

3.1 Incomplete Contract Documents:

The submission of a bid by the Bidder is considered a representation that the Bidder examined the Contract Documents to make certain that all sheets and pages were provided and that the Bidder is satisfied as to the conditions to be encountered in performing the Work. The AUTHORITY expressly denies any responsibility or liability for a bid submitted on the basis of an incomplete set of Contract Documents.

3.2 Copies of Contract Documents:

The AUTHORITY shall furnish to the CONTRACTOR up to six copies of the Contract Documents. Additional copies will be furnished, upon request, at the cost of reproduction.

3.3 Scope of Work:

The Contract Documents comprise the entire Contract between the AUTHORITY and the CONTRACTOR concerning the Work. The Contract Documents are complementary; what is called for by one is as binding as if called for by all. The Contract Documents will be construed in accordance with the Regulatory Requirements of the place of the Project.

It is specifically agreed between the parties executing this Contract that it is not intended by any of the provisions of the Contract to create in the public or any member thereof a third party benefit, or to authorize anyone not a party to this Contract to maintain a suit pursuant to the terms or provisions of the Contract.

3.4 Intent of Contract Documents:

- 3.4.1 It is the intent of the Contract Documents to describe a functionally complete Project to be constructed in accordance with the Contract Documents. Any Work, materials or equipment that may reasonably be inferred from the Contract Documents as being required to produce the intended result will be supplied, without any adjustment in Contract Price or Contract Time, whether or not specifically called for.
- 3.4.2 Reference to standard specifications, manuals or codes of any technical society, organization or association, or to the Regulatory Requirements of any governmental authority, whether such reference be specific or by implication, shall mean the edition stated in the Contract Documents or if not stated the latest standard specification, manual, code or Regulatory Requirements in effect at the time of Advertisement for the Project (or, on the Effective Date of the Contract if there was no Advertisement). However, no provision of any referenced standard specification, manual or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of the AUTHORITY and the CONTRACTOR, or any of their consultants, agents or employees from those set forth in the Contract Documents, nor shall it be effective to assign to the AUTHORITY or any of the AUTHORITY's Consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraphs 2.3.

3.5 Discrepancy in Contract Documents:

- 3.5.1 Before undertaking the Work, the CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures, and dimensions shown thereon and all applicable field measurements. Work in the area by the CONTRACTOR shall imply verification of figures, dimensions and field measurements. If, during the above study or during the performance of the Work, the CONTRACTOR finds a conflict, error, discrepancy or omission in the Contract Documents, or a discrepancy between the Contract Documents and any standard specification, manual, code, or Regulatory Requirement which affects the Work, the CONTRACTOR shall promptly report such discrepancy in writing to the Contracting Officer. The CONTRACTOR shall obtain a written interpretation or clarification from the Contracting Officer before proceeding with any Work affected thereby. Any adjustment made by the CONTRACTOR without this determination shall be at his own risk and expense. However, the CONTRACTOR shall not be liable to the AUTHORITY for failure to report any conflict, error or discrepancy in the Contract Documents unless the CONTRACTOR had actual knowledge thereof or should reasonably have known thereof.

3.5.2 Discrepancy - Order of Precedence:

When conflicts errors or discrepancies within the Contract Documents exist, the order of precedence from most governing to least governing will be as follows:

- Contents of Addenda
- Supplementary Conditions
- General Conditions
- General Requirements
- Technical Specifications
- Drawings
- Recorded dimensions will govern over scaled dimensions
- Large scale details over small scale details

Schedules over plans
Architectural drawings over structural drawings Structural drawings over mechanical
and electrical drawings

3.6 Clarifications and Interpretations:

The Contracting Officer will issue with reasonable promptness such written clarifications or interpretations of the requirements of the Contract Documents as the Contracting Officer may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents.

3.7 Reuse of Documents:

Neither the CONTRACTOR nor any Subcontractor, or Supplier or other person or organization performing or furnishing any of the Work under a direct or indirect contract with the AUTHORITY shall have or acquire any title to or ownership rights in any of the Contract Documents (or copies thereof) prepared by or for the AUTHORITY and they shall not reuse any of the Contract Documents on extensions of the Project or any other project without written consent of the Contracting Officer.

Contract Documents prepared by the CONTRACTOR in connection with the Work shall become the property of the AUTHORITY.

ARTICLE 4 - LANDS AND PHYSICAL CONDITIONS

4.1 Availability of Lands:

The AUTHORITY shall furnish as indicated in the Contract Documents, the lands upon which the Work is to be performed, rights-of-way and easements for access thereto, and such other lands which are designated for use of the CONTRACTOR in connection with the Work. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by the AUTHORITY, unless otherwise provided in the Contract Documents. The CONTRACTOR shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment. The CONTRACTOR shall provide all waste and disposal areas, including disposal areas for hazardous or contaminated materials, at no additional cost to the AUTHORITY.

4.2 Visit to Site:

The submission of a bid by the CONTRACTOR is considered a representation that the CONTRACTOR has visited and carefully examined the site and is satisfied as to the conditions to be encountered in performing the Work and as to the requirements of the Contract Documents.

4.3 Explorations and Reports:

Reference is made to the Supplementary Conditions for identification of those reports of explorations and tests of subsurface conditions at the site that have been utilized by the AUTHORITY in preparation of the Contract Documents. The CONTRACTOR may for his

purposes rely upon the accuracy of the factual data contained in such reports, but not upon interpretations or opinions drawn from such factual data contained therein or for the completeness or sufficiency thereof. Except as indicated in the immediately preceding sentence and in paragraphs 4.4 and 9.9, CONTRACTOR shall have full responsibility with respect to surface and subsurface conditions at the site.

4.4 Utilities:

- 4.4.1 The horizontal and vertical locations of known underground utilities as shown or indicated by the Contract Documents are approximate and are based on information and data furnished to the AUTHORITY by the owners of such underground utilities.
- 4.4.2 The CONTRACTOR shall have full responsibility for:
 - a. Reviewing and checking all information and data concerning utilities.
 - b. Locating all underground utilities shown or indicated in the Contract Documents which are affected by the Work.
 - c. Coordination of the Work with the owners of all utilities during construction.
 - d. Safety and protection of all utilities as provided in paragraph 6.17.
 - e. Repair of any damage to utilities resulting from the Work in accordance with 4.4.4 and 4.5.
- 4.4.3 If Work is to be performed by any utility owner, the CONTRACTOR shall cooperate with such owners to facilitate the Work.
- 4.4.4 In the event of interruption to any utility service as a result of accidental breakage or as result of being exposed or unsupported, the CONTRACTOR shall promptly notify the utility owner and the Project Manager. If service is interrupted, repair work shall be continuous until the service is restored. No Work shall be undertaken around fire hydrants until provisions for continued service has been approved by the local fire authority.

4.5 Damaged Utilities:

When utilities are damaged by the CONTRACTOR, the utility owner shall have the choice of repairing the utility or having the CONTRACTOR repair the utility. In the following circumstances, the CONTRACTOR shall reimburse the utility owner for repair costs or provide at no cost to the utility owner or the AUTHORITY, all materials, equipment and labor necessary to complete repair of the damage:

- a. When the utility is shown or indicated in the Contract Documents.
- b. When the utility has been located by the utility owner.
- c. When no locate was requested by the CONTRACTOR for utilities shown or indicated in the Contract Documents.
- d. All visible utilities.

- e. When the CONTRACTOR could have, otherwise, reasonably been expected to be aware of such utility.

4.6 Utilities Not Shown or Indicated:

If, while directly performing the Work, an underground utility is uncovered or revealed at the site which was not shown or indicated in the Contract Documents and which the CONTRACTOR could not reasonably have been expected to be aware of, the CONTRACTOR shall, promptly after becoming aware thereof and before performing any Work affected thereby (except in an emergency as permitted by paragraph 6.19) identify the owner of such underground utility and give written notice thereof to that owner and to the Project Manager. The Project Manager will promptly review the underground utility to determine the extent to which the Contract Documents and the Work should be modified to reflect the impacts of the discovered utility. The Contract Documents will be amended or supplemented in accordance with paragraph 9.2 and to the extent necessary through the issuance of a change document by the Contracting Officer. During such time, the CONTRACTOR shall be responsible for the safety and protection of such underground utility as provided in paragraph 6.17. The CONTRACTOR may be allowed an increase in the Contract Price or an extension of the Contract Time, or both, to the extent that they are directly attributable to the existence of any underground utility that was not shown or indicated in the Contract Documents and which the CONTRACTOR could not reasonably have been expected to be aware of.

4.7 Survey Control:

The AUTHORITY will identify sufficient horizontal and vertical control data to enable the CONTRACTOR to survey and layout the Work. All survey work shall be performed under the direct supervision of a registered land surveyor when required by paragraph 7.8. Copies of all survey notes shall be provided to the AUTHORITY at an interval determined by the Project Manager. The Project Manager may request submission on a weekly or longer period at his discretion. Any variations between the Contract Documents and actual field conditions shall be identified in the survey notes. Survey notes are to be in a format acceptable to the AUTHORITY.

ARTICLE 5 - BONDS, INSURANCE, AND INDEMNIFICATION

5.1 Delivery of Bonds:

When the CONTRACTOR delivers the executed Contract to the Contracting Officer, the CONTRACTOR shall also deliver to the Contracting Officer such bonds as the CONTRACTOR may be required to furnish in accordance with paragraph 5.2.

5.2 Bonds:

- 5.2.1 The CONTRACTOR shall furnish Performance and Payment Bonds, each in an amount as shown on the Contract as security for the faithful performance and payment of all CONTRACTOR's obligations under the Contract Documents. These bonds shall remain in effect for one year after the date of Final Acceptance and until all obligations under this Contract, except special guarantees as per 12.7, have been met. All bonds shall be furnished on forms provided by the AUTHORITY (or copies thereof) and shall be executed by such Sureties as are authorized to do business in the State of Alaska. The Contracting Officer may at his option copy the Surety with notice of any potential default or liability.

5.3 Replacement of Bond and Surety:

If the Surety on any bond furnished in connection with this Contract is declared bankrupt or becomes insolvent or its right to do business is terminated in any state where any part of the Project is located or it ceases to meet the requirements of paragraph 5.2, or otherwise becomes unacceptable to the AUTHORITY, or if any such Surety fails to furnish reports as to his financial condition as requested by the AUTHORITY, the CONTRACTOR shall within five days thereafter substitute another bond and Surety, both of which must be acceptable to AUTHORITY.

An individual Surety may be replaced by a corporate Surety during the course of the Contract period. If the Surety desires to dispose of the collateral posted, the AUTHORITY may, at its option, accept substitute collateral.

5.4 Insurance Requirements:

5.4.1 The CONTRACTOR shall provide evidence of insurance with a carrier or carriers satisfactory to the AUTHORITY covering injury to persons and/or property suffered by the Alaska Energy Authority or a third party, as a result of operations which arise both out of and during the course of this Contract by the CONTRACTOR or by any Subcontractor. This coverage will also provide protection against injuries to all employees of the CONTRACTOR and the employees of any Subcontractor engaged in Work under this Contract.

5.4.2 The CONTRACTOR shall maintain in force at all times during the performance of Work under this agreement the following policies and minimum limits of liability. Where specific limits and coverages are shown, it is understood that they shall be the minimum acceptable. The requirements of this paragraph shall not limit the CONTRACTOR's responsibility to indemnify under paragraph 5.5. Additional insurance requirements specific to this Contract are contained in the Supplementary Conditions, when applicable.

a. Workers' Compensation Insurance: The Contractor shall provide and maintain, for all employees of the Contractor engaged in work under this contract, Workers' Compensation Insurance as required by AS 23.30.045. The Contractor shall be responsible for Workers' Compensation Insurance for any subcontractor who provides services under this contract, to include:

1. Waiver of subrogation against the Authority and Employer's Liability Protection in the amount of \$500,000 each accident/\$500,000 each disease.
2. If the Contractor directly utilizes labor outside of the State of Alaska in the prosecution of the work, "Other States" endorsement shall be required as a condition of the contract.
3. Whenever the work involves activity on or about navigable waters, the Workers' Compensation policy shall contain a United States Longshoreman's and Harbor Worker's Act endorsement, and when appropriate, a Maritime Employer's Liability (Jones Act) endorsement with a minimum limit of \$1,000,000.

b. Commercial General Liability Insurance: on an occurrence policy form covering all operations by or on behalf of the CONTRACTOR with combined single limits not less than:

1. If the CONTRACTOR carries a *Comprehensive General Liability* policy, the limits of liability shall not be less than a Combined Single Limit for bodily injury, property damage and Personal Injury Liability of:

\$1,000,000 each occurrence

\$2,000,000 aggregate

2. If the CONTRATOR carries a *Commercial General Liability* policy, the limits of liability shall not be less than:

\$1,000,000 each occurrence (Combined Single Limit for bodily injury and property damage)

\$1,000,000 for Personal Injury Liability

\$2,000,000 aggregate for Products-Completed Operations

\$2,000,000 general aggregate

The Authority and the Owner shall be named as "Additional Insured" under all liability coverages listed above.

- c. Automobile Liability Insurance: covering all vehicles used by the Contractor in the performance of services under this agreement with combined single limits not less than:

\$1,000,000 each occurrence

- d. Builder's Risk Insurance: Coverage shall be on an "All Risk" completed value basis including "quake and flood" and protect the interests of the AUTHORITY, the CONTRACTOR and Subcontractors at all tiers. Coverage shall include all materials, supplies and equipment that are intended for specific installation in the Project while such materials, supplies and equipment are located at the Project site, in transit from port of arrival to job site, or while temporarily located away from the Project site.

In addition to providing the above coverages the CONTRACTOR shall require that all indemnities obtained from any SUBCONTRACTORS be extended to include the Authority and Owner as an additional named indemnitees. CONTRACTOR shall further require that the Authority and the Owner be named as additional insured on all liability insurance policies maintained by all SUBCONTRACTORS under their contracts with CONTRACTOR, and that an appropriate waiver of subrogation in favor of the Authority be obtained with respect to all other insurance policies.

- e. Other Coverages: As specified in the Supplementary Conditions, if required.

- 5.4.3 a. In addition to providing the above coverages the Contractor shall, in any contract or agreement with subcontractors performing work, require that all indemnities and waivers of subrogation it obtains, and that any stipulation to be named as an additional insured it obtains, also be extended to waive rights of subrogation against the AUTHORITY and the Owner and to add the ALASKA ENERGY AUTHORITY and the Owner as additional named indemnitees and as additional insured.

- b. Evidence of insurance shall be furnished to the AUTHORITY prior to the award of the contract. Such evidence, executed by the carrier's representative and

issued to the AUTHORITY, shall consist of a certificate of insurance or the policy declaration page with required endorsements attached thereto which denote the type, amount, class of operations covered, effective (and retroactive) dates, and dates of expiration. Acceptance by the AUTHORITY of deficient evidence does not constitute a waiver of contract requirements.

- c. When a certificate of insurance is furnished, it shall contain the following statement:
"This is to certify that the policies described herein comply with all aspects of the insurance requirements of (Project Name and Number)."

5.5 Indemnification:

The CONTRACTOR shall indemnify, save harmless, and defend the AUTHORITY, the OWNER its agents and its employees from any and all claims, actions, or liabilities for injuries or damages sustained by any person or property arising directly or indirectly from the CONTRACTOR or SUBCONTRACTOR's performance of WORK under this Contract; however, this provision has no effect if, but only if, the sole proximate cause of the injury or damage is the AUTHORITY's negligence.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES

6.1 Supervision of Work:

The CONTRACTOR shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. All Work under this Contract shall be performed in a skillful and workmanlike manner. The CONTRACTOR shall be solely responsible for the means, methods, techniques, sequences and procedures of construction.

6.2 Superintendence by CONTRACTOR:

The CONTRACTOR shall keep on the Work at all times during its progress a competent resident superintendent. The Project Manager shall be advised in writing of the superintendent's name, local address, and telephone number. This written advice is to be kept current until Final Acceptance by the AUTHORITY. The superintendent will be the CONTRACTOR's representative at the site and shall have full authority to act and sign documents on behalf of the CONTRACTOR.

All communications given to the superintendent shall be as binding as if given to the CONTRACTOR. The CONTRACTOR shall cooperate with the Project Manager in every way possible.

6.3 Character of Workers:

The CONTRACTOR shall provide a sufficient number of competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. The CONTRACTOR shall at all times maintain good discipline and order at the site. The Project Manager may, in writing, require the CONTRACTOR to remove from the Work any employee the Project Manager deems incompetent, careless, or otherwise detrimental to the progress of the Work, but the Project Manager shall have no duty to exercise this right.

6.4 CONTRACTOR to Furnish:

Unless otherwise specified in the General Requirements, the CONTRACTOR shall furnish and assume full responsibility for all materials, equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities and all other facilities and incidentals necessary for the furnishing, performance testing, start-up and completion of the Work.

6.5 Materials and Equipment:

All materials and equipment shall be of specified quality and new, except as otherwise provided in the Contract Documents. If required by the Project Manager, the CONTRACTOR shall furnish satisfactory evidence (including reports of required tests) as to the kind and quality of materials and equipment. All materials and equipment shall be applied, installed, connected, erected, used, cleaned, and conditioned in accordance with the instructions of the applicable Supplier except as otherwise provided in the Contract Documents; but no provision of any such instructions will be effective to assign to the AUTHORITY or any of the AUTHORITY's consultants, agents or employees, any duty or authority to supervise or direct the furnishing or performance of the Work or any duty or authority to undertake responsibility contrary to the provisions of paragraph 2.3.

6.6 Anticipated Schedules:

- 6.6.1 Prior to submitting the CONTRACTOR's first Application for Payment the CONTRACTOR shall submit to the Project Manager for review an anticipated progress schedule indicating the starting and completion dates of the various stages of the Work.
- 6.6.2 Prior to submitting the CONTRACTOR's first Application for Payment, the CONTRACTOR shall submit to the Project Manager for review:

Anticipated schedule of Shop Drawing submissions; and

Anticipated Schedule of Values for all of the Work which will include quantities and prices of items aggregating the Contract Price and will subdivide the Work into component parts in sufficient detail to serve as the basis for progress payments during construction. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work which will be confirmed in writing by the CONTRACTOR at the time of submission.

6.7 Finalizing Schedules:

Prior to processing the first Application for Payment the Project Manager and the CONTRACTOR will finalize schedules required by paragraph 6.6. The finalized progress schedule will be acceptable to the AUTHORITY as providing information related to the orderly progression of the Work to completion within the Contract Time; but such acceptance will neither impose on the AUTHORITY nor relieve the CONTRACTOR from full responsibility for the progress or scheduling of the Work. If accepted, the finalized schedule of Shop Drawing and other required submissions will be acknowledgment by the AUTHORITY as providing a workable arrangement for processing the submissions. If accepted, the finalized Schedule of Values will be acknowledgment by the AUTHORITY as an approximation of anticipated value of Work accomplished over the anticipated Contract Time. Receipt and acceptance of a schedule submitted by the CONTRACTOR shall not be

construed to assign responsibility for performance or contingencies to the AUTHORITY or relieve the CONTRACTOR of his responsibility to adjust his forces, equipment, and work schedules as may be necessary to insure completion of the Work within prescribed Contract Time. Should the prosecution of the Work be discontinued for any reason, the CONTRACTOR shall notify the Project Manager at least 24 hours in advance of resuming operations.

6.8 Adjusting Schedules:

Upon substantial changes to the schedule or upon request the CONTRACTOR shall submit to the Project Manager for acceptance (to the extent indicated in paragraph 6.7 and the General Requirements) adjustments in the schedules to reflect the actual present and anticipated progress of the Work.

6.9 Substitutes or "Or-Equal" Items:

- 6.9.1 Whenever materials or equipment are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier the naming of the item is intended to establish the type, function and quality required. Unless the name is followed by words indicating that substitution is limited or not permitted, materials or equipment of other Suppliers may be accepted by the Project Manager only if sufficient information is submitted by the CONTRACTOR which clearly demonstrates to the Project Manager that the material or equipment proposed is equivalent or equal in all aspects to that named. The procedure for review by the Project Manager will include the following as supplemented in the General Requirements.
- 6.9.2 Requests for review of substitute items of material and equipment will not be accepted by the Project Manager from anyone other than the CONTRACTOR.
- 6.9.3 If the CONTRACTOR wishes to furnish or use a substitute item of material or equipment, the CONTRACTOR shall make written application to the Project Manager for Approval thereof, certifying that the proposed substitute will perform adequately the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as the specified. The application will state that the evaluation and Approval of the proposed substitute will not delay the CONTRACTOR's timely achievement of Substantial or Final Completion, whether or not acceptance of the substitute for use in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with the AUTHORITY for Work on the Project) to adapt the design to the proposed substitute and whether or not incorporation or use of the substitute in connection with the Work is subject to payment of any license fee or royalty.
- 6.9.4 All variations of the proposed substitute from that specified will be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, including costs of redesign and claims of other contractors affected by the resulting change, all of which shall be considered by the AUTHORITY in evaluating the proposed substitute. The AUTHORITY may require the CONTRACTOR to furnish at the CONTRACTOR's expense additional data about the proposed substitute. The Project Manager may reject any substitution request which the Project Manager determines is not in the best interest of the OWNER.

- 6.9.5 Substitutions shall be permitted during or after the bid period as allowed and in accordance with Document 00020 - Invitation for Bids, Document 00700 – General Conditions, and Document 01630 - Product Options and Substitutions.

6.10 Substitute Means and Methods:

If a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents, the CONTRACTOR may furnish or utilize a substitute means, method, sequence, technique or procedure of construction acceptable to the Project Manager, if the CONTRACTOR submits sufficient information to allow the Project Manager to determine that the substitute proposed is equivalent to that indicated or required by the Contract Documents. The procedure for review by the Project Manager will be similar to that provided in paragraph 6.9 as applied by the Project Manager and as may be supplemented in the General Requirements.

6.11 Evaluation of Substitution:

The Project Manager will be allowed a reasonable time within which to evaluate each proposed substitute. The Project Manager will be the sole judge of acceptability, and no substitute will be ordered, installed or utilized without the Contracting Officer's prior written Approval which will be evidenced by either a Change Order or a Shop Drawing Approved in accordance with Sections 6.20 and 6.21. The Contracting Officer may require the CONTRACTOR to furnish at the CONTRACTOR's expense a special performance guarantee or other Surety with respect to any substitute.

6.12 Dividing the Work:

The divisions and sections of the Specifications and the identifications of any Drawings shall not control the CONTRACTOR in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

6.13 Subcontractors:

The CONTRACTOR may utilize the services of appropriately licensed Subcontractors on those parts of the Work which, under normal contracting practices, are performed by Subcontractors, in accordance with the following conditions:

- 6.13.1 The CONTRACTOR shall not award any Work to any Subcontractor without prior written Approval of the Contracting Officer. This Approval will not be given until the CONTRACTOR submits to the Contracting Officer a written statement concerning the proposed award to the Subcontractor which shall contain required Equal Employment Opportunity documents, evidence of insurance whose limits are acceptable to the CONTRACTOR, and an executed copy of the subcontract. All subcontracts shall contain provisions for prompt payment, release of retainage, and interest on late payment amounts and retainage as specified in AS 36.90.210. Contracts between subcontractors, regardless of tier, must also contain these provisions.
- 6.13.2 The CONTRACTOR shall be fully responsible to the AUTHORITY for all acts and omissions of the Subcontractors, Suppliers and other persons and organizations performing or furnishing any of the Work under a direct or indirect contract with

CONTRACTOR just as CONTRACTOR is responsible for CONTRACTOR's own acts and omissions.

- 6.13.3 All Work performed for CONTRACTOR by a Subcontractor will be pursuant to an appropriate written agreement between CONTRACTOR and the Subcontractor which specifically binds the Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of the AUTHORITY and contains waiver provisions as required by paragraph 13.17 and termination provisions as required by Article 14.
- 6.13.4 Nothing in the Contract Documents shall create any contractual relationship between the AUTHORITY and any such Subcontractor, Supplier or other person or organization, nor shall it create any obligation on the part of the AUTHORITY to pay or to see to the payment of any moneys due any such Subcontractor, Supplier or other person or organization except as may otherwise be required by Regulatory Requirements. The AUTHORITY will not undertake to settle any differences between or among the CONTRACTOR, Subcontractors, or Suppliers.
- 6.13.5 The CONTRACTOR and Subcontractors shall coordinate their work and cooperate with other trades so to facilitate general progress of Work. Each trade shall afford other trades every reasonable opportunity for installation of their work and storage of materials. If cooperative work of one trade must be altered due to lack of proper supervision or failure to make proper provisions in time by another trade, such conditions shall be remedied by the CONTRACTOR with no change in Contract Price or Contract Time.
- 6.13.6 The CONTRACTOR shall include on his own payrolls any person or persons working on this Contract who are not covered by written subcontract, and shall ensure that all Subcontractors include on their payrolls all persons performing Work under the direction of the Subcontractor.

6.14 Use of Premises:

The CONTRACTOR shall confine construction equipment, the storage of materials and equipment and the operations of workers to the Project limits and approved remote storage sites and lands and areas identified in and permitted by Regulatory Requirements, rights-of-way, permits and easements, and shall not unreasonably encumber the premises with construction equipment or other materials or equipment. The CONTRACTOR shall assume full responsibility for any damage to any such land or area, or to the owner or occupant thereof or of any land or areas contiguous thereto, resulting from the performance of the Work. Should any claim be made against the AUTHORITY by any such owner or occupant because of the performance of the Work, the CONTRACTOR shall hold the AUTHORITY harmless.

6.15 Structural Loading:

The CONTRACTOR shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall the CONTRACTOR subject any part of the Work or adjacent property to stresses or pressures that will endanger it.

6.16 Record Documents:

The CONTRACTOR shall maintain in a safe place at the site one record copy of all Drawings, Specifications, Addenda, Directives, Change Orders, Supplemental Agreements,

and written interpretations and clarifications (issued pursuant to paragraph 3.6) in good order and annotated to show all changes made during construction. These record documents together with all Approved samples and a counterpart of all Approved Shop Drawings will be available to the Project Manager for reference and copying. Upon completion of the Work, the annotated record documents, samples and Shop Drawings will be delivered to the Project Manager. Record documents shall accurately record variations in the Work which vary from requirements shown or indicated in the Contract Documents.

6.17 Safety and Protection:

The CONTRACTOR alone shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. The CONTRACTOR shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury or loss to:

- 6.17.1 All employees on the Work and other persons and organizations who may be affected thereby;
- 6.17.2 All the Work and materials and equipment to be incorporated therein, whether in storage on or off the site; and
- 6.17.3 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation or replacement in the course of construction.

The CONTRACTOR shall comply with all applicable Regulatory Requirements of any public body having jurisdiction for the safety of persons or property or to protect them from damage, injury or loss; and shall erect and maintain all necessary safeguards for such safety and protection. The CONTRACTOR shall notify owners of adjacent property and utility owners when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation and replacement of their property. All damage, injury or loss to any property caused, directly or indirectly, in whole or in part, by the CONTRACTOR, any Subcontractor, Supplier or any other person or organization directly or indirectly employed by any of them to perform or furnish any of the Work or anyone for whose acts any of them may be liable, shall be remedied by the CONTRACTOR with no change in Contract Price or Contract Time except as stated in 4.6, except damage or loss attributable to unforeseeable causes beyond the control of and without the fault or negligence of the CONTRACTOR, including but not restricted to acts of God, of the public enemy or governmental authorities. The CONTRACTOR's duties and responsibilities for the safety and protection of the Work shall continue until Final Acceptance (except as otherwise expressly provided in connection with Substantial Completion).

6.18 Safety Representative:

The CONTRACTOR shall designate a responsible safety representative at the site. This person shall be the CONTRACTOR's superintendent unless otherwise designated in writing by the CONTRACTOR to the Project Manager.

6.19 Emergencies:

In emergencies affecting the safety or protection of persons or the Work or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization

from the AUTHORITY, is obligated to act to prevent threatened damage, injury or loss. The CONTRACTOR shall give the Project Manager prompt written notice if the CONTRACTOR believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby. If the AUTHORITY determines that a change in the Contract Documents is required because of the action taken in response to an emergency, a change will be authorized by one of the methods indicated in Paragraph 9.2, as determined appropriate by the Project Manager.

6.20 Shop Drawings and Samples:

- 6.20.1 After checking and verifying all field measurements and after complying with applicable procedures specified in the General Requirements, the CONTRACTOR shall submit to the Project Manager for review and Approval in accordance with the accepted schedule of Shop Drawing submissions the required number of all Shop Drawings, which will bear a stamp or specific written indication that the CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission. All submissions will be identified as the Project Manager may require. The data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials and similar data to enable the Project Manager to review the information as required.
- 6.20.2 The CONTRACTOR shall also submit to the Project Manager for review and Approval with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and accompanied by a specific written indication that the CONTRACTOR has satisfied CONTRACTOR's responsibilities under the Contract Documents with respect to the review of the submission and will be identified clearly as to material, Supplier, pertinent data such as catalog numbers and the use for which intended.
- 6.20.3 Before submission of each Shop Drawing or sample the CONTRACTOR shall have determined and verified all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog numbers and similar data with respect thereto and reviewed or coordinated each Shop Drawing or sample with other Shop Drawings and samples and with the requirements of the Work and the Contract Documents.
- 6.20.4 At the time of each submission the CONTRACTOR shall give the Project Manager specific written notice of each variation that the Shop Drawings or samples may have from the requirements of the Contract Documents, and, in addition, shall cause a specific notation to be made on each Shop Drawing submitted to the Project Manager for review and Approval of each such variation. All variations of the proposed Shop Drawing from that specified will be identified in the submission and available maintenance, repair and replacement service will be indicated. The submittal will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such variation, including costs of redesign and claims of other Contractors affected by the resulting change, all of which shall be considered by the AUTHORITY in evaluating the proposed variation. If the variation may result in a change of Contract Time or Price, or Contract responsibility, and is not minor in nature; the CONTRACTOR must submit a written request for Change Order with the variation to notify the AUTHORITY of his intent. The AUTHORITY may require the CONTRACTOR to furnish at the CONTRACTOR's expense additional data about the proposed variation. The Project Manager may reject any variation request which the Project Manager determines is not in the best interest of the AUTHORITY.

6.21 Shop Drawing and Sample Review:

- 6.21.1 The Project Manager will review with reasonable promptness Shop Drawings and samples, but the Project Manager's review will be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents and shall not extend to means, methods, techniques, sequences or procedures of construction (except where a specific means, method, technique, sequence or procedure of construction is indicated in or required by the Contract Documents) or to safety precautions or programs incident thereto. The review of a separate item as such will not indicate acceptance of the assembly in which the item functions. The CONTRACTOR shall make corrections required by the Project Manager and shall return the required number of corrected copies of Shop Drawings and submit as required new samples for review. The CONTRACTOR shall direct specific attention in writing to revisions other than the corrections called for by the Project Manager on previous submittals.
- 6.21.2 The Project Manager's review of Shop Drawings or samples shall not relieve CONTRACTOR from responsibility for any variation from the requirements of the Contract Documents unless the CONTRACTOR has in writing advised the Project Manager of each such variation at the time of submission as required by paragraph 6.20.4. The Contracting Officer if he so determines, may give written Approval of each such variation by Change Order, except that, if the variation is minor and no Change Order has been requested a specific written notation thereof incorporated in or accompanying the Shop Drawing or sample review comments shall suffice as a modification. Approval by the Contracting Officer will not relieve the CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or from responsibility for having complied with the provisions of paragraph 6.20.3.
- 6.21.3 The AUTHORITY shall be responsible for all AUTHORITY review costs resulting from the initial submission and the resubmittal. The CONTRACTOR shall, at the discretion of the AUTHORITY, pay all review costs incurred by the AUTHORITY as a result of any additional re-submittals.
- 6.21.4 Where a Shop Drawing or sample is required by the Specifications, any related Work performed prior to the Project Manager's review and Approval of the pertinent submission will be the sole expense and responsibility of the CONTRACTOR.

6.22 Maintenance During Construction:

The CONTRACTOR shall maintain the Work during construction and until Substantial Completion, at which time the responsibility for maintenance shall be established in accordance with paragraph 13.10.

6.23 Continuing the Work:

The CONTRACTOR shall carry on the Work and adhere to the progress schedule during all disputes or disagreements with the AUTHORITY. No Work shall be delayed or postponed pending resolution of any disputes, disagreements, or claims except as the CONTRACTOR and the Contracting Officer may otherwise agree in writing.

6.24 Consent to Assignment:

The CONTRACTOR shall obtain the prior written consent of the Contracting Officer to any proposed assignment of any interest in, or part of this Contract. The consent to any assignment or transfer shall not operate to relieve the CONTRACTOR or his Sureties of any of his or its obligations under this Contract or the Performance Bonds. Nothing herein contained shall be construed to hinder, prevent, or affect an assignment of monies due, or to become due hereunder, made for the benefit of the CONTRACTOR's creditors pursuant to law.

6.25 Use of Explosives:

- 6.25.1 When the use of explosives is necessary for the prosecution of the Work, the CONTRACTOR shall exercise the utmost care not to endanger life or property, including new Work and shall follow all Regulatory Requirements applicable to the use of explosives. The CONTRACTOR shall be responsible for all damage resulting from the use of explosives.
- 6.25.2 All explosives shall be stored in a secure manner in compliance with all Regulatory Requirements, and all such storage places shall be clearly marked. Where no Regulatory Requirements apply, safe storage shall be provided not closer than 1,000 feet from any building, camping area, or place of human occupancy.
- 6.25.3 The CONTRACTOR shall notify each public utility owner having structures in proximity to the site of his intention to use explosives. Such notice shall be given sufficiently in advance to enable utility owners to take such steps as they may deem necessary to protect their property from injury. However, the CONTRACTOR shall be responsible for all damage resulting from the use of the explosives, whether or not, utility owners act to protect their property.

6.26 CONTRACTOR's Records:

- 6.26.1 Records of the CONTRACTOR and Subcontractors relating to personnel, payrolls, invoices of materials, and any and all other data relevant to the performance of this Contract, must be kept on a generally recognized accounting system. Such records must be available during normal work hours to the Contracting Officer for purposes of investigation to ascertain compliance with Regulatory Requirements and provisions of the Contract Documents.
- 6.26.2 Payroll records must contain the name and address of each employee, his correct classification, rate of pay, daily and weekly number of hours of work, deductions made, and actual wages paid. The CONTRACTOR and Subcontractors shall make employment records available for inspection by the Contracting Officer and representatives of the U.S. and/or State Department of Labor and will permit such representatives to interview employees during working hours on the Project.
- 6.26.3 Records of all communications between the AUTHORITY and the CONTRACTOR and other parties, where such communications affected performance of this Contract, must be kept by the CONTRACTOR and maintained for a period of three years from Final Acceptance. The AUTHORITY or its assigned representative may perform an audit of these records during normal work hours after written notice to the CONTRACTOR.

6.27 Load Restrictions

The CONTRACTOR shall comply with all load restrictions as set forth in the

"Administrative Permit Manual", and Title 17, Chapter 25, of the Alaska Administrative Code in the hauling of materials on public roads, beyond the limits of the project, and on all public roads within the project limits that are scheduled to remain in use upon completion of the project.

Overload permits may, at the discretion of the State, be issued for travel beyond the project limits for purposes of mobilization and/or demobilization. Issuance of such a permit will not relieve the CONTRACTOR of liability for damage which may result from the moving of equipment.

The operation of equipment of such weight or so loaded as to cause damage to any type of construction will not be permitted. No overloads will be permitted on the base course or surface course under construction. No loads will be permitted on a concrete pavement, base or structure before the expiration of the curing period. The CONTRACTOR shall be responsible for all damage done by his equipment.

ARTICLE 7 - LAWS AND REGULATIONS

7.1 Laws to be Observed

The CONTRACTOR shall keep fully informed of all federal and state Regulatory Requirements and all orders and decrees of bodies or tribunals having any jurisdiction or authority, which in any manner affect those engaged or employed on the Work, or which in any way affect the conduct of the Work. The CONTRACTOR shall at all times observe and comply with all such Regulatory Requirements, orders and decrees; and shall protect and indemnify the AUTHORITY and its representatives against claim or liability arising from or based on the violation of any such Regulatory Requirement, order, or decree whether by the CONTRACTOR, Subcontractor, or any employee of either. Except where otherwise expressly required by applicable Regulatory Requirements, the AUTHORITY shall not be responsible for monitoring CONTRACTOR's compliance with any Regulatory Requirements.

7.2 Permits, Licenses, and Taxes

- 7.2.1 The CONTRACTOR shall procure all permits and licenses, pay all charges, fees and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the Work. As a condition of performance of this Contract, the CONTRACTOR shall pay all federal, state and local taxes incurred by the CONTRACTOR, in the performance of this Contract. Proof of payment of these taxes is a condition precedent to final payment by the AUTHORITY under this Contract.
- 7.2.2 The CONTRACTOR's certification that taxes have been paid (as contained in the *Release of Contract*) will be verified with the Department of Revenue and Department of Labor, prior to final payment.
- 7.2.3 If any federal, state or local tax is imposed, charged, or repealed after the date of bid opening and is made applicable to and paid by the CONTRACTOR on the articles or supplies herein contracted for, then the Contract shall be increased or decreased accordingly by a Change Order.

7.3 Patented Devices, Materials and Processes

If the CONTRACTOR employs any design, device, material, or process covered by letters of patent, trademark or copyright, the CONTRACTOR shall provide for such use by suitable legal agreement with the patentee or owner. The CONTRACTOR and the Surety shall indemnify and save harmless the AUTHORITY, any affected third party, or political subdivision from any and all claims for infringement by reason of the use of any such patented design, device, material or process, or any trademark or copyright, and shall indemnify the AUTHORITY for any costs, expenses, and damages which it may be obliged to pay by reason of any infringement, at any time during the prosecution or after the completion of the Work.

7.4 Compliance of Specifications and Drawings:

If the CONTRACTOR observes that the Specifications and Drawings supplied by the AUTHORITY are at variance with any Regulatory Requirements, CONTRACTOR shall give the Project Manager prompt written notice thereof, and any necessary changes will be authorized by one of the methods indicated in paragraph 9.2. as determined appropriate by the Project Manager. If the CONTRACTOR performs any Work knowing or having reason to know that it is contrary to such Regulatory Requirements, and without such notice to the Project Manager, the CONTRACTOR shall bear all costs arising there from; however, it shall not be the CONTRACTOR's primary responsibility to make certain that the Specifications and Drawings supplied by the AUTHORITY are in accordance with such Regulatory Requirements.

7.5 Accident Prevention:

The CONTRACTOR shall comply with AS 18.60.075 and all pertinent provisions of the Construction Code Occupational Safety and Health Standards issued by the Alaska Department of Labor.

7.6 Sanitary Provisions:

The CONTRACTOR shall provide and maintain in a neat and sanitary condition such accommodations for the use of his employees and AUTHORITY representatives as may be necessary to comply with the requirements of the State and local Boards of Health, or of other bodies or tribunals having jurisdiction.

7.7 Business Registration:

Comply with AS 08.18.011, as follows: "it is unlawful for a person to submit a bid or work as a contractor until he has been issued a certificate of registration by the Department of Commerce. A partnership or joint venture shall be considered registered if one of the general partners or ventures whose name appears in the name under which the partnership or venture does business is registered."

7.8 Professional Registration and Certification:

All craft trades, architects, engineers and land surveyors, electrical administrators, and explosive handlers employed under the Contract shall specifically comply with applicable provisions of AS 08.18, 08.48, 08.40, and 08.52. Provide copies of individual licenses within seven days following a request from the Contracting Officer.

7.9 Local Building Codes:

The CONTRACTOR shall comply with AS 35.10.025 which requires construction in accordance with applicable local building codes to include the obtaining of required permits.

7.10 Air Quality Control:

The CONTRACTOR shall comply with all applicable provisions of AS 46.03.04 as pertains to Air Pollution Control.

7.11 Archaeological or Paleontological Discoveries:

When the CONTRACTOR's operation encounters prehistoric artifacts, burials, remains of dwelling sites, or paleontological remains, such as shell heaps, land or sea mammal bones or tusks, the CONTRACTOR shall cease operations immediately and notify the Project Manager. No artifacts or specimens shall be further disturbed or removed from the ground and no further operations shall be performed at the site until so directed. Should the Contracting Officer order suspension of the CONTRACTOR's operations in order to protect an archaeological or historical finding, or order the CONTRACTOR to perform extra Work, such shall be covered by an appropriate Contract change document.

7.12 Applicable Alaska Preferences: Not Applicable.

7.13 Preferential Employment: Not Applicable.

7.14 Wages and Hours of Labor:

7.14.1 One certified copy of all payrolls shall be submitted weekly to the State Department of Labor and, upon request, to the Contracting Officer to assure to assure compliance with AS 36.05.040, *Filing Schedule of Employees Wages Paid and Other Information*. The CONTRACTOR shall be responsible for the submission of certified copies of payrolls of all Subcontractors. The certification shall affirm that the payrolls are current and complete, that the wage rates contained therein are not less than the applicable rates referenced in these Contract Documents, and that the classification set forth for each laborer or mechanic conforms to the Work performed. The CONTRACTOR and his Subcontractors shall attend all hearings and conferences and produce such books, papers, and documents all as requested by the Department of Labor. Should federal funds be involved, the appropriate federal agency shall also receive a copy of the CONTRACTOR's certified payrolls. Regardless of project funding source, copies of all certified payrolls supplied to the State Department of Labor by the CONTRACTOR shall be supplied also to the Project Manager upon request, including submittals made by, or on behalf of, subcontractors.

7.14.2 The following labor provisions shall also apply to this Contract:

- a. The CONTRACTOR and his Subcontractors shall pay all employees unconditionally and not less than once a week;
- b. wages may not be less than those stated under AS 36.05.010, regardless of the contractual relationship between the CONTRACTOR or Subcontractors and laborers, mechanics, or field surveyors;
- c. the scale of wages to be paid shall be posted by the CONTRACTOR in a prominent and easily accessible place at the site of the Work;

d. the AUTHORITY shall withhold so much of the accrued payments as is necessary to pay to laborers, mechanics, or field surveyors employed by the CONTRACTOR or Subcontractors the difference between

1. the rates of wages required by the Contract to be paid laborers, mechanics, or field surveyors on the Work, and

2. the rates of wages in fact received by laborers, mechanics or field surveyors.

7.14.3 Within three calendar days of award of a construction contract, the CONTRACTOR shall file a "Notice of Work" with the Department of Labor and shall pay all related fees. The Contracting Officer will not issue Notice to Proceed to the CONTRACTOR until such notice and fees have been paid to the Department of Labor. Failure of the CONTRACTOR to file the Notice of Work and pay fees within this timeframe shall not constitute grounds for an extension of contract time or adjustment of contract price.

7.15 Overtime Work Hours and Compensation:

Pursuant to 40 U.S.C. 327-330 and AS 23.10.060 -.110, the CONTRACTOR shall not require nor permit any laborer or mechanic in any workweek in which he is employed on any Work under this Contract to work in excess of eight hours in any Calendar Day or in excess of forty hours in such workweek on Work subject to the provisions of the *Contract Work Hours and Safety Standards Act* unless such laborer or mechanic receives compensation at a rate not less than one and one half times his basic rate of pay for all such hours worked in excess of eight hours in any Calendar Day or in excess of forty hours in such workweek whichever is the greater number of overtime hours. In the event of any violation of this provision, the CONTRACTOR shall be liable to any affected employee for any amounts due and penalties and to the AUTHORITY for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic employed in violation of this provision in the sum of \$10.00 for each Calendar Day on which such employee was required or permitted to be employed on such Work in excess of eight hours or in excess of the standard workweek of forty hours without payment of the overtime wages required by this paragraph.

7.16 Covenant Against Contingent Fees:

The CONTRACTOR warrants that no person or selling agent has been employed or retained to solicit or secure this Contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the CONTRACTOR for the purpose of securing business. For breach or violation of this warrant, the DEPARTMENT shall have the right to annul this Contract without liability or, in its discretion, to deduct price of consideration from the Contract or otherwise recover the full amount of such commission, percentage, brokerage, or contingent fee.

7.17 Officials Not to Benefit:

No member of or delegate to the U.S. Congress, the Alaska State Legislature or other state official shall be admitted to any share or part of this Contract, nor to any benefit that may arise there from. However, this provision shall not be construed to extend to this Contract if made with a corporation for its general benefit.

7.18 Personal Liability of Public Officials:

In carrying out any of the provisions thereof, or in exercising any power or authority granted to the Contracting Officer by the Contract, there will be no liability upon the Contracting Officer nor upon AUTHORITY employees authorized as his representatives, either personally or as officials of the AUTHORITY, it being always understood that in such matters they act as agents and representatives of the AUTHORITY.

ARTICLE 8 - OTHER WORK

8.1 Related Work at Site:

- 8.1.1 The AUTHORITY reserves the right at any time to contract for and perform other or additional work on or near the Work covered by the Contract.
- 8.1.2 When separate contracts are let within the limits of the Project, the CONTRACTOR shall conduct his Work so as not to interfere with or hinder the work being performed by other contractors. The CONTRACTOR when working on the same Project with other contractors shall cooperate with such other contractors. The CONTRACTOR shall join his Work with that of the others in an acceptable manner and shall perform it in proper sequence to that of others.
- 8.1.3 If the fact that other such work is to be performed is identified or shown in the Contract Documents the CONTRACTOR shall assume all liability, financial or otherwise, in connection with this Contract and indemnify and save harmless the AUTHORITY from any and all damages or claims that may arise because of inconvenience, delay, or loss experienced by the CONTRACTOR because of the presence and operations of other contractors.
- 8.1.4 If the fact that such other work is to be performed was not identified or shown in the Contract Documents, written notice thereof will be given to the CONTRACTOR prior to starting any such other work. If the CONTRACTOR believes that such performance will require an increase in Contract Price or Contract Time, the CONTRACTOR shall notify the Project Manager of such required increase within fifteen (15) calendar days following receipt of the Contracting Officer's notice. Should the Project Manager find such increase(s) to be justified, a Change Order will be executed.

8.2 Access, Cutting, and Patching:

The CONTRACTOR shall afford each utility owner and any other contractor who is a party to such a direct contract with the AUTHORITY (or the AUTHORITY, if the AUTHORITY is performing the additional work with the AUTHORITY's employees) proper and safe access to the site and a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such work, and shall properly connect and coordinate the Work with the work of others. The CONTRACTOR shall do all cutting, fitting and patching of the Work that may be required to make its several parts come together properly and integrate with such other work, the CONTRACTOR shall not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter such other work with the written consent of the Project Manager. The duties and responsibilities of the CONTRACTOR under this paragraph are for the benefit of other contractors to the extent that there are comparable provisions for the benefit of the CONTRACTOR in said direct contracts between the AUTHORITY and other contractors.

8.3 Defective Work by Others:

If any part of the CONTRACTOR's Work depends for proper execution or results upon the work of any such other contractor, utility owner, or the AUTHORITY, the CONTRACTOR shall inspect and promptly report to the Project Manager in writing any delays, defects or deficiencies in such work that render it unavailable or unsuitable for such proper execution and results. The CONTRACTOR's failure to so report will constitute an acceptance of the other work as fit and proper for integration with CONTRACTOR's Work except for latent or non-apparent defects and deficiencies in the other work.

8.4 Coordination:

If the AUTHORITY contracts with others for the performance of other work at the site, Project Manager will have authority and responsibility for coordination of the activities among the various prime contractors.

ARTICLE 9 - CHANGES

9.1 AUTHORITY's Right to Change

Without invalidating the Contract and without notice to any Surety, the AUTHORITY may, at any time or from time to time, order additions, deletions or revisions in the Work within the general scope of the Contract, including but not limited to changes:

- 9.1.1 In the Contract Documents;
- 9.1.2 In the method or manner of performance of the Work;
- 9.1.3 In Authority-furnished facilities, equipment, materials, services, or site;
- 9.1.4 Directing acceleration in the performance of the Work.

9.2 Authorization of Changes within the General Scope.

Additions, deletions, or revisions in the Work within the general scope of the Contract as specified in 9.1 shall be authorized by one or more of following ways:

- 9.2.1 Directive (pursuant to paragraph 9.3)
- 9.2.2 A Change Order (pursuant to paragraph 9.4)
- 9.2.3 AUTHORITY's acceptance of Shop Drawing variations from the Contract Documents as specifically identified by the CONTRACTOR as required by paragraph 6.20.4.

9.3 Directive

- 9.3.1 The Contracting Officer shall provide written clarification or interpretation of the Contract Documents (pursuant to paragraph 3.6).
- 9.3.2 The Project Manager may authorize minor variations in the Work from the requirements of the Contract Documents which do not involve an adjustment in the Contract Price or the Contract Time and are consistent with the overall intent of the Contract Documents.

- 9.3.3 The Project Manager may order the Contractor to correct Defective Work or methods which are not in conformance with the Contract Documents.
- 9.3.4 The Project Manager may direct the commencement or suspension of Work or emergency related Work (as provided in paragraph 6.19).
- 9.3.5 Upon the issuance of a Directive to the CONTRACTOR by the Project Manager, the CONTRACTOR shall proceed with the performance of the Work as prescribed by such Directive.
- 9.3.6 If the CONTRACTOR believes that the changes noted in a Directive may cause an increase in the Contract Price or an extension of Contract Time, the CONTRACTOR shall immediately provide written notice to the Project Manager depicting such increases before proceeding with the Directive, except in the case of an emergency. If the Project Manager finds the increase in Contract Price or the extension of Contract Time justified, a Change Order will be issued. If however, the Project Manager does not find that a Change Order is justified, the Project Manager may direct the CONTRACTOR to proceed with the Work. The CONTRACTOR shall cooperate with the Project Manager in keeping complete daily records of the cost of such Work. If a Change Order is ultimately determined to be justified, in the absence of agreed prices and unit prices, payment for such Work will be made on a "cost of the work basis" as provided in 10.4

9.4 Change Order

A change in Contract Time, Contract Price, or responsibility may be made for changes within the scope of the Work by Change Order. Upon receipt of an executed Change Order, the CONTRACTOR shall promptly proceed with the Work involved which will be performed under the applicable conditions of the Contract Documents except as otherwise specifically provided. Changes in Contract Price and Contract Time shall be made in accordance with Articles 10 and 11. A Change Order shall be considered executed when it is signed by the AUTHORITY.

9.5 Shop Drawing Variations

Variations by shop drawings shall only be eligible for consideration under 9.4 when the conditions affecting the price, time, or responsibility are identified by the CONTRACTOR in writing and a request for a Change Order is submitted as per 6.20.4.

9.6 Changes Outside the General Scope; Supplemental Agreement

Any change which is outside the general scope of the Contract, as determined by the Project Manager, must be authorized by a Supplemental Agreement signed by the appropriate representatives of the AUTHORITY and the CONTRACTOR.

9.7 Unauthorized Work:

The CONTRACTOR shall not be entitled to an increase in the Contract Price or an extension of the Contract Time with respect to any work performed that is not required by the Contract Documents as amended, modified and supplemented as provided in this Article 9, except in the case of an emergency as provided in paragraph 6.19 and except in the case of uncovering Work as provided in paragraph 12.4.2.

9.8 Notification of Surety:

If notice of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Time) is required by the provisions of any bond to be given to a Surety, the giving of any such notice will be the CONTRACTOR's responsibility, and the amount of each applicable bond will be adjusted accordingly.

9.9 Differing Site Conditions:

- 9.9.1 The CONTRACTOR shall promptly, and before such conditions are disturbed (except in an emergency as permitted by paragraph 6.19), notify the Project Manager in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in the Contract, and which could not have been discovered by a careful examination of the site, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in this Contract. The Project Manager shall promptly investigate the conditions, and if the Project Manager finds that such conditions do materially so differ and cause an increase or decrease in the CONTRACTOR's cost of, or time required for, performance of this Contract, an equitable adjustment shall be made and the Contract modified in writing accordingly.
- 9.9.2 Any claim for additional compensation by the CONTRACTOR under this clause shall be made in accordance with Article 15. In the event that the Contracting Officer and the CONTRACTOR are unable to reach an agreement concerning an alleged differing site condition, the CONTRACTOR will be required to keep an accurate and detailed record which will indicate the actual "cost of the work" done under the alleged differing site condition. Failure to keep such a record shall be a bar to any recovery by reason of such alleged differing site conditions. The Project Manager shall be given the opportunity to supervise and check the keeping of such records.

9.10 Interim Work Authorization

An Interim Work Authorization may be used to establish a change within the scope of the Work; however, only a Change Order shall establish associated changes in Contract Time and Price. Work authorized by Interim Work Authorization shall be converted to a Change Order. The basis of payment shall be as stated in the Interim Work Authorization, unless it states that the basis of payment has not been established and is to be negotiated, in which case the Cost of the Work shall be documented pursuant to Article 10.4, to establish a basis for negotiating a lump sum price for the Change Order.

ARTICLE 10 - CONTRACT PRICE; COMPUTATION AND CHANGE

10.1 Contract Price:

The Contract Price constitutes the total compensation (subject to authorized adjustments) payable to the CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by the CONTRACTOR shall be at his expense without change in the Contract Price. The Contract Price may only be changed by a Change Order or Supplemental Agreement.

10.2 Claim for Price Change:

Any claim for an increase or decrease in the Contract Price shall be submitted in accordance with the terms of Article 15, and shall not be allowed unless notice requirements of this Contract have been met.

10.3 Change Order Price Determination:

The value of any Work covered by a Change Order for an increase or decrease in the Contract Price shall be determined in one of the following ways:

10.3.1 Where the Work involved is covered by unit prices contained in the Contract Documents, by application of unit prices to the quantities of the items involved (subject to the provisions of subparagraphs 10.9.1 through 10.9.3, inclusive).

10.3.2 By mutual acceptance of a lump sum price that includes overhead and profit. The following maximum rates of cost markup (to cover both overhead and profit of the CONTRACTOR) shall be used in the negotiation of a Lump Sum Change Order:

- a. 17% - where a cost is borne directly by prime contractor (first tier contractor).
- b. 10% - where a cost is borne by a subcontractor (lower tier contractor).

Where the cost is borne by a subcontractor acting as a first tier contractor, the allowable overhead and profit markup for lump sum change orders shall not exceed 17%. Any lower tier subcontractors, including the CONTRACTOR in this case, for whom the first tier subcontractor performs the work, shall be allowed an overhead and profit markup that does not exceed 10%.

10.3.3 When 10.3.1 and 10.3.2 are inapplicable, on the basis of the "cost of the work" (determined as provided in paragraphs 10.4 and 10.5) plus a CONTRACTOR's fee for overhead and profit (determined as provided in paragraph 10.6).

10.3.4 Before a Change Order or Supplemental Agreement is approved, the CONTRACTOR shall submit cost or pricing data regarding the changed or extra Work. The CONTRACTOR shall certify that the data submitted is, to his best knowledge and belief, accurate, complete and current as of a mutually determined specified date and that such data will continue to be accurate and complete during the performance of the changed or extra Work.

10.4 Cost of the Work:

The term "cost of the work" means the sum of all costs necessarily incurred and paid by the CONTRACTOR in the proper performance of the Work. Except as otherwise may be agreed to in writing by the AUTHORITY, such costs shall be in amount no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in subparagraph 10.5:

10.4.1 Payroll costs for employees in the direct employ of the CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by the AUTHORITY and the CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits which shall include social security contributions, unemployment, excise

and payroll taxes, workers' or workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include manual workers up through the level of foreman but shall not include general foremen, superintendents, and non-manual employees. The expenses of performing Work after regular working hours, on Saturday, Sunday or legal holidays shall be included in the above to the extent authorized by the AUTHORITY.

- 10.4.2 Cost of all materials and equipment furnished and incorporated or consumed in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to the CONTRACTOR unless the AUTHORITY deposits funds with the CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to the AUTHORITY. All trade discounts, rebates and refunds and all returns from sale of surplus materials and equipment shall accrue to the AUTHORITY, and the CONTRACTOR shall make provisions so that they may be obtained.
- 10.4.3 Payments made by the CONTRACTOR to Subcontractors for Work performed by Subcontractors. If required by the AUTHORITY, CONTRACTOR shall obtain competitive quotes from Subcontractors or Suppliers acceptable to the CONTRACTOR and shall deliver such quotes to the AUTHORITY who will then determine which quotes will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of "cost of the work" plus a fee, the Subcontractor's "cost of the work" shall be determined in the same manner as the CONTRACTOR's "cost of work" as described in paragraphs 10.4 through 10.5; and the Subcontractor's fee shall be established as provided for under subparagraph 10.6.2 clause b. All subcontracts shall be subject to the other provisions of the Contract Documents insofar as applicable.
- 10.4.4 Costs of special consultants (including but not limited to engineers, architects, testing laboratories, and surveyors) employed for services necessary for the completion of the Work.
- 10.4.5 Supplemental costs including the following:
- a. The proportion of necessary transportation, travel and subsistence expenses of the CONTRACTOR's employees incurred in discharge of duties connected with the Work.
 - b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of the CONTRACTOR.
 - c. Rentals of all construction equipment and machinery and the parts thereof whether rented from the CONTRACTOR or others in accordance with rental agreements Approved by the AUTHORITY and the costs of transportation, loading, unloading, installation, dismantling and removal thereof - all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall cease when the use thereof is no longer necessary for the Work.

For any machinery or special equipment (other than small tools) which has been authorized by the Project Manager, the CONTRACTOR shall receive the rental rates in the current edition and appropriate volume of the "Rental Rate Blue Book for Construction Equipment", published by Dataquest, Inc., 1290 Ridder Park Drive, San Jose, CA 95131.

Hourly rental rates shall be determined as follows:

The established hourly rental rate shall be equal to the adjusted monthly rate for the basic equipment plus the adjusted monthly rate for applicable attachments, both divided by 176, and multiplied by the area adjustment factor, plus the estimated hourly operating cost.

The adjusted monthly rate is that resulting from application of the rate adjustment formula in order to eliminate replacement cost allowances in machine depreciation and contingency cost allowances.

Attachments shall not be included unless required for the time and materials work.

For equipment not listed in The Blue Book, the CONTRACTOR shall receive a rental rate as agreed upon before such work is begun. If agreement cannot be reached, the AUTHORITY reserves the right to establish a rate based on similar equipment in the Blue Book or prevailing commercial rates in the area.

These rates shall apply for equipment used during the CONTRACTOR's regular shift of 10 hours per day. Where the equipment is used more than 10 hours per day, either on the CONTRACTOR's normal work or on time and materials, and either on single or multiple shifts, an overtime rate, computed as follows, shall apply:

The hourly overtime rate shall be equal to the adjusted monthly rate for the basic equipment plus the adjusted monthly rate for applicable attachments, both divided by 352, and multiplied by the area adjustment factor, plus the estimated hourly operating cost.

Equipment which must be rented or leased specifically for work required under this section shall be authorized in writing by the Project Manager. The CONTRACTOR shall be paid invoice price plus 15%.

When it is necessary to obtain equipment from sources beyond the project limits exclusively for time and materials work, the actual cost of transferring the equipment to the site of the work and return will be allowed as an additional item of expense. Where the move is made by common carrier, the move-in allowance will be limited to the amount of the freight bill or invoice. If the CONTRACTOR hauls the equipment with his own forces, the allowance will be limited to the rental rate for the hauling unit plus operator wages. In the event that the equipment is transferred under its own power, the moving allowance will be limited to one-half of the normal hourly rental rate plus operator's wages. In the event that the move-out is to a different location, payment will in no instance exceed the amount of the move-in. Move-in allowance shall not be made for equipment brought to the project for time and materials work which is subsequently retained on the project and utilized for completion of contract items, camp maintenance, or related work.

Equipment ordered to be on a stand-by basis shall be paid for at the stand-by rental rate for the number of hours in the CONTRACTOR'S normal work shift, but not to exceed 8 hours per day. The stand-by rental rate shall be computed as follows:

The hourly stand-by rate shall be equal to the adjusted monthly rate for the basic equipment plus the adjusted monthly rate for applicable attachments, both divided by 352, all multiplied by the area adjustment factor.

Time will be recorded to the nearest one-quarter hour for purposes of computing compensation to the CONTRACTOR for equipment utilized under these rates.

The equipment rates as determined above shall be full compensation, including overhead and profit, for providing the required equipment and no additional compensation will be made for other costs such as, but not limited to, fuels, lubricants, replacement parts or maintenance costs. Cost of repairs, both major and minor, as well as charges for mechanic's time utilized in servicing equipment to ready it for use prior to moving to the project and similar charges will not be allowed.

- d. Sales, consumer, use or similar taxes related to the Work, and for which the CONTRACTOR is liable, imposed by Regulatory Requirements.
- e. Deposits lost for causes other than negligence of the CONTRACTOR, any Subcontractor or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.
- f. Losses and damages (and related expenses), not compensated by insurance or otherwise, to the Work or otherwise sustained by the CONTRACTOR in connection with the performance and furnishing of the Work provided they have resulted from causes other than the negligence of the CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and Approval of the AUTHORITY. No such losses, damages and expenses shall be included in the "cost of the work" for the purpose of determining the CONTRACTOR's fee. If, however, any such loss or damage requires reconstruction and the CONTRACTOR is placed in charge thereof, the CONTRACTOR shall be paid for services a fee proportionate to that stated in paragraphs 10.6.2.a and 10.6.2.b.
- g. The cost of utilities, fuel and sanitary facilities at the site.
- h. Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.
- i. Cost of premiums for additional bonds and insurance required because of changes in the Work and premiums for property insurance coverage within the limits of the deductible amounts established by the AUTHORITY in accordance with Article 5.

10.5 Excluded Costs:

The term "cost of the work" shall not include any of the following:

- 10.5.1 Payroll costs and other compensation of CONTRACTOR's officers, executives, principals (of partnership and sole proprietorships), general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing agency, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in CONTRACTOR's principal or a branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in paragraph 10.4.1 or specifically covered by paragraph 10.4.4 all of which are to be considered administrative costs covered by the CONTRACTOR's fee.

- 10.5.2 Expenses of CONTRACTOR's principal and branch offices other than CONTRACTOR's office at the site.
- 10.5.3 Any part of CONTRACTOR's capital expenses including interest on CONTRACTOR's capital employed for the Work and charges against CONTRACTOR for delinquent payments.
- 10.5.4 Cost of premiums for all bonds and for all insurance whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except for the cost of premiums covered by subparagraph 10.4.5.i above).
- 10.5.5 Costs due to the negligence of CONTRACTOR, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of Defective Work, disposal of materials or equipment wrongly supplied and making good any damage to property.
- 10.5.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 10.4.

10.6 CONTRACTOR's Fee:

The CONTRACTOR's fee allowed to CONTRACTOR for overhead and profit shall be determined as follows.

- 10.6.1 A mutually acceptable fixed fee; or if none can be agreed upon.
- 10.6.2 A fee based on the following percentages of the various portions of the "cost of the work":
- a. For costs incurred under paragraphs 10.4.1 and 10.4.2, the CONTRACTOR's fee shall be twenty percent;
 - b. For costs incurred under paragraph 10.4.3, the CONTRACTOR's fee shall be ten percent; and if a subcontract is on the basis of "cost of the work" plus a fee, the maximum allowable to CONTRACTOR on account of overhead and profit of all Subcontractors and multiple tiers thereof shall be fifteen percent;
 - c. No fee shall be payable on the basis of costs itemized under paragraphs 10.4.4, 10.4.5 and 10.5;
 - d. The amount of credit to be allowed by the CONTRACTOR to the AUTHORITY for any such change which results in a net decrease in cost will be the amount of the actual net decrease plus a deduction in CONTRACTOR's fee by an amount equal to ten percent of the net decrease; and
 - e. When both additions and credits are involved in any one change, the adjustment in CONTRACTOR's fee shall be computed on the basis of the net change in accordance with paragraphs 10.6.2.a through 10.6.2.d, inclusive.

10.7 Cost Breakdown:

Whenever the cost of any Work is to be determined pursuant to paragraphs 10.4 and 10.5, the CONTRACTOR will submit in a form acceptable to the AUTHORITY an itemized cost breakdown together with supporting data.

10.8 Cash Allowances:

It is understood that CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such Subcontractors or Suppliers and for such sums within the limit of the allowances as may be acceptable to the Contracting Officer. CONTRACTOR agrees that:

- 10.8.1 The allowances include the cost to CONTRACTOR (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the site, and all applicable taxes; and
- 10.8.2 CONTRACTOR's cost for unloading and handling on the site, labor, installation costs, overhead, profit and other expenses contemplated for the allowances have been included in the Contract Price and not in the allowances. No demand for additional payment on account of any thereof will be valid.

Prior to final payment, an appropriate Change Order will be issued to reflect actual amounts due the CONTRACTOR on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

10.9 Unit Price Work:

- 10.9.1 Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the established unit prices for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Contract. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of bids and determining an initial Contract Price. Determinations of the actual quantities and classifications of Unit Price Work performed by the CONTRACTOR will be made by the AUTHORITY in accordance with paragraph 10.10.
- 10.9.2 Each unit price will be deemed to include an amount considered by the CONTRACTOR to be adequate to cover the CONTRACTOR's overhead and profit for each separately identified item. If the "Basis of Payment" clause in the Contract Documents relating to any unit price in the bid schedule requires that the said unit price cover and be considered compensation for certain work or material essential to the item, this same work or material will not also be measured or paid for under any other pay item which may appear elsewhere in the Contract Documents.
- 10.9.3 Payment to the CONTRACTOR shall be made only for the actual quantities of Work performed and accepted or materials furnished, in conformance with the Contract Documents. When the accepted quantities of Work or materials vary from the quantities stated in the bid schedule, or change documents, the CONTRACTOR shall accept as payment in full, payment at the stated unit prices for the accepted quantities of Work and materials furnished, completed and accepted; except as provided below:

- a. When the quantity of Work to be done or material to be furnished under any item, for which the total cost of the item exceeds 10% of the total Contract Price, is increased by more than 25 percent of the quantity stated in the bid schedule, or change documents, either party to the Contract, upon demand, shall be entitled to an equitable unit price adjustment on that portion of the Work above 125 percent of the quantity stated in the bid schedule.
- b. When the quantity of Work to be done or material to be furnished under any major item, for which the total cost of the item exceeds 10% of the total Contract Price, is decreased by more than 25 percent of the quantity stated in the bid schedule, or change documents either party to the Contract, upon demand, shall be entitled to an equitable price adjustment for the quantity of Work performed or material furnished, limited to a total payment of not more than 75 percent of the amount originally bid for the item.

10.10 Determinations for Unit Prices:

The Project Manager will determine the actual quantities and classifications of Unit Price Work performed by the CONTRACTOR. The Project Manager will review with the CONTRACTOR preliminary determinations on such matters before finalizing the costs and quantities on the Schedule of Values. The Project Manager's acknowledgment thereof will be final and binding on the CONTRACTOR, unless, within 10 days after the date of any such decisions, the CONTRACTOR delivers to the Project Manager written notice of intention to appeal from such a decision.

ARTICLE 11 - CONTRACT TIME; COMPUTATION AND CHANGE

11.1 Commencement of Contract Time; Notice to Proceed:

The Contract Time will commence to run on the day indicated in the Notice to Proceed.

11.2 Starting the Work:

No Work on Contract items shall be performed before the effective date of the Notice to Proceed. The CONTRACTOR shall notify the Project Manager at least 24 hours in advance of the time actual construction operations will begin. The CONTRACTOR may request a limited Notice to Proceed after Award has been made, to permit him to order long lead materials which could cause delays in Project completion. However, granting is within the sole discretion of the Contracting Officer, and refusal or failure to grant a limited Notice to Proceed shall not be a basis for claiming for delay, extension of time, or alteration of price.

11.3 Computation of Contract Time:

- 11.3.1 When the Contract Time is specified on a Calendar Day basis, all Work under the Contract shall be completed within the number of Calendar Days specified. The count of Contract Time begins on the day following receipt of the Notice to Proceed by the CONTRACTOR, if no starting day is stipulated therein.

Calendar Days shall continue to be counted against Contract Time until and including the date of Substantial Completion of the Work.

11.3.2 When the Contract completion time is specified as a fixed calendar date, it shall be the date of Final Completion.

11.3.3 The Contract Time shall be as stated is 00800, Supplementary Conditions.

11.4 Time Change:

The Contract Time may only be changed by a Change Order or Supplemental Agreement.

11.5 Extension Due to Delays:

The right of the CONTRACTOR to proceed shall not be terminated nor the CONTRACTOR charged with liquidated or actual damages because of delays to the completion of the Work due to unforeseeable causes beyond the control and without the fault or negligence of the CONTRACTOR, including, but not restricted to the following: acts of God or of the public enemy, acts of the AUTHORITY in its contractual capacity, acts of another contractor in the performance of a contract with the AUTHORITY, floods, fires, epidemics, quarantine restrictions, strikes, freight embargoes, unusually severe weather and delays of Subcontractors or Suppliers due to such causes. Any delay in receipt of materials on the site, caused by other than one of the specifically mentioned occurrences above, does not of itself justify a time extension, provided that the CONTRACTOR shall within twenty four (24) hours from the beginning of any such delay (unless the Contracting Officer shall grant a further period of the time prior to the date of final settlement of the Contract), notify the Project Manager in writing of the cause of delay. The Contracting Officer shall ascertain the facts and the extent of the delay and extend the time for completing the Work when the findings of fact justify such an extension.

11.6 Essence of Contract:

All time limits stated in the Contract Documents are of the essence of the Contract.

11.7 Reasonable Completion Time:

It is expressly understood and agreed by and between the CONTRACTOR and the AUTHORITY that the date of beginning and the time for Substantial Completion of the Work described herein are reasonable times for the completion of the Work.

11.8 Delay Damages:

Whether or not the CONTRACTOR's right to proceed with the Work is terminated, he and his Sureties shall be liable for damages resulting from his refusal or failure to complete the Work within the specified time.

Liquidated and actual damages for delay shall be paid by the CONTRACTOR or his Surety to the AUTHORITY in the amount as specified in the Supplementary Conditions for each Calendar Day the completion of the Work or any part thereof is delayed beyond the time required by the Contract, or any extension thereof. If a listing of incidents resulting from a delay and expected to give rise to actual or liquidated damages is not established by the Contract Documents, then the CONTRACTOR and his Surety shall be liable to the AUTHORITY for any actual damages occasioned by such delay. The CONTRACTOR acknowledges that the liquidated damages established herein are not a penalty but rather constitute an estimate of damages that the AUTHORITY will sustain by reason of delayed completion. These liquidated and actual damages are intended as compensation for losses anticipated arising, and including those items enumerated in the Supplementary Conditions.

These damages will continue to run both before and after termination in the event of default termination. These liquidated damages do not cover excess costs of completion or AUTHORITY costs, fees, and charges related to reprocurement. If a default termination occurs, the CONTRACTOR or his Surety shall pay in addition to these damages, all excess costs and expenses related to completion as provided by Article 14.2.5.

For each calendar day that the work remains incomplete after the expiration of the Contract Time, liquidated damages in the amount as stated in 00800, Supplemental Conditions shall be assessed to the CONTRACTOR. If no money is due the CONTRACTOR, the AUTHORITY shall have the right to recover said sum from the CONTRACTOR, the surety or both. The amount of these deductions is to reimburse the AUTHORITY for estimated liquidated damages incurred as a result of the CONTRACTOR's failure to complete the work within the time specified. As liquidated damages, such deductions are not to be considered as penalties.

Permitting the CONTRACTOR to continue and finish the work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, will in no way operate as a waiver on the part of the AUTHORITY of any of its rights under the Contract.

ARTICLE 12 - QUALITY ASSURANCE

12.1 Warranty and Guaranty:

The CONTRACTOR warrants and guarantees to the AUTHORITY that all Work will be in accordance with the Contract Documents and will not be Defective. Prompt notice of all defects shall be given to the CONTRACTOR. All Defective Work, whether or not in place, may be rejected, corrected or accepted as provided for in this article.

12.2 Access to Work:

The AUTHORITY and the AUTHORITY's consultants, testing agencies and governmental agencies with jurisdiction interests will have access to the Work at reasonable times for their observation, inspecting and testing. The CONTRACTOR shall provide proper and safe conditions for such access.

12.3 Tests and Inspections:

12.3.1 The CONTRACTOR shall give the Project Manager timely notice of readiness of the Work for all required inspections, tests or Approvals.

12.3.2 If Regulatory Requirements of any public body having jurisdiction require any Work (or part thereof) to specifically be inspected, tested or approved, the CONTRACTOR shall assume full responsibility therefore, pay all costs in connection therewith and furnish the Project Manager the required certificates of inspection, testing or approval. The CONTRACTOR shall also be responsible for and shall pay all costs in connection with any inspection or testing required in connection with AUTHORITY's acceptance of a Supplier of materials or equipment proposed to be incorporated in the Work, or of materials or equipment submitted for Approval prior to the CONTRACTOR's purchase thereof for incorporation in the Work. The cost of all inspections, tests and approvals in addition to the above which are required by the Contract Documents shall be paid by the CONTRACTOR. The AUTHORITY may perform additional tests and inspections which it deems necessary to insure quality control. All such failed tests or inspections shall be at the CONTRACTOR's expense.

12.3.4 If any Work (including the work of others) that is to be inspected, tested or Approved is covered without written concurrence of the Project Manager, it must, if requested by the Project Manager, be uncovered for observation. Such uncovering shall be at the CONTRACTOR's expense unless the CONTRACTOR has given the Project Manager timely notice of CONTRACTOR's intention to cover the same and the Project Manager has not acted with reasonable promptness in response to such notice.

12.3.5 Neither observations nor inspections, tests or Approvals by the AUTHORITY or others shall relieve the CONTRACTOR from the CONTRACTOR's obligations to perform the Work in accordance with the Contract Documents.

12.4 Uncovering Work:

12.4.1 If any Work is covered contrary to the written request of the Project Manager, it must, if requested by the Project Manager, be uncovered for the Project Manager's observation and replaced at the CONTRACTOR's expense.

12.4.2 If the Project Manager considers it necessary or advisable that covered Work be observed inspected or tested, the CONTRACTOR, at the Project Manager's request, shall uncover, expose or otherwise make available for observation, inspection or testing as the Project Manager may require, that portion of the Work in question, furnishing all

necessary labor, material and equipment. If it is found that such Work is Defective, the CONTRACTOR shall bear all direct, indirect and consequential costs of such uncovering, exposure, observation, inspection and testing and of satisfactory reconstruction, (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) and the AUTHORITY shall be entitled to an appropriate decrease in the Contract Price. If, however, such Work is not found to be Defective, the CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to such uncovering, exposure, observation, inspection, testing and reconstruction.

12.5 AUTHORITY May Stop the Work:

If the Work is Defective, or the CONTRACTOR fails to supply suitable materials or equipment, or fails to furnish or perform the Work in such a way that the completed Work will conform to the Contract Documents, the Contracting Officer may order the CONTRACTOR to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of the Contracting Officer to stop the Work shall not give rise to any duty on the part of the Contracting Officer to exercise this right for the benefit of the CONTRACTOR or any other party.

12.6 Correction or Removal of Defective Work:

If required by the Project Manager, the CONTRACTOR shall promptly, as directed, either correct all Defective Work, whether or not fabricated, installed or completed, or, if the Work has been rejected by the Project Manager, remove it from the site and replace it with Work which conforms to the requirements of the Contract Documents. The CONTRACTOR shall bear all direct, indirect and consequential costs of such correction or removal (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) made necessary thereby.

12.7 One Year Correction Period:

If within one year after the date of Substantial Completion of the relevant portion of the Work or such longer period of time as may be prescribed by Regulatory Requirements or by the terms of any applicable special guarantee required by the Contract Documents or by any specific provision of the Contract Documents, any Work is found to be Defective, the CONTRACTOR shall promptly, without cost to the AUTHORITY and in accordance with the Project Manager's written instructions, either correct such Defective Work, or, if it has been rejected by the Project Manager, remove it from the site and replace it with conforming Work. If the CONTRACTOR does not promptly comply with the terms of such instructions, or in an emergency where delay would cause serious risk of loss or damage, the AUTHORITY may have the Defective Work corrected or the rejected Work removed and replaced, and all direct, indirect and consequential costs of such removal and replacement (including but not limited to fees and charges of engineers, architects, attorneys and other professionals) will be paid by the CONTRACTOR. In special circumstances where a particular item of equipment is placed in continuous service for the benefit of the AUTHORITY before Substantial Completion of all the Work, the correction period for that item may begin on an earlier date if so provided in the Specifications or by Change Order. Provisions of this paragraph are not intended to shorten the statute of limitations for bringing an action.

12.8 Acceptance of Defective Work:

Instead of requiring correction or removal and replacement of Defective Work, the Project Manager may accept Defective Work, the CONTRACTOR shall bear all direct, indirect and consequential costs attributable to the Project Manager's evaluation of and determination to accept such Defective Work (costs to include but not be limited to fees and charges of engineers, architects, attorneys and other professionals). If any such acceptance occurs prior to final payment, a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and the AUTHORITY shall be entitled to an appropriate decrease in the Contract Price. If the AUTHORITY has already made final payment to the CONTRACTOR, an appropriate amount shall be paid by the CONTRACTOR or his Surety to the AUTHORITY.

12.9 AUTHORITY May Correct Defective Work:

If the CONTRACTOR fails within a reasonable time after written notice from the Project Manager to proceed to correct Defective Work or to remove and replace rejected Work as required by the Project Manager in accordance with paragraph 12.6, or if the CONTRACTOR fails to perform the Work in accordance with the Contract Documents, or if the CONTRACTOR fails to comply with any other provision of the Contract Documents, the AUTHORITY may, after 7 days' written notice to the CONTRACTOR, correct and remedy any such deficiency. In exercising the rights and remedies under this paragraph the AUTHORITY shall proceed expeditiously. To the extent necessary to complete corrective and remedial action, the Project Manager may exclude the CONTRACTOR from all or part of the site, take possession of all or part of the Work, and suspend the CONTRACTOR's services related thereto, take possession of the CONTRACTOR's tools, appliances, construction equipment and machinery at the site and incorporate in the Work all materials and equipment stored at the site or approved remote storage sites or for which the AUTHORITY has paid the CONTRACTOR but which are stored elsewhere. The CONTRACTOR shall allow the Project Manager and his authorized representatives such access to the site as may be necessary to enable the Project Manager to exercise the rights and remedies under this paragraph. All direct, indirect and consequential costs of the AUTHORITY in exercising such rights and remedies will be charged against the CONTRACTOR, and a Change Order will be issued incorporating the necessary revisions in the Contract Documents with respect to the Work; and the AUTHORITY shall be entitled to an appropriate decrease in the Contract Price. Such direct, indirect and consequential costs will include but not be limited to fees and charges of engineers, architects, attorneys and other professionals, all court and arbitration costs and all costs of repair and replacement of work of others destroyed or damaged by correction, removal or replacement of the CONTRACTOR's Defective Work. The CONTRACTOR shall not be allowed an extension of time because of any delay in performance of the work attributable to the exercise, by the Project Manager, of the AUTHORITY's rights and remedies hereunder.

ARTICLE 13 - PAYMENTS TO CONTRACTOR AND COMPLETION

13.1 Schedule of Values:

The Schedule of Values established as provided in paragraph 6.6 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to the Project Manager. Progress payments on account of Unit Price Work will be based on the number of units completed.

13.2 Preliminary Payments:

Upon approval of the Schedule of Values the CONTRACTOR may be paid for direct costs substantiated by paid invoices and other prerequisite documents required by the General Requirements. Direct costs shall include the cost of bonds, insurance, approved materials stored on the site or at approved remote storage sites, deposits required by a Supplier prior to fabricating materials, and other approved direct mobilization costs substantiated as indicated above. These payments shall be included as a part of the total Contract Price as stated in the Contract.

13.3 Application for Progress Payment:

The CONTRACTOR shall submit to the Project Manager for review an Application for Payment filled out and signed by the CONTRACTOR covering the Work completed as of the date of the Application for Payment and accompanied by such supporting documentation as is required by the Contract Documents. Progress payments will be made as the Work progresses on a monthly basis.

13.4 Review of Applications for Progress Payment:

Project Manager will either indicate in writing a recommendation of payment or return the Application for Payment to the CONTRACTOR indicating in writing the Project Manager's reasons for refusing to recommend payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the Application for Payment.

13.5 Stored Materials and Equipment:

If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, paid invoice or other documentation warranting that the AUTHORITY has received the materials and equipment free and clear of all charges, security interests and encumbrances and evidence that the materials and equipment are covered by appropriate property insurance and other arrangements to protect the AUTHORITY's interest therein, all of which will be satisfactory to the Project Manager. No payment will be made for perishable materials that could be rendered useless because of long storage periods. No progress payment will be made for living plant materials until planted.

13.6 CONTRACTOR's Warranty of Title:

The CONTRACTOR warrants and guarantees that title to all Work, materials and equipment covered by any Application for Payment, whether incorporated in the Project or not, will pass to the AUTHORITY no later than the time of payment free and clear of any claims, liens, security interests and further obligations.

13.7 Withholding of Payments:

The AUTHORITY may withhold or refuse payment for any of the reasons listed below provided it gives written notice of its intent to withhold and of the basis for withholding:

- 13.7.1 The Work is Defective, or completed Work has been damaged requiring correction or replacement, or has been installed without Approval of Shop Drawings, or by an unapproved Subcontractor, or for unsuitable storage of materials and equipment.

- 13.7.2 The Contract Price has been reduced by Change Order,
- 13.7.3 The AUTHORITY has been required to correct Defective Work or complete Work in accordance with paragraph 12.9.
- 13.7.4 The AUTHORITY's actual knowledge of the occurrence of any of the events enumerated in paragraphs 14.2.1.a through 14.2.1.k inclusive.
- 13.7.5 Claims have been made against the AUTHORITY or against the funds held by the AUTHORITY on account of the CONTRACTOR's actions or inactions in performing this Contract, or there are other items entitling the AUTHORITY to a set off.
- 13.7.6 Subsequently discovered evidence or the results of subsequent inspections or test, nullify any previous payments for reasons stated in subparagraphs 13.7.l through 13.7.5.
- 13.7.7 The CONTRACTOR has failed to fulfill or is in violation of any of his obligations under any provision of this Contract.

13.8 Retainage:

At any time the AUTHORITY finds that satisfactory progress is not being made it may in addition to the amounts withheld under 13.7 retain a maximum amount equal to 10% of the total amount earned on all subsequent progress payments. This retainage may be released at such time as the Project Manager finds that satisfactory progress is being made.

13.9 Request for Release of Funds:

If the CONTRACTOR believes the basis for withholding is invalid or no longer exists, immediate written notice of the facts and Contract provisions on which the CONTRACTOR relies, shall be given to the AUTHORITY, together with a request for release of funds and adequate documentary evidence proving that the problem has been cured. In the case of withholding which has occurred at the request of the Department of Labor, the CONTRACTOR shall provide a letter from the Department of Labor stating that withholding is no longer requested. Following such a submittal by the CONTRACTOR, the AUTHORITY shall have a reasonable time to investigate and verify the facts and seek additional assurances before determining whether release of withheld payments is justified.

13.10 Substantial Completion:

When the CONTRACTOR considers the Work ready for its intended use the CONTRACTOR shall notify the Project Manager in writing that the Work or a portion of Work which has been specifically identified in the Contract Documents is substantially complete (except for items specifically listed by the CONTRACTOR as incomplete) and request that the AUTHORITY issue a certificate of Substantial Completion. Within a reasonable time thereafter, the Project Manager, the CONTRACTOR and Engineer(s) shall make an inspection of the Work to determine the status of completion. If the Project Manager does not consider the Work substantially complete, the Project Manager will notify the CONTRACTOR in writing giving the reasons therefore. If the Project Manager considers the Work substantially complete, the Project Manager will within fourteen days execute and deliver to the CONTRACTOR a certificate of Substantial Completion with tentative list of items to be completed or corrected. At the time of delivery of the certificate of Substantial Completion the Project Manager will deliver to the CONTRACTOR a written

division of responsibilities pending Final Completion with respect to security, operation, safety, maintenance, heat, utilities, insurance and warranties which shall be consistent with the terms of the Contract Documents.

The AUTHORITY shall be responsible for all AUTHORITY costs resulting from the initial inspection and the first re-inspection, the CONTRACTOR shall pay all costs incurred by the AUTHORITY resulting from re-inspections, thereafter.

13.11 Access Following Substantial Completion:

The AUTHORITY shall have the right to exclude the CONTRACTOR from the Work after the date of Substantial Completion, but the AUTHORITY shall allow CONTRACTOR reasonable access to complete or correct items on the tentative list.

13.12 Final Inspection:

Upon written notice from the CONTRACTOR that the entire Work or an agreed portion thereof is complete, the Project Manager will make a final inspection with the CONTRACTOR and Engineer(s) and will notify the CONTRACTOR in writing of all particulars in which this inspection reveals that the Work is incomplete or Defective. The CONTRACTOR shall immediately take such measures as are necessary to remedy such deficiencies. The CONTRACTOR shall pay for all costs incurred by the AUTHORITY resulting from re-inspections.

13.13 Final Completion and Application for Payment:

After the CONTRACTOR has completed all such corrections to the satisfaction of the Project Manager and delivered schedules, guarantees, bonds, certificates of payment to all laborers, Subcontractors and Suppliers, and other documents - all as required by the Contract Documents; and after the Project Manager has indicated in writing that the Work has met the requirements for Final Completion, and subject to the provisions of paragraph 13.18, the CONTRACTOR may make application for final payment following the procedure for progress payments. The final Application for Payment shall be accompanied by all remaining certificates, warranties, guarantees, releases, affidavits, and other documentation required by the Contract Documents.

13.14 Final Payment:

13.14.1 If on the basis of the Project Manager's observation of the Work during construction and final inspection, and the Project Manager's review of the final Application for Payment and accompanying documentation - all as required by the Contract Documents; and the Project Manager is satisfied that the Work has been completed and the CONTRACTOR's other obligations under the Contract Documents have been fulfilled, the AUTHORITY will process final Application for Payment. Otherwise, the Project Manager will return the Application for Payment to the CONTRACTOR, indicating in writing the reasons for refusing to process final payment, in which case the CONTRACTOR shall make the necessary corrections and resubmit the final Application for Payment.

13.14.2 If, through no fault of the CONTRACTOR, Final Completion of the Work is significantly delayed, the Project Manager shall, upon receipt of the CONTRACTOR's final Application for Payment, and without terminating the Contract, make payment of

the balance due for that portion of the Work fully completed and accepted. If the remaining balance to be held by the AUTHORITY for Work not fully completed or corrected is less than the retainage provided for in paragraph 13.9, and if bonds have been furnished as required in paragraph 5.I, the written consent of the Surety to the payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the CONTRACTOR to the AUTHORITY with the application for such payment. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

13.15 Final Acceptance:

Following certification of payment of payroll and revenue taxes, and final payment to the CONTRACTOR, the AUTHORITY will issue a letter of Final Acceptance, releasing the CONTRACTOR from further obligations under the Contract, except as provided in paragraph 13.17.

When it is anticipated that restarting, testing, adjusting, or balancing of systems will be required following Final Acceptance and said requirements are noted in Section(s) 01650, such Work shall constitute a continuing obligation under the Contract.

13.16 CONTRACTOR's Continuing Obligation:

The CONTRACTOR's obligation to perform and complete the Work and pay all laborers, Subcontractors, and material men in accordance with the Contract Documents shall be absolute. Neither any progress or final payment by the AUTHORITY, nor the issuance of a certificate of Substantial Completion, nor any use or occupancy of the Work or any part thereof by the AUTHORITY or Owner, nor any act of acceptance by the AUTHORITY nor any failure to do so, nor any review and Approval of a Shop Drawing or sample submission, nor any correction of Defective Work by the AUTHORITY will constitute an acceptance of Work not in accordance with the Contract Documents or a release of the CONTRACTOR's obligation to perform the Work in accordance with the Contract Documents.

13.17 Waiver of Claims by CONTRACTOR:

The making and acceptance of final payment will constitute a waiver of all claims by the CONTRACTOR against the AUTHORITY other than those previously made in writing and still unsettled.

13.18 No Waiver of Legal Rights:

The AUTHORITY shall not be precluded or be estopped by any payment, measurement, estimate, or certificate made either before or after the completion and acceptance of the Work and payment therefore, from showing the true amount and character of the Work performed and materials furnished by the CONTRACTOR, nor from showing that any payment, measurement, estimate or certificate is untrue or is incorrectly made, or that the Work or materials are Defective. The AUTHORITY shall not be precluded or estopped, notwithstanding any such measurement, estimate, or certificate and payment in accordance therewith, from recovering from the CONTRACTOR or his Sureties, or both, such damages as it may sustain by reason of his failure to comply with requirements of the Contract Documents. Neither the acceptance by the AUTHORITY, or any representative of the AUTHORITY, nor any payment for or acceptance of the whole or any part of the Work, nor any extension of the Contract Time, nor any possession taken by the AUTHORITY, shall operate as a waiver of any portion of the Contract or of any power herein reserved, or of any

right to damages. A waiver by the AUTHORITY of any breach of the Contract shall not be held to be a waiver of any other subsequent breach.

ARTICLE I4 - SUSPENSION OF WORK, DEFAULT AND TERMINATION

14.I AUTHORITY May Suspend Work:

14.1.1 The AUTHORITY may, at any time, suspend the Work or any portion thereof by notice in writing to the CONTRACTOR. If the Work is suspended without cause the CONTRACTOR shall be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if the CONTRACTOR makes an Approved claim therefore as provided in Article 15. However, no adjustment shall be made under this clause for any suspension, delay, or interruption to the extent that suspension is due to the fault or negligence of the CONTRACTOR, or that suspension is necessary for Contract compliance, or that performance would have been so suspended, delayed, or interrupted by any other cause, including the fault or negligence of the CONTRACTOR.

14.1.2 In case of suspension of Work, the CONTRACTOR shall be responsible for preventing damage to or loss of any of the Work already performed and of all materials whether stored on or off the site or Approved remote storage sites.

14.2 Default of Contract:

14.2.1 The Contracting Officer may give the contractor and his surety a written Notice to Cure Default if the contractor:

- a. fails to begin work in the time specified,
- b. fails to use sufficient resources to assure prompt completion of the work,
- c. performs the work unsuitably or neglect or refuse to remove and replace rejected materials or work,
- d. stops work,
- e. fails to resume stopped work after receiving notice to do so,
- f. becomes insolvent (except that if you declare bankruptcy, termination will be under Title 11 US Code 362 and/or 365. Your bankruptcy does not relieve the surety of any obligations to assume the Contract and complete the work in a timely manner.
- g. Allows any final judgment to stand against him unsatisfied for period of 60 days, or
- h. Makes an assignment for the benefit of creditors without the consent of the Contracting Officer, or
- i. Disregards Regulatory Requirements of any public body having jurisdiction, or
- j. Otherwise violates in any substantial way any provisions of the Contract Documents, or
- k. fails to comply with Contract minimum wage payments or civil rights requirements, or
- l. are party to fraud, deception, misrepresentation , or

- m. for any cause whatsoever, fails to carry on the Work in an acceptable manner.
- 14.2.2 The Notice to Cure Default will detail the conditions determined to be in default, the time within which to cure the default and may, in the Contracting Officer's discretion, specify the actions necessary to cure the default. Failure to cure the delay, neglect or default within the time specified in the Contracting Officer's written notice to cure authorizes the Authority to terminate the contract. The Contracting Officer may allow more time to cure than originally stated in the Notice to Cure Default if he deems it to be in the best interests of the Authority. The Authority will provide you and your surety with a written Notice of Default Termination that details the default and the failure to cure it.
- 14.2.3 If the CONTRACTOR or Surety, within the time specified in the above notice of default, shall not proceed in accordance therewith, then the AUTHORITY may, upon written notification from the Contracting Officer of the fact of such delay, neglect or default and the CONTRACTOR's failure to comply with such notice, have full power and authority without violating the Contract, to take the prosecution of the Work out of the hands of the CONTRACTOR. The AUTHORITY may terminate the services of the CONTRACTOR, exclude the CONTRACTOR from the site and take possession of the Work and of all the CONTRACTOR's tools, appliances, construction equipment and machinery at the site and use the same to the full extent they could be used by the CONTRACTOR (without liability to the CONTRACTOR for trespass or conversion), incorporate in the Work all materials and equipment stored at the site or for which the AUTHORITY has paid the CONTRACTOR but which are stored elsewhere, and finish the Work as the AUTHORITY may deem expedient. The AUTHORITY may enter into an agreement for the completion of said Contract according to the terms and provisions thereof, or use such other methods that in the opinion of the Contracting Officer are required for the completion of said Contract in an acceptable manner.
- 14.2.4 The Contracting Officer may, by written notice to the CONTRACTOR and his Surety or his representative, transfer the employment of the Work from the CONTRACTOR to the Surety, or if the CONTRACTOR abandons the Work undertaken under the Contract, the Contracting Officer may, at his option with written notice to the Surety and without any written notice to the CONTRACTOR, transfer the employment for said Work directly to the Surety. The Surety shall submit its plan for completion of the Work, including any contracts or agreements with third parties for such completion, to the AUTHORITY for Approval prior to beginning completion of the Work. Approval of such contracts shall be in accordance with all applicable requirements and procedures for Approval of subcontracts as stated in the Contract Documents.
- 14.2.5 After the notice of termination is issued, the Authority may take over the work and complete it by contract or otherwise and may take possession of and use materials, appliances, equipment or plant on the work site necessary for completing the work.
- 14.2.6 Rather than taking over the work itself, the Authority may transfer the obligation to perform the work from the contractor to your surety. The surety must submit its plan for completion of the work, including any contracts or agreements with third parties for completion, to the Authority for approval prior to beginning work. The surety must follow the Contract requirements for approval of subcontracts, except that the limitation on percent of work subcontracted will not apply.

- 14.2.7 On receipt of the transfer notice, the surety must take possession of all materials, tools, and appliances at the work site, employ an appropriate work force, and complete the Contract work, as specified. The Contract specifications and requirements shall remain in effect. However the Authority will make subsequent Contract payments directly to the Surety for work performed under the terms of the Contract. CONTRACTOR forfeits any right to claim for the same work or any part thereof. CONTRACTOR is not entitled to receive any further balance of the amount to be paid under the Contract.
- 14.2.8 Upon receipt of the notice terminating the services of the CONTRACTOR, the Surety shall enter upon the premises and take possession of all materials, tools, and appliances thereon for the purpose of completing the Work included under the Contract and employ by contract or otherwise any person or persons to finish the Work and provide the materials therefore, without termination of the continuing full force and effect of this Contract. In case of such transfer of employment to the Surety, the Surety shall be paid in its own name on estimates covering Work subsequently performed under the terms of the Contract and according to the terms thereof without any right of the CONTRACTOR to make any claim for the same or any part thereof.
- 14.2.9 If the Contract is terminated for default, the CONTRACTOR and the Surety shall be jointly and severally liable for damages for delay as provided by paragraph 11.8, and for the excess cost of completion, and all costs and expenses incurred by the AUTHORITY in completing the Work or arranging for completion of the Work, including but not limited to costs of assessing the Work to be done, costs associated with advertising, soliciting or negotiating for bids or proposals for completion, and other procurement costs. Following termination the CONTRACTOR shall not be entitled to receive any further balance of the amount to be paid under the Contract until the Work is fully finished and accepted, at which time if the unpaid balance exceeds the amount due the AUTHORITY and any amounts due to persons for whose benefit the AUTHORITY has withheld funds, such excess shall be paid by the AUTHORITY to the CONTRACTOR. If the damages, costs, and expenses due the AUTHORITY exceed the unpaid balance, the CONTRACTOR and his Surety shall pay the difference.
- 14.2.10 If, after notice of termination of the CONTRACTOR's right to proceed under the provisions of this clause, it is determined for any reason that the CONTRACTOR was not in default under the provisions of this clause, or that the delay was excusable under the provisions of this clause, or that termination was wrongful, the rights and obligations of the parties shall be determined in accordance with the clause providing for convenience termination.

14.3 Rights or Remedies:

Where the CONTRACTOR's services have been so terminated by the AUTHORITY, the termination will not affect any rights or remedies of the AUTHORITY against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys due the CONTRACTOR by the AUTHORITY will not release the CONTRACTOR from liability.

14.4 Convenience Termination:

- 14.4.1 The performance of the Work may be terminated by the AUTHORITY in

accordance with this section in whole or in part, whenever, for any reason the Contracting Officer shall determine that such termination is in the best interest of the OWNER. Any such termination shall be effected by delivery to the CONTRACTOR of a Notice of Termination, specifying termination is for the convenience of the AUTHORITY the extent to which performance of Work is terminated, and the date upon which such termination becomes effective.

14.4.2 Immediately upon receipt of a Notice of Termination and except as otherwise directed by the Contracting Officer, the CONTRACTOR shall:

- a. Stop Work on the date and to the extent specified in the Notice of Termination;
- b. Place no further orders or subcontracts for materials, services, or facilities except as may be necessary for completion of such portion of the Work as is not terminated;
- c. Terminate all orders and subcontracts to the extent that they relate to the performance of Work terminated by the Notice of Termination;
- d. With the written Approval of the Contracting Officer, to the extent he may require, settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, the cost of which would be reimbursable, in whole, or in part, in accordance with the provisions of the Contract;
- e. Submit to the Contracting Officer a list, certified as to quantity and quality, of any or all items of termination inventory exclusive of items the disposition of which had been directed or authorized by the Contracting Officer;
- f. Transfer to the Contracting Officer the completed or partially completed record drawings, Shop Drawings, information, and other property which, if the Contract had been completed, would be required to be furnished to the AUTHORITY;
- g. Take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to the Contract which is in the possession of the CONTRACTOR and in which the AUTHORITY has or may acquire any interest.

The CONTRACTOR shall proceed immediately with the performance of the above obligations.

14.4.3 When the AUTHORITY orders termination of the Work effective on a certain date, all Work in place as of that date will be paid for in accordance with Article 13 of the Contract. Materials required for completion and on hand but not incorporated in the Work will be paid for at invoice cost plus 15 % with materials becoming the property of the AUTHORITY - or the CONTRACTOR may retain title to the materials and be paid an agreed upon lump sum. Materials on order shall be cancelled, and the AUTHORITY shall pay reasonable factory cancellation charges with the option of taking delivery of the materials in lieu of payment of cancellation charges. The CONTRACTOR shall be paid 10% of the cost, freight not included, of materials cancelled, and direct expenses only for CONTRACTOR chartered freight transport which cannot be cancelled without charges, to the extent that the CONTRACTOR can establish them. The extra costs due to cancellation of bonds and insurance and that part of job start-up and phase-out costs not amortized by the amount of Work accomplished shall be paid by the AUTHORITY. Charges for loss of profit or consequential damages shall not be recoverable except as provided above.

- a. The following costs are not payable under a termination settlement agreement or Contracting Officer's determination of the termination claim:
 1. Loss of anticipated profits or consequential or compensatory damages
 2. Unabsorbed home office overhead (also termed "General & Administrative Expense") related to ongoing business operations
 3. Bidding and project investigative costs
 4. Direct costs of repairing equipment to render it operable for use on the terminated work
- 14.4.4 The termination claim shall be submitted promptly, but in no event later than 90 days from the effective date of termination, unless extensions in writing are granted by the Contracting Officer upon written request of the CONTRACTOR made within the 90 day period. Upon failure of the CONTRACTOR to submit his termination claim within the time allowed, the Contracting Officer may determine, on the basis of information available to him, the amount, if any, due to the CONTRACTOR by reason of the termination and shall thereupon pay to the CONTRACTOR the amount so determined.
- 14.4.5 The CONTRACTOR and the Contracting Officer may agree upon whole or any part of the amount or amounts to be paid to the CONTRACTOR by reason of the total or partial termination of Work pursuant to this section. The Contract shall be amended accordingly, and the CONTRACTOR shall be paid the agreed amount.
- 14.4.6 In the event of the failure of the CONTRACTOR and the Contracting Officer to agree in whole or in part, as provided heretofore, as to the amounts with respect to costs to be paid to the CONTRACTOR in connection with the termination of the Work the Contracting Officer shall determine, on the basis of information available to him, the amount, if any, due to the CONTRACTOR by reason of the termination and shall pay to the CONTRACTOR the amount determined as follows:
- a. All costs and expenses reimbursable in accordance with the Contract not previously paid to the CONTRACTOR for the performance of the Work prior to the effective date of the Notice of Termination;
 - b. So far as not included under "a" above, the cost of settling and paying claims arising out of the termination of the Work under subcontracts or orders which are properly chargeable to the terminated portions of the Contract;
 - c. So far as practicable, claims by the contractor for idled or stand-by equipment shall be made as follows: Equipment claims will be reimbursed as follows:
 1. Contractor-owned equipment usage, based on the contractor's ownership and operating costs for each piece of equipment as determined from the contractor's accounting records. Under no circumstance, may the contractor base equipment claims on published rental rates.
 2. Idle or stand-by time for Contractor-owned equipment, based on your internal ownership and depreciation costs. Idle or stand-by equipment time is limited to the actual period of time equipment is idle or on stand-by as a direct result of the termination, not to exceed 30 days. Operating expenses will not be included for payment of idle or stand-by equipment

time.

3. Rented equipment, based on reasonable, actual rental costs. Equipment leased under "capital leases" as defined in Financial Accounting Standard No. 13 will be considered Contractor-owned equipment. Equipment leased from an affiliate, division, subsidiary or other organization under common control with you will be considered Contractor-owned equipment, unless the lessor has an established record of leasing to unaffiliated lessees at competitive rates consistent with the rates you have agreed to pay and no more than forty percent of the lessor's leasing business, measured in dollars, is with organizations affiliated with the lessor.

14.4.7 The CONTRACTOR shall have the right of appeal under the AUTHORITY's claim procedures, as defined in Article 15, for any determination made by the Contracting Officer, except if the CONTRACTOR has failed to submit his claim within the time provided and has failed to request extension of such time, CONTRACTOR shall have no such right of appeal. In arriving at the amount due the CONTRACTOR under this section, there shall be deducted:

- a. All previous payments made to the CONTRACTOR for the performance of Work under the Contract prior to termination;
- b. Any claim for which the AUTHORITY may have against the CONTRACTOR;
- c. The agreed price for, or the proceeds of sale of, any materials, supplies, or other things acquired by the CONTRACTOR or sold pursuant to the provisions of this section and not otherwise recovered by or credited to the AUTHORITY; and,
- d. All progress payments made to the CONTRACTOR under the provisions of this section.

14.4.8 Where the Work has been terminated by the AUTHORITY said termination shall not affect or terminate any of the rights of the AUTHORITY against the CONTRACTOR or his Surety then existing or which may thereafter accrue because of such default. Any retention or payment of monies by the AUTHORITY due to the CONTRACTOR under the terms of the Contract shall not release the CONTRACTOR or his Surety from liability.

14.4.9 The contractor's termination claim may not include claims that pre dated the notice for termination for convenience. Those claims shall be prosecuted by the contractor under Article 15.

14.4.10 The contractor's termination claim may not exceed the total dollar value of the contract as awarded plus agreed upon change orders less the amounts that have been paid for work completed.

- a. Unless otherwise provided for in the Contract Documents, or by applicable statute, the CONTRACTOR, from the effective date of termination and for a period of three years after final settlement under this Contract, shall preserve and make available to the AUTHORITY at all reasonable times at the office of the CONTRACTOR, all its books, records, documents, and other evidence bearing on the cost and expenses of the CONTRACTOR under his Contract and relating to the Work terminated hereunder.
- b. Cost Principles. The Authority may use the federal cost principles at 48 CFR §§ 31.201-1 to 31.205-52 (or succeeding cost principles for fixed price contracts) as guidelines in determining allowable costs under this

Subsection to the extent they are applicable to construction contracts and consistent with the specifications of this Contract. The provisions of this contract control where they are more restrictive than, or inconsistent with, these federal cost principles.”

ARTICLE 15 - CLAIMS AND DISPUTES

15.1 Notification

- 15.1.1 The CONTRACTOR shall notify the AUTHORITY in writing as soon as the CONTRACTOR becomes aware of any act or occurrence which may form the basis of a claim for additional compensation or an extension of Contract Time or of any dispute regarding a question of fact or interpretation of the Contract. The AUTHORITY has no obligation to investigate any fact or occurrence that might form the basis of a claim or to provide any additional compensation or extension of Contract Time unless the CONTRACTOR has notified the AUTHORITY in writing in a timely manner of all facts the CONTRACTOR believes form the basis for the claim.
- 15.1.2 If the CONTRACTOR believes that he is entitled to an extension of Contract Time, then the CONTRACTOR must state the contract section on which he basis his extension request, provide the AUTHORITY with sufficient information to demonstrate that the CONTRACTOR has suffered excusable delay, and show the specific amount of time to which the CONTRACTOR is entitled. The AUTHORITY will not grant an extension of Contract Time if the CONTRACTOR does not timely submit revised schedules under **Section 01300**.
- 15.1.3 If the matter is not resolved by agreement within 7 days, the CONTRACTOR shall submit an Intent to Claim, in writing, to the AUTHORITY within the next 14 days.
- 15.1.4 If the CONTRACTOR believes additional compensation or time is warranted, then he must immediately begin keeping complete, accurate, and specific daily records concerning every detail of the potential claim including actual costs incurred. The CONTRACTOR shall provide the AUTHORITY access to any such records and furnish the AUTHORITY copies, if requested. Equipment costs must be based on the CONTRACTOR's internal rates for ownership, depreciation, and operating expenses and not on published rental rates. In computing damages, or costs claimed for a change order, or for any other claim against the Authority for additional time, compensation or both, the contractor must prove actual damages based on internal costs for equipment, labor or efficiencies. Total cost, modified total cost or jury verdict forms of presentation of damage claims are not permissible to show damages. Labor inefficiencies must be shown to actually have occurred and can be proven solely based on job records. Theoretical studies are not a permissible means of showing labor inefficiencies. Home office overhead will not be allowed as a component of any claim against the Authority.
- 15.1.5 If the claim or dispute is not resolved by the Project Manager, then the CONTRACTOR shall submit a written Claim to the Contracting Officer within 90 days after the CONTRACTOR becomes aware of the basis of the claim or should have known the basis of the claim, whichever is earlier. The Contracting Officer will issue written acknowledge of the receipt of the Claim.
- 15.1.6 The CONTRACTOR waives any right to claim if the AUTHORITY was not notified properly or afforded the opportunity to inspect conditions or monitor actual costs or if the Claim is not filed on the date required.

15.2 Presenting the Claim

- 15.2.1 The Claim must include all of the following:

- a. The act, event, or condition the claim is based on
- b. The Contract provisions which apply to the claim and provide relief
- c. The item or items of Contract work affected and how they are affected
- d. The specific relief requested, including Contract Time if applicable, and the basis upon which it was calculated
- e. A statement certifying that the claim is made in good faith, that the supporting cost and pricing data are accurate and complete to the best of your knowledge and belief, and that the amount requested accurately reflects the Contract adjustment which the CONTRACTOR believes is due.

15.3 Claim Validity, Additional Information, and AUTHORITY's Action

- 15.3.1 The Claim, in order to be valid, must not only show that the CONTRACTOR suffered damages or delay but that it was caused by the act, event, or condition complained of and that the Contract provides entitlement to relief for such act, event, or condition.
- 15.3.2 The AUTHORITY can make written request to the CONTRACTOR at any time for additional information relative to the Claim. The CONTRACTOR shall provide the AUTHORITY the additional information within 30 days of receipt of such a request. Failure to furnish the additional information may be regarded as a waiver of the Claim.

15.4 Contracting Officer's Decision

- 15.4.1 The CONTRACTOR will be furnished the Contracting Officer's Decision within 90 days, unless the Contracting Officer requests additional information or gives the CONTRACTOR notice that the time for issuing a decision is being extended for a specified period. The Contracting Officer's decision is final and conclusive unless, within 14 days of receipt of the decision, the CONTRACTOR delivers a Notice of Appeal to the Executive Director of the Authority.

15.5 Appeals on a Contract Claim.

- 15.5.1 An appeal from a decision of the Contracting Officer on a contract claim may be filed by the CONTRACTOR with the Executive Director of the Authority. The appeal shall be filed within 14 days after the decision is received by the CONTRACTOR. An appeal by the CONTRACTOR may not raise any new factual issues or theories of recovery that were not presented to and decided by the Contracting Officer in the decision under Section 15.4, except that a CONTRACTOR may increase the contractor's calculation of damages if the increase arises out of the same operative facts on which the original claim was based. The CONTRACTOR shall file a copy of the appeal with the Contracting Officer.
 - a. An appeal must contain a copy of the decision being appealed and identification of the factual or legal errors in the decision that form the basis for the appeal.
 - b. The Executive Director shall handle the appeal of a claim under this section expeditiously.

15.6 Construction Contract Claim Appeals.

15.6.1 The appeal from a decision of the Contracting Officer of a claim involving a construction contract shall be resolved by:

- a. binding and final arbitration under AS 09.43.010 - 09.43.180 (Uniform Arbitration Act) if the claim is:
 - 1. less than \$250,000 and the CONTRACTOR requests arbitration of the claim; or
 - 2. \$250,000 or more and both the agency and the CONTRACTOR agree to arbitration of the claim; or
- b. a hearing under the Authority's established policy and procedures if the claim is not handled by arbitration under 15.6.1 of this subsection.

15.7 Fraud and Misrepresentation in Making Claims

Criminal and Civil penalties authorized under State or federal law (including, but not limited to, forfeiture of all claimed amounts) may be imposed on the CONTRACTOR if the CONTRACTOR makes or uses a misrepresentation in support of a claim or defraud or attempt to defraud the AUTHORITY at any stage of prosecuting a claim under this Contract."

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SECTION 00800 SUPPLEMENTARY CONDITIONS MODIFICATIONS TO THE GENERAL CONDITIONS

The following supplements modify, change, delete from, or add to Section 00700 "General Conditions of the Construction Contract for Buildings", revised December, 2011. Where any article of the General Conditions is modified, or a Paragraph, Subparagraph, or Clause thereof is modified or deleted by these Supplementary Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph, or Clause shall remain in effect.

00800.1-CONTRACT TIME / MILESTONES

- Anticipated Contract award: August, 2016
- Pipe Sleeves Installed at Keku Road crossing: November 1, 2016
- Alaska Energy Authority provided Power Plant Module available in Anchorage for Contractor mobilization to the project site: April, 2017
- Required Substantial Completion: November 1, 2017
- Final Completion: December 31, 2017
- End of Warranty Period and Contractor Release: December 31, 2018

SC-4.3-EXPLORATIONS AND REPORTS

At General Conditions Article 4.3, add the following paragraph:

“All reports and other records (if available) are provided for informational purposes only to all plan holders listed with the AUTHORITY as General Contractors, and are available to other planholders upon request. They are made available so Bidders have access to the same information available to the AUTHORITY. The reports and other records are not intended as a substitute for independent investigation, interpretation, or judgment of the Bidder. The AUTHORITY is not responsible for any interpretation or conclusion drawn from its records by the Bidder. While referenced by or provided with the Contract Documents; the recommendations, engineering details, and other information contained in these reports of explorations shall not be construed to supersede or constitute conditions of the Contract Documents.”

SC-5.4.2a – WORKERS COMPENSATION INSURANCE

At General Condition Article 5.4.2a, delete paragraph “a” in its entirety and replace with the following:

- "a. Workers' Compensation Insurance: The Contractor shall provide and maintain, for all employees of the Contractor engaged in work under this contract, Workers' Compensation Insurance as required by AS 23.30.045. The Contractor shall be responsible for Workers' Compensation Insurance for any subcontractor who provides services under this contract. Coverage shall include:

1. Waiver of subrogation against the State.

2. Employer's Liability Protection in the amount of \$500,000 each accident / \$500,000 each disease.
3. If the Contractor directly utilizes labor outside of the State of Alaska in the prosecution of the work, "Other States" endorsement shall be required as a condition of the contract.
4. Whenever the work involves activity on or about navigable waters, the Workers' Compensation policy shall contain a United States Longshoreman's and Harbor Worker's Act endorsement, and when appropriate, a Maritime Employer's Liability (Jones Act) endorsement with a minimum limit of \$2,000,000."

At General Conditions Article 5.4.2 add the following Paragraph:

- f. Contractor to provide Marine Cargo Carriage Insurance for the full value of all materials in transport, including the Alaska Energy Authority provided power plant generator module.

SC-6.6.2 – SCHEDULE OF SHOP DRAWINGS AND SCHEDULE OF VALUES

At General Condition Article 6.6.2, Schedule of Values, add the following text:

"Specific line item values as indicated below shall be minimum acceptable amounts and must be included on all approved Schedules of Values and Applications for Payment.

1. Mobilization and Demobilization: Value of Preconstruction activities, costs and submittals shall be limited to three and a half percent **(3.5%)** of the total Contract Price. Value of Demobilization shall be not less than one and a half percent **(1.5%)** of the total Contract Price.
2. Section 01300 and 01700 - Contract Closeout Procedures. Value of all required Substantial Completion Submittals and Closeout Submittals shall be not less than **\$10,000."**

SC-6.9-SUBSTITUTES OR "OR-EQUAL" ITEMS

In Paragraph 6.9.5, delete "Document 01630 – Product Options and Substitutions" and replace with "Document 01600 – Material and Equipment."

SC-6.13 – SUBCONTRACTORS

Add new general conditions Article 6.13.7 as follows:

"6.13.7 The Contractor may, without penalty, replace a subcontractor who:

1. Fails to comply with the licensing and registration requirements of AS 08.18;

2. Fails to obtain or maintain a valid Alaska Business License;
3. Files for bankruptcy or becomes insolvent;
4. Fails to execute a subcontract or performance of the work for which the subcontractor was listed, and the Contractor has acted in good faith;
5. Fails to obtain bonding acceptable to the AUTHORITY;
6. Fails to obtain insurance acceptable to the AUTHORITY;
7. Fails to perform subcontract work for which the subcontractor was listed;
8. Must be replaced to meet the Contractor's required state or federal affirmative action requirements.
9. Refuses to agree to abide by the Contractor's labor agreement; or
10. Is determined by the AUTHORITY to be not responsible.

In addition to the circumstances described above, a Contractor may in writing request permission from the AUTHORITY to add a new subcontractor or replace a listed subcontractor. The AUTHORITY will approve the request if it determines in writing that allowing the addition or replacement is in the best interest of the state.

The Contractor shall submit a written request to add a new Subcontractor or replace a listed Subcontractor to the Contracting Officer a minimum of five working days prior to the date the new Subcontractor is scheduled to begin work on the construction site. The request must state the basis for the request and include supporting documentation acceptable to the Contracting Officer.

If a Contractor violates this article, the Contracting Officer may:

1. Cancel the Contract after Award without any damages accruing to the AUTHORITY; or
2. After notice and hearing, assess a penalty on the bidder in an amount not exceeding 10 percent of the value of the subcontract at issue.

SC-9.4-CHANGE ORDER

A. At General Conditions Article 9.4, add the following sentence:

"The AUTHORITY will issue Change Orders for the CONTRACTOR to sign. A Change Order shall be considered executed when the AUTHORITY signs it. The CONTRACTOR'S signature indicates that they accept the Change Order or acknowledge it. Acknowledgement of a Change Order does not surrender the CONTRACTOR'S right to claim."

SC-11.8-DELAY DAMAGES

At General Condition Article 11.8, add the following paragraphs:

11.8.1 For each calendar day that the Schedule A and Schedule B Work is not Substantially Complete after the expiration of the Contract Time or the completion date has passed, the AUTHORITY shall deduct \$500 from progress payments.

11.8.2 If no money is due the CONTRACTOR, the AUTHORITY shall have the right to recover these sums from the CONTRACTOR, from the Surety, or from both. These are liquidated damages

and not penalties. These charges shall reimburse the AUTHORITY for its additional administrative expenses incurred due to CONTRACTOR'S failure to complete the work within the time specified.

11.8.3 Permitting the CONTRACTOR to continue and finish the work or any part of it after the Contract time has elapsed or the completion date has passed does not waive the AUTHORITY'S rights to collect liquidated damages under this section.

SC-12.1-WARRANTY AND GUARANTEE

At General Condition Article 12.1, add the following sentence:

"The failure of the AUTHORITY to strictly enforce the Contract in one or more instances does not waive its right to do so in other or future instances."

SC-12.6-CORRECTION OR REMOVAL OF DEFECTIVE WORK

At General Condition Article 12.6, add the following paragraphs:

"The CONTRACTOR shall establish necessary lines and grades before performing the Work. Work done before necessary lines and grades are established, Work contrary to the AUTHORITY'S instructions, Work done beyond the limits of the Contract, or any extra Work done without authority, will be considered as unauthorized and shall not be paid for by the AUTHORITY, and may be ordered removed or replaced at no additional cost to the AUTHORITY."

SC-13.3 – APPLICATION FOR PROGRESS PAYMENT

At General Conditions Article 13.3, revise the last sentence to read as follows:

"Progress payments will be made as the Work progresses on a monthly basis."

SC-15.1-NOTIFICATION

In Paragraph 15.1.2, delete "Section 01310" and replace with "Section 01300."

END OF SECTION 00800

REQUIRED CONTRACT PROVISIONS
For
FEDERAL-AID CONSTRUCTION CONTRACTS

- I. General
- II. Non-discrimination
- III. Non-segregated Facilities³
- IV. Payment of Predetermined Minimum Wages
- V. Statements and Payrolls
- VI. Record of Materials, Supplies, and Labor
- VII. Subletting or Assigning the Contract
- VIII. Safety: Accident Prevention
- IX. False Statements
- X. Implementation of Clean Air Act and Federal Water Pollution Control Act
- XI. Certification Regarding Debarment, Suspension, Ineligibility, and Voluntary Exclusion
- XII. Certification Regarding Use of Contract Funds for Lobbying

I. GENERAL

1. These contract provisions shall apply to all work performed on the contract by the Contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.
2. Except as otherwise provided for in each section, the contractor shall insert in each subcontract all of the stipulations contained in these Required Contract Provisions and further require their inclusion in any lower tier subcontract or purchase order that may in turn be made. The Required Contract Provisions shall not be incorporated by reference in any case. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with these Required Contract Provisions.
3. A breach of any of the stipulations contained in these Required Contract Provisions shall be sufficient grounds for termination of the contract.
4. A breach of the following clauses of these Required Contract Provisions may also be grounds for debarment as provided in 29 CFR 5.12:
 - Section I, paragraph 2;
 - Section IV, paragraphs 1, 2, 3, 4, and 7;
 - Section V, paragraphs 1 and 2a through 2g.
5. Disputes arising out of the labor standards provisions of Section IV (except paragraph 5) and Section V of these Required Contract Provisions shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the U.S. Department of Labor (DOL) as set forth in 29 CFR 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the DOL, or the contractor's employees or their representatives.
6. Selection of Labor: During the performance of this contract, the contractor shall not:
 - a. discriminate against labor from any other State, possession, or territory of the United States, or
 - b. Employ convict labor for any purpose within the limits of the project unless it is labor performed by convicts who are on parole, supervised release, or probation.

II. NONDISCRIMINATION (Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630 and 41 CFR 60) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The Equal Opportunity Construction Contract Specifications set forth under 41 CFR 60-4.3 and the provisions of the American Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:

a. The contractor will work with the Alaska Energy Authority (AEA) and the Federal Government in carrying out EEO obligations and in their review of his/her activities under the contract.

b. The contractor will accept as his operating policy the following statement:

"It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or on-the-job training."

2. EEO Officer: The contractor will designate and make known to the AEA contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active contractor program of EEO and who must be assigned adequate authority and responsibility to do so.

3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:

a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.

b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.

c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minority group employees.

d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.

e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.

4. Recruitment: When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minority groups in the area from which the project work force would normally be derived.

a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minority group applicants. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority group applicants may be referred to the contractor for employment consideration.

b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, he is expected to observe the provisions of that agreement to the extent that the system permits the contractor's compliance with EEO contract provisions. (The DOL has held that where implementation of such agreements has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Executive Order 11246, as amended.)

c. The contractor will encourage his present employees to refer minority group applicants for employment. Information and procedures with regard to referring minority group applicants will be discussed with employees.

5. Personnel Actions: Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:

a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.

b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.

c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with his obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of his avenues of appeal.

6. Training and Promotion:

a. The contractor will assist in locating, qualifying, and increasing the skills of minority group and women employees, and applicants for employment.

b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. Where feasible, 25 percent of apprentices or trainees in each occupation shall be in their first year of apprenticeship or training. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision.

c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.

d. The contractor will periodically review the training and promotion potential of minority group and women employees and will encourage eligible employees to apply for such training and promotion.

7. Unions: If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use his/her best efforts to obtain the cooperation of such unions to increase opportunities for minority groups and women within the unions, and to effect referrals by such unions of minority and female employees. Actions by the contractor either directly or through a contractor's association acting as agent will include the procedures set forth below:

a. The contractor will use best efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minority group members and women for membership in the unions and increasing the skills of minority group employees and women so that they may qualify for higher paying employment.

b. The contractor will use best efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.

c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the AEA and shall set forth what efforts have been made to obtain such information.

d. In the event the union is unable to provide the contractor with a reasonable flow of minority and women referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minority group persons and women. (The DOL has held that it shall be no excuse that the union with which the contractor has a collective bargaining agreement providing for exclusive referral failed to refer minority employees.) In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the AEA.

8. Selection of Subcontractors, Procurement of Materials, and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment.

a. The contractor shall notify all potential subcontractors and suppliers of his/her EEO obligations under this contract.

b. Disadvantaged business enterprises (DBE), as defined in 49 CFR 26 shall have equal opportunity to compete for and perform subcontracts which the contractor enters into pursuant to this contract. The contractor will use his best efforts to solicit bids from and to utilize DBE subcontractors or subcontractors with meaningful minority group and female representation among their employees. Contractors shall obtain lists of DBE construction firms from AEA personnel.

c. The contractor will use his best efforts to ensure subcontractor compliance with their EEO obligations.

9. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years

following completion of the contract work and shall be available at reasonable times and places for inspection by authorized representatives of the AEA and the U.S. DOT.

a. The records kept by the contractor shall document the following:

(1) The number of minority and non-minority group members and women employed in each work classification on the project;

(2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women;

(3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minority and female employees; and

(4) The progress and efforts being made in securing the services of DBE subcontractors or subcontractors with meaningful minority and female representation among their employees.

b. The contractors will submit an annual report to the AEA each July for the duration of the project, indicating the number of minority, women, and non minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. If on the job training is being required by special provision, the contractor will be required to collect and report training data.

III. NONSEGREGATED FACILITIES (Applicable to all Federal-aid construction contracts and to all related subcontracts of \$10,000 or more.)

1. By submission of this bid, the execution of this contract or subcontract, or the consummation of this material supply agreement or purchase order, as appropriate, the bidder, Federal-aid construction contractor, subcontractor, material supplier, or vendor, as appropriate, certifies that the firm does not maintain or provide for its employees any segregated facilities at any of its establishments, and that the firm does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The firm agrees that a breach of this certification is a violation of the EEO Provisions of this contract. The firm further certifies that no employee will be denied access to adequate facilities on the basis of sex or disability.

2. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive, or are, in fact, segregated on the basis of race, color, religion, or national origin, age or disability, because of habit, local custom, or otherwise. The only exception will be for the disabled when the demands for accessibility override (e.g. disabled parking).

3. The contractor agrees that it has obtained or will obtain identical certification from proposed subcontractors or material suppliers prior to the award of subcontracts or consummation of material supply agreements of \$10,000 or more and that it will retain such certifications in its files.

IV. PAYMENT OF PREDETERMINED MINIMUM WAGES (Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural minor collectors, which are exempt.)

1. General:

a. All mechanics and laborers employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on

any account [except such payroll deductions as are permitted by regulations (29 CFR 3) issued by the Secretary of Labor under the Copeland Act (40 U.S.C. 276c] the full amounts of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment. The payment shall be computed at wage rates not less than those contained in the wage determination of the Secretary of Labor (hereinafter "the wage determination") which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor or its subcontractors and such laborers and mechanics. The wage determination (including any additional classifications and wage rates conformed under paragraph 2 of this Section IV and the DOL poster (WH-1321) or Form FHWA-1495) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers. For the purpose of this Section, contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act (40 U.S.C. 276a) on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of Section IV, paragraph 3b, hereof. Also for the purpose of this Section, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs, which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in paragraphs 4 and 5 of this Section IV.

b. Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein, provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed.

c. All rulings and interpretations of the Davis-Bacon and related acts contained in 29 CFR 1, 3, and 5 are herein incorporated by reference in this contract.

2. Classification:

a. The AEA contracting officer shall require that any class of laborers or mechanics employed under the contract, which is not listed in the wage determination, shall be classified in conformance with the wage determination.

b. The contracting officer shall approve an additional classification, wage rate and fringe benefits only when the following criteria have been met:

(1) The work to be performed by the additional classification requested is not performed by a classification in the wage determination;

(2) The additional classification is utilized in the area by the construction industry;

(3) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination; and

(4) With respect to helpers, when such a classification prevails in the area in which the work is performed.

c. If the contractor or subcontractors, as appropriate, the laborers and mechanics (if known) to be employed in the additional classification or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the U.S. Department of Labor, Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, D.C. 20210. The Wage and Hour Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days

of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

d. In the event the contractor or subcontractors, as appropriate, the laborers or mechanics to be employed in the additional classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. Said Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

e. The wage rate (including fringe benefits where appropriate) determined pursuant to paragraph 2c or 2d of this Section IV shall be paid to all workers performing work in the additional classification from the first day on which work is performed in the classification.

3. Payment of Fringe Benefits:

a. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor or subcontractors, as appropriate shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

b. If the contractor or subcontractor, as appropriate, does not make payments to a trustee or other third person, he/she may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided that the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

4. Apprentices and Trainees (Programs of the U. S. DOL) and Helpers:

a. Apprentices:

(1) Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the DOL, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State apprenticeship agency recognized by the Bureau, or if a person is employed in his/her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State apprenticeship agency (where appropriate) to be eligible for probationary employment as an apprentice.

(2) The allowable ratio of apprentices to journeyman-level employees on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any employee listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate listed in the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor or subcontractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman-level hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

(3) Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator for the Wage and Hour Division determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

(4) In the event the Bureau of Apprenticeship and Training, or a State apprenticeship agency recognized by the Bureau, withdraws approval of an apprenticeship program, the contractor or subcontractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the comparable work performed by regular employees until an acceptable program is approved.

b. Trainees:

(1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the DOL, Employment and Training Administration.

(2) The ratio of trainees to journeyman-level employees on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Any employee listed on the payroll at a trainee rate that is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

(3) Every trainee must be paid at not less than the rate specified in the approved program for his/her level of progress, expressed as a percentage of the journeyman-level hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman-level wage rate on the wage determination which provides for less than full fringe benefits for apprentices, in which case such trainees shall receive the same fringe benefits as apprentices.

(4) In the event the Employment and Training Administration withdraws approval of a training program, the contractor or subcontractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

c. Helpers: Helpers will be permitted to work on a project if the helper classification is specified and defined on the applicable wage determination or is approved pursuant to the conformance procedure set forth in Section IV.2. Any worker listed on a payroll at a helper wage rate, which is not a helper under an approved definition, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed.

5. Apprentices and Trainees (Programs of the U.S. DOT): Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and

trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

6. Withholding: The AEA shall, upon its own action or upon written request of an authorized representative of the DOL, withhold or cause to be withheld from the contractor or subcontractor under this contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, as much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the AEA Procurement Officer may, after written notice to the contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

7. Overtime Requirements: No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers, mechanics, watchmen, or guards (including apprentices, trainees, and helpers described in paragraphs 4 and 5 above) shall require or permit any laborer, mechanic, watchman, or guard in any workweek in which he/she is employed on such work, to work in excess of 40 hours in such work week unless such laborer, mechanic, watchman, or guard receives compensation at a rate not less than one-and-one-half times his/her basic rate of pay for all hours worked in excess of 40 hours in such workweek.

8. Violation: Liability for Unpaid Wages; Liquidated Damages: In the event of any violation of the clause set forth in paragraph 7 above, the contractor and any subcontractor responsible therefor shall be liable to the affected employee for his/her unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer, mechanic, watchman, or guard employed in violation of the clause set forth in paragraph 7, in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the clause set forth in paragraph 7.

9. Withholding for Unpaid Wages and Liquidated Damages: The AEA shall, upon its own action or upon written request of an authorized representative of the U.S. Department of Labor, withhold or cause to be withheld from any monies payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other Federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph 8 above.

V. STATEMENTS AND PAYROLLS (Applicable to all Federal-aid construction contracts exceeding \$2,000 and to all related subcontracts, except for projects located on roadways classified as local roads or rural collectors, which are exempt.)

1. Compliance with Copeland Regulations (29 CFR 3): The contractor shall comply with the Copeland Regulations of the Secretary of Labor which are herein incorporated by reference.

2. Payrolls and Payroll Records:

a. Payrolls and basic records relating thereto shall be maintained by the contractor and each subcontractor during the course of the work and preserved for a period of 3 years from the date of completion of the contract for all laborers, mechanics, apprentices, trainees, watchmen, helpers, and guards working at the site of the work.

b. The payroll records shall contain the name, social security number, and address of each such employee, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in Section 1(b) (2) (B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor, pursuant to Section IV, paragraph 3b, has found that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1(b)(2)(B) of the Davis-Bacon Act, the contractor and each subcontractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the cost anticipated or the actual cost incurred in providing benefits. Contractors or subcontractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprentices and trainees and ratios and wage rates prescribed in the applicable programs.

c. Each contractor and subcontractor shall furnish each week in which any contract work is performed a payroll of wages paid each of its employees (including apprentices, trainees, and helpers described in Section IV, paragraphs 4 and 5 and watchmen and guards engaged on work during the preceding weekly payroll period). The payroll submitted shall set out accurately and completely all of the information required to be maintained under paragraph 2b of this Section V. This information may be submitted in any form desired. Optional Form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal stock number 029-005-0014-1), U.S. Government Printing Office, Washington, D.C. 20402 or the Government Bookstore, 915 Second Avenue, Seattle, WA 98174. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.

d. Each payroll submitted shall be accompanied by a "Statement of Compliance", signed by the contractor or subcontractor or his/her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) that the payroll for the payroll period contains the information required to be maintained under paragraph 2b of this Section V and that such information is correct and complete;

(2) that such laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid in full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions set forth in the Regulations, 29 CFR 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rate and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

e. The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 2d of this Section V.

f. The falsification of any of the above certifications may subject the contractor to civil or criminal prosecution under 18 U.S.C. 1001 and 31 U.S.C. 231.

g. The contractor or subcontractor shall make the records required under paragraph 2b of this section V available for inspection, copying, or transcription by authorized representatives of the AEA, the U.S. DOT, or the DOL, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the AEA, the U.S. DOT, DOL, or all may, after written notice to the contractor, sponsor, applicant, or owner, take such actions as may be necessary to cause the suspension of any

further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

VI. RECORDS OF MATERIALS, SUPPLIES, AND LABOR (Applicable to highway contracts)

1. On all Federal-aid contracts on the National Highway System, except those which provide solely for the installation of protective devices at railroad grade crossings, those which are constructed on a force account or direct labor basis, highway beautification contracts, and contracts for which the total final construction cost for roadway and bridge is less than \$1,000,000 (23 CFR Part 635) the contractor shall:

a. Become familiar with the list of specific materials and supplies contained in Form FHWA-47, "Statement of Materials and Labor Used by Contractor of Highway Construction Involving Federal Funds," prior to the commencement of work under this contract.

b. Maintain a record of the total cost of all materials and supplies purchased for and incorporated in the work, and also of the quantities of those specific materials and supplies listed on Form FHWA-47, and in the units shown on the Form FHWA-47.

c. Furnish, upon the completion of the contract, to the AEA resident engineer on Form FHWA-47 together with the data required in paragraph 1b relative to materials and supplies, a final labor summary of all contract work indicating the total hours worked and the total amount earned.

2. At the prime contractor's option, either a single report covering all contract work or separate reports for the contractor and for each subcontract shall be submitted.

VII. SUBLETTING OR ASSIGNING THE CONTRACT

1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the State. Specialty items may be performed by subcontract and the amount of any such specialty items so performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR Part 635).

a. "Its own organization" shall be construed to include only workers employed and paid directly by the prime contractor and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor, assignee, or agent of the prime contractor.

b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid on the contract as a whole and in general are to be limited to minor components of the overall contract.

2. The contract amount upon which the requirements set forth in paragraph 1 of this Section VII is computed includes the cost of materials and manufactured products which are to be purchased or produced by the contractor under the contract provisions.

3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the AEA contracting officer determines is necessary to assure the performance of the contract.

4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the AEA contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the AEA is assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.

VIII. SAFETY: ACCIDENT PREVENTION

1. In the performance of this contract, the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the AEA contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.

2. It is a condition of this contract, and shall be made a condition of each subcontract entered into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous, or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 333).

IX. FALSE STATEMENTS

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. Title 18, United States Code, Section 1001, states:

“Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious or fraudulent statements or representations, or makes or uses any false writing or document knowing the same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than \$10,000 or imprisoned not more than five years, or both.” (June 25, 1948, ch. 645, 62 Stat. 749.)

To prevent any misunderstanding regarding the seriousness of these and similar acts, the following notice shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all personnel concerned with the project:

X. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT (Applicable to all Federal-aid construction contracts and to all related subcontracts of \$100,000 or more.)

By submission of this bid, or the execution of this contract or subcontract, as appropriate, the bidder, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

1. That any facility that is or will be utilized in the performance of this contract, unless such contract is exempt under the Clean Air Act, as amended (42 U.S.C. 1857 et seq., as amended by Pub. L. 91-604), and under the Federal Water Pollution Control Act, as amended (33 U.S.C. 1251, et seq., as amended by Pub. L. 92-500), Executive Order 11738, and regulations in implementation thereof (40 CFR Part 15) is not listed, on the date of contract award, on the U.S. Environmental Protection Agency (EPA) List of Violating Facilities pursuant to 40 CFR 15.20.
2. That the firm agrees to comply and remain in compliance with all the requirements of Section 114 of the Clean Air Act and Section 308 of the Federal Water Pollution Control Act and all regulations and guidelines listed thereunder.
3. That the firm shall promptly notify the AEA of the receipt of any communication from the Director, Office of Federal Activities, EPA, indicating that a facility that is or will be utilized for the contract is under consideration to be listed on the EPA List of Violating Facilities.
4. That the firm agrees to include or cause to be included the requirements of paragraphs 1 through 4 of this Section X in every nonexempt subcontract, and further agrees to take such action as the government may direct as a means of enforcing such requirements.

XI. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

1. Instructions for Certification - Primary Covered Transactions: (Applicable to all Federal-aid contracts - 49 CFR 29)

a. By signing and submitting this proposal, the prospective primary participant is providing the certification set out below.

b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective primary participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.

c. The certification in this clause is a material representation of fact upon which reliance was placed when the department or agency determined to enter into this transaction. If it is later determined that the prospective primary participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause of default.

d. The prospective primary participant shall provide immediate written notice to the department or agency to which this proposal is submitted if any time the prospective primary participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.

e. The terms "covered transaction," "debarred," "suspended," "ineligible," "lower tier covered transaction," "participant," "person," "primary covered transaction," "principal," "proposal," and "voluntarily excluded," as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the department or agency to which this proposal is submitted for assistance in obtaining a copy of those regulations.

f. The prospective primary participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from

participation in this covered transaction, unless authorized by the department or agency entering into this transaction.

g. The prospective primary participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," provided by the department or agency entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.

h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the nonprocurement portion of the "Lists of Parties Excluded from Federal Procurement or Nonprocurement Programs" (Nonprocurement List) which is compiled by the General Services Administration.

i. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

j. Except for transactions authorized under paragraph f of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion—Primary Covered Transactions

1. The prospective primary participant certifies to the best of its knowledge and belief, that it and its principals:

a. Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

b. Have not within a 3-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

c. Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 1b of this certification; and

d. Have not within a 3-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.

Where the prospective primary participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Covered Transactions: (Applicable to all subcontracts, purchase orders and other lower tier transactions of \$25,000 or more - 49 CFR 29)

- a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
- b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
- c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
- d. The terms “covered transaction,” “debarred,” “suspended,” “ineligible,” “primary covered transaction,” “participant,” “person,” “principal,” “proposal,” and “voluntarily excluded,” as used in this clause, have the meanings set out in the Definitions and Coverage sections of rules implementing Executive Order 12549. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations.
- e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
- f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled “Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction,” without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions.
- g. A participation in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant may decide the method and frequency by which it determines the eligibility of its principals. Each participant may, but is not required to, check the Nonprocurement List.
- h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

Certification Regarding Debarment,

Suspension, Ineligibility and Voluntary Exclusion—Lower Tier Covered Transactions:

1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

XII. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING (Applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 - 49 CFR 20)

1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:

a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.

2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

3. The prospective participant also agrees by submitting his or her bid or proposal that he or she shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

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SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Related Requirements
- B. Work Covered by Contract Documents
- C. Description of Bid Items
- D. Contract Method
- E. Work By Others
- F. Shutoffs / Disruptions to Service
- G. Contractor's Use of Premises
- H. Coordination
- I. Access for Testing and Inspection

1.02 RELATED REQUIREMENTS

- A. Section 00700 General Conditions
- B. Section 00800 Supplementary Conditions

1.03 WORK COVERED BY CONTRACT DOCUMENTS

- A. Work under this Contract consists of the construction of bulk fuel upgrades and rural power system upgrades in the community of Kake, Alaska.
 - 1. Schedule A: Construct Bulk Fuel Upgrades: Provide all labor, materials, and equipment required to construct the bulk fuel upgrades as described in 1.04 Description of Bid Items below.
 - 2. Schedule B: Construct Rural Power System Upgrades: Provide all labor, materials, and equipment required to construct the rural power system upgrades as described in 1.04 Description of Bid Items below.
- B. The intent of the Contract is to provide for the construction and completion of every detail of work described in the Contract Documents. The Contractor shall furnish all labor, materials, supervision, equipment, tools, transportation, quality control, and supplies required to complete the work in accordance with the Contract Documents. A brief description of the work is as follows:

Schedule A: Construct Bulk Fuel Upgrades: Work consists of providing all labor, materials, and equipment required to complete the Kake Bulk Fuel Upgrades Project as shown in Section 00320 Bid Schedule. This work includes site work consisting of survey, clearing, excavation and handling of petroleum contaminated soil, site grading, contaminated material liner installation, unclassified excavation, installing classified fill, crushed aggregate surface course, concrete containment dike, grounding grid system, tank farm liner, drain rock, tank foundation concrete strip footings, truckfill shelter concrete foundation, installing carrier piping at road crossing; furnishing and installing fuel tanks, pumps and appurtenances; installing chainlink fence and signs; construction of a tank farm, pumps and manifold piping; construction of a contained distribution pipeline; furnish and install above grade piping, below grade header piping, cathodic protection, transfer pumps, fuel pumps, truckfill shelter building, vehicle dispenser, marine header and spill response equipment; fuel transfer; decommissioning of existing fuel piping; lighting and controls, and other related work as described in the Contract Documents.

Schedule B: Construct Rural Power System Upgrades: Work consists providing all labor, materials, and equipment required to complete the Kake Rural Power System Upgrades Project as shown in Section 00320 Bid Schedule. This work includes site work consisting of survey, clearing, site grading, unclassified excavation, installing classified fill, crushed aggregate surface course, concrete footings, constructing a new rural power system including: mobilization and installation of the Owner-furnished power plant module; overhead distribution upgrades, above grade fuel piping, below grade contained fuel piping, bulk fuel storage tank manifold piping, grounding grid system, electrical conduit, waste heat piping, modifications to the heating and electrical systems in the old power plant building, and other related work as described in the Contract Documents.

Bid Schedule Summary, Force Account Allowance: This item is AEA's allowance for local hire by force account (\$50,000). AEA will coordinate with the City of Kake to hire a local labor pool using AEA's force account system. The City of Kake shall employ the force account local labor and establish labor rates. The contractor is expected to utilize the local force account labor pool to the greatest extent possible. Prior to the first pay application, the contractor shall present a plan to utilize force account labor and provide a cost estimate for the total force account labor payroll (not to exceed \$50,000). The contractor shall supervise the force account labor. The City of Kake shall manage the time cards. AEA will process the force account labor time cards, issue pay checks, and provide workers' compensation insurance.

C. IMPORTANT NOTES TO CONTRACTOR:

1. Site conditions may be saturated following seasonal snow melt or significant rainfall. Standing water may be encountered.
2. No clearing of existing vegetation shall occur between April 15 and July 15, yearly.
3. Contractor shall make his own arrangements for staging of construction materials and equipment and shall coordinate and pay for the use of these areas with the associated landowners and other appropriate parties. No other staging

areas are provided by the Authority, except for the proposed construction areas shown on the drawings.

4. There is a stock pile of City-owned unclassified material located at the new tank farm site. This material is available for purchase by the Contractor for use in this project. Screening and processing of the stockpile material is anticipated to be required for the material to meet the project specifications. Material purchase, handling, screening, processing, transporting, placement, and compaction of the stockpiled material shall be the responsibility of the Contractor. All remaining gravel stockpiles shall be relocated as shown on the Plans.
5. Bid Schedule quantities for Structural and CASC material include neat line calculations plus 10%.
6. Contractor shall install the HDPE sleeves for the Keku Road header and distribution pipeline crossing and electrical conduit no later than September 1, 2016. The road shall be backfilled and re-surfaced in accordance with the plans, specifications and the DOT&PF Utility Permit.

1.04 DESCRIPTION OF BID ITEMS

A. Schedule A: Construct Bulk Fuel Upgrades.

1. Bid Item A1: Mobilization and Demobilization.
 - a. The lump sum for Mobilization and Demobilization shall include but not be limited to work described in Section 02120 Mobilization and Demobilization.
2. Bid Item A2: Temporary Erosion and Sediment Control.
 - a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Furnish and install temporary erosion and sediment control in accordance with the plans and specification Section 01568 Permits, Environmental Limitations, and Storm Water and Erosion Control.
3. Bid Item A3: Furnish and Install Carrier Pipe for Road Crossing.
 - a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Furnish and install HDPE carrier pipes (pipe sleeves) for the header and distribution pipelines and associated electrical conduit underneath Keku Road in accordance with the plans, specifications, and DOT&PF Utility Crossing Permit. This work shall be performed during summer 2016 construction activities.
4. Bid Item A4: Demolition and Relocation of Existing Equipment and Materials.
 - a. The lump sum for this bid item shall include all labor, materials, equipment,

and incidentals required to conduct the following:

1. Coordinate with the City and KTC for the relocation of existing equipment and materials staged on the Bulk Fuel Tank Farm site, and buried pipeline alignment. Assist the City with relocation as requested by City and KTC Representatives or directed by the Project Manager.
 2. Demolish the existing perimeter fence around the City's equipment yard as shown in the Contract Documents.
 3. Demolish culvert as shown in the Contract Documents.
5. Bid Item A5: Excavation and Handling of Petroleum Contaminated Material.
- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Excavate truckfill shelter foundation, place all contaminated material found during the excavation in the contaminated material liner area, and grade material to the liner grades shown in accordance with the Contaminated Materials Work Plan and specification Section 02084 Excavation and Handling of Petroleum Contaminated Material, Plans, and other project specifications.
 2. Contaminated Material Liner Installation: Furnish and install the liner over petroleum contaminated soil and associated non-woven geotextile in the area shown in accordance with the plans and specifications.
6. Bid Item A6: Furnish and Install Structural Fill.
- a. The unit price for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Structural Fill: Furnish and install structural fill material and construct gravel embankments in accordance with the plans and specifications.
 2. The bid item quantity for this item is based on neat line quantity plus 10%. This item will be measured for payment in accordance with Section 02200 Excavation and Embankment.
7. Bid Item A7: Furnish and Install Crushed Aggregate Surface Course (CASC).
- a. The unit price for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. CASC: Furnish and install CASC material and construct gravel embankments in accordance with the plans and specifications.
 2. The bid item quantity for this item is based on neat line quantity plus 10%. This item will be measured for payment in accordance with Section 02200 Excavation and Embankment.

8. Bid Item A8: Relocate Remaining Stockpiled Material.

- a. The unit price for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 - 1. Contractor shall relocate the stockpiled material located on the new tank farm site to the area shown on the Plans and Specifications. Bid quantity is based on the neat line quantity from the January 2015 survey of the stockpiles as shown in the Plans. The payment quantity for this bid item shall be based on the relocated quantity of the ANTHC stockpile material and the relocated quantity of City-owned material to the location shown on the Plans. Material that is used by the Contractor to construct the project or is otherwise incorporated into the work shall not be measured or paid for under this bid item.

9. Bid Item A9: Miscellaneous Site Work, Construct Ditch, and Stabilize Slopes.

- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 - 1. Miscellaneous Site Work: Work shall consist of surveying, clearing, dewatering, excavation, surface preparation, hauling, stockpiling, excavation, compaction, seeding, fertilizing, furnishing and installing erosion control aggregate, and finish grading of fill materials in accordance with the plans and specifications.
 - 2. Seeding/Fertilizing: Areas grassed and/or seeded prior to construction and excavated or otherwise disturbed during construction operations shall be restored to their original condition in accordance with the plans and specifications.
 - i. The following areas shall be seeded in accordance with this section:
 - a. Previously vegetated areas disturbed by construction activities.
 - b. All other areas defined on the Contract Drawings.

10. Bid Item A10: Construct Tank Farm Concrete Dike Walls and Truckfill Shelter Concrete Foundation.

- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 - 1. Grounding Grid System: Furnish and Install the grounding grid system in accordance with the plans and specifications.
 - 2. Concrete Dike Wall Containment: Furnish and install the concrete dike wall in accordance with the plans and specifications.
 - 3. Tank Farm Liner: Furnish and install the tank farm liner and associated

non-woven geotextile in accordance with the plans and specifications.

4. Drain Rock: Furnish and install the drain rock inside the containment area in accordance with the plans and specifications.
5. Subdrainage System: Furnish and install the subdrainage system inside the containment area in accordance with the plans and specifications.
6. Tank Foundation Concrete Strip Footings: Furnish and install the tank foundation concrete strip footings in accordance with the plans and specifications.
7. Other incidental work shown on the plans and described in the specifications.
8. Truckfill Shelter Concrete Foundation: Furnish and install truckfill shelter concrete foundation in accordance with the plans and specifications.

11. Bid Item A11: Furnish 10,000-Gallon Single Wall Gasoline Dispensing Tank.

- a. The unit price for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Furnish one (1) 10,000-gallon, single wall, (approx. 10'x17') horizontal, gasoline dispensing tank with submersible sump and appurtenances in accordance with the plans and specifications.

12. Bid Item A12: Furnish 20,000-Gallon Single Wall, Dual Product (10,000-Gallon Diesel #1, 10,000-Gallon Diesel #2) Dispensing Tank.

- a. The unit price for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Furnish one (1) 20,000-gallon, single wall, (approx. 10'x34'), horizontal, dual product (10,000-gallon diesel #1, 10,000-gallon diesel #2) dispensing tank with submersible pumps and appurtenances in accordance with the plans and specifications.

13. Bid Item A13: Furnish 27,000-Gallon, Single Wall, Horizontal, Gasoline Bulk Fuel Tank.

- a. The unit price for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Furnish two (2) 27,000-gallon, single wall, (approx. 11'x38') horizontal, gasoline bulk fuel tanks with appurtenances in accordance with the plans and specifications.

14. Bid Item A14: Furnish 27,000-Gallon, Single Wall, Horizontal, Diesel #1 Bulk Fuel Tank.

- a. The unit price for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 - 1. Furnish two (2) 27,000-gallon, single wall, (approx. 11'x38') horizontal, diesel #1 bulk fuel tanks with appurtenances in accordance with the plans and specifications.
15. Bid Item A15: Furnish 27,000-Gallon, Single Wall, Horizontal, Diesel #2 Bulk Fuel Tank.
- a. The unit price for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 - 1. Furnish two (2) 27,000-gallon, single wall, (approx. 11'x38') horizontal, diesel #2 bulk fuel tanks with appurtenances in accordance with the plans and specifications.
16. Bid Item A16: Mobilization of Tanks to Kake, AK.
- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 - 1. Contractor shall transport all the tanks with appurtenances, listed below, to the project site in Kake, AK.
 - i. One (1) 10,000-gallon, single wall, (approx. 10'x17') horizontal, gasoline dispensing tank with submersible pump and appurtenances.
 - ii. One (1) 20,000-gallon, single wall, (approx. 10'x34') horizontal, dual product (10,000-gallon diesel #1, 10,000-gallon diesel #2) dispensing tank with submersible pump and appurtenances.
 - iii. Two (2) 27,000-gallon, single wall, (approx. 11'x38') horizontal, gasoline bulk fuel tanks with appurtenances.
 - iv. Two (2) 27,000-gallon, single wall, (approx. 11'x38') horizontal, diesel #1 bulk fuel tanks with appurtenances.
 - v. Two (2) 27,000-gallon, single wall, (approx. 11'x38') horizontal, diesel #2 bulk fuel tanks with appurtenances.
17. Bid Item A17: Complete Tank Farm Construction.
- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 - 1. Bulk Fuel and Dispensing Tanks: Install bulk fuel and dispensing tanks with appurtenances in accordance with the plans and specifications.
 - 2. Tank Farm Mechanical and Electrical Piping and Equipment: Furnish

and install all tank farm mechanical and electrical piping and equipment in accordance with the plans and specifications.

3. Tank Farm Pumps and Pump Boxes: Furnish and install all tank farm pumps and pump boxes in accordance with the plans and specifications.
4. Tank Farm Stairs: Furnish and install stairs in accordance with the plans and specifications.
5. Tank Farm Fencing with Gates: Furnish and install all tank farm fencing with gates in accordance with the plans and specifications.
6. Tank Farm Signage: Furnish and install all tank farm signage in accordance with the plans and specifications.
7. Contractor shall transfer fuel from the old tank farm to the new tank farm in accordance with the fuel transfer plan and the plans and specifications.
8. Contractor shall submit a fuel transfer plan detailing the fuel transfer operations in accordance with the plans and specifications.

18. Bid Item A18: Complete Truckfill Shelter Construction.

- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Truckfill Building Shelter: Furnish and install pre-engineered truckfill shelter in accordance with the plans and specifications.
 2. Truckfill Mechanical and Electrical Piping and Equipment: Furnish and install all truckfill mechanical and electrical piping and equipment in accordance with the plans and specifications.
 3. Truckfill Fencing: Furnish and install all truckfill fencing in accordance with the plans and specifications.

19. Bid Item A19: Fuel Dispensing and Marine Header Above and Below Grade Piping.

- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to Furnish and install all tank farm, fuel dispensing, and marine header above and below grade piping in accordance with the plans and specifications.
 1. Marine Header Lines: Furnish and install above and below grade marine header lines from the new marine header to the new tank farm in accordance with the plans and specifications.
 2. Above Grade Distribution Piping: Furnish and install above grade distribution piping and electrical from the tank farm to the truckfill shelter

in accordance with the plans and specifications.

3. Below Grade Distribution Piping: Furnish and install buried contained distribution piping and electrical from new truckfill to reconstructed KTC vehicle dispensers and new marine dock on shore controls in accordance with the plans and specifications.
4. Cathodic Protection: Furnish and install cathodic protection along buried heads and pipelines in accordance with the plans and specifications.
5. Pipe Supports: Furnish and install pipe supports in accordance with the plans and specifications.

20. Bid Item A20: Reconstruct KTC Vehicle Dispenser and Install Marine Dock Onshore Controls.

- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Reconstruct KTC Vehicle Dispenser: Reconstruct the KTC vehicle dispenser in accordance with the plans and specifications
 2. Install Marine Dock Onshore Controls: Furnish and install the marine dock dispenser pipeline and valve box in accordance with the plans and specifications.

21. Bid Item A21: Decommission Existing KTC Dispenser and Truckfill.

- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Existing KTC Dispenser: Decommission the existing KTC dispenser in accordance with the plans and specifications.
 2. Existing KTC Truckfill: Decommission the existing KTC truckfill in accordance with the plans and specifications.
 3. Provide temporary dispensing operations during dispenser demolition and reconstruction in accordance with the plans and specifications.

22. Bid Item A22: Install Perimeter Fencing for City's Equipment Yard.

- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Fencing: Furnish and install perimeter fencing for the City's equipment yard in accordance with the plans and specifications.

23. Bid Item A23: Furnish Spill Response Equipment.

- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:

1. Spill Response Equipment: Furnish and install the spill response equipment in accordance with the plans and specifications.
24. Bid Item A24: Decommission Existing Tank Farm Piping.
 - a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Existing Tank Farm Piping: Clean and abandon in-place the existing tank farm piping in accordance with the plans and specifications.
- B. Schedule B: Construct Rural Power System Upgrades.
 1. Bid Item B1: Mobilization and Demobilization.
 - a. The lump sum for Mobilization and Demobilization shall include but not be limited to work described in Section 02120 Mobilization and Demobilization.
 2. Bid Item B2: Temporary Erosion and Sediment Control.
 - a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Furnish and install temporary erosion and sediment control in accordance with the plans and specification Section 01568 Permits, Environmental Limitations, and Storm Water and Erosion Control.
 3. Bid Item B3: Demolition and Relocation of Existing Equipment and Materials.
 - a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Coordinate with IPEC for the relocation of existing transformers and equipment staged onsite. Assist IPEC with relocation as requested by IPEC Representatives or directed by the Project Manager.
 4. Bid Item B4: Furnish and Install Structural Fill.
 - a. The unit price for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Structural Fill: Furnish and install structural fill material construct gravel embankments in accordance with the plans and specifications.
 2. The bid item quantity for this item is based on neat line quantity plus 10%. This item will be measured for payment in accordance with Section 02200 Excavation and Embankment.
 5. Bid Item B5: Furnish and Install Crushed Aggregate Surface Course (CASC).
 - a. The unit price for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:

1. Crushed Aggregate Surface Course (CASC): Furnish and install CASC material and construct gravel embankments in accordance with the plans and specifications.
 2. The bid item quantity for this item is based on neat line quantity plus 10%. This item will be measured for payment in accordance with Section 02200 Excavation and Embankment.
6. Bid Item B6: Miscellaneous Site Work, Construct Ditch, and Stabilize Slopes.
- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Miscellaneous Site Work: Work shall consist of clearing and dewatering, surface preparation, hauling, stockpiling, excavation, seeding, fertilizing, furnishing and installing erosion control aggregate, and finish grading of fill materials in accordance with the plans and specifications.
 2. Seeding/Fertilizing: Areas grassed and/or seeded prior to construction and excavated or otherwise disturbed during construction operations shall be restored to their original condition in accordance with the plans and specifications.
 - i. The following areas shall be seeded in accordance with this section:
 - a. Previously vegetated areas disturbed by construction activities.
 - b. All other areas defined on the Contract Drawings.
7. Bid Item B7: Construct Concrete Foundations.
- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Power Plant Module Concrete Foundations: Furnish and install power plant module concrete foundation in accordance with the plans and specifications.
8. Bid Item B8: Mobilization of Power Plant Module to Kake, AK.
- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Power Plant Module Mobilization: Mobilize the power plant module from the Authority's storage yard located at 2601 Commercial Drive, Anchorage, Alaska, 99501 to the project site in Kake, AK in accordance with the plans.
 2. Power Plant Disassembly and Packaging: The power plant module will be assembled as a single unit and fully operational while in the

Authority's yard. Prior to shipment the Contactor shall disassemble the module, weatherproof the module shipping splits, and pack all exterior equipment for shipment. Module disassembly shall be in accordance with the Module Reference Drawings, included in the Plans.

- i. The power plant shall be disassembled and ship as two separate module sections. One section will be 40 feet long and weigh approximately 82,000 lbs. The second section will be 26 feet long and weigh approximately 53,000 lbs.
- ii. Disassembly shall include at a minimum the following tasks as indicated on the Drawings: draining and disconnecting piping; disconnecting electrical; removing external equipment and devices; disconnecting structural fasteners at the shipping split, and physically separating the two sections.
- iii. Weatherproofing shall include at a minimum closing all openings and covering each shipping split with a waterproof membrane such as reinforced shrink wrap or custom fit tarpaulin. Protection shall be adequate to prevent moisture from getting into any part of the modules during shipping and storage.
- iv. The contractor shall be responsible any damage to the power plant module during disassembly and mobilization to the project site, and installation as shown on the Plans.

9. Bid Item B9: Power Plant Module Installation.

- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Power Plant Module Assembly and Installation: Install the power plant module on the module foundations and reconnect the two power plant module sections. The Contractor shall install all of the external equipment and devices, reconnect all piping, refill piping systems, and reconnect all electrical in accordance with the Module Reference Drawings, included in the Plans.
 2. Power Plant Module Roof: Furnish and install the power plant module roof in accordance with the Plans.

10. Bid Item B10: Site Utility Mechanical and Electrical Installation, Modifications and Connections to the Electrical Distribution System, Fencing, and Modifications to the Existing Power Plant Building and Bulk Storage Tanks.

- a. The lump sum for this bid item shall include all labor, materials, equipment, and incidentals required to conduct the following:
 1. Mechanical and Electrical: Furnish and install electrical ground grid; conduit with electrical power and communications conductors from the

module to the existing power plant; heat recovery arctic piping from the module to the existing power plant; and fuel piping, conduit, and conductors from the module to the existing IPEC tank farm. Install Owner furnished 750kva step up transformer on Owner furnished ground sleeve. Install and primary feeder from the generator module to the community electrical distribution system in accordance with the plans.

2. Modifications and Connections to the Electrical Distribution System: Furnish and install all materials to complete the module electrical connection to the IPEC electrical distribution system, install new power poles and anchors to revise distribution alignment, reconnect existing systems, and perform other related work as shown on the Plans.
3. Mechanical and Electrical Modification to the Existing Power Plant Building: Furnish and install all materials to complete the mechanical and electrical modifications to the existing power plant building in accordance with the plans and specifications including but not limited to:
 - a. 45kva Station Service Transformer and electrical connections to the existing power plant building.
 - b. Building unit heaters and electrical controls in the existing power plant building.
4. Bulk Storage Tank Modifications: Furnish and install all materials to complete the mechanical and electrical modifications to the existing IPEC tank farm including but not limited to:
 - a. Above ground portion of the fuel piping, conduit and conductors to the bulk storage tanks.
 - b. Manifold piping and controls to allow for the supply of fuel from the existing bulk fuel tanks to the generator module day tank.

1.05 CONTRACT METHOD

- A. This Contract is composed of multiple lump sum and unit price items as shown on the bid schedule. This work shall be measured and paid for in accordance with Section 00700 – General Conditions, Article 13 – Payment to Contractors and Completion.

1.06 WORK BY OTHERS

- A. Other projects may run concurrently with work. Cooperate with other contractors, force account construction crews and superintendents, agencies, and the Authority to minimize conflicts.
- B. Notify the Project Manager immediately if conflicts will interfere with the progress of the work.
- C. The Authority will manufacture the Power Plant Module.

- D. Kake Tribal Fuel Corporation shall be responsible for the cleaning and decommissioning of the existing tank farm tanks, replacing existing dispensing equipment on the KTC dock, and making final connections of on-shore marine fuel supply piping and controls provided under this contract to a new, code compliant marine dispenser on the dock

1.07 SHUTTOFFS / DISRUPTIONS TO SERVICE

- A. No unscheduled disruptions in fuel supply shall be allowed. Provide temporary dispensing operations in accordance with the specifications as necessary to avoid fuel dispensing outages during construction. Provide not less than 72 hours notice to Project Manager of activities that will affect operations.

1.08 CONTRACTOR'S USE OF PREMISES

- A. Coordinate with the Project Manager prior to placing equipment or supplies at Contractor provided staging areas or within the Project boundary. Do not disturb areas outside of Project boundaries.
- B. Do not disrupt access to adjacent areas unaffected by the Work. Keep driveways and entrances serving premises clear and available for use at all times. Cooperate with the Authority during construction operations to minimize conflicts and facilitate operations.
- C. Assume full responsibility for protection and safekeeping of products under this Contract.
- D. Assume full responsibility for the protection of existing facilities and contents from damage due to construction operations.

1.09 COORDINATION

- A. Contractor is responsible for coordination required with the City of Kake for use of the City-owned barge landing facility and/or for utilizing the area surrounding the barge landing for stored materials.
- B. Coordinate with the Project Manager, IPEC, and City for the relocation of stored equipment and materials inside the project areas.
- C. Contractor is responsible for any areas utilized by the contractor for stored materials.
- D. Coordinate Work to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items to be installed later.
- E. Sequence Work to maximize worker efficiency and minimize construction time.
- F. Prior to procurement verify that characteristics of interrelated equipment are compatible.
- G. Coordinate space requirements and installation of components. Utilize spaces

efficiently to maximize accessibility for other installations, maintenance, and repairs.

- H. Coordinate temporary fuel dispensing plan with State Alaska Fire Marshall and provide code compliant temporary fueling operations as required during construction.

1.10 ACCESS FOR TESTING AND INSPECTION

- A. Provide access for the Authority, the Project Manager, and the Engineer to the site. Provide on-site transportation, ladders, lifts, eye and ear protection, hard hats, appropriate and clean respiratory protection, etc., for inspections and testing of the work.

PART 2 – PRODUCTS

Not Used

Part 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01020

INTENT OF DOCUMENTS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Explanation of intent and terminology of the Construction Documents.

1.02 RELATED REQUIREMENTS

- A. Section 00700 General Conditions: Article 1 Definitions relating to 'Drawings' and 'Specifications'.
- B. Section 00700 General Conditions: Article 3 Contract Documents relating to Intent, Amending, and Reuse.

1.03 SPECIFICATION FORMAT AND COMPOSITION

- A. Specifications are divided into Divisions and Sections for the convenience of writing and using. Titles are not intended to imply a particular trade jurisdiction. The Authority is not bound to define the limits of any subcontract, and will not enter into disputes between the Contractor and his employees, including Subcontractors.
- B. Pages are numbered independently for each section, and recorded in the Table of Contents. Section number is shown with the page number at the bottom of each page. The end of each section of the specifications is ended by "End of Section". It is Contractor's responsibility to verify that Contract Documents received for bidding and/or construction are complete in accordance with Table of Contents.
- C. The language employed in the Contract Documents is addressed directly to the Contractor. Imperative or indicative language is generally employed throughout and requirements expressed are the mandatory responsibility of the Contractor, even though the work specified may be accomplished by specialty subcontractors engaged by the Contractor. References to third parties in this regard shall not be interpreted in any way as to relieve the Contractor of his or her responsibility under this Contract.
- D. These Specifications are of the abbreviated or "streamlined" type, and may include incomplete sentences.
- E. Omissions of words or phrases such as "the Contractor shall", "in conformity therewith", "shall be", "as noted on the Drawings", "according to the Drawings", "a", "an", "the", and "all" are intentional.
- F. Omitted words or phrases shall be supplied by inference in the same manner as they are when a "note" occurs on the Drawings.

1.04 DRAWINGS: CONTENT EXPLANATION

A. Drawings, Dimensions, and Measurements.

1. Contract Documents do not purport to describe in detail, absolute and complete construction information. Drawings are diagrammatic. Contractor shall provide verification of actual site conditions and shall provide complete and operational systems as specified when drawings do not provide full detail.

1.05 COMMON TERMINOLOGY

A. Certain items used generally throughout the Specifications and Drawings are used as follows:

1. Indicated: The term "indicated" is a cross reference to details, notes or schedules on the Drawings, other paragraphs or schedules in the Specifications, and similar means of recording requirements in the Contract Documents. Where terms such as "shown", "noted", "schedules", and "specified" are used in lieu of "indicate", it is for the purpose of helping the reader accomplish the cross reference, and no limitation of location is intended except as specifically noted.
2. Installer: The person or entity engaged by Contractor or subcontractors for the performance of a particular unit of Work at the Project site, including installation, erection, application, and similar required operations. It is a general requirement that installers be recognized experts in the work they are engaged to perform.
3. Furnish: Except as otherwise defined in greater detail, the term "furnish" is used to mean "...supply and deliver to the Project site, ready for unpacking, assembly and installation..."
4. Provide: Except to the extent further defined, the term "provide" means to furnish and install, complete and ready for the intended use.
5. Guarantee and Warranty: "Guarantee" is generally used in conjunction with units of work which require both products and substantial amounts of labor at the Project site. "Warranty" is generally used in conjunction with products manufactured or fabricated away from the Project site. The resulting difference is that warranties are frequently issued by manufacturers, and guarantees are generally issued by Contractor and frequently supported (partially) by product warranties from manufacturers.

1.06 CONFLICTS

A. Report any conflicts to the Project Manager for clarification.

PART 2 – PRODUCTS

Not Used

Part 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01027

APPLICATIONS FOR PAYMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures for preparation and submittal of Applications for Payment.

1.02 RELATED REQUIREMENTS

- A. Section 00700 General Conditions: Article 13, Progress Payments, and Final Payment.
- B. Section 01300 Submittals: Procedures.
- C. Section 01370 Schedule of Values.
- D. Section 01700 Contract Closeout Procedures: Final Payment.
- E. Section 01720 Project Record Documents.

1.03 FORMAT

- A. Application for Payment form as provided by the Authority or Contractor's form containing same information.

1.04 PREPARATION OF APPLICATIONS

- A. Type required information on Application for Payment form approved by the Authority. Payment form shall be similar to AIA G702 or G703.
- B. Execute certification by original signature of authorized officer upon each copy of the Application for Payment.
- C. Submit names of individuals authorized to be responsible for information submitted on Application for Payment.
- D. Indicate breakdown of costs for each item of the Work on accepted schedule of values. Provide dollar value in each column for each line item for portion of Work performed and for stored products.
- E. List each authorized Change Order as an extension on continuation sheet, listing Change Order number and dollar amount as for an original item of Work.
- F. Prepare Application for Final Payment as specified in Section 01700 Contract Closeout Procedures: Final Payment.

1.05 SUBMITTAL PROCEDURES

- A. Submit three copies of each Application for Payment at times stipulated in Contract.
- B. Submit under the Authority accepted transmittal letter. See Section 01370 Schedule of Values. Identify Contract by the Authority contract number.

1.06 SUBSTANTIATING DATA

- A. When the Authority requires substantiating information, submit data justifying line item amounts in question.
- B. Provide one copy of data with cover letter for each copy of Application for Payment. Show Application for Payment number and date, and line item by number and description.

1.07 SUBMITTALS WITH APPLICATION FOR PAYMENT

- A. Submit the following with each Application for Payment.
 - 1. Updated construction schedule as required by Section 01300 Submittals.
 - 2. Updated Schedule of Values as required by Section 01370 Schedule of Values.
 - 3. Evidence of transmittal of certified payrolls to the Labor Department.

PART 2 – PRODUCTS

Not Used

Part 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01028

CHANGE ORDER PROCEDURES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures for processing Change Orders.

1.02 RELATED REQUIREMENTS

- A. Section 00312 Bid Schedule: Total amount bid for lump sum items
- B. Section 00510 Construction Contract: Total amount of Contract Price, as awarded
- C. Section 00700 General Conditions: Article 9, Governing requirements for changes in the Work, in Contract Price, and Contract Time.
- D. Section 01027 Applications for Payment.
- E. Section 01300 Submittals: Progress Schedules.
- F. Section 01370 Schedule of Values.
- G. Section 01700 Contract Closeout Procedures: Project Record Documents.

1.03 SUBMITTALS

- A. Submit name of the individual authorized to accept changes, and to be responsible for informing others in Contractor's employ of changes in the Work.
- B. Change Order forms will be prepared by the Authority.

1.04 DOCUMENTATION OF CHANGE IN CONTRACT PRICE AND CONTRACT TIME

- A. Maintain detailed records of work done on a Cost of the Work basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work. Incomplete or unsubstantiated costs will be disallowed.
- B. Contractor shall submit a complete, detailed, itemized cost breakdown addressing impact on Contract Time and Contract Price with each proposal.
- C. On request, provide additional data to support computations:
 - 1. Quantities of products, labor, and equipment.
 - 2. Taxes, insurance, and bonds.
 - 3. Justification for any change in Contract Time.
 - 4. Credit for deletions from Contract, similarly documented.

- D. Support each claim for additional costs, and for work done on a Cost of the Work basis, with additional information:
 - 1. Origin and date of claim.
 - 2. Dates and times work was performed and by whom.
 - 3. Time records and wage rates paid.
 - 4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

1.05 PRELIMINARY PROCEDURES

- A. The Authority may submit a Proposal Request which includes: Detailed description of change with supplementary or revised Drawings and Specifications, the projected time for executing the change, with a stipulation of any overtime work required, and the period of time during which the requested price will be considered valid.
- B. Contractor may initiate a change by submittal of a request to the Authority describing the proposed change with a statement of the reason for the change, and the effect on Contract Price and Contract Time with full documentation.

1.06 CONSTRUCTION CHANGE AUTHORIZATION

- A. Shall be in accordance with Article 9 - Changes: in Section 00700 - General Conditions.

1.07 LUMP SUM CHANGE ORDER

- A. Contractor shall submit an itemized price proposal in sufficient detail to fully explain the basis for the proposal. Contractor and the Authority shall then negotiate an equitable price (and time adjustment if appropriate) in good faith. The Change Order will reflect the results of those negotiations. If negotiations break down, Contractor may be directed to perform the subject Work under a COST OF THE WORK CHANGE ORDER.
- B. The maximum rates of cost markup (to cover both overhead and profit of the Contractor) shall be in accordance with Article 10- Contract Price, Computation and Change: in Section 00700 – General Conditions.
- C. These terms shall also apply to the proposals of subcontracts and allowances.

1.08 UNIT PRICE CHANGE ORDER

- A. For pre-determined unit prices and quantities, Change Order will be executed on a lump sum basis.
- B. For pre-determined unit prices and undetermined quantities, Change Order will be executed on an estimated quantity basis; payment will be based on actual quantities measured as specified.

1.09 COST OF THE WORK CHANGE ORDER

- A. Contractor shall submit documentation required in Paragraph 1.04 of this Section on a daily basis for certification by the Authority. The Authority will indicate by signature that the submitted documentation is acceptable. If it is not acceptable, Contractor and the Authority shall immediately meet to discuss resolution.
- B. After completion of the change and within 14 calendar days, unless extended by the Authority, the Contractor shall submit in final form an itemized account with support data of all costs. Support data shall have been certified by the Authority, as required above in paragraph A.
- C. The Authority will determine the change allowable in Contract Price and Contract Time as provided in provisions of the Contract Documents.

1.10 EXECUTION OF CHANGE ORDERS

- A. The Authority will issue Change Orders for signatures of parties as provided in Conditions of the Contract.

1.11 CORRELATION OF CONTRACTOR SUBMITTALS

- A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Price as shown on Change Order.
- B. Promptly revise progress schedules to reflect any change in Contract Time, revise subschedules to adjust times for other items of Work affected by the change, and resubmit.
 - 1. Progress Schedule shall be updated to reflect the changed condition. It shall be identified as a unique single or multiple task activity and shall be linked to it's predecessor and successor activities from the base schedule set of activities. An update to the cash flow schedule shall be made as well and to the extent possible, operational tasks shall be cross referenced to schedule of values categories
- C. Promptly enter changes in Project Record Documents.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01030

CONSTRUCTION SURVEYING

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section is intended to establish a standard minimum level of acceptable field survey specifications and procedures to properly control the construction project.
- B. The Contractor shall furnish all labor and materials necessary to perform all surveying and construction staking essential for the completion of construction in conformance with the drawings, specifications, and other Contract Documents. The Contractor shall perform all the necessary calculations required to accomplish the work.
- C. It is the Contractor's responsibility to ensure proper survey methods and procedures are followed. The Contractor, at no additional expense to the Authority, shall correct any errors resulting from the survey. Any method conflicting with these survey specifications shall be approved by the Project Manager prior to its use.
- D. All survey work performed shall be under the direct supervision of a Professional Land Surveyor registered in the State of Alaska.

1.02 RELATED SECTIONS

- A. Section 1720 Project Record Documents

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

3.01 PROJECT CONTROL

- A. General: The Authority will provide reference horizontal and vertical control data to facilitate construction staking. It is the Contractor's responsibility to establish and check all survey control prior to any staking activity to ensure that the Project is properly located and constructed according to the Contract Documents. If discrepancies are found, Project Manager shall be notified separately and immediately. The Contractor is responsible for preserving and protecting all line stakes, grade stakes, reference points, and hubs. In the event of their loss or destruction the Contractor shall pay all costs for their replacement. The Contractor shall replace any monument that exists within the construction limits if it is disturbed or removed due to construction project activity. All monumentation disturbed or removed shall be replaced with the same type of monument or a monument approved by the Project Manager.
- B. Horizontal Control Accuracy: The maximum permissible linear error allowed in establishing horizontal control is 1:5000 feet. The maximum error allowed in unadjusted angular closure shall be calculated by the formula "30 multiplied by the square root of N" where the term "N" signifies the number of transit setups in the traverse and "30" signifies 30 seconds.

C. Vertical Control

1. Elevations shall originate from the datum provided in the Contract Drawings. All level circuits run to establish temporary benchmarks (TBM) shall have an accuracy no less than the value computed by the equation "0.1 feet multiplied by the square root of the distance in miles." Foresights and backsights shall be balanced. The maximum sighting distance shall not exceed 300 feet. All leveling circuits establishing TBMs shall be adjusted using recognized standard surveying adjustment methods. Side shots to establish elevations on TBMs shall not be allowed.
2. A minimum of two known benchmarks shall be used when establishing TBMs to verify correct elevation information. A sufficient number of TBMs shall be set to control the Project with a maximum spacing of 800 feet. A TBM shall not be located further than 200 feet outside the construction limits of the Project. All TBMs shall be located and be comprised of sufficient material such that their integrity will not be compromised throughout the life of the Project.

3.02 FIELD NOTES

- A. The Contractor shall supply uniform, hard backed, write in rain survey field books. The Project Manager has the right to inspect the field books at any time during the Project. All field books shall be identified on the outside spine. Each book shall be indexed and its contents referred to by page number. The date, weather condition, survey crew personnel, and instruments used shall be shown at the beginning of each day's notes. All field books containing field notes shall be sealed and signed by a Registered Professional Land Surveyor on the title page of each field book. Copies of all field books used in the process of work shall be submitted to the Project Manager upon completion of the work.
- B. All observations shall be recorded directly into project field books. All field books shall be in pencil. All field notes and drawings shall be completed and reduced before acceptance by the Project Manager. Control sketches and traverse data shall be graphic and show measured and recorded distances. The source of record shall be stated. Stationing shall increase from the bottom of the page to the top. Notes shall be neat, legible, precise and sufficiently detailed. The Project Manager may stop all survey work until the notes are brought into conformance with this specification. A copy of each day's field notes shall be reduced and available to the Project Manager by 12:00 PM the following workday. The Project Manager may issue a stop work order at the Contractor's expense if the field notes are not delivered, when requested, within this time frame.
- C. Erasures of errors in field books will not be accepted. A line shall be drawn through those portions of notes in error, leaving the original note legible, and the correction shall be noted above the original entry. Corrections shall be initialed by the party chief and dated. Where appropriate, a note explaining the error shall be included.
- D. Failure on the part of the Contractor to keep and maintain complete and accurate field notes as required herein shall be sufficient reason to withhold payment for those items of work where survey is required. No final Project payment will be

made to the Contractor until copies of the field books have been submitted to and approved by the Project Manager.

3.03 PARTY CHIEF'S DAILY DIARY

- A. The survey party chief shall keep a factual daily diary of all work performed by the survey crew on this Project. The diary shall contain the following information: date, crew, type and location of work performed, work accomplished, orders from the Project Manager and signature.
- B. This record shall be kept on the Project Site and submitted to the Project Manager upon request. A copy of the diary shall be submitted to the Authority upon completion of the Project.

3.04 FUEL SYSTEM STAKING

- A. The Contractor shall stake the fuel line alignment and grade for work to be done under the Contract. Two offset hubs and lath shall be set for each tee, header, valve, and angle point in alignment. The lath shall identify the feature being staked and state the elevation of the hub, and the offset distance to the center of the feature as shown on the Contract Drawings. The offsets shall be set at a reasonable distance to protect them from disturbance.
- B. At the time the fuel line centerline is staked, control points shall be set so that the line can be readily re-established when required. Each control point shall be visible to at least one other control point. Control points shall be placed in locations at which they are unlikely to be disturbed during construction. Measurements and sketches of the control points shall be kept in the field book.
- C. Grade Stakes
 - 1. Grade stakes shall be used where slope stakes are not required. The reference point shall be a standard wooden hub accompanied by a minimum three foot lath indicating the cut or fill, distance to the point, description of the point being cut or filled, and a distance from fuel line centerline to stake. The fuel line station shall be written on the back of the lath. Cuts and fills shall be given to the nearest 0.1 foot. A record of the staking elevations, the design grade, the location of stakes, the fuel line station of the stake and the feature which is being staked shall be made in the survey field book.

3.05 MISCELLANEOUS CONSTRUCTION STAKING

- A. The Contractor shall provide sufficient stakes for the adequate control of all structures and incidental construction not specifically covered above. A staking diagram with respect to fuel line stations and measurements for pay quantities shall be maintained in the field notes. Other items such as horizontal and vertical control shall be shown in the field book and shall be governed by procedures established in previous articles of this specification.

3.06 ELECTRONIC DATA COLLECTION AND RADIAL SURVEYS

- A. When electronic data collection is used for radial stakeout, the following criteria shall be maintained and submitted:

1. A standard field book containing: date, weather conditions, instrumentation used, crew, project description and sketch, listing of turning points and control points used, and other information needed to reconstruct the survey activity.
2. A printout of the unedited output from the data collector or a copy of the field book entries to include: code descriptors, horizontal circle information, vertical circle information based on zenith angle and slope distance expressed in feet. Also, a sheet containing the explanation of the codes used to identify the various shots.
3. A printout of the reduced and adjusted (ratios of error and magnitude of misclosure shown) data represented by x, y, and z coordinates, plus necessary descriptive information.
4. A plot and or line drawing showing the control points, point occupied, and the radial observations at a scale large enough to read the point number, elevation, point descriptions, and coordinates.
5. If cross sectional data is collected by radial methods a printout/plot of the following data is required:
 - a. Each point identified as it relates to the fuel line centerline station.
 - b. The distance offset from centerline of the fuel line.
 - c. The elevation and description of the shot.
 - d. A cross section line plot of each station with the individual shots averaged out to produce the final interpolated cross section.
 - e. The vertical angle and distance to the TBM's used for control and the instrument height, and the height of the prisms.

3.07 AS-BUILT SURVEYS, FIELD NOTES AND PROJECT RECORD DOCUMENTS

- A. As-built survey measurements shall be recorded on a clean set of blue-line drawings deemed the Project Record Documents and shall show changes and improvements which vary from the dimensions, lines, grades, locations and materials as shown on the Contract Drawings. The as-builts shall also include swing ties to all pertinent existing structures, in accordance with Section 01720.
- B. Survey measurements shall be taken, field notes shall be kept, and accuracies shall be attained in accordance with the specifications of this section.
- C. When electronic data collection is used to obtain as-built information, the following information shall be maintained and submitted:
 1. A printout of the unedited, raw data from the data collector
 2. An explanation of all codes and abbreviations used
 3. A printout of the x, y, and z coordinates
 4. An electronic file, suitable for insertion into AutoCAD, with as-built features indicated by horizontal position, description, and elevation, based on Project coordinates.

- 5. Electronic data collection used to obtain as-built information does not relieve the Contractor's obligation to maintain Project Record Documents or the obligation to obtain swing ties.
- D. A copy of all survey field notes shall be submitted with each pay request. Pay requests shall not be processed until the survey notes are received by the Project Manager and the Project Manager is provided evidence that the Project Record Documents are current and in the required condition.
- E. Project Record Documents shall be redlined and kept current. They shall be kept ready for review for when the Project Manager, at his/her option, requests that the Project Record Documents be submitted with the survey field notes for the pay request.
- F. Project Record Documents shall be submitted along with a copy of the field notes to the Project Manager at the completion of construction activity, in accordance with Section 01720 Project Record Documents, of these Specifications.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 01090

REFERENCE STANDARDS

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Quality assurance.

1.02 RELATED REQUIREMENTS

- A. Section 00700 General Conditions: Paragraph 3.4.2.

1.03 QUALITY ASSURANCE

- A. For products or workmanship specified by association, trade, or Federal Standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date for receiving bids, unless otherwise stated in the Contract Documents.
- C. Obtain copies of standards when required by the Contract Documents.
- D. Maintain copy at Project Site during submittals, planning, and progress of the specific work, until Substantial Completion.
- E. Should specified reference standards conflict with Contract Documents, request clarification from the Project Manager before proceeding. Local code requirements, where more stringent than referenced standards, shall govern.
- F. Neither the contractual relationship, duties, nor responsibilities of the parties in Contract nor those of the Project Manager shall be altered by the Contract Documents by mention or inference otherwise in any reference document.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01126

CONTRACTOR'S CERTIFICATION OF SUBCONTRACT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures for preparing, submitting, and accepting subcontracts.

1.02 RELATED REQUIREMENTS

- A. Document 00100 Information to Proposers, Requirements of Apparent Low Bidder
- B. Document 00430 Subcontractor List
- C. Document 00700 General Conditions: Paragraph 6.13.1, Subcontractor Certification and Approval
- D. Section 01300 Submittals: Procedures

1.03 PREPARATION

- A. Certification Forms: Use forms provided in Section 00430.
- B. Contractor to prepare certification form and submit to the Authority prior to the start of work. Multiple subcontracts may be included under a single submittal. Where required, attach additional information (cross-referenced to the appropriate subcontract) to the certification form.
- C. Substitute certification forms will not be considered.

1.04 SUBMITTAL OF CERTIFICATION

- A. Contractor shall submit the initial and all subsequent certification forms in accordance with the submittal requirements identified under paragraph 1.02 D of this Section.

1.05 CONSIDERATION OF CERTIFICATION

- A. Following receipt of submittal and within a reasonable period of time the Authority shall review for each of the following:
 - 1. Completeness of forms and attachments.
 - 2. Proper execution (signatures) of forms and attachments.
- B. Submittals which are not complete or not properly executed will be returned to the Contractor under a transmittal letter denoting the deficiencies found. Contractor shall correct and resubmit per paragraph 1.04 of this Section.

1. Subcontractors will be required to leave the Project site until properly executed subcontract is in place.
2. Payment will not be made for work performed by a non-certified subcontractor.

1.06 ACKNOWLEDGMENT OF CERTIFICATION

- A. Submittals which have been examined by the Authority and are determined to be complete and properly executed shall be acknowledged as such by the Authority's signature on the face of each certification form.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01200

PROJECT MEETINGS

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Contractor participation in preconstruction conferences.
- B. Contractor administration of progress meetings and pre-installation conferences.

1.02 PRECONSTRUCTION CONFERENCES.

- A. The Authority will administer a preconstruction conference to be held at the Authority's main office located at 813 W. Northern Lights Blvd, Anchorage, Alaska, for execution of Contract and exchange of preliminary submittals. The conference will be scheduled for a mutually agreeable time for the Authority Project Manager, Authority Engineering, Authority Operations, Engineer, and Contractor following Notice-To-Proceed. During the conference, the contractor shall present his schedule, construction methodology, and other pertinent information. Contractor will be required to field questions about his operation.

1.03 PROGRESS MEETINGS

- A. Contractor shall schedule and administer weekly project meetings throughout progress of the work (unless this requirement is waived by The Authority).
- B. Attendance: Job superintendent, major Subcontractors and Suppliers, Project Engineer, and Project Manager as appropriate to agenda topics for each meeting unless this requirement is waived by The Authority.
- C. Suggested Agenda: Review of Work progress, status of progress schedule and adjustments thereto, delivery schedules, submittals, maintenance of quality standards, pending changes and substitutions, and other items affecting progress of Work.

1.04 PREINSTALLATION CONFERENCES

- A. When required in individual Specification section, or directed by the Project Manager, convene a pre-installation conference prior to commencing Work of the section unless this requirement is waived or modified by the Authority.
- B. Require attendance of entities directly affecting, or affected by, Work of the section.
- C. Review conditions of installation, preparation and installation procedures, and coordination with related Work.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures.
- B. Construction Progress Schedules.
- C. Manufacturer's Instructions.
- D. Manufacturer's Certificates.

1.02 RELATED REQUIREMENTS

- A. Section 01027 Applications for Payment
- B. Section 01028 Change Order Procedures
- C. Section 01030 Construction Surveying
- D. Section 01126 Contractor's Certification of Subcontract
- E. Section 01340 Shop Drawings, Product Data, Samples
- F. Section 01370 Schedule of Values
- G. Section 01400 Quality Control
- H. Section 01500 Construction Facilities and Temporary Controls
- I. Section 01568 Permits, Environmental Limitations, and Storm Water and Erosion Control
- J. Section 01570 Traffic Control
- K. Section 01600 Material and Equipment
- L. Section 01630 Product Options and Substitutions
- M. Section 01700 Contract Closeout Procedures
- N. Section 01720 Project Record Documents
- O. Section 02081 Special Project Procedures for Maintaining Fuel Storage and Transfer Operations During Construction
- P. Section 02082 Decommission Fuel Piping

- Q. Section 02083 Demolition and Removal of Existing Buildings and Structures
- R. Section 02200 Excavation and Embankment
- S. Section 02275 Geotextile
- T. Section 02620 Subdrainage
- U. Section 02666 Liners
- V. Section 02830 Chain Link Fences and Gates
- W. Section 02890 Signs
- X. Section 02930 Seeding
- Y. Section 03200 Concrete Reinforcement
- Z. Section 03300 Cast-In-Place Concrete
- AA. Section 07610 Metal Roof Panels
- BB. Section 05120 Structural Steel
- CC. Section 09800 Hot Dip Galvanized Coatings
- DD. Section 09900 Painting and Coating
- EE. Section 11951 Spill Response Equipment
- FF. Section 13121 Pre-Engineered Buildings
- GG. Section 15050 Basic Mechanical Materials and Methods
- HH. Section 15175 Aboveground Fuel Storage Tanks
- II. Section 15190 Cathodic Protection
- JJ. Section 15191 Fuel Piping System
- KK. Section 15192 Pumps and Equipment
- LL. Section 15193 Fuel Tank Appurtenances
- MM. Section 15195 Fuel Dispensers and Appurtenances
- NN. Section 16010 General Electrical Provisions
- OO. Section 16100 Basic Materials and Methods
- PP. Section 16110 Conduits and Fittings

- QQ. Section 16120 Wire and Cable
- RR. Section 16130 Outlet Boxes
- SS. Section 16131 Pull and Junction Boxes
- TT. Section 16140 Wiring Devices
- UU. Section 16160 Motor Starters
- VV. Section 16164 Panel Boards
- WW. Section 16170 Disconnects
- XX. Section 16180 Overcurrent Protective Devices
- YY. Section 16190 Supporting Devices
- ZZ. Section 16450 Grounding
- AAA. Section 16500 Lighting Fixtures
- BBB. Section 16900 Control/Alarm Panels
- CCC. Other Sections requiring submittals for the Work

1.03 PROCEDURES

- A. Delivery of Submittals:
 - 1. Within 10 days following Notice to Proceed, Contractor shall submit to Project Manager in electronic format, a Submittal Register (Section 01340 1.12A) as required by the Contract (by Section Number, Paragraph Number, Page Number, and time criteria if required). The schedule must be approved by the Project Manager before any submittals required by the Contract will be accepted.
 - 2. Deliver submittals to directly to the Project Manager.
- B. Transmit each item on an Authority accepted form. Identify Project, Contractor, Subcontractor, and major Supplier. Identify pertinent Drawing sheet and detail number, and Specification section number, as appropriate. Identify deviations from Contract Documents by submitting a separate Substitution Request Form. Provide a minimum of 8 1/2" x 5 1/2" blank space on the front page for Contractor, and Engineer review stamps.
- C. Submit initial progress schedules and Schedule of Values in electronic format as directed by the Project Manager, in accordance with Document 00700 - General Conditions. Form and content shall be reviewed by the Authority. After review by the Authority, revise and resubmit as required. Submit subsequent updated schedules with each Application for Payment.

- D. Comply with progress schedule for submittals related to Work progress. Coordinate submittal of related items.
- E. After Project Manager review of submittal, revise and resubmit as required, identifying changes made since previous submittal. The Project Manager will not return the first or revised copies of rejected submittals for re-use. DO NOT submit partial copies of submittals for incorporation into rejected submittal packages which have been kept by the Project Manager. Provide COMPLETE copies for each review.
- F. Distribute copies of reviewed submittals to concerned persons. Instruct recipients to promptly report any inability to comply with provisions.
- G. If drawings, product submittals, samples, mock-ups, or other required submittals are incomplete or not properly submitted, Project Manager will not review the submittal and will immediately return submittal to Contractor. Project Manager will review a submittal no more than three times (incomplete or improper submittals count as one). Contractor shall pay all review costs associated with more than three reviews, unless a re-submittal is required due to new comments addressing previously submitted information.

1.04 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit horizontal bar Gantt chart. Schedule shall show:
 - 1. Separate bar for each major trade or operation, identifying the duration of each activity and precedent activities.
 - 2. Complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Show each work plan and separate work area as a separate activity or group of activities.
 - 3. Submittal dates for Shop Drawings, product data, and samples, and product delivery dates, including any furnished by the Authority and those under allowances.
 - 4. All required submittals and indicating the date for each required submittal.
 - 5. Show projected percentages of completion for each item of Work and submittal as of time of each Application for Progress Payment.
 - 6. Schedule shall be computer generated; (MS Projects, Sure-Trac, or Primavera); Gantt format with preceding and succeeding operational tasks indicated by relationship arrows. An accompanying cash flow chart shall reflect estimated monthly draw amounts. To the extent possible, operational tasks shall be cross referenced to schedule of values categories.
 - 7. Submit updated schedule with each Application for Payment per Section 01027

1.05 SCHEDULE OF VALUES

- A. Submit in accordance with Section 01370 Schedule of Values.

1.06 SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

- A. Submit in accordance with Section 01340 Shop Drawings, Product Data and Samples.
- B. Submit signed and sealed engineering design calculations performed by a Professional Engineer licensed in the State of Alaska where the Contractor is responsible for design as required in the Contract Documents.

1.07 MANUFACTURER'S INSTRUCTIONS

- A. When required in individual Specification Section, submit manufacturer's printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for product data.

1.08 QUALITY CONTROL DATA

- A. Submit in accordance with Section 01400 Quality Control and individual specification sections.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A1 – Mobilization and Demobilization, Bid Item B1 – Mobilization and Demobilization and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 01340

SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

PART 1 GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures for submittals.

1.02 RELATED REQUIREMENTS

- A. Section 00700 General Conditions
- B. Section 01300 Submittals
- C. Section 01400 Quality Control
- D. Section 01630 Product Options and Substitutions
- E. Section 01700 Contract Closeout: Project Record Documents

1.03 SHOP DRAWINGS

- A. Present drawings in a clear and thorough manner. Label each Shop Drawing with the Authority's Project name and Project number; identify each element of the Shop Drawings by reference to sheet number and detail, or schedule.
- B. Identify field dimensions; show relation to adjacent or critical features or Work or products.
- C. Minimum Sheet Size: 8-1/2"x11". Larger sheets may be submitted in multiples of 8-1/2"x11".

1.04 PRODUCT DATA

- A. Submit only pages which are pertinent; mark each copy of standard printed data to identify pertinent products, referenced to Specification section and Article number. Show reference standards, performance characteristics, capacities, wiring and piping diagrams and controls, component parts, finishes, dimensions, and required clearances.
- B. Modify manufacturer's standard schematic drawings and diagrams to supplement standard information and to provide information specifically applicable to the Work. Delete information not applicable.

1.05 SAMPLES

- A. Submit full range of manufacturer's standard finishes except when more restrictive requirements are specified, indicating colors, textures, and patterns, for Project Manager selection.

- B. Submit samples to illustrate functional characteristics of products, including parts and attachments.
- C. Approved samples which may be used in the Work are indicated in the Specification section.
- D. Label each sample with identification required for transmittal letter.
- E. Provide field samples of finishes at Project, at location acceptable to the Project Manager, as required by individual Specification section. Install each sample complete and finished. Acceptable finishes in place may be retained in completed Work.

1.06 MANUFACTURER'S INSTRUCTIONS

- A. Manufacturer's instructions for storage, preparation, assembly, installation, start-up, adjusting, balancing, and finishing under provisions of Section 01400.

1.07 CONTRACTOR REVIEW

- A. Review submittals prior to transmittal; determine and verify field measurements, field construction criteria, manufacturer's catalog numbers, and conformance of submittal with requirements of Contract Documents.
- B. Coordinate submittals with requirements of Work and of Contract Documents.
- C. Notify the Project Manager in writing at time of submittal, of any deviations from requirements of Contract Documents.
- D. Do not fabricate products or begin Work which requires submittals until return of submittal with Authority acceptance.

1.08 SUBMITTAL REQUIREMENTS

- A. Each submittal to be numbered by Specification Section and Paragraph. Revisions shall be identified by a hyphen after the paragraph, with a letter designator. Example: 1st submittal "01010 1.08A-1", resubmittal for 1st submittal "01010 1.08A-2" and 2nd submittal 01010 1.08B-1".
- B. Transmit submittals in accordance with the required submittal schedule and in such sequence to avoid delay in the Work.
- C. Provide 8 1/2" x 5 1/2" blank space on each submittal for Contractor and Engineer stamps.
- D. Apply Contractor's stamp, signed or initialed, certifying to review, verification of products, field dimensions and field construction criteria, and coordination of information with requirements of Work and Contract Documents.
- E. Coordinate submittals into logical groupings to facilitate interrelation of the items.
- F. Submit electronic copies of shop drawings required in the Contract. Contractor may

be required to submit, to the Project Manager, four opaque reproductions of full-size shop drawings at no additional cost to the Owner.

- G. Submit electronic copies of product data and manufacturer's instructions required by the contract.
- H. Submit number of samples specified in individual Specifications sections.
- I. Submit under the Authority's accepted transmittal form letter. Identify Project by title and the Authority's Project number; identify Contract by the Authority's contract number. Identify Work and product by Specification section and Article number.
- J. Each submittal shall have as its face document a completed, Authority furnished, Submittal Summary form.

1.09 RESUBMITTALS

- A. After the Project Manager review of submittal, revise and resubmit as required, identifying changes made since previous submittal. Project Manager will not return the first or revised copies of rejected submittals for re-use. DO NOT submit partial copies of submittals for incorporation into rejected submittal packages which have been kept by the Project Manager. Provide COMPLETE copies for each review.

1.10 AUTHORITY REVIEW

- A. The Authority or authorized agent will review Shop Drawings, product data, and samples and return submittals within (14) working days.
- B. The Authority or authorized agent will examine shop drawings for general arrangement, overall dimensions and suitability, and will return to the Contractor marked as follows:

"Submit Specified Item" - denotes that the item specified in the contract documents is required and substitutions are not acceptable.

"Approved" - denotes acceptance of the submittal.

"Approved With Corrections Noted" - denotes review is conditional on compliance with notes made on the submittal.

"Revise and Resubmit" - denotes that revisions are required in the submittal in order for the submittal to be generally consistent with the requirements of the Contract Documents. Required revisions will be identified to the Contractor. Resubmittal is required.

"Rejected" - denotes that the submittal does not meet the requirements of the Contract Documents and shall not be used in the Work. Reasons for rejection will be identified to the Contractor. Resubmittal is required.

- C. Review by the Authority or authorized agent of shop drawings shall not be construed as a complete check, but will indicate only that the general method of construction and detailing is consistent with the requirements of the Contract Documents. Review

of such drawings shall not relieve the Contractor of the responsibility for errors, dimensions, and detail design.

- D. The Authority or authorized agent review will not extend to means, methods, techniques, sequences or procedures of construction (except in the case of construction specific submittals, such as erection plans) or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in with the item functions.

1.11 DISTRIBUTION

- A. Duplicate and distribute reproductions of Shop Drawings, copies of product data, and samples, which bear Engineer's stamp, to job site file, record documents file, Subcontractors, Suppliers, and other entities requiring information.

1.12 SCHEDULE OF SUBMITTALS

- A. Submittal Register Form to be completed by Contractor and approved by the Authority prior to submittal of any items.
- B. Submit shop drawings, product data and samples as required for each specification section.
- C. Format.
 - 1. Submittal schedule form as provided by the Authority as outlined in Section 01400 1.07.

Part 2 – PRODUCTS

Not Used

Part 3 – EXECUTION

Not used

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 01370

SCHEDULE OF VALUES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures for preparation and submittal of Schedule of Values.

1.02 RELATED REQUIREMENTS

- A. Section 00700 General Conditions
- B. Section 01027 Applications for Payment
- C. Section 01300 Submittals

1.03 FORMAT

- A. Form and content must be acceptable to the Authority.
- B. Contractor's standard form or media-driven printout will be considered on request.
- C. Follow the table of contents of Project Manual for listing component parts. Identify each line item by number and title of listed Specification sections.

1.04 CONTENT

- A. List installed value of each major item of Work and each subcontracted item of Work as a separate line item to serve as a basis for computing values for progress payments. Round off values to nearest dollar.
- B. The work shall include all major items and sub-items:
- C. For each major subcontract, list products and operations of that subcontract as separate line items.
- D. Coordinate listings with progress schedule.
- E. Component listings shall each include a directly proportional amount of Contractor's overhead and profit.
- F. For items on which payments will be requested for stored products, list sub-values for cost of stored products with taxes paid.
- G. No progress payments will be made for Substantial Completion Submittals and Closeout Submittals until all submittals have been submitted to and accepted by Authority.
- H. The sum of values listed shall equal total Contract Price.

1.05 SUBMITTAL

- A. Contractor shall submit a Schedule of Values in electronic format within 15 days after the Notice to Proceed. Subsequent updated Schedule of Values shall be presented for review ten days prior to each Application for Payment.
- B. Transmit on an Authority accepted form transmittal letter. Identify Project by the Authority's title and Project number; identify Contract by the Authority's Contract number.

1.06 SUBSTANTIATING DATA

- A. When the Authority requires substantiating information, submit data justifying line item amounts in question.
- B. Provide an electronic copy of data with cover letter for each copy of the Application for Payment. Show application number and date, and line item by number and description.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 01400
QUALITY CONTROL

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Quality Control Program Requirements
- B. Workmanship.
- C. Manufacturer's Instructions.
- D. Manufacturer's Certificates.
- E. Manufacturers' Field Services

1.02 RELATED REQUIREMENTS

- A. Section 00700 - General Conditions: Article 12, inspection and testing required by governing authorities.
- B. Section 01300 Submittals

1.03 DESCRIPTION

- A. The Contractor shall assure that all materials and completed construction conform to contract Plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. When required, the Contractor shall establish, provide, and maintain an effective Quality Control Program that details the methods and procedures that will be used. Although guidelines are established and certain minimum requirements are specified herein and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.
- B. The intent of this section is to enable the Contractor to establish a necessary level of control that will:
 - 1. Adequately provide for the production of acceptable quality materials.
 - 2. Provide sufficient information to assure both the Contractor and the Engineer that the specification requirements can be met.
 - 3. Allow the Contractor as much latitude as possible to develop his own standard of control.

- C. The Contractor shall be prepared to discuss and present, at the preconstruction conference, his understanding of the quality control requirements. The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the Quality Control Program has been reviewed by the Engineer. No partial payment will be made for materials subject to specific quality control requirements until the Quality Control Program has been reviewed.
- D. The quality control requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the acceptance testing requirements. Acceptance testing requirements are the responsibility of the Engineer.

1.04 DESCRIPTION OF PROGRAM

A. General Description

The Contractor shall establish a Quality Control Program to perform inspection and testing of each item of work for which it is required by the technical specifications, including those performed by subcontractors. This Quality Control Program shall ensure conformance to applicable parts of the contract documents (plans and specifications) with respect to materials, workmanship, construction, finish, and functional performance. The Quality Control Program shall be effective for control of all construction work performed under this Contract and shall specifically include (1) surveillance and tests required by the technical specifications, (2) other requirements of this section, and (3) any other activities deemed necessary by the Contractor to establish an effective level of quality control.

B. Quality Control Program.

The Contractor shall describe the Quality Control Program in a written document which shall be reviewed by the Engineer prior to the start of any production, construction, or off-site fabrication. The written Quality Control Program shall be submitted to the Engineer for review at least 5 calendar days before the preconstruction conference.

- C. The Quality Control Program shall be organized to address, as a minimum, the following items:
 - 1. Quality control organization;
 - 2. Project progress schedule;
 - 3. Submittals schedule;
 - 4. Inspection requirements;
 - 5. Quality control testing plan;
 - 6. Documentation of quality control activities; and

7. Requirements for corrective action when quality control and/or acceptance criteria are not met.
- D. The Contractor is encouraged to add any additional elements to the Quality Control Program that he/she deems necessary to adequately control all production and/or construction processes required by this contract.

1.05 QUALITY CONTROL AND ORGANIZATION

- A. The Contractor's Quality Control Program shall be implemented by the establishment of a separate quality control organization. An organizational chart shall be developed to show all quality control personnel and how these personnel integrate with other management/production and construction functions and personnel.
- B. The organizational chart shall identify all quality control staff by name and function, and shall indicate the total staff required to implement all elements of the Quality Control Program, including inspection and testing for each item of work. If necessary, different technicians can be utilized for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the Quality Control Program, the personnel assigned shall be subject to the qualification requirements of this specification. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.
- C. The quality control organization shall consist of the following minimum personnel:
 1. Program Administrator. The Program Administrator shall be a full-time employee of the Contractor, or a consultant engaged by the Contractor. The Program Administrator shall have a minimum of 10 years of experience in bulk fuel facility construction and shall have had prior quality control experience on a project of comparable size and scope as the contract.

The Program Administrator shall have full authority to institute any and all actions necessary for the successful implementation of the Quality Control Program to ensure compliance with the contract documents. The Program Administrator shall report directly to a responsible officer of the construction firm. The Program Administrator may supervise the Quality Control Program on more than one project provided that person can be at the job site within 12 hours after being notified of a problem.

2. Quality Control Technicians. A sufficient number of quality control technicians necessary to adequately implement the Quality Control Program shall be provided. These personnel shall be either engineers, engineering technicians with five (5) years of experience, or experienced craftsman with qualifications in the appropriate field with a minimum of two (2) years of experience in their area of expertise and NICET certification.

The quality control technicians shall report directly to the Program Administrator and shall perform the following functions:

- a. Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications, and as required by the contract documents.
- b. Performance of all quality control tests as required by the technical specifications.

Engineer approval or certification at an equivalent level by a state or nationally recognized organization will be acceptable in lieu of NICET certification.

3. **Staffing Levels.** The Contractor shall provide sufficient qualified quality control personnel to monitor each work activity at all times. Where material is being produced in a plant for incorporation into the work, separate plant and field technicians shall be provided at each plant and field placement location. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The Quality Control Program shall state where different technicians will be required for different work elements.

1.06 WORKMANSHIP AND STANDARDS

- A. The Contractor's quality control program shall ensure compliance with industry standards except when more restrictive tolerances or specified requirements indicate more rigid standards or more precise workmanship.
- B. The Contractor shall secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, and racking
- C. Contractor shall comply with manufacturer's instructions in full detail, including each step in sequence. Should instructions conflict with Contract Documents, request clarification from the Project Manager before proceeding.
- D. When required by individual Specifications section, submit manufacturer's certificate, in duplicate, that products meet or exceed specified requirements.

1.07 SUBMITTALS SCHEDULE

- A. The Contractor shall submit a detailed listing of all submittals and shop drawings required by the technical specifications. The listing can be developed in a spreadsheet format and shall include:
 1. Specification item number;
 2. Item description;

3. Description of submittal;
4. Specification Subsection requiring submittal; and
5. Scheduled date of submittal.

1.08 INSPECTION REQUIREMENTS

- A. Quality control inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified by this specification.
- B. Inspections shall be performed daily to ensure continuing compliance with contract requirements until completion of the particular feature of work. These shall include the following minimum requirements:
 1. During tank and steel fabrications, plant operation for material production, quality control test results and periodic inspections shall be utilized to ensure the quality of the materials and workmanship. The Quality Control Program shall detail how these and other quality control functions will be accomplished and utilized to ensure compliance with applicable codes and standards.
 2. During field operations, quality control test results and periodic inspections shall be utilized to ensure the quality of all materials and workmanship. All equipment shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The Program shall document how these and other quality control functions will be accomplished and utilized.

1.09 QUALITY CONTROL TESTING PLAN

- A. As a part of the overall Quality Control Program, the Contractor shall implement a quality control testing plan. The testing plan shall include the minimum tests and test frequencies required by these specifications, the technical specification item, and Drawings, as well as any additional quality control tests that the Contractor deems necessary to adequately control production and/or construction processes.
- B. Any failed test results shall prompt the Contractor to immediately repair the tested area to meet the specifications and retest as necessary to achieve the specified results at no additional cost to the Owner.
- C. The testing plan can be developed in a spreadsheet fashion and shall, as a minimum, include the following:
 1. Specification item number;
 2. Item description (e.g., Schedule 80 pipe);

3. Test type (e.g., NDT, pipe pressure test);
 4. Test standard (e.g., ASTM or NACE test number, as applicable);
 5. Test frequency (e.g., as required by technical specifications or minimum frequency p);
 6. Responsibility (e.g., plant or field technician); and
 7. Control requirements (e.g., target, permissible deviations).
- D. The Engineer shall be provided the opportunity to witness quality control sampling and testing.
- E. All quality control test results shall be documented by the Contractor as required by this specification and submitted to the Engineer for approval.
- F. Testing shall also include nuclear densometer testing and material testing for placed fills in accordance with Section 02200, to ensure the quality of constructed embankments.
- G. Minimum earthwork testing shall include:

Material	Test	Frequency
Structural Fill and Trench Backfill	Gradation: ATM 304	At least 1 per source and as required by changes in material
	Plasticity Index: ATM 204 and ATM 205	At least 1 per source and as required by changes in material
	Moisture Density Determination: ASTM D1557 or AASHTO T-180	At least 1 per source and as required by changes in material
	In Place Density Determination AASHTO T310 or ATM 213	1 per 200 CY, or 1 per lift, whichever is more frequent; 1 per 200 LF of trench; 1 directly under each foundation and segment of dike wall.

Crushed Aggregate Surface Course (CASC)	AASHTO M-147 Quality	At least 1 per source and as required by changes in material
	Coarse Aggregate Wear ATM 313	At least 1 per source and as required by changes in material
	Course Aggregate Fractured Face ATM 305	At least 1 per source and as required by changes in material
	Gradation: ATM 304	At least 1 per source and as required by changes in material
	Moisture Density Determination: ASTM D1557 or AASHTO T- 180	At least 1 per source and as required by changes in material
	In Place Density Determination AASHTO T310 or ATM 213	1 per 25 CY

1.10 MANUFACTURERS' FIELD SERVICES

- A. When required by manufacturer or when specified in respective Specification sections, require manufacturer to provide qualified personnel to observe field conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment as applicable, and to make appropriate recommendations.
- B. Require manufacturer's representative to submit written report to the Project Manager listing observations and recommendations.

1.11 DOCUMENTATION

- A. The Contractor shall maintain current quality control records of all inspections and tests performed. These records shall include factual evidence that the required inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.
- B. These records must cover both conforming and defective or deficient features, and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the Engineer daily. The records shall cover all work

placed subsequent to the previously furnished records and shall be verified and signed by the Contractor's Program Administrator.

C. Specific Contractor quality control records required for the contract shall include, but are not necessarily limited to, the following records:

1. Daily Inspection Reports. Each Contractor quality control technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations on a form acceptable to the Engineer. These technician's daily reports shall provide factual evidence that continuous quality control inspections have been performed and shall, as a minimum, include the following:

- a. Technical specification item number and description;
- b. Compliance with approved submittals;
- c. Proper storage of materials and equipment;
- d. Proper operation of all equipment;
- e. Adherence to contract documents;
- f. Review of quality control tests; and
- g. Safety inspection.

The daily inspection reports shall identify inspections conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

The daily inspection reports shall be signed by the responsible quality control technician and the Program Administrator. The Engineer shall be provided at least one copy of each daily inspection report on the work day following the day of record.

2. Daily Test Reports. The Contractor shall be responsible for establishing a system which will record all quality control test results. Daily test reports shall document the following information:

- a. Technical specification item number and description;
- b. Test designation;
- c. Location;
- d. Date of test;
- e. Control requirements;
- f. Test results;

- g. Causes for rejection;
- h. Recommended remedial actions; and
- i. Retests.

Test results from each day's work period shall be submitted to the Engineer prior to the start of the next day's work period. When required by the technical specifications, the Contractor shall maintain statistical quality control charts. The daily test reports shall be signed by the responsible quality control technician and the Program Administrator.

1.12 CORRECTIVE ACTION REQUIREMENTS

- A. The Quality Control Program shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the Quality Control Program as a whole, and for individual items of work contained in the technical specifications.
- B. The Quality Control Program shall detail how the results of quality control inspections and tests will be used for determining the need for corrective action and shall contain clear sets of rules to gauge when a process is out of control and the type of correction to be taken to regain process control.
- C. When applicable or required by the technical specifications, the Contractor shall establish and utilize statistical quality control charts for individual quality control tests. The requirements for corrective action shall be linked to the control charts.

1.13 INSPECTION BY THE ENGINEER

- A. All items of material and equipment shall be subject to inspection by the Engineer at the point of production, manufacture or shipment to determine if the Contractor, producer, manufacturer or shipper maintains an adequate quality control system in conformance with the requirements detailed herein and the applicable technical specifications and plans. In addition, all items of materials, equipment and work in place shall be subject to inspection by the Engineer at the site for the same purpose.
- B. Inspection by the Engineer does not relieve the Contractor of performing quality control inspections of either on-site or off-site Contractor's or subcontractor's work.

1.14 NONCOMPLIANCE

- A. The Engineer will notify the Contractor of any noncompliance with any of the foregoing requirements. The Contractor shall, after receipt of such notice, immediately take corrective action. Any notice, when delivered by the Engineer or their authorized representative to the Contractor or their authorized representative at the site of the work, shall be considered sufficient notice.

- B. In cases where quality control activities do not comply with either the Contractor's Quality Control Program or the contract provisions, or where the Contractor fails to properly operate and maintain an effective Quality Control Program, as determined by the Engineer, the Engineer may:
 - 1. Require the Contractor to replace ineffective or unqualified quality control personnel or subcontractors.
 - 2. Require the Contractor to stop operations until appropriate corrective action is taken.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Temporary Utilities: water, sanitation, electrical, heating and communication systems.
- B. Temporary Construction Facilities: Field office for the use of Contractor personnel, storage yards and buildings, worker shelters and access roads.
- C. Temporary Controls: air/water pollution controls, erosion control and traffic control.
- D. Temporary Fuel Storage and Dispensing: fuel storage, secondary containment and dispensing facilities.

1.02 RELATED REQUIREMENTS

- A. Section 01010 Summary of Work
- B. Section 01300 Submittals
- C. Section 01568 Permits, Environmental Limitations, and Storm Water and Erosion Control

1.03 DELIVERY, STORAGE AND HANDLING OF TEMPORARY FACILITIES

- A. Protect temporary facilities during delivery and storage operations.
- B. Maintain temporary facilities in proper and safe condition throughout progress of the work.

1.04 SUBMITTALS

- A. Submit an electronic copy of written Plan for providing temporary facilities. Submit plan a minimum of 60 days from receipt of the "Intent to Award letter".
 - 1. Plan shall include written description of Contractor's proposed methods and means of providing temporary utilities during construction activities, as described in the Specifications.

PART 2 - PRODUCTS

2.01 TEMPORARY UTILITIES CONTRACTOR FURNISHED ITEMS

A. Temporary Sanitation Systems

1. Furnish and install all necessary components and systems to provide sewer and solid waste collection services at the field office. Temporary outhouses shall be self contained units, pit privies are not acceptable.
2. Contractor furnished items include, but are not limited to, all piping, valves, fittings, structures, insulation, pumps, tanks, fixtures, tie-ins, trash receptacles, hauling operations and service agreements.
3. Contractor to provide and pay for all temporary sanitation system related components and fees.

B. Temporary Electrical Systems

1. Furnish and install all necessary components and systems to provide 120/240 VAC single phase electrical service to the field office and required electrical service at all work areas.
2. Contractor furnished items include, but are not limited to, all conductor, transformers, service meters and masts, distribution panels, controls, electrical and lighting fixtures, tie-ins, and service agreements.
3. Contractor shall be responsible for providing temporary power to all electrical control panels to ensure that they remain heated from the time of installation to substantial completion.
4. Contractor to provide and pay for all temporary electrical system related components and fees.

C. Temporary Heating Systems

1. Furnish and install all necessary components and systems to provide heat at the field office and worker shelters as required.
2. Contractor furnished items include, but are not limited to, all heaters, fuel tanks, piping, valves, fittings, meters, insulation, pumps, fixtures, tie-ins, and fuel hauling.
3. Contractor to provide and pay for all temporary heating system related components and fees.

D. Temporary Communication Systems (Telephone, Fax, and Internet)

1. Furnish and install all necessary components and systems to provide telephone, fax and internet service to the field office.
2. Contractor furnished items include, but are not limited to, all phone lines,

phones, fax machines, tie-ins, and service agreements.

3. Contractor to provide and pay for all temporary communication system related components and fees.

E. Temporary Bulk Fuel Transfer Operations

1. The new Authority tank farm shall be Substantially Complete and operational prior to the transfer of fuel from the existing Authority tank farm to the new Authority tank farm. Work shall be performed in accordance with Section 02082.

2.02 TEMPORARY CONSTRUCTION FACILITIES CONTRACTOR FURNISHED ITEMS

A. Temporary Construction Facilities (Field Office, Storage Facilities, Worker Shelters)

1. Temporary field office: Furnish field office building for use of Contractor personnel. Field office structure shall meet all requirements of the most current version of the IBC. Provide temporary electrical, heating, telephone, fax and internet services at the field office.
2. Temporary storage facilities: Furnish temporary storage facilities as required to protect materials and equipment during the course of the work. Facilities shall be structurally sound and sufficiently weather tight to protect stored items in accordance with the manufacturer's recommendations.
3. Worker shelters: Worker shelters shall be provided in accordance with applicable laws and regulations.
4. Contractor to provide and pay for all temporary construction facility related components and fees.

2.03 TEMPORARY CONTROLS CONTRACTOR FURNISHED ITEMS

A. Temporary Controls

1. Furnish all gates, barricades, fences, handrails, guardrails, and security systems required for safe execution and protection of the work.
2. Furnish all Guards, markers, shields, protective clothing, hard hats, hearing protection and other equipment required by health and safety regulations for workers.
3. Furnish erosion controls in accordance with industry accepted Best Management Practices and in accordance with Section 01568.
4. Furnish all required first aid and fire suppression equipment required by laws and regulations.
5. Contractor to provide and pay for all temporary controls related components and fees.

PART 3 – EXECUTION

3.01 TEMPORARY UTILITIES

- A. All work relating to temporary utilities shall be arranged and implemented by the Contractor.
- B. All costs associated with providing temporary utilities shall be borne solely by the Contractor.
- C. Contractor shall not connect to any existing utility system unless specific written authorization from the applicable utility company is given.
 - 1. Contractor shall provide individuals who are qualified to connect to the existing utility system and provide all necessary equipment and materials required for the connection.
 - 2. Contractor shall at no time exceed the usage allowed by the Authority's governing the utility.
 - 3. Contractor shall remove all temporary materials and equipment upon completion of construction and repair any damage caused by installation, and restore to like new condition.
- D. Water: Provide temporary water for all construction requirements and Contractor's crews. Contractor shall maintain sanitary conditions at all times and shall not violate requirements of applicable codes
- E. Sanitation Facilities: Provide and maintain facilities for Contractor's employees, Subcontractors and all other onsite employer's employees. Service, clean, and maintain facilities and enclosures
- F. Electricity and Lighting: Provide temporary power for all construction requirements including Contractor's field office and to ensure safe work conditions and security of site. Provide temporary lighting as required to meet all applicable safety requirements to allow erection, application or installation of materials and equipment, and observation or inspection of the work.
- G. Heating: Provide temporary heating systems at the field office and other temporary construction facilities as required by laws and regulations.
- H. Communication Systems: Provide temporary communication systems at the field office including telephone, fax, and internet service.

3.02 TEMPORARY CONSTRUCTION FACILITIES

- A. Field Office: Contractor shall maintain an on-site field office.
 - 1. Field office shall provide sufficient working space and sanitary facilities for Contractor personnel. Provide temporary electrical, heating, water, sewer, telephone, fax, and internet services at the field office.

2. Field Office shall provide one temporary workspace w/internet connections and phone for the Authority, the Project Manager and other Authority Representatives.
- B. Temporary Storage Yard:
1. Temporary storage yard shall be constructed for storage of products that are not subject to damage by weather conditions.
- C. Temporary Storage Buildings:
1. Environmental control systems shall be provided that meet recommendations of manufacturers of equipment and materials stored.
 2. Contractor shall arrange or partition to provide security of contents and ready access for inspection and inventory.
 3. Combustible materials (paints, solvents, fuels, etc.) shall be stored in a well-ventilated and remote building meeting applicable safety standards.
- D. Access roads:
1. Access roads, if required, shall be constructed within easements, rights-of-way, or Project limits. Alignments for new routes shall be approved by Project Manager.
 2. Ground surface disturbed by access road construction shall be restored to original grade upon completion of construction.

3.03 TEMPORARY CONTROLS

- A. Air Pollution Controls:
1. Minimize air pollution from construction operations.
 2. Burning of waste materials, rubbish, or other debris will not be permitted on or adjacent to the site.
- B. Water Pollution Controls:
1. Contractor shall not cause or permit action to occur which would cause a discharge to an existing waterway. See Section 01568.
- C. Erosion Control:
1. As specified in Section 01568.

3.04 PROGRESS CLEANING AND WASTE REMOVAL

- A. Maintain work areas free of waste materials, debris, and rubbish. Maintain work site in a clean, orderly and organized condition. Materials should be clearly identified, with products covered and labeled. Materials should be identified with generator

(Contractor) name.

- B. Collect and remove waste materials, debris, and rubbish from site periodically and dispose of in accordance with all Federal, State and local regulations.
- C. Contractor shall not dispose of hazardous materials such as mineral spirits, oil, chemicals, or paint thinner at the local land fill. Provide acceptable containers for collection and disposal of waste materials, debris and rubbish.

3.05 REMOVAL OF TEMPORARY FACILITIES

- A. Remove temporary materials, equipment, services, and construction prior to Substantial Completion inspection, with the exception of temporary bulk fuel storage.
- B. Clean and repair damage caused by installation or use of temporary facilities. Restore permanent facilities used during construction to pre-construction condition.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Items A1 – Mobilization and Demobilization, Bid Item B1 – Mobilization and Demobilization and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 01568

PERMITS, ENVIRONMENTAL LIMITATIONS, AND STORM WATER AND EROSION CONTROL

PART 1 - GENERAL

1.01 RELATED REQUIREMENTS

- A. This project is subject to conditions, limitations, and mitigation required by local, State, and Federal permitting agencies, building codes, and stakeholders.
- B. Requirements of Federal, State, and local statutes and regulations dealing with storm water, pollution, and erosion shall be strictly adhered to by the Contractor.
- C. Contractor shall comply with all laws and regulations relating to prevention and control of erosion.
- D. Contractor is responsible for obtaining all required permits not provided by the Owner including but not limited to ROW permits, dewatering permits, landfill permits, and ADEC permits.
- E. Contractor shall coordinate and permit temporary dispensing operations with the State Fire Marshall's Office as required for construction.

1.02 GENERAL

- A. The Contractor is responsible for acquiring and operating within the conditions of all permits required by Local, State, and Federal permitting agencies. See Appendix B for the following items:
 - 1. U.S. Army Corps of Engineers: Section 404 Wetlands Nationwide Permit.
 - 2. Alaska Department of Environmental Conservation: Section 401 Water Quality Certification.
 - 3. Alaska State Historic Preservation Officer: Section 106 Consultation.
- B. Contractor shall implement storm water and erosion control as soon as practicable to limit the potential for sediment transport and riling of disturbed slopes and/or embankment slopes.
- C. Contractor shall provide all labor, equipment, materials, and services to implement, inspect, report, maintain, and repair all items associated with the Erosion and Sediment Control Plan (ESCP), see Appendix D.
- D. Contractor shall provide inspection reports to the Project Manager as determined in the Erosion and Sediment Control Plan (ESCP), see Appendix D.
- E. Maintenance and repair of all erosion control measures outlined within the ESCP

shall be performed by the contractor at no additional cost to the Owner.

- F. Contractor shall prepare and implement a Hazardous Material Control Plan (HMCP) for prevention of pollution from storage, use, containment, cleanup, and disposal of all hazardous material, including petroleum products related to construction activities and equipment.
- G. The contractor shall make their own determination if construction activity outside of the fill limits will sufficiently disturb the native ground surface to require development and implementation of a SWPPP. If cumulative ground disturbance of more than one acre is anticipated, Contractor shall prepare, implement, and maintain a SWPPP in accordance with the Construction General Permit (CGP) for Discharge from Large and Small Construction Activities, issued by the Alaska Department of Environmental Conservation (ADEC) under the Alaska Pollutant Discharge Elimination System (APDES).

1.03 ENVIRONMENTAL PROTECTION

- A. The Contractor shall comply with the provisions of Federal, State and local statutes, ordinances and regulations dealing with the prevention of environmental pollution and the preservation of public natural resources that may affect or may be affected by the Project. The Contractor shall familiarize himself with all such statutes, ordinances and regulations, whether listed or not.

1.04 DEFINITIONS

- A. Repair. Mending or replacement of erosion and control measures to a degree as to meet the intended function as outlined in the ESCP, as determined by the Project Manager. Repairs to erosion control measure can result from, but is not limited to, any degradation to the items from flooding, sediment deposition, wind, and construction activities.

1.05 SUBMITTALS

- A. The Contractor shall prepare, implement, and maintain a Storm Water Pollution Prevention Plan (SWPPP) in accordance with the Storm Water Construction General Permit for Discharges from Large and Small Construction Activities, issued by the Alaska Department of Environmental Conservation (ADEC) under the Alaska Pollutant Discharge Elimination System (APDES).
- B. Hazardous Material Control Plan.

Submit an electronic copy of the HMCP, to the Project Manager for approval. Submit these documents to the Project Manager at least 21 days before beginning Construction Activity. After the HMCP is approved by the Owner, the Contractor must sign and certify the approved HMCP.
- C. Inspection Reports

The contractor shall submit an electronic copy of the routine inspection reports as defined in the Erosion and Sediment Control Plan, see Appendix D. Reports

shall be submitted to the Project Manager within 24 hours after the report is recorded.

PART 2 - EROSION, SEDIMENT, AND POLLUTION CONTROL

2.01 TEMPORARY AND PERMINENT EROSION CONTROL

- A. Temporary erosion and pollution control measures that are required at Contractor-furnished sites are subsidiary.
- B. Perform temporary erosion and pollution control measures that are required due to your negligence, carelessness, or failure to install permanent controls as a part of the work as scheduled or ordered by the Engineer, or for your convenience, at your own expense.
- C. Permanent erosion and pollution control measures will be measured and paid for under other contract items, when shown on the bid schedule.

PART 3 - EXECUTION

3.01 EROSION CONTROL

- A. Best management practices for erosion control shall be observed to prevent construction related erosion impacts to receiving waters.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A2 – Temporary Erosion and Sediment Control, Bid Item B2 – Temporary Erosion and Sediment Control and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 01569

CONSTRUCTION CLEANING

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Cleaning and disposal of waste materials, debris, and rubbish during construction.

1.02 RELATED REQUIREMENTS

- A. Section 00700 - General Conditions: Article 6, Contractor's Responsibilities - Materials and Equipment, and Maintenance during Construction.
- B. Section 01700 Contract Closeout Procedures: Final Cleaning

PART 2 - PRODUCTS

2.01 EQUIPMENT

- A. Provide containers for deposit of waste materials, debris, and rubbish.

PART 3 - EXECUTION

3.01 GENERAL CLEANING

- A. Maintain areas under Contractor's control free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

3.02 DISPOSAL

- A. Collect and remove waste materials, debris, and rubbish from site periodically and dispose of in accordance with all Federal, State, and local regulations.
- B. Contractor shall be responsible for obtaining all required permits related to disposal of construction-related waste materials, debris, and rubbish in the local landfill.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 01570

TRAFFIC CONTROL

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. This section describes the requirements, products and methods of execution for traffic control on this Project.

1.02 GENERAL REQUIREMENTS

- A. The Contractor is responsible for traffic control to ensure safe passage of pedestrians and vehicles in and around the work area. The Contractor shall prepare, submit, implement, and maintain an acceptable Traffic Control Plan (TCP). An electronic copy of the TCP shall be delivered to the Engineer within ten (10) working days of the effective date of the Notice-to-Proceed (NTP), or ten (10) working days before commencement of work, whichever is the earlier date. The Engineer will review and accept or reject the plan within five (5) working days of submission. Successive submittals will also be reviewed within five (5) working days.
- B. For work associated with the crossing of Keku Road the Contractor shall prepare a separate TCP for submission directly to the DOT&PF. Contractor shall prepare and submit this TCP in accordance with the requirements of the DOT&PF Utility Permit included in Appendix E. Provide the Project Manager with a copy of the DOT&PF approved TCP prior to beginning the work.
- C. The TCP shall include a drawing or drawings indicating the method or scheme for safely and efficiently routing traffic during construction. The TCP shall include provisions for safely routing pedestrian, bicycle, and vehicle traffic through or around the construction zone.
- D. The Work shall be conducted to interfere as little as possible with public access and comply with the following requirements:
 - 1. If for any reason it is necessary to cross, close, or obstruct roads, driveways, and walks, whether public or private, Contractor shall provide and maintain suitable and safe bridges, detours, or other temporary expedients for accommodation of public and private travel.
 - 2. Contractor shall not block off emergency vehicle access without written permission from the Project Manager. Operations shall be conducted with the least interference to fire equipment access, and at no time prevent such access. Contractor shall furnish night emergency contact numbers to the Project Manager.
 - 3. Contractor shall not block more than one-half the thoroughfare at any time during crossings.
 - 4. If a closure is required, Contractor shall maintain satisfactory means of exit

for persons residing or having occasion to transact business along the route of the Work.

5. If it is necessary to close off a thoroughfare or other access providing sole vehicular access to property for periods greater than 2 hours, provide written notice to each property owner affected 3 days prior to such closure. Maintenance of traffic is not required if Contractor obtains written permission from property owner and tenant of private property, or from the Authority having jurisdiction over public property involved, to obstruct traffic at the designated point.
6. Contractor shall not block pedestrian or vehicle access to homes or businesses.

PART 2 - PRODUCTS

2.01 EQUIPMENT

- A. The TCP may include, but not be limited to, such items as signs, portable concrete barriers, barricades, traffic cones, special signs, warning lights, portable changeable message board signs, flaggers, pilot cars, temporary roadways, and all other items required to direct traffic through or around the construction zone in accordance with these specifications, the Manual on Uniform Traffic Control Devices (MUTCD), published documents by the US Department of Transportation, the State of Alaska Traffic Manual (ATM), and the Alaska Sign Design Specifications (ASDS).

PART 3 - EXECUTION

3.01 MAINTENANCE OF TRAFFIC

- A. Contractor shall perform the Work in accordance with the approved TCP, and this Specification. No Work shall occur within traveled ways, rights-of-way or easements for public access until the Contractor has implemented an approved TCP for the Work proposed. The number of signs indicated on the TCP is a minimum. If unsafe conditions occur, the Engineer or Project Manager may require additions signs/devices at no additional cost to the Authority.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 01600

MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Products.
- B. Transportation and Handling.
- C. Storage and Protection.

1.02 RELATED REQUIREMENTS

- A. Section 01400 Quality Control: Submittal of manufacturers' certificates.

1.03 PRODUCTS

- A. Products include material, equipment, and systems.
- B. Comply with Specifications and referenced standards as minimum requirements.
- C. Components required to be supplied in quantity within a Specification section shall be the same, and shall be interchangeable.
- D. Do not use materials and equipment removed from existing structure, except as specifically required, or allowed, by Contract Documents.

1.04 TRANSPORTATION AND HANDLING

- A. Transport products by methods to avoid product damage; deliver in undamaged condition in manufacturer's unopened containers or packaging, dry.
- B. Provide equipment and personnel to handle products by methods to prevent soiling or damage.
- C. Immediately on delivery, inspect shipment to assure:
 - 1. Product complies with requirements of Contract Documents and reviewed submittals.
 - 2. Quantities are correct.
 - 3. Accessories and installation hardware are correct.
 - 4. Containers and packages are intact and labels legible.
 - 5. Products are protected and undamaged.

1.05 STORAGE AND PROTECTION

- A. Handle and store materials for construction, products of demolition, and other items to avoid damage to adjacent facilities and equipment.
- B. Store products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weather-tight enclosures; maintain within temperature and humidity ranges required by manufacturer's instructions.
- C. Store loose granular materials on solid surfaces in a well-drained area; prevent mixing with foreign matter. Cover such material to prevent material from being blown away.
- D. Arrange storage to provide access for inspection. Periodically inspect to assure products are undamaged, and are maintained under required conditions.
- E. Provide Material Safety Data Sheets (MSDS) for all products which may produce unpleasant or noxious odors. Contractor shall provide for adequate venting if needed.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A1 – Mobilization and Demobilization, Bid Item B1 – Mobilization and Demobilization and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 01630

PRODUCT OPTIONS AND SUBSTITUTIONS

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Requests for substitution of products.

1.02 RELATED REQUIREMENTS

- A. Section 00020 Invitation For Bids: Substantial Completion Date.
- B. Section 00700 General Conditions: Article 6, Substitutes or "Or-Equal" Items.
- C. Section 00800 Supplementary Conditions
- D. Section 01300 Submittals
- E. Section 01340 Shop Drawings, Product Data, and Samples: Product Data Submittals.

1.03 SUBSTITUTION SUBMITTAL PERIOD

- A. All product substitution requests will be considered only within 15 days after date established in Notice to Proceed. Subsequent requests will be considered only in case of product unavailability or other conditions beyond control of Contractor.

1.04 OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any product meeting those standards.
- B. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not specifically named.
- C. Products Specified by Naming One or More Manufacturers followed by the term "No Substitutions": use only specified manufacturers, no substitutions allowed.

1.05 PRODUCTS LIST

- A. Within (15) days after date of Notice to Proceed, transmit an electronic copy of a list of products which are proposed for installation, including name of manufacturer.
- B. Tabulate products by Specifications section number, title, and Article number
- C. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.
- D. Project Manager will reply in writing within fifteen days stating whether there is

reasonable objection to listed items. Failure to object to a listed item shall not constitute a waiver of requirements of Contract Documents.

- E. Project Manager will contact Engineer to ascertain any extra Professional fees to assess the substitutions and shall so notify Contractor who will include payment for the professional review cost in the application for substitution.

1.06 LIMITATIONS ON SUBSTITUTIONS

- A. Substitutions will not be considered when indicated on Shop Drawings or product data submittals.
- B. Substitute products shall not be ordered or installed without written acceptance.
- C. Project Manager will contact the Engineer to determine acceptability of substitutions.

1.07 REQUESTS FOR SUBSTITUTIONS

- A. Submit separate request for each substitution. Document each request with complete data substantiating compliance of proposed substitution with requirements of Contract Documents.
- B. Identify product by Specification section and Article numbers. Provide manufacturer's name and address, trade name of product, and model or catalog number. List fabricators and Suppliers as appropriate.
- C. Attach product data as specified in Section 01340.
- D. List similar projects using product, dates of installation, and names of design Engineer(s) and, name of the facility owner.
- E. Give itemized comparison of proposed substitution with specified product, listing variations, and reference to Specification sections and Article numbers.
- F. Give quality and performance comparison between proposed substitution and the specified product.
- G. Give cost data comparing proposed substitution with specified product, and amount of net change to Contract Price.
- H. List availability of maintenance services and replacement materials.
- I. State effect of substitution on construction schedule, and changes required in other Work or products.

1.08 CONTRACTOR REPRESENTATION

- A. Request for substitution constitutes a representation that Contractor has investigated proposed product and has determined that it is equal to or superior in all respects to specified product.
- B. Contractor will provide same warranty for substitution as for specified product.

- C. Contractor will coordinate installation of accepted substitute, making such changes as may be required for Work to be complete in all respects.
- D. Contractor certifies that cost data presented is complete and includes all related costs under this Contract.
- E. Contractor waives claims for additional costs related to substitution which may later become apparent.

1.09 SUBMITTAL PROCEDURES

- A. Submit an electronic copy of complete request for substitution.
- B. Project Manager will review Contractor's requests for substitutions with reasonable promptness.
- C. During the bidding period, the Authority will record acceptable substitutions in Addenda.
- D. After Award of Contract, the Authority will notify Contractor, in writing, of decision to accept or reject requested substitution within 15 days.
- E. For accepted products, submit Shop Drawings, product data, and samples under provisions of Section 01340.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A1 – Mobilization and Demobilization, Bid Item B1 – Mobilization and Demobilization and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT PROCEDURES

PART 1 - GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Administrative provisions for Substantial Completion and for Final Acceptance.
- B. Closeout Procedures.
- C. Final Cleaning.
- D. Project Record Documents.
- E. Warranties and Bonds.
- F. Spare Parts and Maintenance Materials.

1.02 RELATED REQUIREMENTS

- A. Document 00700 General Conditions:
- B. Section 01300 Submittals
- C. Section 01370 Schedule of Values
- D. Section 01720 Project Record Documents
- E. Section 16010 General Electrical Provisions

1.03 FINAL CLEANING

- A. Execute final cleaning prior to Substantial Completion inspection.
- B. Use materials which will not create hazards to health or property, and which will not damage surfaces. Follow manufacturer's recommendations.
- C. Remove waste, debris and surplus materials from the site.

1.04 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

1.05 PROJECT RECORD DOCUMENTS

- A. Comply fully with the requirements of Section 01720 Project Record Documents.

1.06 SPARE PARTS AND MAINTENANCE MATERIALS

- A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual Specification Sections.
- B. Deliver to Project site and place in location as directed, obtain receipt prior to final payment.

1.07 WARRANTIES

- A. As specified in Section 0700 – General Conditions Article 12.7, Contractor shall warranty all work for a period of 1 year after substantial completion, unless longer warranty periods are specified for individual products or pieces of work.
- B. As a condition precedent to Final Payment, all guaranties and warranties as specified under various sections of the Contract Documents shall be obtained by the Contractor and delivered to the Project Manager, in duplicate giving a summary of guarantees attached and stating the following in respect to each:
 - 1. Character of Work affected.
 - 2. Name of Subcontractors.
 - 3. Period of Guarantee.
 - 4. Conditions of Guarantee.
- C. Delivery of said guarantees and/or warranties shall not relieve the Contractor from any obligations assumed under any other provision of the Contract.
- D. If, within any guarantee period, repairs or changes are required in connection with the guaranteed Work, which in the opinion of the Authority is rendered necessary as the result of the use of materials, equipment or workmanship, which are defective, or inferior, or not in accordance with the terms of the Contract, the Contractor shall, upon receipt of notice from the Project Manager, and without expense to the Authority, proceed within seven (7) calendar days to:
 - 1. Place in satisfactory conditions in every particular all of such guaranteed Work, correct all defects therein, and make good all damages to the structure or site.
 - 2. Make good all Work or materials, or the equipment and contents of structures or site disturbed in fulfilling any such guarantee.
- E. If the Contractor, after notice, fails to comply with the terms of the guarantee, the Authority may have the defects corrected and the Contractor and Contractor's Surety shall be liable for all expenses incurred in connection therewith, including Engineer's fees.

1.08 OPERATIONS AND MAINTENANCE DATE (O&M MANUALS)

- A. Submit an electronic copy of draft O&M manuals ten (10) working days prior to Substantial Completion inspection. Revise and resubmit as necessary based on engineer mark-ups.

- B. The Engineer shall approve the draft O&M manuals for use in on-site facility training prior to completion of a Substantial Completion inspection.
- C. Submit four (4) sets of final O&M manuals within 15 days of Substantial Completion inspection or date of approval of draft operations and maintenance manuals.
- D. Submit data in bound 8-1/2 x 11 inch text pages, ring binders with durable plastic covers.
- E. Prepare binder cover with printed title "OPERATIONS AND MAINTENANCE DATA", title of project, and subject matter of binder.
- F. Binder contents shall be divided with plastic page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.
- G. Contents: Prepare a table of contents for each volume, with each Product or system description identified, enclosed in a plastic text sheet sleeve, in three parts as follows:
 - 1. Part 1: Directory, listing names, addresses and telephone numbers of A/E, Contractor, subcontractors, and major equipment suppliers.
 - 2. Part 2: Operation and maintenance instructions, arranged by system process flow and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and Product data.
 - b. Pressure test reports.
 - c. Certificates.
 - d. Copies of Warranties and Bonds.

1.09 ON-SITE FACILITY TRAINING

- A. Contractor shall conduct on-site training of the operation of the new facilities for the facility owners and/or operators. Training must be completed prior to substantial completion inspection. Notify the Project Manager fifteen (15) working days prior to training date.

- B. Facility Training shall include:
 - 1. A thorough walk through of the facility and operational components.
 - 2. Presentation of the O&M Manuals including
 - i. Discussion of where the O&M Manuals will be kept
 - ii. Discussion of required facility maintenance
 - iii. Discussion of the product components
 - iv. Discussion of the operational procedures and troubleshooting alarms
 - 3. Discussion of emergency spill response procedures
- C. Each attendee shall demonstrate competency at transferring fuel, activating and deactivating and Emergency Shut Down, dispensing fuel, opening and closing appropriate valves for fuel delivery.
- D. Training shall be approximately two (2) four (4) hour sessions. Total training duration shall be a minimum of eight hours.

1.10 SUBSTANTIAL COMPLETION SUBMITTALS

Submit the following prior to requesting a Substantial Completion Inspection:

- A. Project Record Documents: Under provisions of Section 01700.
- B. Operation and Maintenance Data (O&M Manual): Under provisions of Section 01700.
- C. Spare Parts and Maintenance Materials: Under provisions of Section 01700.

1.11 SUBSTANTIAL COMPLETION

- A. Substantial Completion shall be considered by the Authority when:
 - 1. Written notice is provided seven (7) days in advance of inspection date.
 - 2. List of items to be completed or corrected is submitted.
 - 3. Equipment and systems have been tested, adjusted, balanced and are fully operational.
 - 4. Operation of system has been demonstrated to the Project Manager.
 - 5. Certificates of Inspection for required inspections have been submitted.
 - 6. Project Record Documents for the Work or the portion of the Work being accepted are submitted and approved.

7. Spare parts and maintenance materials are turned over to the Authority.
- B. Should the Authority's inspection find that the Work is not substantially complete, Project Manager will promptly notify Contractor in writing, listing observed deficiencies.
- C. Contractor shall remedy deficiencies and send a second written notice of Substantial Completion.
- D. When the Authority finds that the Work is substantially complete the Project Manager will prepare a certificate of Substantial Completion in accordance with provisions of General Conditions.

1.12 FINAL COMPLETION

- A. When Contractor considers Work is complete, submit written certification:
 1. Contract Documents have been reviewed.
 2. Work has been inspected for compliance with Contract Documents.
 3. Work has been completed in accordance with Contract Documents, and deficiencies listed with certificate of Substantial Completion have been corrected.
 4. Work is complete and ready for final inspection.
- B. Should the Authority's inspection find the Work incomplete, the Project Manager will promptly notify Contractor in writing listing observed deficiencies.
- C. Contractor shall remedy deficiencies and send a second certification of Final Completion.
- D. When the Authority finds that the Work is complete, the Project Manager will consider closeout submittals.

1.13 REINSPECTION FEES

- A. Should status of completion of Work require more than two re-inspections by the Authority due to failure of Work to comply with Contractor's responsibility, the Authority will deduct the cost of re-inspection from final payment to Contractor as provided in the Contract Documents.
- B. Re-inspection fees shall not exceed \$5,000 for any one re-inspection.

1.14 CLOSEOUT SUBMITTALS

- A. Project Record Documents: Under provisions of Section 01700.
- B. Warranties and Bonds: Under provisions of Section 01700.
- C. Operations and Maintenance Manuals: Under provisions of Section 01700.

- D. Evidence of Payment: In accordance with Conditions of the Contract.
- E. Certificate of Release of Liens.
- F. Contractor's Statement Concerning Claims.
- G. Miscellaneous
 - 1. Final survey notes not previously transmitted.

1.15 APPLICATION FOR FINAL PAYMENT

- A. Submit Application for Final Payment in accordance with provisions of the General Conditions of the Contract.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A1 – Mobilization and Demobilization, Bid Item B1 – Mobilization and Demobilization and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 01720

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Maintenance of Record Documents and Samples.
- B. Submittal of Record Documents and Samples.

1.02 RELATED REQUIREMENTS

- A. Section 00700 General Conditions: Record Documents.
- B. Section 01300 Submittals
- C. Section 01340 Shop Drawings, Product Data, and Samples
- D. Section 01700 Contract Closeout Procedures

1.03 MAINTENANCE OF DOCUMENTS AND SAMPLES

- A. In addition to requirements in General Conditions, maintain at the site for the Authority one accurate record copy of:
 - 1. Contract Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, product data, and samples.
 - 6. Survey and field records.
 - 7. Field test records.
 - 8. Inspection certificates.
 - 9. Manufacturer's certificates.
- B. Prior to Substantial Completion, provide original or legible copies of each item maintained by Contractor as listed in 01720.1.03.A above.
- C. Delegate responsibility for maintenance of Record Documents to one person on Contractor's staff.

- D. Promptly following award of Contract, secure from the Authority, at no cost to the Contractor, one complete set of all Documents comprising the Contract.
- E. Immediately upon receipt of job set described above, identify each Document with title "RECORD DOCUMENTS - JOB SET".
- F. Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage for record documents and samples.
- G. Label and file record documents and samples in accordance with section number listings in table of contents of this Project manual. Label each document "PROJECT RECORD" in neat, large, printed letters.
- H. Maintain record documents in a clean, dry and legible condition. Do not use record documents for construction purposes.
- I. Use all means necessary to maintain job set of Record Documents completely protected from deterioration and from loss and damage until completion of Work and transfer of recorded data to the Authority.
- J. Keep record documents and samples available for inspection by the Authority.
- K. Upon request by the Authority and at time of each Application for Payment submit complete collection of record documents to Authority for review and duplication as desired.
- L. Authority's approval of current status of Record Documents will be prerequisite to the Authority's approval of requests for progress payments and request for final payment.
 - 1. Prior to submitting each request for progress payment, secure the Authority's approval of Record Documents as currently maintained.
 - 2. Prior to submitting request for Final Payment, obtain Authority's approval of final Record Documents.
- M. Do not use job set for any purpose except entry of new data and for review and copying by the Authority.

1.04 RECORDING

- A. Record information on a set of black line opaque Drawings, and in a copy of a Project manual, provided by the Authority.
- B. Using felt tip marking pens or colored pencil, maintaining separate colors for each major system, clearly describe changes by note and by graphic line, as required. Date all entries. Call attention to entry by a "cloud" around area or areas affected.

- C. Thoroughly coordinate all changes within Record Documents, making adequate and proper entries on each Specification Section and each sheet of Drawings and other Documents where such entry is required to properly show change or selection.
- D. When a change within Record Documents is referenced to another document, such as a DC/VR, Shop Drawing or Change Order, attach a copy of the referenced document to the respective Record Drawing or Record Specification where the entry is made.
- E. Contract Drawings and Shop Drawings: Legibly mark each item to record actual construction, including:
 - 1. Measured depths of elements of foundation in relation to finish first floor datum, accurate to the nearest inch.
 - 2. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements, accurate to the nearest inch.
 - 3. Measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of construction.
 - 4. Field changes of dimension and detail.
 - 5. Changes made by modifications.
 - 6. Details not on original Contract Drawings.
 - 7. References to related Shop Drawings and modifications.
 - 8. Clearly label all changes and show dimensions to establish size and location. All identifications shall be sufficiently descriptive to relate reliably to Specifications.
- F. Specifications: Legibly mark each item to record actual construction, including:
 - 1. Manufacturer, trade name, and catalog number of each product actually installed, particularly optional items and substitute items.
 - 2. Changes made by Addenda and modifications.
- G. Other Documents: Maintain manufacturer's certifications, inspection certifications, and field test records required by individual Specifications sections.

1.05 SUBMITTALS

- A. Upon submittal of the completed Record Documents, make changes in Record Documents as required by the Authority.

- B. Transmit with cover letter in duplicate, listing:
 - 1. Date.
 - 2. Authority's Project title and number.
 - 3. Contractor's name, address, and telephone number.
 - 4. Number and title of each record document.
 - 5. Signature of Contractor or authorized representative.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A1 – Mobilization and Demobilization, Bid Item B1 – Mobilization and Demobilization and no separate payment shall be made for the requirements of this section.

END OF SECTION

Technical Specifications

SECTION 02010

SUBSURFACE CONDITIONS

PART 1 – GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 00800 Supplementary Conditions
- B. Section 02200 Excavation and Embankment

1.02 SOIL REPORTS

- A. General:
 - 1. Any data on soil and/or subsurface conditions shown in the Contract Drawings or Specifications is not to be taken as a representation of actual conditions, but is based on limited information acquired and is at best only an opinion; consequently, such data cannot be considered precise or complete.
 - 2. The information contained in the soils report may not be representative of the actual soil conditions at the time or location of the Contractors work, and the Contractor is solely responsible for costs associated with interpretations made from the information and there is no guarantee as to its completeness, accuracy, or precision.
- B. Soils Report:
 - 1. A copy of the soils investigation report for the Project titled "Geotechnical Report Bulk Fuel and Rural Power Systems Upgrades Project" and dated May 3, 2015 is provided in Appendix A. The report is for general informational purposes only.
- C. Additional Investigation:
 - 1. Contractor is encouraged to visit the site and acquaint himself with site conditions before submitting a Bid, and the submission of a Bid shall be prima facie evidence that he has done so.
 - 2. Prior to bidding, Contractor may make his own sub-surface investigations, as approved by the Project Manager and the Authority, to satisfy himself with site and subsurface conditions.

1.03 QUALITY ASSURANCE

- A. The Contractor shall make no deviations from the Contract Documents without Specific written approval from the Authority.
- B. The Contractor shall be responsible for obtaining approval from responsible agency or property owner before performing any exploratory excavations.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 02081

SPECIAL PROJECT PROCEDURES FOR MAINTAINING FUEL

STORAGE AND TRANSFER OPERATIONS DURING CONSTRUCTION

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Requirements for maintaining code-compliant temporary fuel storage and transfer operations during construction.

1.02 RELATED REQUIREMENTS

- A. Section 01300 Submittals
- B. Section 01500 Construction Facilities and Temporary Controls
- C. Section 02082 Decommission of Fuel Piping

1.03 REFERENCES

- A. 18 ACC 75 Article 075 Secondary Containment Requirements for Aboveground Oil Storage Tanks
- B. 2009 International Fire Code
- C. API 2015 Requirements for Safe Entry and Cleaning of Petroleum Storage Tanks
- D. 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response

1.04 SUBMITTALS

- A. Contractor shall submit a work plan for approval detailing the location and capacity of storage and dispensing facilities, demonstrating code-compliance and describing procedure for dispensing and metering.
- B. Contractor shall submit a work plan, for approval by the project engineer, detailing the transfer of the remaining fuel in the existing bulk fuel facility to the new bulk fuel facility. The plans shall demonstrate code compliance for bulk fuel transfer operations and describe in detail the procedure for fuel transfer.

1.05 PROCEDURES

- A. The Contractor shall be responsible for maintaining fuel service to the Kake Tribal Corporation fuel sales gas station and fuel dock during the construction of the new Kake Bulk Fuel facilities. Contractor shall make his own plan for providing temporary fuel dispensing during dispenser reconstruction and provide

all required permitting for code compliant temporary dispensing operations. The contractor shall submit his temporary fuel dispensing plan to Kake Tribal Corporation, the engineer, and the Authority for approval. Kake Tribal Corporation and the Authority shall be notified in writing, and provided their approval, prior to any scheduled interruptions in fuel supply to the gas station. No more than two, 24 hour, scheduled interoperation shall be allowed. No unscheduled interruptions of fuel sales are permitted.

- B. The new Kake Bulk Fuel Storage Facility shall be fuel ready and substantially complete, contain a minimum of 10,000 gallons of #1 diesel fuel, 10,000 gallons of #2 diesel fuel, and 10,000 gallons of Gasoline fuel, with the fuel dispensing operations tested and accepted by the Authority, prior to abandoning the existing fuel piping and electrical conduit at the Keku road crossing and switching over to the new Keku road crossing. The existing Keku road crossing shall be abandoned in place in accordance with Section 02082
- C. The Contractor shall transfer any remaining fuel in the old Kake bulk fuel facility to the new Kake Bulk Fuel Facility.
- D. Cleaning and decommissioning the existing Kake Bulk Fuel Facility storage tanks shall be the responsibility of the Bulk Fuel Facility owner, Kake Tribal Corporation. After all fuel transfer operations are completed, the contractor shall close all tank valves, verify that all tank vents are operational, and notify the Authority and Kake Tribal Corporation that all fuel transfer operation are completed.
- E. Contractor shall be responsible for obtaining all temporary storage location permits, permissions, and all associated fees in accordance with local, State and Federal Regulations, Statutes and Laws. The Contractor shall obtain written permission from the property owner or owners for such temporary storage site(s) and shall furnish the Authority with a copy of this permission. The written permission shall specifically provide that the property owner will not hold the Authority, its employees, agents, or engineers liable for use of or damage to this property.
- F. Contractor shall maintain the existing fuel supply from the IPEC bulk storage tanks to the existing power plant generators. No modifications to the existing power generator fuel supply system shall be allowed. No fuel supply interpretations to the existing power plant generators shall be allowed.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. The contractor shall provide Secondary containment and spill response equipment and materials as required and in accordance with 40 CFR 112.
- B. If contaminated soil is encountered during the excavation of the road crossing, installation of fuel piping, and the decommissioning of the existing fuel pipes the contractor shall excavate and handle the contaminated soil per Section 02084.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. All contaminated soil storage pile liners must meet 18 AAC 75.370 requirements.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. The temporary facilities shall be adequately protected from vandalism and unauthorized access by installing temporary fencing and appropriate signage and lighting as necessary.
- B. Removal of temporary storage and dispensing facilities shall be in accordance Section 01500 3.5 – Removal of Temporary Facilities.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 02082

DECOMMISSION FUEL PIPING

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures for Cleaning and Decommissioning the Fuel Piping System.

1.02 RELATED REQUIREMENTS

- A. Section 01010 Summary of Work
- B. Section 01300 Submittals
- C. Section 02084 Excavation and Handling of Contaminated Soil.

1.03 REFERENCES

- A. 18 AAC 75 Article 3 Discharge, Reporting, Cleanup, & Disposal of Oil and other Hazardous Substances.
- B. 18 AAC 75 Section 370 Soil Storage.
- C. 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response
- D. 40 CFR Chapter I, Subchapter I – Solid Wastes, Parts 260 through 265
- E. 49 CFR Subtitle B, Chapter I, Subchapter A – Hazardous Materials and Oil Transportation, and Subchapter C – Hazardous Material Regulations

1.04 SUBMITTALS

- A. Health and Safety Plan which includes the Work Plan for decommissioning of fuel piping as required by this Section.

1.05 DECOMMISSIONING AND DISPOSAL REQUIREMENTS

- A. Decommission existing Kake Tribal Corporation fuel system piping as shown on Plans and as required for new construction. Piping shown on Plans to be removed or encountered in excavation shall be removed. Other piping shall be decommissioned and abandoned in place per this specification.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Personal Protection Equipment must be appropriate for hazardous materials encountered on the work site and meet requirements in 29 CFR Subpart I, Sections 1910.132-1910.139.

- B. Contractor shall maintain a site-specific Health and Safety Plan that includes, but is not limited to:
1. List of key personnel
 2. Health and Safety Risk Analysis that meets 29 CFR Subpart I, Section 1910.120(c).
 3. Comprehensive Work Plan
 4. Confined Space Entry Plan
 5. Site Control Measures
 6. Health and Safety Training Requirements
 7. Standard Operating Procedures
 8. Emergency Response Procedures

PART 3 – EXECUTION

3.02 PIPE DECOMMISSIONING AND DISPOSAL

- A. All fuel and residual liquid shall be completely removed from existing piping as follows, or by alternate means and method submitted by the Contractor. If alternate means and methods will be used by the Contractor this shall be described in the Work Plan required by this section.
1. Existing Fuel Piping from Fuel Vault to Fuel Dock: Existing fuel piping from valve vault to fuel dock to remain operational during construction. After the new tank farm is operational, the contractor shall purge all remaining fuel, cap pipe ends, and abandon existing piping in place.
 2. Existing Fuel Piping from Fuel Vault to Dispenser: Existing fuel piping from the valve vault to dispenser to remain operational during construction. After new dispenser is operational, the contractor shall purge all remaining fuel, cap pipe ends, and abandon existing fuel piping in place.
 3. Existing Fuel Vault: Protect existing fuel vault and diesel dispenser during construction. The existing fuel vault and diesel dispenser is to remain usable until all new facilities are operational. After all new facilities are operational, the contractor shall purge all remaining fuel from the piping, filters and dispenser equipment connected to the valve vault. All fencing, valves, filters, above ground piping and dispenser equipment in or connected to the valve vault shall be removed and properly disposed of offsite by the contractor. The contractor shall cap all existing underground piping connected to the valve vault and abandon existing fuel piping in place. The contractor shall fill the concrete vault with structural fill material and abandon the concrete vault in place.

4. Existing Keku Road Crossing: The existing Keku Road crossing piping shall remain useable until all new facilities are operational. After all new facilities are operational, the contractor shall purge all remaining fuel from the pipes and fill the pipes within the Keku Road easement with a concrete slurry mixture. All pipe ends shall be capped below grade and abandon in place. All above grade fuel pipe within the Keku Road easement shall be removed and properly deposited offsite by the contractor.
 5. Existing above ground Fuel Piping from the Keku Road Crossing to the existing KTC tank farm: Existing above ground piping from the Keku Road Crossing easement to the existing KTC tank farm to remain operational during construction. After the new tank farm is operational, the contractor shall purge all remaining fuel, cap pipe ends, and abandon existing piping in place.
- B. The Contractor shall contain, filter and transfer all useable fuel removed from piping to the respective entities tanks. Any unusable fuel or sludge shall be assumed to be hazardous waste and disposed of by the Contractor in accordance with this Specification.

3.04 HAZARDOUS WASTES

- A. The hazardous nature of containerized sludge will be based upon composite testing performed by the Contractor in accordance with 40 CFR 261.
- B. All waste that is deemed hazardous in accordance with 40 CFR 261 shall be manifested in accordance with 40 CFR 262 and shipped in accordance with US DOT 49 CFR parts 100-199 regulations. The Contractor shall use EPA Uniform Hazardous Waste Manifest, OMB No. 2050-0039, EPA form 8700-22.

3.05 FIELD QUALITY CONTROL

- A. All monitoring equipment must be calibrated daily in accordance with the manufacturer's requirements.
- B. The Contractor Safety Officer is responsible for implementing the OSHA requirements for worker safety on the work site. This includes, but is not limited to, confined entry, atmospheric monitoring, and proper personal protection equipment.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A20 – Reconstruct KTC Vehicle Dispenser and Install Marine Dock Onshore Controls,

Bid Item B10 – Site Utility Below Ground Mechanical and Electrical Installation, and Modification of Existing Power Plant Building and Bulk Storage Tanks and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 02083

DEMOLITION AND REMOVAL OF EXISTING BUILDINGS AND STRUCTURES

PART 1 – GENERAL

1.01 SUMMARY

- A. This Section includes the following:
 - 1. Demolition and removal of fence.
 - 2. Relocation of existing connex.
 - 3. Relocation of equipment and stored materials.

1.02 DEFINITIONS

- A. Demolish: Completely remove and legally dispose of off-site.
- B. Remove: Carefully detach from existing construction, in a manner to prevent damage, and deliver to Owner specified location.

1.03 MATERIALS OWNERSHIP

- A. Unless otherwise indicated, all materials resulting from demolition are to be considered waste and become property of Contractor.

1.04 SUBMITTALS

- A. Proposed Protection Measures: Submit informational report, including drawings, that indicate the measures proposed for protecting individuals and property.
- B. Schedule of Building Demolition and Removal Activities: Indicate the following:
 - 1. Detailed sequence of demolition and removal work, with starting and ending dates for each activity.
- C. If demolition materials are disposed in the City of Kake landfill, the contractor shall provide the Owner with a written approval letter from the City to allow for such disposal.

1.05 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- B. Standards: Comply with ANSI A10.6 and NFPA 241.

1.07 PROJECT CONDITIONS:

- A. Contractor shall be responsible for safe and secure demolition and relocation of the

items listed below where shown on the Plans. The contractor shall investigate the condition of the existing structures and develop a method for work to be performed.

1. City Equipment Storage Yard Chain Link Fence: The existing perimeter fence on the project site shall be demolished and disposed of offsite.
2. Chain Link Fence, valves, filters, above ground piping and dispenser equipment in or connected to the valve vault: The existing Chain Link Fence, valves, filters, above ground piping and dispenser equipment in or connected to the valve vault site shall be demolished and disposed of offsite.
3. Existing Gas Station Fuel Dispensers: The Existing Gas Station Fuel Dispensers shall be demolished and disposed of offsite.
4. Connex: The Connex located on the project site shall be relocated to an area determined by the KTC. Give 24 hour notice to the KTC prior to relocation and coordinate relocation with KTC.
5. Equipment and Stored Materials: Relocate all equipment and stored materials on the project site to a location determined by City, IPEC, or KTC, depending on ownership where equipment and materials are stored. Give 72 hour notice to each entity prior to relocation and coordinate relocation with the respective owner.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Inventory and record the condition of items to be relocated.

3.02 PROTECTION

- A. Existing Facilities: Protect adjacent walkways, loading docks, building entries, and other building facilities during building removal and transport operations. Maintain exits from existing buildings.
- B. Existing Utilities: Maintain utility services to remain and protect from damage during removal and transport.

3.03 DISPOSAL OF DEMOLISHED MATERIALS

- A. Remove demolition waste materials from project site.
- B. Remove waste materials from project site and legally dispose of them in an EPA-approved landfill acceptable to authorities having jurisdiction.
 1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

- C. Do not burn demolished materials.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A4 – Demolition and Relocation of Existing Equipment and Materials, Bid Item B3 – Demolition and Relocation of Existing Equipment and Materials and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 02084

EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL

PART 1 – GENERAL

1.01 REQUIREMENTS INCLUDED

- A. Procedures to be followed while working with contaminated soils during execution of the work required by the contract documents.
- B. Procedures for stockpiling petroleum-contaminated soils.
- C. Procedures for Managing Petroleum-Contaminated Soil during Utility Construction

1.02 RELATED REQUIREMENTS

- A. Section 01300 Submittals
- B. Section 02082 Decommission Fuel Piping
- C. Section 02200 Excavation and Embankment

1.03 REFERENCES

- A. Contaminated Materials Work Plan, See Appendix C.
- B. 18 AAC 75 Article 3 Discharge, Reporting, Cleanup, & Disposal of Oil and other Hazardous Substances.
- C. 18 AAC 75 Section 370 Soil Storage.
- D. 29 CFR 1910.120 Hazardous Waste Operations and Emergency Response.
- E. ADEC March 2014 Technical Memorandum: *Managing Petroleum-Contaminated Soil, Water, or Free Product during Public Utility and Right-of-Way Construction and Maintenance Projects* (See Contaminated Materials Work Plan, Appendix C.

1.04 DESCRIPTION OF WORK

- A. Contractor is responsible for contamination that results from his own work or operations. This specification is applicable to pre-existing contaminated soils.
- B. Contractor shall perform all work related to the excavation, handling, and capping of contaminated material within the existing contaminated material area shown on the Plans in accordance with the Contaminated Materials Work Plan, see Appendix C. Provide daily reports, photos, verbal reports, and other specified deliverables per the Contaminated Materials Work Plan.
- C. After reaching final contaminated material liner grade in the existing contaminated material area, install geomembrane liner over contaminated

material as shown in accordance with the Plans and section 02666 of these specifications.

- D. Contractor shall immediately notify Project Manager if contaminated material are encountered outside of the existing contaminated material area as shown in the Plans.
- E. Contractor shall not proceed with excavation and handling of contaminated material encountered outside of the existing contaminated material area shown in the Plans without prior approval of the Project Manager. All work related to excavation and handling of contaminated material outside of the existing contaminated material area shall be negotiated with the Authority based on the site conditions, extent of contamination, and action needed.
- F. When directed by the Project Manager, the Contractor shall proceed with excavation, handling, stockpiling, and remediation of contaminated material in accordance with AAC 75 Section 370 and ADEC's March 2014 Technical Memorandum: *Managing Petroleum-Contaminated Soil, Water, or Free Product during Public Utility and Right-of-Way Construction and Maintenance Projects*.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. All contaminated soil outside of the area defined in the Contract Drawings with visible free product encountered during excavation shall be contained and covered in accordance with the long-term stockpile requirement of 18 AAC 75 Section 370 and ADEC's March 2014 Technical Memorandum: *Managing Petroleum-Contaminated Soil, Water, or Free Product during Public Utility and Right-of-Way Construction and Maintenance Projects*.
- B. Stockpile location shall be approved by the Owner and the Authority. Provide written letter of approval from stockpile area land owner authorizing storage of contaminated materials on the site prior to delivery.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. All contaminated soil stockpiles must be covered in accordance with 18 AAC 75 Section 370.
- B. Soil liners and covers must meet the requirements of 18 AAC 75 Section 370, Table D.

1.07 HAZARDOUS WASTES

- A. All containerized sludge will be tested for hazardous substances in accordance with 40 CFR 261.
- B. All waste that is deemed hazardous in accordance with 40 CFR 261 will be shipped in accordance with US DOT 49 CFR parts 100-199 regulations.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. All liners must meet 18 AAC Section 370 requirements for contaminated soil encountered outside of the area defined in the Contract Drawings.
- B. All liners must meet requirements of the Contaminated Materials Work Plan and be in accordance with the plans and section 02666 of these specifications for contaminated soils within the area defined in the Contract Drawings.
- C. Personal Protection Equipment must be appropriate for hazardous encountered on the work site and meet requirements in 29 CFR Subpart I, Sections 1910.132-1910.139.
- D. Equipment to Monitor Hazardous Atmosphere: The Contractor shall use oxygen meters, combustible gas indicators, colorimetric indicator tubes, or organic vapor monitors to determine if a toxic, anoxic, or explosive environment exists.

PART 3 – EXECUTION

3.01 EXCAVATION AND HANDLING

- A. Appropriate Personal Protection Equipment will be used to protect workers from work site hazards.
- B. All soil that exhibits visual signs of contamination shall be considered hazardous.
- C. Soil excavated outside of the existing contaminated material area shown in the Plans with visible free product shall be contained and covered in accordance with the long term stockpile requirements of 18 AAC 75 Section 370 and in accordance with ADEC's March 2014 Technical Memorandum: *Managing Petroleum-Contaminated Soil, Water, or Free Product during Public Utility and Right-of-Way Construction and Maintenance Projects*
- D. Contractor shall clearly document on the Record Drawings the location of all contaminated soil encountered outside the area defined in the Contract Drawings.
- E. Work within the existing contaminated material area shown on the Plans shall be performed in accordance with the requirements of the DEC approved Contaminated Materials Work Plan, see Appendix C.

3.02 LINER SEAMING

- A. If field seaming is required, then all seams and joints must be bonded by a qualified technician.

3.03 FIELD QUALITY CONTROL

- A. All monitoring equipment must be calibrated daily in accordance with the manufacturer's requirements.

3.04 PERSONNEL SAFETY

- A. The Contractor Safety Officer is responsible for meeting the OSHA requirements for worker safety on the work site.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A5 – Excavation and Handling of Petroleum Contaminated Material and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 02100

CLEARING AND GRUBBING

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This item consists of furnishing all labor, equipment, supplies, and material in performance of all operations required for site clearing, grubbing, and clean-up operations.
- B. No clearing shall occur between April 15 and July 15

1.02 RELATED REQUIREMENTS

- A. Section 02140 Dewatering and Control of Surface Water
- B. Section 02200 Excavation and Embankment

1.03 DEFINITIONS

- A. Clearing: Includes cutting and grubbing all brush, trees and stumps, including roots, to natural ground. Contractor is responsible for the removal and proper disposal of cleared brush, trees, and root systems. Clearing also includes the removal of all snow and ice in the project area.

PART 2 – PRODUCTS

Not used.

PART 3 – EXECUTION

3.01 GENERAL

- A. Contractor shall perform all clearing and grubbing operations where designated on the Contract Drawings and as specified herein or as directed by the Project Manager.
 - 1. Locate, identify, and protect utilities from damage.
 - 2. Verify and protect any vegetation to remain.

3.02 PROTECTION

- A. Provide protection as necessary to prevent damage to existing improvements and utilities indicated to remain.
 - 1. Protect improvements on adjoining properties and on project site.

2. Protect trees, plant growth, and features designated to remain. Protect survey benchmarks, property corners, survey monuments, and existing work from damage or displacement.
- B. All property corners, benchmarks or other permanent survey marker disturbed during construction shall be removed and recorded. The contractor shall be responsible for the resurvey and resetting of any disturbed property corners, benchmarks or other permanent survey markers by a professional land surveyor, licensed by the State of Alaska.

3.03 USE AND DISPOSAL OF CLEARED MATERIAL

- A. Cleared material shall be disposed of at a Contractor furnished disposal area.
- B. Except as otherwise stated, the Contractor shall make his/her own arrangements and assume all costs in connection with disposal sites. Disposal sites shall be located and maintained in such a manner as to prevent a public nuisance.
- C. If the disposal site is located on private land, the Contractor shall obtain written permission from the property owner or owners for such disposal sites and shall furnish the Project Manager with a copy of this permission. The written permission shall specifically provide that the property owner will not hold AEA, its employees, agents, or engineers liable for use of or damage to this property. The Contractor shall be held liable for any trespass and property damage incurred outside of the disposal site.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A9 – Miscellaneous Site Work, Construct Ditch, and Stabilize Slopes, Bid Item B6 – Miscellaneous Site Work, Construct Ditch, and Stabilize Slopes and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 02120

MOBILIZATION AND DEMOBILIZATION

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. The work covered by this Section includes the furnishing of all labor, tools, equipment and materials for the following work and operations:
 - 1. Preparatory work and operations, including but not limited to pre-construction and post-construction costs of obtaining all required bonds, insurance, and other costs Contractor must incur before beginning the Work.
 - 2. Transportation of all materials, supplies, plant(s), equipment and personnel to and from the jobsite.
 - 3. Contractor is responsible for erecting and maintaining all plants, temporary structures, storage yards, erosion control measures, and other construction facilities, and for work required to remove said temporary facilities and perform cleanup of the project area in accordance with the Contract Documents.
 - 4. Contractor shall obtain and pay for all permits required for the work that are not provided by the Owner.
 - 5. Contractor shall post all OSHA required notices and establish safety programs.
 - 6. Contractor shall submit required Project Schedules.
- B. Mobilization and Demobilization costs for all subcontracted work shall be considered to be included.
- C. Items not included in Mobilization and Demobilization include, but are not limited to, any portion of the Work covered by specific bid items or incidental work which is to be included in a bid item or items; and profit, interest on borrowed money, overhead or management costs.
- D. Contractor shall be advised that barge landings, storage, staging, and lay down areas in Kake are limited and other Contractors may be using or planning on using available areas. Contractor shall make his own arrangements for staging of construction materials and equipment and shall coordinate and pay for the use of these areas with the associated landowners and other appropriate parties. No other staging areas are provided by the Authority, except for the proposed construction areas shown on the drawings. Contractor is responsible for any areas utilized by the contractor for stored materials.
- E. Contractor is responsible for coordinating with and obtaining approval from the City of Kake for use of the barge landing facility and/or for utilizing the area surrounding the barge landing for stored materials.

1.02 RELATED REQUIREMENTS

- A. Section 01010 Summary of Work
- B. Section 01500 Construction Facilities and Temporary Controls
- C. Section 01568 Permits, Environmental Limitations, and Storm Water and Erosion Control
- D. Section 01569 Construction Cleaning

PART 2 – PAYMENT

2.01 METHOD OF MEASUREMENT

Payment for mobilization and demobilization will be made as Lump Sum in partial payments as follows:

- A. Up to sixty percent of the amount bid for mobilization and demobilization may be paid when equipment and supplies are landed in serviceable condition at the Project site and other necessary preparations have been completed so that work can commence on other pay items.
- B. The remaining balance will be paid as Contractor facilities are dismantled and equipment is removed from the construction site, with the final increment paid upon completion of demobilization or as approved by the Engineer.

The right is reserved to require submittal of invoices, receipted bills, payrolls, and other appropriate documents to justify any or all payments under this item.

2.02 BASIS OF PAYMENT

Payment for this Work shall be in accordance with General Conditions.

Payment shall be made under the following units:

ITEM	UNIT
Mobilization and Demobilization	Lump Sum

END OF SECTION

SECTION 02140

DEWATERING AND CONTROL OF SURFACE WATER

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This Section describes the requirements for dewatering and the control of surface water during construction in accordance with the Contractor's approved Storm Water Pollution Prevention Plan.

1.02 RELATED REQUIREMENTS

- A. Section 02200 Excavation and Embankment
- B. Appendix D Erosion & Sediment Control Plan

1.03 SYSTEM DESCRIPTION

- A. Dewatering and temporary diversion works shall be designed by and be the sole responsibility of the Contractor.

1.04 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with governing EPA notification regulations before beginning dewatering. Comply with hauling and disposal regulations of authorities having jurisdiction.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Selection of equipment and materials to perform the work is at the option of the Contractor.

PART 3 – EXECUTION

3.01 GENERAL

- A. Comply with the Contractor's approved Storm Water Pollution Prevention Plan.
- B. The construction area shall be maintained in a relatively dry condition during the placement of fill materials. Contractor shall make his own provisions for diverting surface run off, alleviating ponding water, and dewatering excavation when ground water is encountered. Contractor shall be responsible for coordinating, acquiring, and paying for all permits required for dewatering operations.
- C. Remove ponded water and limit water flowing or infiltrating into the work area to the extent that the quality of work is not compromised.

- D. Surface water flows within the work area shall be diverted by constructing temporary ditches, berms, or other means to control and direct the water away from the work. The use of pumping equipment may be required to dewater some areas.
- E. Discharge from dewatering operations shall be returned to natural drainage routes. Settling pits, silt fences, straw dikes, or other appropriate measures shall be taken to prevent highly turbid waters from entering existing ponds, streams, or wetlands.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A9 – Miscellaneous Site Work, Construct Ditch, and Stabilize Slopes, Bid Item B6 – Miscellaneous Site Work, Construct Ditch, and Stabilize Slopes and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 02200

EXCAVATION AND EMBANKMENT

PART 1 – GENERAL

1.02 SCOPE OF WORK

- A. This section describes general requirements for all types of earthwork and is applicable to all earthwork required on the Project.
- B. IMPORTANT NOTES:
 - 1. Site conditions are known to be saturated following seasonal snow melt, flooding, or significant rainfall. Standing water may be encountered.
 - 2. Due to ground water fluctuation and the depth of utility trenches, dewatering of trenches may be required.
 - 3. Areas of contaminated material are known to exist on the project site. The Contaminated Material Work Plan, Appendix C, addresses special excavation and embankment work requirements within the known contaminated material area.
 - 4. There is a stock pile of City-owned unclassified material located at the new tank farm site. This material is available for purchase by the Contractor for use in this project. The City of Kake's Sales Agreement for the unclassified material is included in Appendix F. Screening and processing of the stockpile material is anticipated to be required for the material to meet the project specifications. Material purchase, handling, screening, processing, transporting, placement, and compaction of the stockpiled material shall be the responsibility of the Contractor. All remaining gravel stockpiles shall be relocated as shown on the Plans.

1.01 RELATED REQUIREMENTS

- A. Division 1 Specifications
- B. Section 00800 Supplementary Conditions
- C. Section 02010 Subsurface Conditions
- D. Section 02082 Decommission Fuel Piping
- E. Section 02084 Excavation and Handling of Petroleum Contaminated Soil
- F. Section 02100 Clearing and Grubbing
- G. Section 02140 Dewatering and Control of Surface Water
- H. Section 02275 Geotextile Fabric

- I. Section 02666 Liners
- J. Section 02930 Seeding
- K. Section 15191 Fuel Piping System
- L. Appendix C Contaminated Soils Work Plan

1.03 PROTECTION

- A. Protect equipment and vehicular traffic from trenches and excavations by providing adequate barricades and signage.
- B. Protect excavation side-slopes or adjacent structures by providing adequate back-slopes, shoring, bracing or other methods required to prevent failure of the excavations or existing soils.
- C. Protect all above and below ground utilities.
- D. Notify the Engineer of unexpected sub-surface conditions.
- E. Grade top perimeter of the excavation to prevent surface water runoff from entering the excavation.
- F. Provide for dewatering of the trench where ground water is encountered.
- G. Appropriate Personal Protection Equipment will be used to protect workers from work site hazards.
- H. The Contractor is responsible for meeting the OSHA requirements for worker safety on the work site.

1.04 QUALITY CONTROL ASSURANCE

- A. Testing Procedures and Methods:
 - 1. Earthwork Quality Control Assurance testing procedures and methods shall be in accordance with section 01400- Quality Control.
 - 2. Other testing procedures and methods referenced in individual specification sections.
- B. Quality Control Monitoring:
 - 1. Contractor shall secure and pay for all required quality control monitoring. Contractor shall utilize Engineer approved, certified, independent laboratory and field personnel for all required testing.
 - 2. Provide certified test results as required in Paragraph 1.05 Submittals of this specification.

3. Fill material placed prior to Engineer approval of test results is at the sole risk of the Contractor. Material not meeting requirements shall be removed and replaced at Contractor's expense.
- C. Minimum testing requirements are indicated in Section 01400 Quality Control.

1.05 SUBMITTALS

- A. Submittals shall be made in accordance with the General Conditions, Division 1, and this Section.
- B. Provide the following submittals:
1. Name of proposed independent certified testing laboratory and field testing subconsultant.
 2. Format of proposed laboratory and field test forms.
 3. Laboratory results of gradation and moisture density tests for each fill type to be used on the Project.
 4. If the Contractor changes the source and/or stockpile from which materials are obtained, Gradation Analysis and Moisture-Density test reports for these new sources shall be submitted to the Engineer.
 5. Catalog and manufacturer's data sheets for proposed compaction equipment.
 6. Disposal plan for unusable excavation.
- C. Additional Testing:
1. All testing necessary for the Contractor to locate acceptable sources material for the Project shall be provided by the Contractor at no additional cost to the Authority.
 2. During construction, the Authority may elect to have further gradation and compaction testing completed on the materials being furnished by the Contractor. This testing shall be at the expense of the Authority. The Contractor shall provide material samples as may be necessary to complete this testing and these material samples shall be furnished from material available on the Project site or from the Contractor's source and/or supplier.

1.06 MATERIAL SOURCES

- A. City-owned unclassified material currently stockpiled onsite is available for purchase from the City. The City of Kake's Sales Agreement for the unclassified material is included in Appendix F. This material will need to be screened and processed in order to meet the requirements for Crushed Aggregate Surface Course, Structural Fill, Trench Surface/Bedding material, and Erosion Control

Aggregate. The Contractor may use the material to produce fill material in accordance with the contract documents or furnish material from an alternative source in accordance with the Contract Documents.

- B. There is no known local source for the drain rock material. The Contractor shall furnish this material in accordance with the Contract Documents.
- C. The Contractor shall coordinate as necessary with the materials site property owners, shall acquire all necessary permits and/or material sales agreements, and shall pay required fees, royalties, and other costs associated with pit access and material extraction.
- D. The Contractor shall be responsible for all costs associated with locating, procuring, transporting, testing, storing, placing and compacting fill material. The Authority is not responsible for fill lost during transportation.

PART 2 – PRODUCTS

2.01 UNCLASSIFIED EXCAVATION

- A. Excavation from the project area shall be considered unclassified. Complete all excavation regardless of the type, nature or condition of the materials encountered as shown on the drawings and/or at the Engineer's direction.
- B. Excavation conforming to the specifications materials as defined in Section 2.02 may be reused. Unclassified excavation intended for reuse shall be stockpiled and tested prior to placement in the work.
- C. Dispose of unusable excavation at a contractor provided location approved by the Engineer.

2.02 FILL MATERIAL

- A. Fill Material shall meet the requirements for material types listed below.
 - 1. Structural Fill:
 - a. Structural Fill shall consist of reasonably well graded aggregate containing no muck, frozen material, roots, sod or other deleterious matter and with a plasticity index not greater than 6 as determined by ATM 204 and ATM 205.
 - b. Structural fill material shall conform to the following gradation as determined by ATM 304:

U.S. Standard

Sieve Size

Percent Passing,

by Weight

3 inch	100
2 inch	75-100
No. 4	15-60
No. 200	0-10

2. Trench Surfacing/Bedding Material:

- a. Trench Surfacing/Bedding Material shall consist of reasonably well graded aggregate containing no muck, frozen material, roots, sod or other deleterious matter and with a plasticity index not greater than 6 as determined by ATM 204 and ATM 205.
- b. Trench Surfacing/Bedding Material shall conform to the following gradation as determined by ATM 304:

U.S. Standard	Percent Passing,
<u>Sieve Size</u>	<u>by Weight</u>
1 inch	100
No. 4	15-60
No. 200	0-10

3. Crushed Aggregate Surface Course (CASC):

- a. Crushed Aggregate Surface Course shall consist of crushed stone or crushed gravel, consisting of sound, tough, durable pebbles or rock fragments of uniform quality. Free from clay balls, vegetable matter, or other deleterious matters.
- b. Crushed Aggregate Surface Course shall conform to the requirements of Aggregate Surface Course, Gradation E-1 as established by the Alaska DOT PF Standard Specifications, 2015:

<u>Property</u>	<u>Value</u>	<u>Test Method</u>
L.A.Wear, %	45%, max	AASHTO T96
Degradation Value	45, min	ATM 313
Fracture, %	70, min, 1 Face	ATM 305
Liquid Limit	35, max	ATM 204
Plastic Index	10, max	ATM 205
Sodium Sulfate Loss, %	9, max (5 cycles)	AASHTO T104

- c. Crushed Aggregate Surface Course shall conform to the following gradation as determined by ATM 304:

U.S. Standard	Percent Passing,
<u>Sieve Size</u>	<u>by Weight</u>
1 inch	100
3/4 inch	70-100
3/8 inch	50-85
No. 4	35-65
No. 8	20-50
No. 50	15-30
No. 200	8-15

4. Erosion Control Aggregate:

- a. Erosion Control Aggregate shall consist of reasonably well graded aggregate containing no muck, frozen material, roots, sod or other deleterious matter.
- b. Erosion Control Aggregate shall conform to the following gradation as determined by ATM 304:

U.S. Standard	Percent Passing,
<u>Sieve Size</u>	<u>by Weight</u>
8 inch	100
6 inch	50-80
4 inch	25-50
3 inch	0-25
2 inch	0-10
No. 200	0-1

B. Drain Rock:

1. Drain Rock Material shall consist of rounded or sub-rounded, clean, uniform, gravel.

2. Drain Rock material shall conform to the following gradation as determined by ATM 304:

U.S. Standard	Percent Passing,
<u>Sieve Size</u>	<u>by Weight</u>
1 inch	100
3/4 inch	90-100
1/2 inch	50-70
3/8 inch	20-50
No. 4	0-10
No. 200	0-1

2.03 LOCATOR/WARNING TAPE

- C. Metallic Locator/Warning tape shall be capable of being inductively detected electronically. Materials shall conform to the following:
 1. Film: Inert plastic. Each film layer shall be not less than 0.0005-inch thick (0.5 mil).
 2. Imprint: 3/4-inch or larger bold black letters.
 3. Legend: The buried utility line tape shall be identified with imprint such as "Caution: Fuel Line Below" and the identification repeated on approximately 24-inch intervals.
 4. Metallic foil laminated between two layers of impervious plastic film not less than 2 inches wide. The adhesive shall be compatible with the foil and film. Total thickness of tape shall not be less than 0.005 inch (5 mil).

PART 3 – EXECUTION

3.01 GENERAL

- A. Safety – The Contractor shall be solely responsible for making all excavations in a safe manner. Provide appropriate measures to retain excavation sideslopes and prevent sloughing to ensure that persons working in or near the excavation are protected.
- B. Earthwork safety, excavation slope stability, and dewatering will be the responsibility of the Contractor.

- C. Contact Local utilities to locate all existing underground utilities in the vicinity prior to beginning excavation.
- D. Maintain and protect the existing utilities that may pass through the work area.
- E. Carefully lay out work to minimize disruption and damage to existing structures.
- F. Perform all work in accordance with OSHA requirements. Barricade open excavations to prohibit public entry.
- G. Notify Engineer of any discrepancies between Contractual requirements and site conditions prior to start of Work.
- H. Maintain subgrade, backfill and embankment areas or lifts open until testing is complete and testing requirements are met, or approval of testing is secured from the Engineer.
- I. Any work covered up prior to test completion and achieving testing requirements or Engineer's approval shall be excavated and reconstructed at Contractor's expense.
- J. Work in inclement weather at Contractor's risk. Any materials which become unstable as the result of improper moisture content, improper selection of techniques, equipment, or operations during inclement wet weather shall be replaced at Contractor's expense.
- K. Excavations and embankment shall be accomplished in such a manner that drainage is maintained at all times. Any areas not graded to drain shall be kept free of standing water by pumping if necessary.
- L. The Contractor shall provide for the proper maintenance of traffic flow and accessibility as may be necessary, and shall also make adequate provisions for the safety of property and persons.
- M. No separate payment for any excavation shall be made. All excavation shall be incidental to the Bid Item being performed.

3.02 EXCAVATION

- A. Excavate to lines and grades as shown on the Contract Drawings.
- B. Cut trenches sufficiently wide to enable proper installation and inspection of utilities as specified and shown on the Contract Drawings.
- C. Remove and dispose of all organic material, debris, and oversized rock from excavation.
- D. At Contractor's option, unclassified excavation may be stockpiled and tested for conformance with Material specifications.
- E. Disposal of Excess Excavation

1. Dispose of all excess excavated materials in a Contractor provided disposal area outside of the work area. Contractor shall make arrangements for the disposal of the excavated material and bear all costs incidental to such disposal.
 2. Sideslopes of excavation waste piles shall be sloped to match the materials natural angle of repose, or flatter.
 3. Excavation waste shall be stored completely within the limits of the disposal area property.
- F. Dewatering:
1. Excavate all materials in a dewatered condition unless approved otherwise by the Engineer.
 2. Dewatering shall be performed in accordance with the requirements of Section 02140, Dewatering and Control of Surface Water.
- G. Unauthorized Excavation:
1. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or neat-line dimensions without written approval by the Engineer.
 2. Unauthorized excavation, as well as remedial work as directed, shall be at Contractor's expense.
 3. Backfill and compact unauthorized excavations as specified for authorized excavations of same classification.

3.03 SITE PREPARATION

- A. The contractor shall install a liner over the area indicated on the plans in accordance with the plans, Sections 02084, 02275, 02666 and the Contaminated Material Work Plan. The contractor shall re-grade the contaminated area as shown on the drawings. All contaminated soil within the contaminated soil area shall be kept within the limits of the contaminated soils area as shown in the drawings.
- B. The contractor shall install Structural Fill below the liner, as needed, to establish the graded surface as shown on the drawings in accordance with Paragraph 3.06.
- C. The contractor shall prepare the liner subsurface in accordance with Section 02666 and the manufacture's installation instructions.
- D. Install Geotextile Fabric in accordance with Section 02275 of the Specifications.
- E. Install Liner in accordance with Section 02666 of the Specifications.

- F. Install fill materials as shown on the drawings, and in accordance with Paragraph 3.06 and to a level, uniform surface before the placement of subsequent layers.
- G. Sloped ground surfaces steeper than 1 vertical to 4 horizontal on which embankment is to be placed shall be plowed, benched, or broken up in such manner that the fill material will bond with the prepared surface.

3.04 EMBANKMENT CONSTRUCTION

- A. Embankment Fill Placement:
 - 1. The specified material shall be placed at the locations and to the lines and grades indicated on the Contract Drawings. The fill shall be placed and spread uniformly in successive layers not exceeding eight (8) inches in loose thickness. The layers shall be carried up full width from the bottom of the fill. Each layer shall be compacted in accordance with Section 3.06 of this Specification. Grade to provide positive drainage and blend grading into existing surfaces.
 - 2. Blading and compaction shall continue until the surface is smooth, free from waves and irregularities, and conforms to elevations shown on the Contract Drawings. If at any time the material is excessively wet; it shall be scarified by means of blade graders, harrows, or other suitable equipment and dried until the moisture content is satisfactory. The material shall then be compacted and finished as specified above.
 - 3. Oversized cobbles or boulders with dimensions in excess of 2/3 of the lift thickness and organics, and other deleterious material shall be removed. Portions of any lift in which the fill material becomes segregated shall be removed and replaced with satisfactory material and remixed to secure a homogeneous fill as directed by the Engineer. No separate payment will be made for any material removed or regraded in areas where material becomes segregated.

3.05 TRENCH BACKFILL

- A. Provide at least a 6-inch bedding thickness under the pipeline. Place bedding before the pipe is laid in the trench. Subsequent lifts of not more than 8-inches shall be installed and individually compacted to 95% of maximum density per ASTM D1557.
- B. No blocking of any type shall be used to adjust the pipe to grade.
- C. Structural Fill or usable excavated material shall be used as backfill material above the bedding material and be compacted in accordance with Section 3.06 of this Specification.
- D. Where ground water is present, the Contractor shall provide drainage through pumping or ditching to ensure that the bedding does not become saturated before placement of the backfill material in accordance with Section 02140 Dewatering and Control of Surface Water.

- E. The Contractor shall exercise caution when compacting above pipes to ensure that the pipes and coatings are not damaged by compaction and backfilling operations. All pipes and coatings damaged during backfill or compaction operations shall be repaired or replaced by the Contractor, at no expense to the Authority.

3.06 COMPACTION

- A. Structural Fill, Trench Backfill, Trench Surfacing/Bedding and Crushed Aggregate Surface Course: Deposit materials in layers not exceeding eight (8) inches in thickness before compaction. Compact by routing construction equipment and vibratory rollers uniformly over the entire surface of each layer before the next layer is placed. Keep dumping and rolling areas separate. Compact each lift to a minimum of 95% of the maximum dry density as determined by the Modified Proctor compaction procedure per ASTM D1557. Compactive effort shall be sufficient to maintain the lines and grades shown in the plans for placed fill and allow for positive drainage for the duration of its intended use. Do not cover any lift by another until the required compaction has been completed, and lift has been approved by the Engineer.
- B. Drain Rock: Deposit materials in layers not exceeding eight (8) inches in thickness before compaction. The Drain Rock material shall be placed and lightly compacted with hand operated compactors. A minimum of three passes with a hand operated compactor over each lift is required. Compactive effort shall be sufficient to maintain the lines and grades shown in the plans for placed fill and allow for positive drainage for the duration of its intended use. Do not cover any lift by another until the required compaction has been completed, and lift has been approved by the Engineer.
- C. Correct improperly compacted areas or lifts if soil density tests indicate inadequate compaction.
- D. Portions of any lift in which the materials become noticeably segregated shall be removed by the Contractor and replaced with satisfactory materials, or blended with additional material until segregation is eliminated and re-compacted in accordance with the Contract Documents.
- E. If, in the opinion of the Project Manager, based on testing service reports and inspection, subgrade and layers of embankment do not meet the specified compaction requirements, the Contractor shall perform additional compaction as directed by the Project Manager until specified compaction is obtained, at no additional cost to the Authority.
- F. The Contractor shall be responsible for providing the proper size and type of compaction equipment and for selecting the proper method of operating said equipment to attain the required compaction.

3.07 GRADING

- A. Existing ground contours shown on the Contract Drawings are based upon limited information and are approximate.

- B. Finished surfaces shall be not more than 0.10 foot above or below the finished grade elevations shown on the Contract Drawings; soft spots or settling areas shall be corrected at Contractor's expense. Blend finish grades to match adjacent existing roads and parking surfaces where required.

3.08 MAINTENANCE

- A. As necessary, Contractor shall water the site to control dust.
- B. Contractor shall protect newly graded areas from traffic and erosion and keep free of trash and debris.
- C. Contractor shall repair and re-establish grades in settled, eroded and rutted areas as directed by the Project Manager.
- D. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, reshape, and compact in accordance with these Specifications prior to further construction.
- E. All open excavations shall be adequately signed and barricaded to protect the public.

3.09 FIELD QUALITY CONTROL

- A. Contractor's quality control shall be performed in accordance with Section 01400 Quality Control.
- B. Notify the Engineer at least 24 hours in advance of trench backfilling operations to allow for inspection. Failure to obtain inspection prior to placement of backfill may be cause for rejection of installed buried pipelines and placed fills.
- C. The results of each density test shall be recorded on a test sheet. The following information shall be recorded.
 - 1. Horizontal and vertical location.
 - 2. Density and percent of referenced standard compaction.
 - 3. Material description and appropriate compaction control standard

PART 4 – BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. Structural fill and CASC shall be measured by the cubic yard in final position using the average end area method based on before and after surveys.
- B. Relocate Remaining Stockpiled Material shall be measured in cubic yards of relocated material not incorporated into the work and in its final stockpiled position as shown on the Plans. Payments shall be based on surveyed quantities of stockpiled material. The Contractor shall shape stockpiles into

single trapezoidal forms that are easily surveyed. Contractor shall provide the Engineer with before and after surveys and volume calculations for partial and final payments.

- C. No measurement will be made for quantities placed beyond the lines and grades authorized or for quantities placed outside of the fill limits, unless otherwise directed by the Project Manager.
- D. All other requirements of this specification: All other requirements of this specification shall be subsidiary to Bid Items A9 and B6 – Miscellaneous Site Work, Construct Ditch, and Stabilize Slopes and no additional measurement will be made.
- E. Excavation shall not be measured or paid for separately.

4.02 BASIS OF PAYMENT

- A. For Structural Fill and CASC shall be paid for at the contract price, per unit of measurement, accepted in place in its final position.
- B. For Relocate Remaining Stockpiled Material, payment shall be made at the contract unit price per cubic yard in its final position at the location shown on the Plans or directed by the Engineer. Payment shall be made when the stockpile has been stabilized in compliance with ADEC storm water and erosion control requirements.
- C. All other requirements of this specification: All other requirements of this specification shall be subsidiary to Bid Items A9 and B6 – Miscellaneous Site Work, Construct Ditch, and Stabilize Slopes and no additional payment will be made.
- D. Payment for this work shall be in accordance with the General Conditions. Payment shall be made under the following units:

ITEM	UNIT
Furnish and Install Structural Fill	Per Cubic Yard
Furnish and Install Crushed Aggregate Surface Course (CASC)	Per Cubic Yard
Relocate Remaining Stockpiled Material	Per Cubic Yard
Miscellaneous Site Work, Construct Ditch, and Stabilize Slopes	Lump Sum

END OF SECTION

SECTION 02275

GEOTEXTILE

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. The Work under this Section consists of furnishing all labor, equipment, supplies and materials necessary to perform all operations pertaining to the furnishing and placement of non-woven geotextiles.

1.02 RELATED REQUIREMENTS

- A. Section 01340 Shop Drawings, Product Data and Samples
- B. Section 01600 Material and Equipment
- C. Section 02200 Excavation and Embankment
- D. Section 02666 Liners

1.03 SUBMITTALS

- A. General: Conform to Section 01340, Shop Drawings, Product Data and Samples.
- B. Furnish Manufacturer's Information and design data, including complete product installation instructions.

1.04 DELIVERY, STORAGE AND HANDLING

- A. General Requirements: Conform to Section 01600, Material and Equipment.
- B. Packaging and Identification Requirements:
 - 1. Non-woven geotextile rolls shall be furnished with suitable wrapping for protection against moisture, contamination and extended ultra-violet exposure prior to placement.
 - 2. Each roll or bundle shall be labeled or tagged to provide product identification sufficient for field identification.
 - 3. Products shall be stored in a manner that protects them from the elements. If stored outdoors, they shall be elevated and protected with a waterproof cover.

1.05 QUALITY ASSURANCE

- A. Manufacturer: The manufacturer of the non-woven geotextile materials shall have a minimum of ten years experience in their fields.
- B. Sampling and Compliance Requirements:

1. A competent laboratory must be maintained by the producer of the non-woven geotextile at the point of manufacture to insure quality control in accordance with ASTM testing procedures.
2. That laboratory shall maintain records of its quality control results and provide, upon request of the specifying agent prior to shipment, a manufacturer's certificate.
3. The certificate shall include:
 - a. Name of manufacturer
 - b. Chemical composition
 - c. Product description
 - d. Statement of compliance to specification requirements
 - e. Signature of legally authorized official attesting to the information required.

PART 2 – PRODUCTS

2.01 GEOTEXTILE

A. Non-woven Geotextile Fabric

1. Non-woven Geotextile Fabric shall be TenCate®'s Mirafi 180N or approved equal.
2. The fabric shall be inert to naturally encountered chemicals, hydrocarbons, mildew and rot resistant, resistant to ultraviolet light exposure, insect and rodent resistant, and conform to the properties in the following table.
3. The minimum average roll value (MARV) for strength properties of any individual roll tested from the manufacturing lot or lots of a particular shipment shall be in excess of the MARV stipulated herein.

SPECIFICATION	TEST	
PROPERTY	LIMIT	METHOD
Grab Tensile Strength	200 lbs	ASTM D-4632
Trapezoid Tear Strength	75 lbs	ASTM D-4533
CBR Puncture Strength	500 lbs	ASTM D-6241

Survivability Class

2

AASHTO M288

- B. Package, label, handle, and store geotextile material according to ASTM D-4873.

PART 3 – EXECUTION

3.01 INSTALLATION OF NON-WOVEN GEOTEXTILE FABRICS

A. Preparation:

1. Prepare subgrade and embankment as specified.
2. Grade to a smooth surface, leaving no surface undulations or irregularities. Do not stretch and or “bridge” bridge fabric over gaps or undulations.
3. Remove any loose and angular materials, rocks, brush, and sticks that may damage the fabric.

B. Installation:

1. Weather Limitations: All work shall be performed under weather conditions recommended by the manufacturer.
2. The non-woven geotextile fabric sheet shall be unrolled, placed in a relaxed position, free from stress and with minimum wrinkles, and in full contact with the subgrade in accordance with manufacturer's recommendations. Do not bridge over voids or low areas in the subgrade.
3. Seams shall be overlapped 2-feet or as approved by the Engineer in accordance with the manufacturer's recommendations.
4. Construction vehicles shall not be allowed to travel directly on the fabric.
5. Take due care to ensure that fabric is not damaged during construction activities.
6. Fabric damaged to a degree that compromises its intended capabilities shall be replaced with same approved geotextile fabric at no additional cost to The Authority.

3.02 FILL PLACEMENT

- A. Fill or backfill placement shall be in accordance with Section 02200 Excavation and Embankment.
- B. A minimum of 6 inches of fill material shall be placed before any construction equipment is permitted to pass over the installed geotextile fabric. At no time shall equipment be operated on the unprotected fabric.

- C. Care shall be taken to avoid tears or other damage to the geotextile fabric during placement. Tears or damage are cause for repair or replacement of the fabric at the Contractor's expense.

3.03 GEOTEXTILE REPAIR

- A. If the geotextile becomes torn or damaged, it shall be repaired at the Contractor's expense prior to backfill operations.
- B. The fill material shall be cleaned from the surface of the geotextile and the torn area overlain with new fabric per manufacturer's recommendations. Care shall be taken that the patch remains in place during subsequent fill placement.

PART 4 – BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no separate measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A5 - Excavation and Handling of Petroleum Contaminated Material and Bid Item A10 - Construct Tank Farm Concrete Dike Walls and Truckfill Shelter Concrete Foundation and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 02620

SUBDRAINAGE

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section includes the subdrainage system for the tank farm containment dike.

1.02 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Provide manufacturer's literature.
- C. Manufacturer's Installation Instructions.

1.03 DELIVERY, STORAGE AND HANDLING

- A. Contractor is responsible for protection of all material provided from damage during transportation, storage and installation processes.
- B. Material, equipment or apparatus damaged because of improper storage or protection will be rejected and replaced at Contractor's expense.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Materials shall be new unless otherwise specified. All items of the same type shall be of the same manufacturer.

2.02 PERFORATED-WALL PIPES AND FITTINGS

- A. Perforated PE Pipe and Fittings: Fabric wrapped perforated ADS 472 drain pipe or approved equal.
 - 1. Couplings: ADS 412 couplings or approved equal.

PART 3 – EXECUTION

3.01 PIPING INSTALLATION

- A. Install piping beginning at low points of system, true to grades and alignment indicated, with unbroken continuity of invert. Bed piping with full bearing in filtering material. Install couplings according to manufacturer's written instructions and other requirements indicated.
 - 1. Tank Farm Subdrainage: Install piping pitched down in direction of flow, at a minimum slope of 0.5 percent

2. Lay perforated pipe with perforations down.
3. Excavate recesses in trench bottom for bell ends of pipe. Lay pipe with bells facing upslope and with spigot end entered fully into adjacent bell.

PART 4 – BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with this item shall be subsidiary to Bid Item A10 - Construct Tank Farm Concrete Dike Walls and Truck Fill Shelter Concrete Foundation and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 02666

LINERS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes geomembrane liners within the tank farm containment dike area and installed over the contaminated soil area shown on the Plans.

1.02 RELATED REQUIREMENTS

- A. Section 01340 Shop Drawings, Product Data and Samples
- B. Section 01600 Material and Equipment
- C. Section 02084 Excavation and Handling of Petroleum Contaminated Material
- D. Section 02200 Excavation and Embankment
- E. Section 02275 Geotextile

1.03 SUBMITTALS

- A. General: Conform to Section 01340, Shop Drawings, Product Data and Samples. Product Data.
- B. Shop Drawings: Show fabrication and installation details for geomembrane liners. Show panel layout, seams, perimeter anchorage, and methods of attachment and sealing to other construction. Differentiate between factory and field seams and joints.
- C. Samples: For each geomembrane.
- D. Product test reports.
- E. Manufacturer's installation instructions.

1.04 DELIVERY, STORAGE AND HANDLING

- A. General Requirements: Conform to Section 01600, Material and Equipment.
- B. Packaging and Identification Requirements:
 - 1. Geomembrane shall be furnished with suitable wrapping for protection against moisture, contamination and extended ultra-violet exposure prior to placement.
 - 2. Each roll or bundle shall be labeled or tagged to provide product identification sufficient for field identification.

3. Products shall be stored in a manner that protects them from the elements. If stored outdoors, they shall be elevated and protected with a waterproof cover.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: The installer shall have a minimum of 5 years of experience with seaming geomembranes and have completed at least 3 projects with geomembrane liner materials. The installer shall be an employer shall be a company trained and approved by manufacturer.
- B. Sampling and Compliance Requirements:
 1. A competent laboratory must be maintained by the producer of the geotextile at the point of manufacture to insure quality control in accordance with ASTM testing procedures.
 2. That laboratory shall maintain records of its quality control results and provide, upon request of the specifying agent prior to shipment, a manufacturer's certificate
 3. The certificate shall include:
 - a. Name of manufacturer
 - b. Chemical composition
 - c. Product description
 - d. Statement of compliance to specification requirements
 - e. Signature of legally authorized official attesting to the information required.

1.06 WARRANTY

- A. Specified form in which Contractor agrees to repair or replace geomembrane liner that fail(s) in materials or workmanship or that deteriorate(s) under conditions of normal weather and intended service within specified warranty period. Warranty does not include deterioration or failure of geomembrane liner due to exposure to harmful chemicals, gases or vapors, abnormal and severe weather phenomena, fire, earthquakes, floods, vandalism, or abuse by persons, animals, or equipment.
- B. Contractor shall warranty liner for a period of one (1) year from date of Project substantial completion.

PART 2 – PRODUCTS

2.01 SHEET MATERIALS

- A. General: Provide impervious geomembrane liner fabricated from sheet material indicated and complying with specified product characteristics:
 - 1. Reinforcing Scrim: One-ply polyester fabric totally encapsulated between two sheets.
 - 2. Nominal Thickness: 36-mil thick sheet per ASTM D 1593.
 - 3. Hydrostatic Resistance: Not less than 750-psi resistance per ASTM D 751, Procedure A.
 - 4. Dimensional Stability, Reinforced Sheet: Not more than plus or minus 2 percent per ASTM D 1204.
 - 5. Bursting Strength: Not less than 900 lb per ASTM D 751 (Ball Tip).
 - 6. Weathering Resistance: Not less than 7500 hours, per ASTM G 23 (Carbon Arc).

Seaman Corporation 9832 XR-5 G or approved equal.

2.03 MISCELLANEOUS MATERIALS

- A. Adhesives: Provide types of adhesive primers, compounds, solvents, and tapes recommended in writing by geomembrane liner manufacturer for bonding to structures (if required).

2.04 FABRICATION

- A. Fabricate geomembrane liner panels from sheets in sizes as large as practical with factory-sealed seams, consistent with limitations of weight and installation procedures. Minimize field seaming.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Examine substrates, with Installer present, for compliance with requirements for soil compaction and grading; for subgrade free from angular rocks, rubble, roots, vegetation, debris, voids, protrusions, and ground water; and for other conditions affecting performance of geomembrane liner.
- B. Preparation:
 - 1. Provide temporary ballast, until edges are permanently secured, that does not damage geomembrane liner or substrate, to prevent uplift of geomembrane liner in areas with prevailing winds.
- C. Place geomembrane liner over non-woven geotextile that has been placed on the prepared surfaces to ensure minimum handling. Install according to Shop Drawings and to comply with geomembrane liner manufacturer's written instructions. In areas with prevailing winds, begin placing geomembrane liner at

Project's upwind direction and proceed downwind. Install geomembrane liner in a relaxed condition, free from stress and with minimum wrinkles, and in full contact with geotextile on subgrade. Do not bridge over voids or low areas in the subgrade. Permanently secure edges.

- D. Field Seams: Comply with geomembrane liner manufacturer's written instructions. Form seams by lapping edges of panels 2 to 4 inches, unless instructions require a larger overlap. Wipe contact surfaces clean and free of dirt, dust, moisture, and other foreign materials. Use solvent-cleaning methods and grind geomembrane seam surfaces if recommended by geomembrane liner manufacturer. Proceed with seaming at required temperatures for materials and ambient conditions. Continuously bond sheet to sheet to construct single or double seams of width recommended for method of seaming used. Seal or fuse free seam edges as instructed. Inspect seams and reseal voids.
- E. Installation in Anchor Trench: Install geomembrane liner in trench according to manufacturer's written instructions and the drawings, backfill, and compact to lock liner into trench.
- F. Liner Repairs: Repair tears, punctures, and other imperfections in geomembrane liner and seams using patches of geomembrane liner material, liner-to-liner bonding materials, and bonding methods according to geomembrane liner manufacturer's written instructions. Apply bonding solvent or weld to contact surfaces of both patch and geomembrane liner, and press together immediately. Roll to remove wrinkles.

3.02 FIELD QUALITY CONTROL

- A. Nondestructive Testing: Visually inspect seams and patches. Comply with ASTM D 4437 for Air Lance Test, Vacuum Box Testing, or Ultrasonic (High Frequency) Pulse Echo Testing or with GRI Test Method GM6, as applicable to geomembrane liner and seam construction. Record locations of failed seams and patches. For the record, individually number and date occurrences and details of leak and remedial action. Repair leaking seams and patches.

3.03 PROTECTION

- A. Protect installed geomembrane liner according to manufacturer's written instructions. Repair or replace areas of geomembrane liner damaged by scuffing, punctures, traffic, rough subgrade, or other unacceptable conditions.

PART 4 – BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no separate measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A5 - Excavation and Handling of Petroleum Contaminated Material and Bid Item A10 – Con-

struct Tank Farm Concrete Dike Walls and Truckfill Shelter Concrete Foundation and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 02830

CHAIN LINK FENCES AND GATES

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. The work covered by this Section includes the furnishing of all labor, tools, equipment and materials necessary to design, fabricate, coat, package for shipment, and delivery of fence materials as shown on the attached Contract Drawings and described in this Specification.

1.02 REFERENCES

- A. The fence and materials shall be in accordance with this Specification, the Contract Drawings and with the following:
 - 1. FS RR-F-191 – Federal Specifications and Standards. Fencing, Wire, Post, and Fabric.

1.03 DEFINITIONS

- A. In this specification, the following words or expressions shall be understood to have the meaning given below:
 - 1. Fence – Chainlink fencing, fabric, pipes, posts, plates, gates, wire, truss rods, fasteners, latches, and other materials shown in the Contract Drawings and necessary to install fence.

1.04 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. The submittals include:
 - 1. Product Data: Submit manufacturer's standard printed information and literature for all materials to be incorporated in the work.
 - 2. Shop Drawings: Submit dimensionally correct (scaled) shop drawings for all items to be fabricated (gates, etc.).
 - 3. Assembly procedures and standard details for the installation of all fence materials.

1.05 QUALITY ASSURANCE

- A. The manufacturer shall be experienced and regularly engaged in the supply and installation of fence materials. The manufacturer shall understand the system design and its intent and shall produce components suitable to accomplish that intent. Any deficiencies in the Contract Drawings or these Specifications which may jeopardize the performance of the system shall be brought to the immediate

attention of the Project Manager, prior to submittal of product description and information for acceptance, whenever possible.

1.06 IDENTIFICATION

- A. All fence materials for each facility shall be marked with an identifying number that identifies which facility and component of the fence they pertain to.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Packaging
 - 1. Contractor shall verify shipping dimensions and weight limitations with shipper to ensure that the receipt and delivery of materials will not require the use of specialized equipment.
 - 2. Packing must meet the shipping requirements of all anticipated carrier(s) and be adequate to protect the materials from being damaged.
 - 3. Individual packages/crates must be limited to three thousand pounds (3,000) gross weight and be suitable for lifting by forklift and cable sling.
 - 4. Contractor shall provide packing lists with all bundles and packages which shall list all materials contained in the package or bundle. Packing list shall be securely attached to each bundle in a watertight carrier.

PART 2 – PRODUCTS

2.01 NEW FENCING MATERIALS, POSTS AND ACCESSORIES

- A. Zinc-Coated Steel Wire Fabric:
 - 1. Type 1, 2-inch mesh, 9 gauge
 - 2. Provide three strands of barbed and twisted selvage at top and barbed selvage at bottom for all fabric. 12.5 gauge, 4-point, class III.
- B. Tension Wire for Top and Bottom of Fabric:
 - 1. 7 gauge, coil spring steel, Class III
- C. Posts and Braces (Class 1, galvanized steel pipe, Grade A or B):
 - 1. Line Posts: 2.375-inch O.D., weight of 3.65 lb/ft.
 - 2. End, Corner, Pull Posts, and Man Gate: 2.875-inch O.D. and weight of 5.79 lb/ft.
 - 3. Brace Rail: 1.660-inch O.D. and weight of 2.27 lb/ft.
 - 4. Top Rail: 1.660-inch O.D., weight of 2.27 lb/ft, minimum 18-feet long with 6-inch long couplings.

D. Gates:

1. Detailed construction requirements for all gates shall be as specified in drawings, and shall meet the applicable requirements of this specification.
2. Man Gates:
 - a. Class 1 steel pipe, galvanized steel pipe, Grade A or B. 1.90-inch O.D. and weight of 2.72lb/ft.
 - b. Man gate shall have truss rods or intermediate braces.
 - c. Provide Fork Latch for man gate.
3. Gate fabric shall be attached to the gate frame by method standard with the manufacturer except that welding will not be permitted.
4. All hardware shall be zinc-coated.
5. Latches shall be arranged on the main entry man gate into the tank farm and truckfill shelter for pad-locking so that the padlock will be accessible from both sides of gates.
6. All emergency egress man gates in the tank farm and truckfill shelter shall include a surface mounted panic bar latch mechanism on the inside of each gate. Hoover Fence Co. Panic Bar Kit D-6030 or equal.

E. Accessories: Ferrous accessories shall be zinc-coated steel.

1. Tension bars: $\frac{1}{4}$ -inch x $\frac{3}{4}$ -inch flat bar
2. Tension bar bands: $\frac{1}{8}$ -inch x 1-inch with $\frac{3}{8}$ -inch carriage bolt.
3. Wire Ties and Clips: 11 gauge.
4. Truss Rods: $\frac{3}{8}$ -inch diameter.

F. Zinc Coating:

1. All steel and iron parts will be zinc-coated after fabrication in accordance with FS RR-F-191.
2. Weight of zinc coating per square foot of actual surface shall average not less than 1.2-ounces and no individual specimen show less than 1.0-ounce.

G. Grounding System:

1. Furnish and install ground wire and ground rod in accordance with the plans.

PART 3 – EXECUTION

3.01 GENERAL

- A. Install posts, fabric, gates and accessories in accordance with ANSI/ASTM F567 and the manufacturer's instructions.
- B. Repair damaged galvanized surfaces with an approved cold galvanizing compound in accordance with manufacturer's instructions.

3.02 POSTS

- A. Spacing: Space posts equidistant measured on a horizontal line; on straight runs, space at 10-feet maximum.
- B. Location:
 - 1. Locate fencing as shown on Plans.
- C. Setting:
 - 1. Set posts plumb.
 - 2. Set all line posts so post tops are two inches below fabric height. Install combination post tops/barbed wire arms.
 - 3. Embed posts 4-feet below finished grade for perimeter fencing of City of Kake storage yard as shown in the Contract Documents.
 - a. It is anticipated that the Contractor will encounter bedrock at this location. To achieve the required embedment depth, fill voids between fence posts and rock with high strength, non-shrink grout as shown on the plans.
 - 4. Attach posts to concrete dike wall at tank farm as shown in the Contract Documents
 - 5. Attach posts to concrete containment wall at truck fill facility as shown in the Contract Documents.

3.03 INSTALLING FABRIC

- A. Place fabric on the outside of posts around the area enclosed.
- B. Fabric for perimeter fencing shall be installed on the cut side of the fence frame work.
- C. Cut fabric by untwisting a picket, and attach each span independently at all terminal posts. Use continuous lengths of barb wire and tension wire between terminal posts.

- D. Attach one end and then apply tension to remove all slack and attach other end, using tension bars with tension bands at maximum 15-inch intervals or any other approved method.
- E. The installed fabric shall have a smooth, uniform appearance, free from sag.
- F. Install fabric 2-inches above finished grade with a tolerance of plus or minus 1-inch at each post.
- G. Fasten fabric to line posts at intervals not to exceed 12-inches and to the top and bottom tension wires at intervals not to exceed 12-inches.
- H. Fasten fabric to line posts and top rail with wire ties, and to bottom tension wire with hog rings.
- I. Join sections of fabric by weaving a single picket into the ends of the rolls to form a continuous mesh.

3.04 BRACES AND TRUSS RODS

- A. Braces and truss rods shall be installed as indicated and in conformance with the standard practice for the fence furnished.
- B. Horizontal (compression) braces and diagonal truss (tension) rods shall be installed.
- C. Braces and truss rods shall extend from terminal posts to line posts.
- D. Diagonal braces shall form an angle of approximately 40 to 50 degrees with the horizontal.

3.05 TOP RAIL AND TENSION WIRES

- A. Pass top rail through line post tops and join rail sections with sleeve couplings. Fasten top rail to terminal posts with pressed steel fittings.
- B. Tension wires shall be installed along the bottom of the fence line and attached to the terminal posts of each stretch of the fence.
- C. Bottom tension wire shall be installed within the bottom 6-inches of the installed fabric.
- D. Tension wire shall be pulled taut and shall be free of sag.

3.06 GATES

- A. Install gate frame plumb with tops of posts level with each other.
- B. Gate latches and other gate appurtenances shall be of sufficient strength and design to assure easy, trouble free operation.
- C. Gate latches shall have a locking mechanism to secure the gate.

- D. Gate fabric shall be the same design and height of line fence fabric, furnished with twisted selvage top and barbed selvage bottom.
- E. Gates shall be constructed so that they may be operated by one person and shall swing free of binding.
- F. Emergence egress man gates shall be able to be opened from the inside of the facilities.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A17 – Complete Tank Farm Construction, Bid Item A18 – Complete Truckfill Shelter Construction, Bid Item A22 – Install Perimeter Fencing for City's Equipment Yard and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 02890

SIGNS

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section covers the furnishing and installation of signs at the tank farm and truck fill facilities.
- B. The Contractor shall furnish all signs and fasteners.

1.02 RELATED REQUIREMENTS

- A. Section 01300 Submittals
- B. Section 02830 Fences and Gates

1.03 REFERENCES

- A. International Fire Code (IFC), Sections 3404, 2204.3.5, and 2205.6
- B. National Fire Protection Association, No. 704
- C. State of Alaska, Department of Transportation, "Standard Specification for Highway Construction" and "Standard Drawings Manual".

1.04 SUBMITTALS

- A. Submit shop drawings of all signs, including height and width as well as sign thickness. Indicate background color and text color, text information (i.e. height and stroke) proposed for each sign.
- B. Submit manufacturer's data and standard colors for vinyl backgrounds and letters.
- C. Submit one (1) sample for approval of each type of fastener used to install, hang or otherwise fasten signs.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Signs posted at the tank farm and truck fill fences shall be constructed of 0.08" minimum aluminum plate. Signs at the truck fill facility and gas station island fuel dispensers shall be self adhesive vinyl. Warning signs shall be white reflective letters on a red non-reflective background. Informational signs shall be black reflective letters on a white non-reflective background, unless otherwise indicated.

- B. Size signs and lay out letters such that no letters touch or overlap, and all words are clearly readable.
- C. Signs and letters shall be sized as indicated on the Contract Drawings.
- D. Provide 3M series 255 High Performance vinyl letters on 3M 3650-10 white vinyl background, or Gerber thermal transfer film printed letters on Gerber High Performance vinyl background as indicated on the Drawings, or as appropriate for the application.

2.02 SIGNS

- A. Provide signs as indicated on the Contract Drawings

PART 3 – EXECUTION

3.01 GENERAL

- A. Install in accordance with IFC flammable and combustible liquid signage standards, and NFPA 704.
- B. Signs shall be conspicuously mounted and easily read.
- C. Where signs are fastened to fences, the fasteners used shall be steel hog rings or steel wire ties.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with this item shall be subsidiary to Bid Item A15 – Complete Tank Farm Construction, Bid Item A20 – Reconstruct KTC Vehicle Dispenser and Install Marine Dock Onshore Controls and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 02930

SEEDING

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. Areas grassed and/or seeded prior to construction and excavated or otherwise disturbed during construction operations shall be restored to their original condition.
- B. The following areas shall be seeded in accordance with this section:
 - 1. Previously vegetated areas of local material sources.
 - 2. Roadway sideslopes, including that for any haul roads to remain after construction activities.
 - 3. Previously vegetated areas disturbed by construction activities.
 - 4. The side slopes of embankments.
 - 5. All other areas defined on the Contract Drawings.

1.02 RELATED REQUIREMENTS

- A. Division 1 Specifications
- B. Section 02100 Clearing and Grubbing
- C. Section 02200 Excavation and Embankment

1.03 REFERENCES

- A. “A Revegetation Manual for Alaska” August 2008, published by the Alaska Department of Natural Resources.

1.04 SUBMITTALS

- A. Duplicate copies of a statement signed by the vendor certifying that each lot of seed has been tested by a recognized seed testing laboratory within 6 months before the date of delivery to the Project.
- B. Duplicate copies of certification from grower certifying grass species.

PART 2 – PRODUCTS

2.01 SEED

- A. Grass seed of the type hereinafter specified shall conform to the standards of State Department of Agriculture.
- B. Seed shall be furnished in standard containers on which shall be shown the following information:
 - 1. Common name of seed
 - 2. Lot number
 - 3. Net weight
 - 4. Percentage of purity
 - 5. Percentage of germination (in case of legumes percentage of germination to include hard seed)
 - 6. Percentage of weed seed content and inert material clearly marked for each kind of seed in accordance with applicable state and federal laws.
- C. Grass Seed Mix and Application Rates (broadcast method):
 - 1. Bering Hairgrass (Norcoast): 48% of seed mix
 - 2. Arctared Red Fescue: 22% of seed mix
 - 3. Annual Rye Grass: 30% of seed mix
 - 4. Application rate of 13 lbs per acre.

2.02 FERTILIZER

- A. General:
 - 1. Fertilizer shall be a standard commercial grade of organic or inorganic fertilizer of the kind and quality specified herein. It may be separate or in a mixture containing the percentage of total nitrogen, available phosphoric acid, and water-soluble potash in the amounts specified.
 - 2. All fertilizers shall be furnished in standard unopened containers with weight, name of plant nutrients, and manufacturer's guaranteed statement of analysis clearly marked in accordance with state and federal laws.
 - 3. Fertilizer shall be ground to a fineness as required for the method of application.

- B. Fertilizer Analysis and Application Rates:
 - 1. Total Nitrogen: 29% of mixture
 - 2. Available Phosphoric Acid: 47% of mixture
 - 3. Water Soluble Potash: 24% of mixture
 - 4. Application rate per the manufacture's recommendation.

PART 3 – EXECUTION

3.01 GRASS SEEDING

- A. Seeding shall be performed as soon as practicable after ground disturbing activities.
- B. Seeding shall not be performed during windy weather or when the ground is frozen, excessively wet or otherwise untillable.
- C. Seedbed Preparation:
 - 1. Sideslopes shall be no steeper than 2 horizontal to 1 vertical and shall be compacted and tracked by a dozer to reduce erosion.
 - 2. The tracked ground surface shall be covered with an erosion control blanket (North American Green S75, or approved equal) in accordance with the manufacturer's recommendations.
 - 3. Sideslopes shall be covered with native grubbed material as needed to ensure grass growth. Grubbed material shall be applied evenly and smoothly over sideslopes. See Section 02100 of these specifications.
- D. Grass seed shall be applied at the rates specified above.
- E. Fertilizer shall be applied at the rates specified above.
- F. Seeding Time:
 - 1. The exact time for seeding will be determined by actual weather conditions.
 - 2. Seeding shall be conducted after first freeze in the fall, or prior to July 15 for best germination.
- G. When weather conditions are such that satisfactory results are not likely to be obtained for any stage of the seeding operations, the Contractor shall stop the work and it shall be resumed only when the desired results are likely to be obtained or when approved alternates or corrective measures and procedures are adopted.

- H. The Contractor shall protect all seeded areas from erosion until final inspection and acceptance has been made and until such time as grass leaves are visible to the eye.
- I. Areas damaged by erosion shall be repaired by the Contractor at his own expense.

3.02 WATERING

- A. Duration:
 - 1. The Contractor shall water all seeded areas a minimum of three times each week or often enough to maintain a moist seed bed to promote healthy seed germination, whichever provides the greater watering frequency, for a duration of 30 days.
 - 2. Watering shall cease at first hard frost in the Fall and shall resume upon ground thaw the following Spring.
 - 3. If at any time during the maintenance period weather conditions (such as extended period with no rain or continuous drying winds) cause the root zone to dry out, the Project Manager may direct the Contractor to water all seeded areas.
 - 4. Any supplemental watering shall be done immediately at no additional cost to the Authority.
- B. Water application shall be applied at a rate that will provide moisture penetration throughout the entire root zone with a minimum of water run-off and no erosion.
- C. Should soil conditions be encountered not conducive to water absorption, the Contractor shall take whatever corrective actions that may be required to correct this condition, without additional cost to the Authority.

3.03 FINAL INSPECTION

- A. Final inspection for seeded areas shall not be made until 30 days following completion of all seeding and fertilizing as specified.
- B. Damage caused by the Contractor to areas which have been seeded shall be repaired and/or replaced by the Contractor at his own expense.

3.04 GUARANTEE

- A. Guarantee of planting and seeding shall continue for one year from date of final acceptance.
- B. Contractor shall replace all seeded areas as required during the guarantee period.
- C. Guarantee shall include both materials and labor.

- D. Replacements shall be the same as originally planted.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Items A9 – Miscellaneous Site Work, Construct Ditch, and Stabilize Slopes, Bid Item B6 – Miscellaneous Site Work, Construct Ditch, and Stabilize Slopes and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Reinforcing steel bars, wire fabric, and accessories for cast-in-place concrete.

1.02 RELATED SECTIONS

- A. Section 03300 Cast-in-Place Concrete
- B. Section 05120 Structural Steel
- C. Section 05300 Metal Deck

1.03 REFERENCES

- A. ACI 301 - Structural Concrete for Buildings.
- B. ACI 304 – Measuring, Mixing, Transporting, and Placing Concrete.
- C. ACI 315 - Manual of Standard Practice for Detailing Reinforced Concrete Structures, and as modified by Interim Reports.
- D. ACI 318 - Building Code Requirements for Reinforced Concrete.
- E. ASTM A82 - Cold-Drawn Steel Wire for Concrete Reinforcement.
- F. ASTM A184 - Fabricated Deformed Steel Bar Mats for Concrete Reinforcement
- G. ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
- H. ASTM A615 - Deformed and Plain Billet - Steel Bars for Concrete Reinforcement.
- I. ASTM A775 – Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
- J. AWS D12.1 - Recommended Practice for Welding, Reinforced Concrete Construction.
- K. CRSI 63 - Recommended Practice For Placing Reinforcing Bars.
- L. CRSI 65 - Recommended Practice For Placing Bar Supports, Specifications and Nomenclature

1.04 SUBMITTALS

- A. Shop Drawings: Submit detailed drawings indicating bar sizes, spacings, locations, and quantities of reinforcing steel and wire fabric, bending and cutting schedules, and supporting and spacing devices.
- B. Miscellaneous
 - 1. Welding Procedure where required for grounding purposes.
 - 2. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with CRSI 63 and 65, ACI 301, 304, 315, and 318, and ASTM A184.

1.06 COORDINATION

- A. Coordinate with placement of formwork, formed openings and other work.
- B. Verify grounding requirements are in conformance with Contract Documents.

PART 2 – PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: Install ASTM A-615 grade 40 or 60 reinforcing bars epoxy coated in accordance with ASTM A-775; to be installed in accordance with ACI 315, size and quantity as indicated. Place concrete in accordance with ACI 304.
- B. Welded Steel Wire Fabric: ASTM A185 Plain Type in flat sheets; plain finish.

2.02 ACCESSORY MATERIALS

- A. Tie Wire: Minimum 16 gauge annealed type.
- B. Chairs, Bolsters, Bar Supports, and Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions including load bearing pad on bottom to prevent vapor barrier puncture.

2.03 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI Manual of Practice, ACI 318, and ASTM A184.
- B. Weld reinforcement in accordance with UBC Standard 19-1 and ANSI/AWS D1.4-92.

- C. Locate reinforcing splices not indicated on Drawings, at point of minimum stress. Review location of splices. Minimum lap shall be 36 bar diameters, 24" minimum.
- D. Cold bending shall be in accordance with IBC and ACI recommendations.

PART 3 – EXECUTION

3.01 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Do not displace or damage vapor barrier.
- C. Accommodate placement of formed openings.
- D. Conform to applicable code and details on Drawings for concrete cover over reinforcement.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Cast-in-place concrete requirements.
- B. Saw cut contraction joints.
- C. Construction/ contraction joint devices.

1.02 RELATED REQUIREMENTS

- A. Section 03200 Concrete Reinforcement
- B. Section 05120 Structural Steel

1.03 REFERENCES

- A. ACI 301 - Structural Concrete for Buildings.
- B. ACI 302 - Guide for Concrete Floor and Slab Construction.
- C. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
- D. ACI 305 - Hot Weather Concreting.
- E. ACI 306R - Cold Weather Concreting.
- F. ACI 308 - Standard Practice for Curing Concrete.
- G. ACI 318 - Building Code Requirements for Reinforced Concrete.
- H. ASTM C33 - Concrete Aggregates.
- I. ASTM C39 - Compressive Strength of Cylindrical Concrete Specimens.
- J. ASTM C94 - Ready-Mixed Concrete.
- K. ASTM C143 - Test for Slump of Portland Cement Concrete.
- L. ASTM C150 - Portland Cement.
- M. ASTM C192 - Making and Curing Concrete Test Specimens in the Laboratory.
- N. ASTM C260 - Air Entraining Admixtures for Concrete.
- O. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete

- P. ASTM C494 - Chemical Admixtures for Concrete.
- Q. ASTM D1850 - Concrete Joint Sealer, Cold-Application Type.
- R. ASTM D4397 - Polyethylene Sheeting for Construction, Industrial, and Agricultural Applications.

1.04 SUBMITTALS

- A. Product Data
 - 1. Air-entraining admixture
 - 2. Water reducing admixture
 - 3. Concrete joint sealer
 - 4. Construction/ contraction joint devices.
- B. Miscellaneous
 - 1. Mix design: Submit proposed mix design of each class of concrete for review prior to commencement of Work, including delivery of concrete components. The mix design shall be newly prepared for the specific components intended for use in the project.
 - 2. Identify individual(s) responsible for installation of concrete flatwork. The responsible individual(s) shall demonstrate a minimum of 5 years experience and demonstrate a minimum of 10 similar flatwork projects.
 - 3. Manufacturer's installation instructions: Indicate installation procedures and interface required with adjacent work for sealer-hardener and joint sealer.
 - 4. Submit results of cylinder breaks, and entrained air test, and slump tests.
 - 5. Accurately record actual locations of embedded utilities and components which are concealed from view. Submit under provisions of Section 01700.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301.
- B. Maintain one copy of each document on site.
- C. Acquire cement and aggregate from same source for all work.
- D. Conform to ACI 305 when concreting during hot weather.
- E. Conform to ACI 306R when concreting during cold weather.

1.06 COORDINATION

- A. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.
- B. Coordinate the placement of threaded rods with tank and module skids.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Portland Cement: ASTM C150, Type I or II.
- B. Coarse Aggregate: ASTM C33, Size 67.
- C. Intermediate Aggregate ASTM C33, Grade 8.
- D. Fine Aggregate: ASTM C33, Concrete Sand.
- E. Mixing Water: Fresh, clean, and potable.
- F. Air-Entraining Admixture: ASTM C260, MB AE-90 or approved equal.
- G. Chemical Admixture: ASTM C494, Type A, water reducing.
- H. Joint Filler: ASTM D1751, 1/2-inch thick, unless otherwise indicated.
- I. Joint Sealant: ASTM D1850, for horizontal joints, inside buildings.
- J. Non-Shrink Grout: Non-shrink type, pre-mixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing additives, capable of developing a minimum compressive strength of 7,000 psi at 28 days.
- K. Cement Grout: Consisting of cement, fine aggregate, and water.
- L. Contraction Joint Sealant: High performance moisture cured, one-component, non-sag, polyurethane based elastomeric sealant. Sikaflex 1A or approved equal.
- M. Gas Station Island Forms: 60 inch wide x 13 inch tall steel island forms with 6 inch radius end sections. As manufactured by Riverside Steel, Inc. or approved equal. Paint steel forms red per section 09900 Painting and Coating.
- N. Gas Station Island “U” Shaped Guard Post: 6 inch schedule 40 pipe, “U” Shaped Guard Post, 48 inch wide x 72 inch tall, as manufactured by Riverside Steel, Inc. or approved equal. Paint Guard posts red per section 09900 Painting and Coating.
- O. Truck Fill Shelter Containment Sump Grate: Galvanized steel grating manufactured to withstand highway traffic loads exceeding AASHTO H-20/HS-20 specifications.

2.02 MIX DESIGN

- A. The Contractor shall furnish all aggregate for cast-in-place concrete and a material sample shall be submitted to ensure compliance with the specifications.
- B. The design of the concrete mixes using the materials specified shall be the responsibility of the Contractor as in accordance with ASTM requirements. The concrete shall be Type C and have the following characteristics:
 - 1. Compressive strength at 28 days shall be not less than 3,500 psi.
 - 2. The strength of the concrete proposed for use shall be established by testing prior to beginning concreting operation. A test consists of the average of three cylinders made and cured in accordance with ASTM C192 and tested in accordance with ASTM C39.
 - 3. Slump shall not be more than 4 inches for vibrated concrete tested in accordance with ASTM C143.
 - 4. Minimum cement factor shall be 5.5 bags per cubic yard.
 - 5. Air-entrainment is required for all concrete and shall be 6 percent +/- 1-1/2 percent.
 - 6. Maximum water-to-cement ratio shall not exceed 0.45, consistent with ACI recommendations for minimum shrink concrete.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify requirements for concrete cover over reinforcement.
- B. Verify that anchors, bar chairs, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, and positioned securely.

3.02 PREPARATION

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- B. Construction Joints: Locate joints to least impair strength. Continue reinforcement across joints unless otherwise indicated.
- C. Contraction Joints: Provide contraction joints, either formed or saw cut, to the indicated depth after the surface has been finished. Complete sawed joints within 4 to 12 hours after concrete placement. Protect joints from intrusion of foreign matter. Fill contraction joints with Sikaflex 1A Sealant, A High performance moisture cured, one-component, non-sag, polyurethane based elastomeric sealant or approved equal. After the concrete is fully cured (28 day minimum. Verify compatibility with hardeners and or curing agents specified. Contraction joints shall be 1/2" deep.

3.03 MIXING

- A. Materials shall be stored, batched, and mixed as specified in ASTM C94.
 - 1. Job-Mixed: Mix concrete at the job site in a batch mixer in the manner specified for stationary mixers in ASTM C94.

3.04 PLACING CONCRETE

- A. Place concrete in accordance with ACI 301, ACI 304, and ACI 318.
- B. Notify Engineer minimum 24 hours prior to commencement of operations.
- C. Ensure reinforcement, inserts, embedded parts, and other accessories are not disturbed during concrete placement.
- D. Composite slab, provide closures necessary to contain the concrete during the pour.
- E. Place concrete continuously between predetermined construction or indicated contraction joints.
- F. Do not interrupt successive placement; do not permit cold joints to occur within the construction joints.
- G. Screed floor slabs maintaining surface flatness of maximum 1/4-inch in 10 feet. Slope floor as shown on the drawings.

3.05 PLACING MISCELLANEOUS MATERIALS

- A. Provide contraction joints, either formed or saw cut to the indicated depth after the surface has been finished. Sawed joints shall be completed within 4 to 12 hours after concrete placement. Protect joints from intrusion of foreign matter.

3.06 CONCRETE FINISHING

- A. Provide formed concrete surfaces to be left exposed with smooth rubbed finish.
- B. Finish concrete floor surfaces in accordance with ACI 301.

3.07 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures in accordance with ACI 305 and ACI 306, and mechanical injury. Do not use membrane-forming compound on surfaces where appearance would be objectionable, on any surface to be painted, where coverings are to be bonded to the concrete, or on concrete to which other concrete is to be bonded.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement, hardening of concrete and minimizing of shrinking cracks.

- C. Cure floor surfaces in accordance with ACI 301. Begin curing immediately following form removal.
- D. Impervious Sheeting: Except during cold weather concreting, wet the entire exposed surface of the concrete thoroughly with a fine spray of water and cover with impervious sheeting throughout the curing period. Lay sheeting directly on the concrete surface and overlap edges 12 inches minimum. Provide sheeting not less than 18 inches wider than the concrete surface to be cured. Secure edges.

3.08 QUALITY CONTROL

- A. Field inspection and testing will be performed in accordance with ACI 301.
- B. Provide free access to Work and cooperate with appointed firm.
- C. Tests of cement and aggregates may be performed to ensure conformance with specified requirements.
- D. Three concrete test cylinders will be taken for every 75 or less cubic yards of concrete placed on each day.
- E. One additional test cylinder will be taken during cold weather concreting as defined by ACI 305, cured on job site under same conditions as concrete it represents.
- F. One test cylinder shall be tested for compressive strength at 7 days and two cylinders shall be tested for compressive strength at 28 days. If an additional cylinder was cast during cold weather concreting, it shall be tested for compressive strength at 28 days.
- G. One slump test and entrained air test will be taken for each set of test cylinders taken.

3.09 PATCHING

- A. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.
- B. Patch imperfections in accordance with ACI 301.

3.10 DEFECTIVE CONCRETE

- A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Engineer.
- C. Contractor shall repair or replace defective concrete as directed at no additional cost to the Owner.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Engineer for each individual area.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 05120

STRUCTURAL STEEL

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This Section includes fabrication and erection of structural steel work for truckfill shelter and tank fabrication, as shown on drawings including schedules, notes, and details showing size and location of members, typical connections, and types of steel required.
 - 1. Structural steel is that work defined in American Institute of Steel Construction (AISC) "Code of Standard Practice" and as otherwise shown on drawings.
 - 2. This section applies, but is not limited to tank containment, truckfill station, foundation structures, stairways, pump boxes, and other miscellaneous steel fabrications.

1.02 RELATED REQUIREMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Section 09900 Painting and Coatings
- C. Section 09800 Hot Dip Galvanized Coatings
- D. Section 13121 Pre-Engineered Buildings
- E. Section 15175 Above Ground Fuel Storage Tanks

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data or manufacturer's specifications and installation instructions for following products. Include laboratory test reports and other data to show compliance with specifications (including specified standards).
 - 1. Structural steel, including certified copies of mill reports covering chemical and physical properties.
 - 2. Structural steel coating system.
- C. Shop drawings including complete details and schedules for fabrication and assembly of structural steel members, procedures, and diagrams.

1. Include details of cuts, connections, camber, holes, and other pertinent data. Indicate welds by standard AWS symbols and show size, length, and type of each weld.
- D. Welders' certifications.

1.04 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of following (latest addition), except as otherwise indicated:
1. American Institute of Steel Construction (AISC) "Code of Standard Practice for Steel Buildings and Bridges."
 2. AISC "Specifications for Structural Steel Buildings," including "Commentary."
 3. American Welding Society (AWS) D1.1 "Structural Welding Code - Steel."
- B. Qualifications for Welding Work: Qualify welding procedures and welding operators in accordance with AWS "Qualification" requirements.
1. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests.
 2. If recertification of welders is required, retesting will be Contractor's responsibility.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site at such intervals to ensure uninterrupted progress of work.
- B. Store materials to permit easy access for inspection and identification. Keep steel members off ground by using pallets, platforms, or other supports. Protect steel members and packaged materials from erosion and deterioration. If bolts and nuts become dry or rusty, clean and re-lubricate before use.
1. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. At Contractor's expense, repair or replace damaged materials or structures as directed.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Metal Surfaces, General: For fabrication of work that will be exposed to view, use only materials that are smooth and free of surface blemishes including pitting, rust and scale seam marks, roller marks, rolled trade names, and

roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating, and applying surface finishes.

- B. Structural Steel Shapes, Plates, and Bars: ASTM A 36, 50 ksi material is acceptable for structural shapes, if more readily available.
- C. Unfinished Threaded Fasteners: ASTM A 325, high strength bolts.
 - 1. Provide hexagonal heads and nuts for all connections.
- D. Electrodes for Welding: Comply with AWS Code.
- E. Grip Strut stair treads and landings shall be hot dip galvanized, and shall have serrated edges around diamond shaped openings to provide slip resistance. 5-Diamond plank x 11 $\frac{3}{4}$ " wide x 2" thick, 12 gauge galvanized. Install per manufacturers recommendations.
- F. Grip Strut walkway shall be hot dip galvanized and shall have serrated edges around diamond shaped openings to provide slip resistance. Install per manufacturer's recommendations.
 - 1. 24" Width: 5 Diamond Plank x 24" Wide x 3" Thick; 11 Gauge; Galvanized
 - 2. 36" Width: 8 Diamond Plank x 36" Wide x 3" Thick; 11 Gauge; Galvanized
- G. Bar Grate Treads, Landings, and Walkways: Welded steel grating meeting the requirement of NAAMM MBG 531, "Metal Bar Grating Manual" and NAAMM MBG 532 "Heavy Duty Metal Bar Grating Manual", designated (W19-4 2"x3/16" with serrated surface) or approved equal. Install with hot dip galvanized mechanical hardware per manufacturer's recommendations. Provide manufacturer data demonstrating that the deck will support 125 psf light storage loading for the spans shown on the drawings.
 - 1. Openings: 1 inches.
 - 2. Bearing Bar Spacing: 1.19 inches on center.
 - 3. Bearing Bar Thickness: 0.19 inches.
 - 4. Bearing Bar Depth: 2.0 inches.
 - 5. Crossbar Spacing: 4.0 inches on center.
 - 6. Traffic Surface: Serrated
 - 7. Steel Finish: Hot-dip galvanized.

2.02 FABRICATION

- A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings.
 - 1. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence that will expedite erection and minimize field handling of materials.
 - 2. Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs, and other defects.
- B. Connections: Weld or bolt shop connections, as indicated.
- C. Bolt field connections, except where welded connections or other connections are indicated. Use Hot-Dipped Galvanized or 316 Stainless Steel bolts.
- D. Welded Construction: Comply with AWS Code for procedures, appearance and quality of welds, and methods used in correcting welding work.
- E. Assemble and weld built-up sections by methods that will produce true alignment of axes without warp.
- F. Holes for Other Work: Provide holes required for securing other work to structural steel framing and for passage of other work through steel framing members, as shown on final shop drawings.
- G. Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame-cut holes or enlarge holes by burning. Drill holes in bearing plates.

2.03 STEEL COATING

- A. Coat miscellaneous steel structures in accordance with Section 09900 Painting and Coatings were called out in the Plans and Specifications.
- B. Hot-dip Galvanizing: Galvanize all structural steel shapes, plates, bolts and hardware unless otherwise noted in accordance with Section 09800, ASTM A 123, and ASTM A 153. This includes, but is not limited to the following: handrails; bolts; fasteners; grip strut; bar grate; pipe supports, clamps, and hardware; gate and fence components; ladders; and catwalks.

2.04 SOURCE QUALITY CONTROL

- A. General: Materials and fabrication procedures are subject to inspection and tests in mill, shop, and field, conducted by a qualified inspection agency. Such inspections and tests will not relieve Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements.

1. At Contractor's expense, promptly remove and replace materials or fabricated components that do not comply.
- B. Design of Members and Connections: Details shown are typical; similar details apply to similar conditions, unless otherwise indicated. Verify dimensions at site whenever possible without causing delay in the work.
 1. Promptly notify Project Manager whenever design of members and connections for any portion of structure are not clearly indicated.

PART 3 – EXECUTION

3.01 ERECTION

- A. Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made. Provide temporary guy lines to achieve proper alignment of structures as erection proceeds.
- B. Field Assembly: Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming part of complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces that will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.
- C. Level and plumb individual members of structure within specified AISC tolerances.
- D. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in primary structural framing. Cutting will be permitted only on secondary members that are not under stress, as acceptable to Project Manager. Finish gas-cut sections equal to a sheared appearance when permitted.
- E. Touch-Up Repairs: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint or galvanizing.
 1. Galvanizing Repair: Galvanized coating at damaged areas shall be repaired according to ASTM A 780 (Annex A1) using zinc-based alloy repair sticks commonly known as "hot sticks".
 2. Coating Repair: If underlying metal surface is exposed, wheel abrade or sandblast to clean metal and re-coat same as tanks. If damage does not fully penetrate coating then reapply top coat only to minimum DFT.

3.02 QUALITY CONTROL

- A. The Authority / the Authority's representatives will visually inspect welded connections.

- B. The Authority reserves the right to contract an independent testing firm to test welded connections.
- C. Provide access for the Authority's inspectors or testing agency representatives to places where structural steel work is being fabricated or produced so that required inspection and testing can be accomplished.
- D. The Authority may inspect structural steel at plant before shipment.
- E. Correct deficiencies in structural steel work that inspection and laboratory test reports have indicated to be not in compliance with requirements. Perform additional tests, at Contractor's expense, as necessary to reconfirm any noncompliance of original work and to show compliance of corrected work.
- F. Shop Welding: Contractor shall inspect and test during fabrication of structural steel assemblies, as follows:
 - 1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
 - 2. Perform visual inspection of all welds.
 - 3. Perform tests of full penetration welds as follows.
 - a. Ultrasonic Inspection: ASTM E 164.
- G. Field Welding: Contractor shall inspect and test during erection of structural steel as follows:
 - 1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
 - 2. Perform visual inspection of all welds.
 - 3. Perform tests of full penetration welds as follows:
 - a. Ultrasonic Inspection: ASTM E 164.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A17 – Complete Tank Farm Construction, Bid Item A18 – Complete Truckfill Shelter Construction and no separate payment shall be made for the requirements of

this section.

END OF SECTION

SECTION 07610
METAL ROOF PANELS
(STANDING SEAM)

PART 1 – GENERAL

1.01 SECTION INCLUDES

- A. Metal roof panels.
- B. Flashing and trim integral to roof panels.
- C. Clips, anchoring devices, fasteners, and accessories for installation of panel system.

1.02 RELATED REQUIREMENTS

- A. Section 13121 Pre-Engineered Buildings

1.03 REFERENCES

- A. UL 580 - Uplift Resistance of Roof Assemblies
- B. UL 1897 - Uplift Test for Roof Covering Systems
- C. ASTM A 653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
- D. ASTM A 792 - Standard Specification for Steel Sheet, Aluminum-Zinc Alloy Coated Steel by the Hot-Dip Process.
- E. ASTM A 924 - General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process

1.04 PERFORMANCE REQUIREMENTS

- A. Structural and Wind Load Tests:
 - 1. Design load/deflection criteria verified from tests per ASTM E 72 "Chamber Method" using a 20 psf (0.96 kPa) simulated wind load with a deflection limit of L/240.
 - 2. FM Approval Standard 4471: Meets windstorm Class 1A [90] and hailstorm Class 1-SH classifications.
 - 3. Underwriters Laboratory (UL) Uplift Tests for Roof Assemblies: UL Class 90 rated in accordance with UL 580 and shall withstand static uplift load of 140 psf when tested on 7 foot purlin spacing and 166 psf when tested on 5 foot purlin spacing.

1.05 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Material type, metal thickness and finish.
 - 4. Installation methods.
- B. Shop Drawings: Including elevations, fastening patterns, sections of each condition and details as required.
- C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.06 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in installation of the products specified for projects of similar size and scope with minimum five years documented experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store products in accordance with Manufacturer's written instructions. Store under cover in manufacturer's unopened packaging with labels intact until ready for installation.
- B. Store products off the ground, with panels sloped for drainage and covered to protect factory finishes from damage.
- C. Do not overload roof structure with stored materials. Do not permit material storage or traffic on completed roof surfaces.

1.08 WARRANTY

- A. Manufacturer's Warranty: Manufacturer's two year limited warranty that panels are free from defects in materials and workmanship, beginning from the date of shipment of panels, but excluding coil coatings (paint finishes) covered under a separate warranty. Warranty does not include interior painted surface of panels.
- B. Submit exterior paint manufacturer's written twenty year limited warranty on paint finish for adhesion to the substrate and a thirty year limited warranty on chalk and color fade.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

- A. Acceptable Manufacturer: AEP Span, A Division of ASC Profiles Inc. - A BlueScope Steel Company, 2110 Enterprise Boulevard, West Sacramento, CA 95691, 800-726-2727, 916-372-0933 (Corporate Office) 907-227-1607 (Alaska Office) or approved equal.

2.02 MATERIALS

- A. Standing Seam Metal Roof Panels:
 - 1. Prefinished Galvalume® or Zinalume® sheet, ASTM AZ50 made of 55% aluminum, 1.6% silicon and the balance zinc as described in ASTM specification A792.
 - 2. Fabricate panels with sufficient thickness to meet specified UL 90 wind uplift requirements.
 - 3. Fabricated panel with integral continuous overlapping seams suitable for continuous locking or crimping by mechanical means during installation.
 - 4. Seam Height: 2" high
 - 5. Provide pre-installed, high grade, hot-melt elastomeric sealant or butyl mastic, within the confines of panel's female leg, designed to seal against adjacent male panel leg.
 - 6. Thickness: 24 gauge (0.0250 inch).
- B. Panel Finish:
 - 1. Exterior Finish: One coat 70 percent polyvinylidene fluoride, nominal 0.7 mil (0.02 mm) thick, over 0.2 mil (0.005 mm) primer; color in accordance to Section 13121 Pre- Engineered Buildings.
- C. Flashing and Trim: Brake-formed sheet metal in the same thickness and finish to match the panels.
- D. Fasteners: Clips, anchoring devices, fasteners, and accessories for installation of panel system as recommended by panel manufacturer for the system specified.
- E. Sealant: Sealant as recommended by panel manufacturer.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine structural members before beginning installation to ensure that all supporting members are straight, level, plumb and satisfactory for panel installation.
- B. Panel Support Tolerances
 - 1. Overall rake to rake tolerances plus or minus 2 inches or plus or minus 1 inch at each rake
 - 2. Overall eave to ridge tolerance plus or minus 1 inch or plus or minus 1/2 inch at the eave, end lap and ridge.
 - 3. Vertical deviation from the nominal roof plane of plus or minus 1/8 inch in any 5 foot length, plus or minus 1/4 inch in any 20 foot length and plus or minus 1/2 inch over the entire roof area.
- C. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, reglets are in place, and nailing strips located.
- D. Correct defective conditions before beginning work.
- E. If substrate is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 INSTALLATION

- A. Install in accordance with manufacturer's instructions and recommendations including approved shop drawings, installation guidebook and manufacturer's handbook of construction details.
- B. Anchor securely in place using clips and fasteners spaced in accordance with manufacturer's recommendations for design wind load criteria.
- C. Form panel shape as indicated on Drawings, accurate in size, square, and free from distortion or defects.
- D. Install flashing and trim true and in proper alignment.
- E. Protective film on trim shall be removed before exposure to sunlight.
- F. Install sealants where indicated to clean dry surfaces only without skips or voids, to ensure weather tightness.

3.03 CLEANING

- A. Replace damaged panels and other components of work, which cannot be repaired by finish touch-up or similar minor repair.
- B. Wipe finished surfaces clean of any filings caused by drilling or cutting to prevent rust staining.

3.04 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with this item shall be subsidiary to Bid Item A18 – Complete Truckfill Shelter Construction and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 09800

HOT DIP GALVANIZED COATINGS

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. Work includes providing all labor, equipment, plant, transportation, supplies, materials, and engineering to provide galvanized coatings on all steel members, sections, fabricated assemblies, and hardware specified on the Plans.
- B. This specification applies to but is not limited to:
 - 1. Grip strut walkway, Tank handrails, ladders, etc. (See Section 05120 Structural Steel.)
 - 2. Section 15175 Aboveground Fuel Storage Tanks
 - 3. Structural Steel Fabrications
 - 4. Pre-Engineered Buildings
 - 5. Fencing components (See Section 02830 Chainlink Fence and Gates.)
 - 6. Pipe supports, clamps, and associated hardware.
 - 7. Nuts, bolts, washers, exposed to the atmosphere
 - 8. All other components exposed to the atmosphere and not specified as painted.

1.02 RELATED REQUIREMENTS

- A. Section 01300 Submittals
- B. Section 02830 Chainlink Fence and Gates
- C. Section 09900 Painting and Coating
- D. Section 15175 Aboveground Fuel Storage Tanks

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. No later than 3 weeks prior to galvanizing, submit an electronic of a Certificate of Compliance which states that all galvanizing complies with ASTM A 123 or A 153 as appropriate, and the requirements set forth herein.

1.04 QUALITY ASSURANCE

- A. Inspection shall be carried out at the galvanizer's plant by a Contractor's representative, or at some other place as agreed between Contractor, fabricator and galvanizer. The Authority reserves the right to reject unacceptable galvanizing at the Project site. Inspection rights and privileges, procedures, and acceptance or rejection of galvanized steel material shall conform to ASTM A 123 or A 153 as applicable. Inspections and tests shall include the following:
 - 1. Visual examination of samples and finished products.
 - 2. Tests to determine weight or mass of zinc coating per square foot of metal surface.

1.05 TRANSPORT, STORAGE, AND HANDLING

- A. Galvanized articles shall be loaded and stored as follows to prevent the formation of wet storage stain:
 - 1. The articles shall be stacked or bundled to allow air between the galvanized surfaces during transport from the supplier. Additionally the material shall be loaded in such a manner that continuous drainage could occur.
 - 2. In storage, the articles shall be raised from the ground and separated with strip spacers to provide free access of air to most parts of the surface. They shall also be inclined in a manner which will give continuous drainage. Under no circumstances shall galvanized steel be allowed to rest on cinders or clinkers; neither shall it be stored on wet soil or decaying vegetation.

PART 2 – PRODUCTS

2.01 STEEL MATERIALS

- A. Structural steel to be galvanized shall conform to Section 05120 Structural Steel.

2.02 ZINC FOR GALVANIZING

- A. Zinc for galvanizing shall conform to ASTM B 6.

PART 3 – EXECUTION

3.01 FABRICATION

- A. Structural steel shall be fabricated generally in accordance with Class (I, II, or III) guidelines as shown in Recommended Details for Galvanized Structures as published by the American Hot Dip Galvanizers Association, Inc.
- B. Fabrication practices for products to be galvanized shall be in accordance with the applicable portions of ASTM A 143, A 384 and A 385, except as specified herein. Care shall be taken to avoid fabrication techniques which could cause

distortion or embrittlement of the steel. Before fabrication proceeds, the Project Manager shall be notified of potential warpage problems which may require modification in design.

- C. All welding slag and burrs shall be removed prior to delivery to the galvanizer.
- D. Holes and/or lifting lugs to facilitate handling during the galvanizing process shall be provided at positions as agreed between the designer, fabricator and galvanizer.
- E. Unsuitable marking paints shall be avoided and unwanted grease, oil, paint and other deleterious material shall be removed prior to fabrication.
- F. Surface contaminants and coatings which would not be removable by the normal chemical cleaning process in the galvanizing operation shall be removed by the fabricator using blast cleaning or some other method.

3.02 SURFACE PREPARATION

- A. Surfaces to be galvanized shall be pre-cleaned utilizing a caustic bath, acid pickle and flux. Alternatively, the steel shall be near white blast cleaned to SPCC – SP10 and fluxed.

3.03 GALVANIZING

- A. Steel members, fabrications, and assemblies shall be galvanized after fabrication, but prior to shipment, by the hot dip process in accordance with ASTM A 123.
- B. Bolts, nuts, washers, and iron and steel hardware components shall be galvanized in accordance with ASTM A 153. Nuts and bolts shall be supplied in accordance with ASTM A 307, A 325, A 394 and A 563, as applicable.
- C. Products shall be safeguarded against steel embrittlement in conformance with ASTM A 143.
- D. All articles to be galvanized shall be handled in such a manner as to avoid any mechanical damage and to minimize distortion.
- E. Design features which may lead to difficulties during galvanizing shall be pointed out prior to dipping.
- F. The composition of metal in the galvanizing bath shall not be less than 98.0% zinc.

3.04 COATING REQUIREMENTS

- A. Weight: The weight and thickness of the galvanized coating shall conform with paragraph 6.1 of ASTM A 123 or Table 1 of ASTM A 153, as appropriate.
- B. Surface Finish: The galvanized coating shall be continuous, adherent, as smooth and evenly distributed as possible and free from any defect that is detrimental to the stated end use of the coated article.

- C. The integrity of the coating shall be determined by visual inspection and coating thickness measurements.
- D. Where slip factors are required to enable friction grip bolting, these shall be obtained after galvanizing by suitable treatment of the faying surfaces in accordance with the latest edition of the Specification for Structural Joints Using ASTM A 325 or A 490 Bolts as approved by the Research Council on Structural Connections of the Engineering Foundation.
- E. Adhesion: The galvanized coating shall be sufficiently adherent to withstand normal handling during transport and erection.

3.05 WELDING

- A. Where galvanized steel is to be welded, adequate ventilation shall be provided. If adequate ventilation is not available, supplementary air circulation shall be provided. In confined spaces a respirator shall be used.
- B. Welding shall be performed in accordance with the American Welding Society publication D19.0-72, Welding Zinc Coated Steel.
- C. All uncoated weld areas shall be touched up.

3.06 TOUCH UP AND REPAIR

- A. Mechanical Damage

Areas damaged by welding, flame cutting, or during handling, transport or erection shall be repaired by one of the following methods whenever the damage exceeds 3/16" in width:

- 1. Cold Galvanizing Compound
 - a. Surfaces to be reconditioned with zinc-rich paint shall be clean, dry, and free of oil, grease and corrosion products.
 - b. Areas to be repaired shall be power disc sanded to bright metal. To ensure that a smooth reconditioned coating can be effected, surface preparation shall extend into the undamaged galvanized coating.
 - c. Touch-up paint shall be an organic cold galvanizing compound having a minimum of 94% zinc dust in the dry film.
 - d. The paint shall be spray or brush applied in multiple coats until a dry film thickness of 8 mils minimum has been achieved. A finish coat of aluminum paint shall be applied to provide a color blend with the surrounding galvanizing.
 - e. Coating thickness shall be verified by measurements with a magnetic or electromagnetic gauge.
- 2. Zinc Based Solder

- a. Surfaces to be reconditioned with zinc-based solder shall be clean, dry and free of oil, grease and corrosion products.
- b. Areas to be repaired shall be wire brushed.
- c. Heat shall be applied slowly and broadly close to, but not directly onto the area to be repaired. The zinc-based solder rod shall be rubbed onto the heated metal until the rod begins to melt. A flexible blade or wire brush shall be used to spread the melt over the area to be covered. The zinc based solder shall be applied in a minimum thickness of 2 mils.
- d. Coating thickness shall be verified by measurements with a magnetic or electromagnetic gauge.

B. Wet Storage Stain

Any wet storage stain shall be removed by the galvanizer if formed and discovered prior to leaving the galvanizer's plant. Wet storage stain shall be removed before installation so that premature failure of the coating will not occur. Wet storage stain shall be removed as follows:

1. The objects shall be arranged so that their surfaces dry rapidly.
2. Light deposits are to be removed by means of a stiff bristle (not wire) brush. Heavier deposits are to be removed by brushing with a 5% solution of sodium or potassium dichromate with the addition of 0.1% by volume of concentrated sulfuric acid. This is to be applied with a stiff bristle brush and left for about 30 seconds before thoroughly rinsing and drying. Alternatively a proprietary product such as Oakite Highlite, or equal, which is intended for this purpose, may be used according to manufacturer's recommendations.
3. A coating thickness check must be made in the affected areas to ensure that the zinc coating remaining after the removal of wet storage stain is sufficient to meet or exceed the requirements of the specification.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 09900
PAINTING AND COATING

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. All Steel not specified as galvanized, or specified elsewhere shall be painted per this specification.
- B. Work includes providing all labor, equipment, plant, transportation, materials, supplies, and engineering to provide impervious corrosion-resistant paint coating system.

1.02 RELATED REQUIREMENTS

- A. Section 01300 Submittals
- B. Section 09800 Hot Dipped Galvanizing
- C. Pre-Engineered Buildings
- D. Section 15175 Aboveground Fuel Storage Tanks
- E. Section 15191 Fuel Piping System

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. No later than one week after the Award and Notice to Proceed, submit manufacturer's instructions for the paint system.
- C. Provide product certifications stating that the products intended for use meet the standards of this specification.

1.04 QUALITY ASSURANCE

- A. All fuel coating components shall be rated for the following service conditions:
 - 1. Fluid: Diesel Fuel
 - 2. Operating Temperature Range: -50°F to +120°F

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Tanks, including saddles, skids, and pipe supports Shall be coated in accordance to Section 15175 Above Ground Storage Tanks
- B. Fuel Piping:
 - 1. Piping shall be coated in accordance to Section 15191 Fuel Piping System.
- C. For all other steel structures including stairs and structural supports for the truckfill shelter:
 - 1. Primer: Devoe Catha-Coat 320H inorganic zinc primer (3 mils minimum DFT), or approved equal.
 - 2. Intermediate Coat: Devoe Bar-Rust 236H (5-6 mils minimum DFT), or approved equal.
 - 3. Top Coat: Devoe Devthane 389 (2-3 mils DFT), or approved equal.
 - 4. All Coats shall be contrasting colors, top coat shall be grey.

PART 3 – EXECUTION

3.01 GENERAL

- A. Protect, ship, and apply paint in accordance with the manufacturer's instructions.
- B. Sand blast surfaces to be painted, Near White Sand Blast, SSPC-10 standards. Surface preparation for field welding shall be in accordance with SSPC-SP11.
- C. Remove all moisture, dust, loose material, and grit prior to masking.
- D. Neatly mask all surfaces not required to be painted.
- E. All painting shall strictly comply with the manufacturer's written instructions for surface preparation, temperature and humidity control, safety, mixing, and paint application.

3.02 REPAINTING AND TOUCHUP

- A. As directed by the Project Manager, wire brush to bare metal, and re-paint any areas with imperfections, sags, runs, blushing, blemishes, holidays, thin spots. Surface preparation for touch-up paint of field-welded surfaces shall be in accordance with SSPC-SP11.
- B. Where field welding of attachments to tanks that have already received finish painting is required, wire brush weld area to bare metal before and after welding and paint with prime, intermediate, and top coats as indicated above.

- C. Touch up any minor nicks, scratches with same material following the manufacturers written instructions.
- D. Repainting and touchup shall be at no additional cost to the Authority.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 11951
SPILL RESPONSE EQUIPMENT

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section includes procurement of required spill response equipment and furnishing and installing two standard steel shipping containers (connexs) for storing this equipment.

1.02 RELATED REQUIREMENTS

- A. Section 01300 Submittals

1.03 REFERENCES

- B. United States Department of Labor, Occupational Safety and Health Administration (OSHA):
 - 1. 29 Code of Federal Regulations (CFR) 1910

1.04 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Submit manufacturer's data for all spill response equipment and supplier for each item. Group item by supplier.
- C. Submit standard manufacturer's data, pictures, and standard shop drawings for each container provided.

1.05 GENERAL

- A. Contractor is responsible for providing spill response equipment as specified and in accordance with this Section. The Contractor shall be responsible for all work and equipment associated with procuring, shipping, handling and storage of the specified equipment.
- B. Place all spill response equipment inside overpack drums. Provide the required number of overpack drums to securely contain all materials. Permanently label all overpack drums with "Spill Response Equipment" with a minimum of 3" high letters. Securely attach a laminated manifest to the outside of each drum listing the all of the materials contained within.
- C. Place overpack drums, and any equipment and materials too large to fit in overpack drums, neatly inside the spill response containers (connexs) in their final position.
- D. All equipment shall be new unless otherwise indicated.

PART 2 – PRODUCTS

2.01 SPILL RESPONSE EQUIPMENT

- A. The following list of Spill Response Equipment shall be provided by the Contactor.

Quantity	Item/Description
Absorbent Material and Containers, as provided by Unitech of Alaska or equal	
2 ea.	95 Gallon Poly Screw Top Over-pack Spill Kit Drums to Include:
	100 ea. White, Oil Specific Sorbent Pads, 16" x 20"
	100 ea. Yellow, Universal Sorbent Pads, 16" x 20"
	4 ea. White, Oil Specific Sorbent Sock, 3" x 8'
	10 ea. Oily Waste Disposal Bags
	10 ea. Zip Tie
	2 ea. Caution Barricade Tape Roll
	4 ea. PE Coated Tyvek Disposal Coverall
	4 ea. PE Coated Tyvek Disposal Boot Cover
	4 ea. Vented Safety Goggles
	4 pair. Embossed Flock Lined Nitrile Gloves
	4 pair. Latex Disposable Gloves
	1 bag Optisorb Granular Sorbent , 25 lb
	1 ea. Emergency Response Guide
	1 ea. Non-Sparking Shovel

- B. Product substitutions must be approved by the Engineer.
- C. Absorbent material can be natural or synthetic.

PART 3 – EXECUTION

3.01 INSTALLATION.

- A. Place one over-pack drum at the Truck Fill Shelter and one drum at the Gas Station.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with this item shall be subsidiary to Bid Item A21 – Furnish Spill Response Equipment and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 13121

PRE-ENGINEERED BUILDINGS

PART 1 – GENERAL

1.01 SCOPE

- A. Pre-engineered and shop fabricated structural steel truckfill shelter, including:
 - 1. Fencing.
 - 2. Metal roof.
 - 3. All trim including rake, eave, peak, corner and opening trim.
 - 4. Framing for mechanical equipment.
 - 5. Coordinate connections to the foundation, floor structure and concrete.

1.02 RELATED REQUIREMENTS

- A. Section 03300 - Cast-in-place-concrete
- B. Section 05120 - Structural Steel
- C. Section 07431 Metal Roof Panel
- D. Section 09900 - Painting

1.03 REFERENCES

- A. AISC - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
- B. ASTM A36 - Structural Steel.
- C. ASTM A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- D. ASTM A307 - Carbon Steel Externally Threaded Standard Fasteners.
- E. ASTM A325 - High Strength Bolts for Structural Steel Joints.
- F. ASTM A386 - Zinc-coating (Hot-Dip) on Assembled Steel Products.
- G. ASTM A446 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, Structural (Physical) Quality.
- H. ASTM A490 - Quenched and Tempered Alloy Steel Bolts for Structural Steel Joints.

- I. ASTM A500 - Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes.
- J. ASTM A501 - Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.
- K. ASTM A525 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, General Requirements.
- L. ASTM A529 - Structural Steel with 42,000 psi (290 MPa) Minimum Yield Point.
- M. ASTM A572 - High Strength Low Alloy Columbium-Vanadium Steel of Structural Quality.
- N. AWS A2.0 - Standard Welding Symbols.
- O. AWS D1.1 - Structural Welding Code.
- P. Where discrepancies occur between manufacturer's submittals and these Specifications or between metal building industry standards and these Specifications, the provisions and reference documents in these Specifications shall govern.

1.04 SUBMITTALS

- A. Manufacturer to provide electronic prints of preliminary building design drawings. Submittal shall identify major load bearing support points and shall demonstrate compatibility with foundation drawings or shall indicate necessary foundation modification. Submittal shall demonstrate to the satisfaction of the Owner that the proposed building is entirely suitable and compatible with the intended facility.
- B. Manufacturer to submit color options for roof panels for selection by the owner, to comply with the following list based on AEP span colors.
 - 1. Roof Panels (including drip edge flashing):
 - a. Exterior: Old Town Gray
 - b. Interior: Winter White
 - 2. Structural Steel Coating: Structural steel coating shall be in accordance with Section 09900 Painting and Coating.
 - 3. Concrete Slab: Sherwin Williams 646 Macropoxy Structural Gray 4031
- C. Manufacturer to provide certification signed and sealed by a Structural Engineer registered in Alaska that the building design conforms to the requirements of these Specifications and can be installed on the foundation shown in the drawings.

- D. If major modifications are required to the foundation to accommodate the proposed metal building, then the Manufacturer will be responsible for retaining a Structural Engineer licensed in Alaska to design the necessary modifications. The proposed modifications must be submitted within 14 days after Award of Contract at the cost of the Contractor.
- E. Manufacturer to provide design report summarizing design criteria and assumptions and containing complete final calculations approval, 14 days prior to start of fabrication.
- F. Final Design:
 - 1. Provide erection and fabrication drawings for approval by Owner, 14 days prior to start of fabrication of that phase of the work. Drawings shall be sealed by a Structural Engineer registered in Alaska.
 - 2. Indicate roof system dimensions, panel layout, general construction details, anchorages and method of anchorage, and method of installation.
 - 3. Indicate framing anchor bolt settings, sizes, and locations from datum, and foundation loads.
 - 4. Indicate welded connections with AWS A2.0 welding symbols. Indicate net weld lengths.
- G. Product Data:
 - 1. Provide data on profiles, component dimensions and fasteners.
- H. Manufacturer's Installation Instructions:
 - 1. Indicate preparation requirements, and assembly sequence.

1.05 SYSTEM DESCRIPTION

- A. Clear span rigid frame, as delineated on the drawings.
- B. Bay spacing of per plan layout.
- C. Primary Framing: Rigid frame of rafter beams and columns for all bays, and wind bracing. Columns to be constant section.
- D. Secondary Framing: Purlins, girts, eave struts, flange bracing, sill supports, clips, and other items required or detailed. Roof System: Preformed metal panels as described in Section 07610.
- E. Roof Slope: 2 inches in 12 inches, or minimum slope to insure performance from the Metal Panel Roof System and as indicated on the Plans.

1.06 DESIGN REQUIREMENTS

- A. Building Codes: 2009 International Building Code, ASCE7-10.
- B. Design Live Loads:
 - 1. Main Level Floor: 125 psf.
 - 2. Snow Loads: Ground Snow Load: $P_g = 60$ psf
 - 3. Wind Loads: Basic Wind Speed (3 sec. Gust): $V_{3s} = 120$ mph; Wind Importance Factor: $I_w = 1.15$; Exposure Classification = Exposure C.
 - 4. Seismic Loading: Seismic Use Group = IV – Essential Facility ($I = 1.5$); Short period Response Acceleration, $S_s = 0.422$; One Second Period Response Acceleration, $S_1 = 0.353$; Seismic Site; Class = D; $F_g = 1.462$; $F_v = 1.695$; $S_{ms} = 0.617$; $S_{m1} = 0.598$
- C. Roof system to withstand imposed loads with maximum allowable deflections as follows:

Maximum deflection, where L is span from center to center of supports, and where H is from top of foundation to eaves:

Primary framing, mid span $L/300$

Primary framing, eave line $H/150$

Secondary framing $L/250$

Roof:

Live Load $H/200$

Wind Load $H/200$

Thermal $H/200$
- D. Assembly to permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to temperature range of 120 degrees F.
- E. Size and fabricate roof systems free of distortion or defects detrimental to appearance or performance.

1.07 PROJECT RECORD DOCUMENTS

- A. Submit one set of prints indicating all field changes.
- B. Accurately record actual locations of concealed utilities.

1.08 QUALITY ASSURANCE

- A. Fabricate structural steel members in accordance with AISC - Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.

1.09 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum three years documented experience.
- B. Design Work under direct supervision of a Professional Engineer experienced in design of this work and licensed in the State of Alaska.

1.10 REGULATORY REQUIREMENTS

- A. Conform to International Building Code, 2009 Edition, or the latest code adopted by the State of Alaska.
- B. Cooperate with regulatory agency or authority and provide data as requested.

1.11 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on shop drawings.

1.12 WARRANTY

- A. The building manufacturer shall furnish a written one year warranty covering materials, and workmanship. Metal Roofing shall have a written twenty year warranty on finish. Such warranties shall cover the full cost of materials and labor to replace or repair defective materials.
- B. Include coverage for exterior pre-finished surfaces to cover pre-finished color coat against chipping, cracking or crazing, blistering, peeling, chalking, or fading.
- C. Include coverage for weather tightness of building enclosure elements after installation.

PART 2 – PRODUCTS

2.01 MANUFACTURES BUILDING SYSTEM

- A. STAR BUILDING SYSTEMS is the System upon which this Section is based. Other "or Equal" manufacturers with similar experience and track record are acceptable.

2.02 MATERIALS - FRAMING

- A. Structural Steel for Primary Frames: ASTM - A36, A529, A572, Grade 50.
- B. Structural Steel for Roll Formed or Press Broken Secondary Framing: ASTM A570, minimum yield strength 50,000 psi.

- C. Structural Tubing: ASTM A500, Grade B.
- D. Plate or Bar Stock: ASTM A529.
- E. Anchor Bolts: ASTM A307, galvanized to ASTM A386, Class B.
- F. Bolts, Nuts, and Washers: ASTM A325 or A307, as applicable and demonstrated by calculation.
- G. Welding Materials: AWS D1.1; type required for materials being welded.
- H. Grout: Non-shrink type, premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents, capable of developing minimum compressive strength of 2400 psi in two days and 7000 psi in 28 days.

2.04 FABRICATION – FRAMING -

- A. Fabricate members in accordance with AISC Specification for plate, bar, tube, or rolled structural shapes.
- B. Anchor Bolts: Formed with bent shank, assembled with template for casting into concrete.
- C. Girts/Purlins: Rolled formed structural shape to receive roofing sheet, 8" depth, minimum.
- D. Internal and external Corners: Same material thickness and finish as adjacent material, profile brake formed shop cut and factory mitered to required angles. Back brace mitered internal corners.
- E. Flashings, Closure Pieces, Facia, Infills, Caps, and trim: Same material and finish as adjacent material, profile to suite system.
- F. Fasteners: To maintain load requirements, and weathertight installation, same finish as cladding, non-corrosive self drilling, hex head, with integral sealing washer.

2.05 FINISHES

- A. Structural Steel Coating: Structural steel coating shall be in accordance with Section 09900 Painting and Coating.
- B. Girts and Purlins are to be factory galvanized.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Verify site conditions prior to fabrication/erection.

- B. Verify that foundation, floor slab, mechanical and electrical utilities, and placed anchors are in correct position.

3.02 ERECTION - FRAMING

- A. Erect framing in accordance with AISC Specification.
- B. Provide for erection and wind loads. Provide temporary bracing to maintain structure plumb and in alignment until completion of erection and installation of permanent bracing.
- C. Set column base plates with non-shrink grout to full plate bearing.
- D. Do not field cut or alter structural members without approval of Engineer.
- E. After erection, prime welds, abrasions, and surfaces not shop primed.

3.03 ERECTION – ROOFING SYSTEMS

- A. Install in accordance with manufacturer's instructions.
- B. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.
- C. Fasten cladding system to structural supports, aligned level and plumb.
- D. Use full length panels from eave to peak for roof panels.
- E. Provide expansion joints where indicated.
- F. Fasten as indicated on approved shop drawings.
- G. Install sealant and gaskets to prevent weather penetration.
- H. System: Free of rattles, noise due to thermal movement and wind whistles.

3.04 INSTALLATION - ACCESSORIES

- A. Seal roof accessories watertight and weather tight with sealant.

3.05 TOLERANCES

- A. Framing Members: 1/4 inch from level; 1/8 inch from plumb.
- B. Roof Panels: 1/8 inch from true position.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Items A18 – Complete Truckfill Shelter Construction and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 15000

MECHANICAL GENERAL PROVISIONS

PART 1 – GENERAL

1.01 SUMMARY

- A. The mechanical work described in this division comprises a part of the total project. Contractor shall be familiar with the work of other trades and shall coordinate with them throughout the project. In particular, this Section is subject to the requirements and provision of the General Conditions, Supplemental Conditions and General Requirements, and they comprise a part of the work of this Section.
- B. This Section does not define, nor is it limited by, trade jurisdictions. All work described herein is a part of the General Contract and is required of the Contractor regardless.

1.02 SCOPE

- A. All provisions of the Contract including the General and Supplementary Conditions and the General Requirements apply to this work.

1.03 WORK INCLUDED

- A. The work to be included in these and all other mechanical subsections shall consist of providing, installing, adjusting and setting into proper operation complete and workable systems for all items shown on the drawings, described in the specifications or reasonably implied. This shall include the planning and supervision to coordinate the work with other crafts and to maintain a proper time schedule for delivery of materials and installation of the work.

1.04 RELATED WORK

- A. Related Work Specified Elsewhere:
 - 1. Electrical Specifications: Division 16
- B. Unless otherwise indicated on the electrical drawings or the electrical schedules, provide all mechanical equipment motors, motor starters, thermal overload switches, control relays, thermostats, motor operated valves, float controls, electrical components, wiring and any other miscellaneous Division 15 controls.

Disconnect switches are included in the electrical work, unless specifically called out on mechanical Drawings or furnished as part of the mechanical equipment.
- C. Carefully coordinate all work with the electrical work shown and specified elsewhere.

1.05 PROJECT RECORD DRAWINGS

- A. In addition to other requirements of the General Requirements, mark up a clean set of drawings as the work progresses to show the dimensioned location and routing of all mechanical work which will become permanently concealed. Show routing of work in concealed blind spaces.
- B. Provide one set of drawings clearly marked up with all as-built information to the Authority within two weeks of completion.
- C. At completion of project, deliver these drawings to the Authority and obtain a written receipt.

1.06 SUBMITTALS

- A. Submittals shall be made in accordance with the General Conditions and Section 01300 Submittals.

1.07 OPERATION & MAINTENANCE MANUAL FOR MECHANICAL SYSTEMS

- A. Provide 3 manuals containing descriptive literature (Manufacturer's catalog data) of each manufactured item. Literature shall show capacities and size of equipment used and be marked indicating each specific item with applicable data underlined. Include fan curves and pump curves where applicable.
- B. Provide operating instructions for each mechanical system, step by step procedure to follow in putting each piece of mechanical equipment into operation. Provide schematic control diagrams for each separate system.
- C. Provide maintenance instructions for each piece of mechanical equipment installed on the project. Instructions shall include name of vendor, installation instructions, parts numbers and lists, maintenance and lubrication instructions.
- D. Include with the manual test run reports, written warranties, and copies of all test reports.
- E. Tests and Qualifications: Make all tests required by code or specification in the presence of a representative of the Authority, recorded and certified by the Contractor and Representative. Involve local authorities where required.

1.08 RECEIVING AND HANDLING

- A. See General Conditions and the General Requirements regarding material handling.
- B. Deliver packaged materials to the jobsite in unbroken packaging with manufacturer's label, and store to facilitate inspection and installation sequence.
- C. Protect all materials and equipment during the duration of construction work against contamination and damage. Replace or repair to original manufactured

condition any items damaged during construction. Immediately report any items found damaged to The Authority prior to commencing construction.

1.09 QUALITY ASSURANCE

- A. Perform all work in accordance with the latest adopted editions of the International Fire Code, the International Building Code, and the International Mechanical Code including State of Alaska amendments. Comply with all applicable State and Federal regulations.
- B. All materials and labor necessary to comply with rules, regulations and ordinances shall be provided. Where the drawings and/or specifications indicate materials or construction in excess of code requirements, the drawings and/or specifications shall govern. The Contractor shall hold and save the Authority and architect/engineer free and harmless from liability of any nature or kind arising from his failure to comply with codes and ordinances.
- C. Perform work with skilled craftsman specializing in said work. Install all materials in a neat and orderly, and secure fashion as required by specifications and commonly recognized standards of good workmanship.

1.10 SCHEDULE OF WORK

- A. The work must be expedited and close coordination will be required in executing the work. The various trades shall perform their portion of the work at such times as directed so as to meet scheduled completion dates, and to avoid delaying any other trade.

1.11 COOPERATION AND CLEANING UP

- A. The Contractor for the work under each section of the specifications shall coordinate his work with the work described in all other sections of the specifications, and shall carry on his work in such a manner that none of the work under any section of these specifications shall be handicapped, hindered or delayed at any time.
- B. At all times during the progress of the work, the Contractor shall keep the premises clean and free of unnecessary materials and debris. The Contractor shall, on direction at any time from The Authority, clear any designated area or areas of materials and debris. On completion of any portion of the work, the Contractor shall remove from the premises all tools and machinery and all debris occasioned by the work, leaving the premises free of all obstructions and hindrances.

1.12 SPECIAL CONDITIONS

- A. Ensure that the appropriate safety measures are implemented and the all workers are aware of the potential hazards from electrical shock, burn, rotating fans, pulleys, belts, hot manifolds, noise, etc. associated with working near power generation and control equipment.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Provide all equipment and materials required for a complete system.
- B. All equipment and materials supplied under this Contract are new unless specifically indicated as existing, Where additional or replacement items are required, provide like items by the same manufacturer to the maximum extent practical.
- C. Install all material and equipment in accordance with manufacturer's installation instructions and recommendations unless specifically indicated otherwise.

PART 3 – EXECUTION

3.01 DRAWINGS

- A. The mechanical drawings are generally diagrammatic and do not necessarily show all features of the required work. Provide all equipment and materials required for a complete system. Complete details of the building which affect the mechanical installation may not be shown. For additional details, see Architectural, Civil and Electrical Drawings. Contractor shall coordinate work under this section with that of all related trades.
- B. Contractor to field verify all dimensions and conditions prior to start of construction. Immediately contact The Authority for clarification of questionable items or apparent conflicts.

3.02 CUTTING, FITTING, REPAIRING, PATCHING, AND FINISHING

- A. Where previously completed building surfaces or other features must be cut, penetrated, or otherwise altered, such work shall be carefully laid out and patched to the original condition. Perform work only with craftsmen skilled in their respective trades.
- B. Do not cut, drill, or notch structural members unless specifically approved by The Authority. Minimize penetrations and disruption of building features.
- C. Seal all exterior ceiling and wall penetrations as indicated.

3.03 INSTALLATION OF EQUIPMENT

- A. Unless otherwise indicated, support all equipment and install in accordance with manufacturer's recommendations and approved submittals.
- B. Maintain manufacture recommended minimum clearances for access and maintenance.
- C. Where equipment is to be anchored to structure, furnish and locate necessary anchoring and vibration isolation devices.

- D. Furnish all structural steel, such as angles, channels, beams, etc. required to support all piping, equipment and accessories installed under this Division. Use structural supports suitable for equipment specified or as indicated. In all cases, support design will be based upon data contained in manufacturer's catalog.
- E. Openings: Arrange for necessary openings in buildings to allow for admittance and reasonable maintenance or replacement of all apparatus furnished.

PART 4 – BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 15175

ABOVEGROUND FUEL STORAGE TANKS

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section includes the furnishing of all labor, tools, equipment, and materials necessary to fabricate, coat, and package for shipment the appropriate number of the following tanks in accordance with the awarded Contract schedule(s):
 - 1. One (1) qty - Ten thousand (10,000) nominal gallon, single-wall, horizontal, steel, skid mounted, aboveground dispensing storage tank for gasoline service. Outer tank dimensions shall be in accordance with the Contract Drawings (UL 142).
 - 2. One (1) qty - Twenty thousand (20,000) nominal gallon, single-wall, horizontal, dual product, steel, skid mounted, aboveground dispensing storage tank for diesel. Outer tank dimensions shall be in accordance with the Contract Drawings (UL 142).
 - 3. Six (6) qty - Twenty-seven thousand (27,000) nominal gallon, single-wall, horizontal, steel, skid mounted, aboveground bulk storage tank for diesel (4 qty) and gasoline (2 qty). Outer tank dimensions shall be in accordance with the Contract Drawings (UL 142).
- B. All tanks shall be constructed in accordance with this specification and the Contract Drawings, and shall be furnished with the fittings and appurtenances in the Contract Documents.
- C. All tanks shall, at a minimum, meet the requirements of the most current edition of Underwriters Laboratories Inc. (UL) Standard for Safety UL 142, "Steel Aboveground Tanks for Flammable and Combustible Liquids." All horizontal tanks must be shop-constructed and UL listed and labeled.

1.02 RELATED REQUIREMENTS

- A. Section 01300 Submittals
- B. Section 01340 Shop Drawings, Product Data, and Samples
- C. Section 01700 Contract Closeout
- D. Section 05120 Structural Steel
- E. Section 09800 Hot Dipped Galvanized Coating
- F. Section 15193 Fuel Tank Appurtenances
- G. Section 15192 Pumps and Equipment

1.03 REFERENCES

- A. The latest revision of the following standards of the American Society for Testing and Materials (ASTM), and other listed standards, are hereby made part of this Specification. The publications may be referred to in the text by basic designation only.
- B. Reference to a particular organization's standards shall be in accordance with those standards unless more restrictive criteria are listed herein or on the Contract Drawings.
- C. Where Contract Drawings or Specifications call for material or construction of a better quality or larger sizes than required by the codes, rules and regulations listed below, the provisions of the Contract shall take precedence.

ASTM A 36	Standard Specification for Carbon Structural Steel
ASTM A 283	Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates
ASTM A 570	Standard Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality
OSHA	Occupational Safety and Health Administration; Chapter 20, Fixed Ladders
UL 142	Steel Aboveground Tanks for Flammable and Combustible Liquids
UL 2085	Protected Aboveground Tanks for Flammable and Combustible Liquids

1.04 SUBMITTALS

- A. Submit material samples and manufacturer's literature in accordance with Section 01300 Submittals and Section 01340 Shop Drawings, Product Data, and Samples.
- B. Shop Drawings:
 - 1. Submit shop drawings, prior to fabrication, showing all principal dimensions of the tanks, details and locations of all accessories, penetrations and appurtenances, thickness of sheets and plates, details of joints and welds and description of coating system. All deviations from these Specifications and the Contract Drawings shall be clearly shown and identified on the shop drawings.
 - 2. Submit material lists with catalog cuts for any proposed substitutions.

- C. Packing Lists: The Contractor shall submit shipping packing lists, detailing all materials shipped and referencing the crate number each component is in. The packing lists will be provided to the Project Manager prior to the delivery date of the tanks.
- D. The Contractor shall submit the following prior to the start of tank erection:
 - 1. Certified Welding Procedure Qualification Records (PQRs)
 - 2. Certified Welding Procedure Specifications (WPSs)
 - 3. Certified Welder Performance Qualifications (WPQs)
 - 4. Nondestructive Testing (NDT) Procedures and NDT Personnel Certifications
 - 5. Welding Inspector Certification
 - 6. Quality Control Plan
- E. Contractor shall submit weld and pressure test results to the Engineer for approval within ten (10) working days of each test.
- F. Tank Painting Schedule – See Section 2.04 B1.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Packing, Shipping, and Handling:
 - 1. Packaging must meet the shipping requirements of all anticipated carriers and shall prevent abrasion, scratching or damage of the materials during overland transport and ocean barge shipment. Exterior ladders, catwalks and pipe supports shall be packaged and shipped separately from tanks. Packaging shall be sufficient to prevent damage during shipping. Extra care shall be taken to protect tank stand offs to ease field installation of bolt on components.
 - 2. All threaded tank openings shall be sealed for shipping with plastic or tin plugs. All flanged tank openings shall be blind flanged for shipment. Provide provision for relief of excess pressure/vacuum, which may damage the tank, while preventing precipitation or salt water spray from entering tank. Minimum vent opening shall be ½" diameter.
 - 3. Lifting connections shall be provided in accordance with the Drawings and as required for proper tank handling.
 - 4. Shipping crates shall be clearly labeled with community name and crate number in large, waterproof, lettering for easy identification at the construction site. Two (2) packing lists shall be securely attached to each shipping container (one inside and one outside) in watertight, re-sealable, plastic bags.

- B. Storage: The packaging shall provide adequate protection for the fabricated materials and appurtenances for outside storage at the site throughout the construction project.

1.06 QUALITY ASSURANCE

- A. Tank manufacturers shall have a minimum of 10 years experience including the manufacture of at least five similar tanks in the previous three years.
- B. Testing: Provide independent testing firm to perform testing and inspection for tank welding.
- C. Tank Leak Test: Provide tank integrity testing in the form of a hydrostatic test in accordance with UL 142.

1.07 DESIGN REQUIREMENTS

- A. General:
 - 1. Horizontal tank design criteria shall be in accordance with the 2009 International Building Code, 2009 International Fire Code, the most current criteria of the American Society of Civil Engineers, and the most current edition of UL 142. Design shall use the following parameters:
 - a. Specific Gravity = 1.0
 - b. Classification of Structure: Category IV, Essential Facility
 - c. (ASCE/SEI 7-05) "Minimum Design Loads for Buildings and Other Structures"
 - d. Importance Factors (IBC 2009, ASCE7-05)
 - e. Seismic = 1.5
 - f. Snow = 1.20
 - g. Wind = 1.15
 - h. Design Loading:
 - i. Seismic = Site Class E; Short Period Response Acceleration (S_d) = 0.422; One Second Period Response Acceleration (S_{d1}) = 0.353;
 - j. Ground Snow load = 60 PSF
 - k. Wind = 120, MPH Exposure D
 - 2. The tanks shall be designed, or supplemented, for anticipated shipping and handling loads. Lifting connections shall be provided in accordance with UL 142 where required for shipping and handling. The lifting eyes

shall be capable of fully supporting the static weight of the completed tank (empty) without damage to the tank.

3. The tanks shall include the nozzles and fittings shown on the Contract Drawings. Provide water draw assemblies and clock gage stilling wells on all tanks as detailed on the Contract Drawings.
 4. Tank dimensions and capacity shall be as shown on the Contract Drawings.
 5. The tanks shall be anchored as shown on the drawings. If additional anchoring is required by UL 142 for the Contractor's tank design, Contractor, shall design, fabricate and install anchors as required to attach to the structural steel framing at no additional cost to the Owner.
 6. Tank bottoms and skids shall be designed with sufficient strength and thickness to span the structural steel framing shown on the drawings.
- B. Design Service Conditions: Unless noted otherwise, all fuel tank appurtenances shall be rated for the following service conditions:
1. Fluid: Diesel fuel and Gasoline
 2. Operating temperature range: -50° F to 120° F.
 3. Design working pressure: 150 psig (min) working pressure at -50° F.

1.08 DRAWINGS

- A. Contract Drawings are diagrammatic and show the general design, arrangement, and extent of the facility. Due to the small scale of the drawings it is not possible to show all offsets, fittings, and accessories which may be required. Contractor shall carefully investigate the field conditions and work requirements for all trades and arrange accordingly.
- B. Contractor is responsible for verifying drawing dimensions by making field measurements and preparing separate shop drawings.

1.09 OPERATION AND MAINTENANCE DATA

- A. Submit in accordance with Section 01700, Contract Closeout.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Materials and apparatus shall be new unless otherwise specified, and each shall have all necessary accessories to make it functionally complete. All items of the same type shall be of the same manufacturer.

2.02 MATERIALS

- A. Steel - Steel Sheets, Plates and shapes shall meet the requirements of Section 05120 Structural Steel of these Specifications as delineated by UL 142.
- B. Threaded Penetrations – Threaded penetrations shall be female pipe thread, size as indicated.
- C. Flanged Penetrations – Flanged penetrations shall be class 150#, size as indicated.
- D. Gaskets - Gaskets shall be Buna-N.

2.03 TANK COMPONENTS

- A. Factory Coated welded steel fuel storage tanks:
 - 1. Tank Joints:
 - a. Head and shell joints for horizontal cylindrical tanks:
 - b. Primary tank head joints shall incorporate double welded full fillet lap joints in accordance with UL 142 Figure 6.2, No. 6,
 - e. Horizontal seams on the ends of all horizontal tanks shall be either vertical or horizontal. Skewed seams shall be cause for rejection of tanks.
 - 2. Horizontal Tank Ladders and Catwalks:
 - a. Equip horizontal tanks with exterior bolt on ladders and catwalks as shown on the Contract Drawings. All bolt on components shall be designed and constructed in accordance with federal OSHA, 2003 International Building Code, 2003 International Fire Code and UL 142 requirements.
 - b. Exterior ladder and catwalk components shall be shop assembled for field installation and hot dipped galvanized. Design shall permit field installation of exterior ladders and catwalks without field welding.
 - c. Verify fit of bolt-on ladder components to tanks prior to painting tanks; remove and package separately for shipping.
 - 3. Pipe/conduit standoffs:
 - a. Equip tanks with all, fittings, supports and appurtenances as shown on the Contract Drawings.
 - b. All components shall be designed and constructed in accordance with the Specifications and applicable Federal OSHA, 2003

International Building Code, 2006 International Fire Code and UL 142 requirements.

- c. All piping shall be Schedule 80 with welded joints unless shown otherwise in the Contract Drawings.

4. Fabricated Materials:

- a. Tolerances for fabricated materials shall conform to the following:

- i. Shear: 1/16 Inch

- ii. Rolling:

- Out of Round: $\pm 3\%$

- Circumference: $\pm 3/16$ Inch

- Radius: $\pm 1.5\%$

- iii. Circle Shearing: $\pm 1/8$ Inch

- iv. Frame Cutting: $\pm 1/16$ Inch

- v. Squareness: $< 1/8$ Inch

5. Horizontal tank saddles and skids:

- a. All horizontal tanks to be provided with integral steel saddles and skid foundations in accordance with UL 142, Section 31 and the Contract Drawings.

- b. Saddles to be seal welded to tank - bolt on or strap on saddles will not be accepted. Space saddles as shown on the Contract Drawings.

- c. Provide minimum W8x35 skid foundations.

- d. Skids to extend 12" beyond each end of tank assembly, be capped with a $\frac{1}{2}$ inch thick end plate at 45 degree angle to horizontal, and be provided with 4" diameter schedule 80 steel pipe tow bars at each end to allow dragging of the tank and lifting from one end with no damage to the tank assembly.

- e. Skid and saddles shall be constructed such that the vertical distance between the bottom of the tank skid and the bottom of the tank is no less than 8 inches and no greater than 10 inches.

6. Tank Labeling

- a. All tanks shall be labeled in accordance with the requirements of the 2006 IFC Chapter 34 and NFPA 704. Each end of dual-

compartment tanks shall be labeled for volume (gallons) and product type. All tank penetrations shall be labeled in accordance with the Contract Drawings in 2-inch high black lettering.

2.04 TANK COATINGS

A. Coating System

1. The tanks, skids, fittings, nozzles, and standoff supports shall be shop coated in accordance with the following specification and in accordance with the coating manufacturer's recommendations. All ladders, ladder cages, catwalks and railings shall be hot dipped galvanized.
 - a. Surfaces to be coated:
 - i. All exterior surfaces of tanks, including skids, pipe supports, fittings, pipes.
 - b. Surfaces not coated: Flange faces, and penetration threads.
 - c. Surface Preparation: All surfaces to be coated shall be prepared in accordance with the Structural Steel Painting Council SSPC-SP10 near white blast criteria. Alternate methods of surface preparation which provide equal, or better, surface preparation will be considered. Identify proposed alternate surface preparation methods, if any, on bid.
 - d. External and Under-Bottom Tank Coatings:
 - i. Prime Coat- Devoe Catha-Coat 302H (3-4 mils DFT)
 - ii. Two coats of Devoe Bar Rust 236H (4-6 mls DFT)
 - iii. Top Coat- Devoe Devthane 389 (2-3 mils DFT)
 - iv. Coat Colors: All coats shall be contrasting colors. Top coat color shall be white.
 - e. Touch-up Paint: Provide 1 gallon each of prime and top coat coatings for each tank. The touch-up coating shall be color matched to coatings applied to the tanks.

B. Coating Application

1. The Contractor shall submit to the Project Manager, for his/her approval, the tank manufacturer's proposed painting schedule. At minimum, this shall include the spreading rate in square feet per gallon for each coat, minimum dry film thickness for each coat, application temperature, curing time and temperature, humidity limits, and paint and paint thinner to be used for the final coat. The painting schedule shall be in accordance with

the paint manufacturer's recommendation and this specification, and shall be approved, in writing, by the Project Manager prior to application.

2. If paint is diluted for application by spray gun, the coating shall be built up to the same film thickness achieved with undiluted material. Deficiencies in film thickness shall be corrected by the application of an additional coat(s) of paint.
3. Inspection and Testing: The OPR may be present during the coating process and may perform random tests. Any deficiencies identified during the inspection shall be corrected at the Contractor's expense.

PART 3 – EXECUTION

3.01 TANK PLACEMENT

- A. Install tanks on new tank foundation decking in accordance with the Contract Drawings, the referenced publications, and the manufacturer's written instructions, checklists, and warranty requirements for each system component.

3.02 COATING REPAIR

- A. Any damage to the factory-applied coating shall be repaired and restored to the original finish in strict compliance with the manufacturer's recommendations.

3.03 TESTING

- A. Pressure test all tanks prior to installation and painting. Pressure test tanks in accordance with the International Fire Code and UL Standard 142.

3.04 WARRANTY

- A. The Contractor shall warrant the tanks against any defects in workmanship and materials for a period of one year from the date of shipment.
- B. In the event any such defect should occur, the Project Manager shall report it in writing to the Contractor during the warranty period.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 15190

CATHODIC PROTECTION

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. The Work under this section consists of the performance of all Work required for furnishing and installing galvanic anodes for added protection of fuel pipe from corrosion. The Contractor shall install galvanic anodes in accordance with these specifications and in conformity with the detail shown on the Drawings, unless otherwise approved.

1.02 RELATED REQUIREMENTS

- A. Section 15191 Fuel Piping System
- B. Section 02200 Excavation and Embankment

1.03 DEFINITIONS

- A. In these Contract Documents, the following words or expressions shall have the meaning given below:

AWG	American Wire Gauge
BDC	Bottom Dead Center of the Pipe
HMWPE	High Molecular Weight Polyethylene
NACE	National Association of Corrosion Engineers

1.04 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Submit manufacturer product information for all materials.

Part 2 – Products

2.01 ANODES

- A. Anodes utilized for typical galvanic anode system installation shall be prepackaged magnesium style anodes weighing twenty (17) pounds. Anode composition shall consist of the following:

Element	Amount (%)
Cu	0.001

Si	0.01
Zn	2.5-3.5
Mn	0.2-0.5
Ni	0.001
Al	5.5-6.5
Fe	0.005
All Others	0.01
Magnesium	Balance

- B. Anodes shall be packaged in a low resistive backfill consisting of seventy-five percent (75%) gypsum, twenty percent (20%) bentonite, and five percent (5%) sodium sulfate.
- C. Anodes shall be provided with #10 AWG stranded copper, single-conductor cable with HMWPE insulation. Lead wire cable shall be rated for six hundred (600) volts and designed for direct burial applications.
- D. Pipe Connection Lead Wire: Lead wires shall be of sufficient length for splice-free routing between the anode and the pipe and shall be #810 AWG stranded copper, single-conductor cable with HMWPE insulation. Lead wire cable shall be rated for six hundred (600) volts and designed for direct burial applications.
- E. Thermite Welding Equipment and Materials: Equipment and materials used to bond the #10 AWG HMWPE to the pipeline shall be "CADWELD" type as manufactured by ERICO Products, Inc. of Cleveland, Ohio, or approved equal. Thermite weld caps, designed to protect the CADWELD bonds from corrosion, shall be Royston "Handy Cap 2" or approved equal.
- F. Cathodic Test Station: Provide Handley Industry Inc., Part T45Q or approved equal.

PART 3 – EXECUTION

3.01 GENERAL

- A. Excavation, shoring, dewatering, disposal of unsuitable material, backfilling, and compaction, shall all conform to the requirements of the Contract Documents.
- B. During the execution of this effort, the Contractor shall maintain vehicular traffic and pedestrian access. The Contractor shall restore the Work area to preconstruction condition.

3.02 INSTALLATION

- A. The following is a list of general procedures utilized for typical installation of galvanic anodes:
 - 1. Anode Placement: Anodes shall be installed twelve to thirty-six inches (12" to 36") from the side wall of the pipe, to a centerline depth in-line with the

approximate horizontal plane of the pipe's BDC. Anodes may be placed on either side of the pipeline, one anode per 200 feet.

2. Lead Wire Connection to Pipe: The #10 AWG HMWPE lead wires shall be attached to the top dead center of the pipe. Lead wire connection to the pipe shall utilize exothermic weld connection methodology as outlined above and on the drawings. Contractor shall follow CADWELD manufacturer's instructions for use.
3. Backfilling: Extreme care shall be taken not to damage the anodes or direct buried lead wires during backfill procedures.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A19 –Fuel Dispensing and Marine Header Above and Below Grade Piping and Equipment and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 15191

FUEL PIPING SYSTEM

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section includes fuel piping system materials, equipment, supports, and accessories. The intent of this specification, along with other specifications, and the accompanying Contract Drawings is to provide a complete and workable facility with complete systems as shown, specified and required by applicable codes.

1.02 RELATED REQUIREMENTS

- A. Section 01300 Submittals
- B. Section 01340 Shop Drawings, Product Data, and Samples
- C. Section 09900 Painting and Coating

1.03 PERFORMANCE REQUIREMENTS

- A. Minimum Working-Pressure Rating: Unless otherwise indicated, minimum pressure requirement for fuel piping is 150 psig.
- B. Design Service Conditions: All pipeline system components shall be rated for the following service conditions:
 - 1. Fluids: Gasoline and Diesel fuel
 - 2. Operating temperature range: -50° F to 120° F
- C. Any referenced standards that do not comply with these service conditions shall be brought to the Engineer's attention immediately.

1.04 REFERENCED STANDARDS

- A. The standards listed below form a part of this specification to the extent referenced.

ASME B16.5	Flanges and Flanged Fittings
ASME B16.9	Factory-Made Wrought Steel Butt welding Fittings
ASME B16.11	Forged Fittings, Socket-Welding and Threaded
ASME B31.3	Chemical Plant and Petroleum Refinery Piping
ASME BPV IX	Boiler and Pressure Vessel Code; Section IX, Welding and Brazing Qualifications

ASTM A53	Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless
ASTM A105	Forgings, Carbon Steel, for Piping Components
ASTM A106	Seamless Carbon Steel Pipe for High-Temperature Service
ASTM A234	Pipe Fittings of Wrought Carbon Steel and Alloy Steel for Moderate and Elevated Temperatures ASTM D3035 Standard Specification for Polyethylene (PE) Plastic Pipe (DR-PR) Based on Controlled Outside Diameter
ASTM A320	Alloy-Steel and Stainless Steel Bolting for Low-Temperature Service
ASTM D3350	Standard Specification for Polyethylene Plastics Pipe and Fittings Materials

1.05 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Shop Drawings: Indicate assembly, required clearances, and location and size of field connections.
- C. Product Data: Provide manufacturer's literature and data indicating rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.
- D. Manufacturer's Installation Instructions: Indicate rigging, assembly, and installation instructions.
- E. Welding Procedure Qualification Records (PQRs) and Welding Procedure Specification.
- F. Pipe coating process and schedule.
- G. Inspection and Testing Procedures and Results.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Contractor is responsible for protection of all material, equipment, and apparatus provided from damage during transportation, storage and installation processes.
- B. Material, equipment or apparatus damaged because of improper storage or protection will be rejected and replaced at Contractor's expense.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Materials shall be new unless otherwise specified. All items of the same type shall be of the same manufacturer.

2.02 PIPE

- A. Steel Pipe: All steel pipe shall be Schedule 80, Black, Seamless, ASTM A53 or ASTM A106. 2" and 3" pipe shall be provided in double random lengths (42' nominal).
- B. Steel Pipe nipples: ASTM A53 carbon steel, threaded schedule to match adjoining piping.
- C. High Density Polyethylene (HDPE) Containment Pipe:
 - 1. HDPE pipe and fittings shall have a standard dimension ratio (SDR) of 17 in accordance with ASTM D3035.
 - 2. HDPE pipe and fittings shall have a cell classification of 445574C in accordance with ASTM D3350.
 - 3. The material must exceed 1000 hours when tested in accordance with the Ring Environmental Stress Crack Resistance Test (Radar Ring Test) with fewer than twenty percent (20%) failures.
 - 4. The extruded pipe shall have impact strength greater than three (3) cubic feet per inch when tested in accordance with the ASTM D256 (Izod Pendulum Impact Test).
 - 5. The pipe shall be homogeneous throughout and free of visible cracks, holes, foreign inclusions or other injurious defects. It shall be uniform in color, opacity, density and other physical properties.

2.03 PIPE FITTINGS

- A. Steel Pipe
 - 1. Elbows, tees, and reducers shall be Schedule 80, ASTM A234 wrought carbon steel butt welding type, except where noted.
 - 2. Flanges shall be ANSI class 150 lbs., ASTM A105 weld neck type. Bore shall match the pipe in which the flange is installed.
 - 3. Gaskets shall be spiral wound fuel resistant and rated for -50°F service.
 - 4. All flanged fittings, including valves, shall have flange nuts and bolts meeting the requirements of ASTM A320, B8, Class 2, Stainless Steel (Low Temperature ANSI 304 Strain Hardened).
 - 5. Pipe and Fittings shall be full penetration butt welded. Fittings smaller than 2" may be ASTM A105 forged steel socket weld fittings, 3000 pound minimum. Threaded fittings are not allowed except where shown on the drawings, or required for connection to specified equipment.
 - 6. Provide flanged connections or unions to allow removal of individual components.

B. HDPE Containment Pipe

1. Fittings shall conform to the requirements of section 2.02 paragraph C of this specification.
2. Where indicated on the contract drawings or where approved by the engineer, flanged fittings shall be installed with HDPE flange adaptors and stainless steel back up rings. Products shall be submitted to the engineer for approval and shall be suitable for the service conditions.
3. Containment pipe end seal shall be fabricated as shown in the contract drawings with ¼" galvanized steel plates, 3/8" galvanized steel nuts & Bolts, and 1 ½" EPDM gasket. As manufactured by Power Plant Supply Co., Pipeline Seal Canada or approved equal.

2.04 PIPE COATING SYSTEM

- A. Coating processes shall be submitted to the engineer for approval prior to pipe coating.

A. Steel Pipe:

1. Prior to coating, pipe shall be shot or grit blasted to near white metal in accordance with SSPC-SP10. Ends shall be masked off 2" minimum from beveled ends.
2. Coating shall be a two-coat fusion bonded epoxy system with UV stabilization per ASTM A972/A972M.
3. The coating installation process shall be performed in strict compliance with manufacturer's recommendations including preparation (blasting), time between blasting and first coat, time between coats, curing times, temperature, and humidity.
4. The first coat shall be minimum 16 mils of fusion bonded epoxy, azkonobel resicoat R4-ES or approved equal, color green diesel, red gasoline.
5. The top coat shall be minimum 3 mils of polyester powder, azkonobel interpon D 2000 or approved equal, color green diesel, red gasoline.
6. Provide mastic line heat shrink sleeves at all joints and fittings. Raychem WPC 100 or approved equal for pipe joints and Raychem Flexclad or approved equal for fittings.
7. Label all above grade piping as to contents and provide flow direction arrows in accordance with ASME A13.1. Arrows may be painted stencils or high quality printed stickers. Maximum flow direction arrow spacing shall be 10 feet measured along pipe length, minimum of one arrow per pipe segment. Color shall be black. Periodically label each pipe run, 50-feet minimum, 150 feet maximum.

8. Extend sleeves and overlap a minimum of 2-inches over pipe coatings.
9. Prior to backfilling below grade sections of pipe, test coating with an electronic holiday detector. Repair all defects and retest.
10. Below grade pipe, both direct bury and inside HDPE containment pipe shall be coated in accordance with this specification.

2.05 VALVES

- A. All valves shall be factory coated with approved epoxy coating for corrosion resistance.
- B. Check Valves: Carbon steel, ANSI Class 150 lbs., raised face flanged, swing check valve suitable for the service conditions. Crane No. 147, no substitutes. Smaller than 2", Bonney Forge Fig. No. 1 1/2" H-41S-SW and Fig. No. 1" H-41S-SW piston check valve or equal. Check valves at the barge line connection of the marine header shall be carbon steel, ANSI Class 150 lbs., raised face flanged, outside lever and weight check valve suitable for the service conditions.
- C. Ball Valves (Flanged): ANSI class 150 lbs., Cast carbon steel body, stainless steel ball, Teflon seat and stuffing box seals, lockable lever handle, raised faced flanged. All materials shall be suitable for the service conditions. NACE MR-01-75 Conformance and fire safe per API 607. PBV C-5410-31-2236-FT-NL, no substitutes.
- D. Ball Valves (Threaded): ASME class 900, Stainless steel body, stainless steel ball, 20% C 5% Graph filled TFE seat, lockable lever handle, threaded. All materials shall be suitable for the service conditions. NACE MR-01-75 Conformance and fire safe per API 607. PBV S-5333-38--36-00-ML-NL-, no substitutes.
- E. Pressure Relief Valves: Flanged, carbon steel body pressure relief valve. 2-inch valves set at 95 psi. 1-inch valves set at 75 psi. Hydro-seal Model No. 30FL1CV-00 for 2" and 1FLAXV-00- for 1", or approved equal.
- F. Anti-Siphon Valve: Normally closed, stainless steel body, with special expansion relief set at 25 psi. Valve set to open at 20 feet head pressure. Morrison Bros Figure 910, or approved equal.
- G. Plug Valves: ASTM Class 150, carbon steel construction, meeting ASME B16.34, API-6D, and API-6FA. Rectangular port, regular opening, pressure lubricated, graphite/TFE packing, Buna-N stem weatherseal, indicator stop collar, flanged ends. Flowserve, Super Nordstrom, or approved equal.
- H. Motorized Valves: ASME Class 150 2-inch, 1 1/2-inch, and 1-inch flanged ball valves with ASTM A350 grade LF2 body, Teflon seats and seals with maximum 360 in-lbs operating torque at minus 50 degrees F. Full Port for 1 1/2": T3-F15R01L. Reduced Port for 2" and 1": Nutron Model T3-R20R01L and T3-R10R01L ball valves with factory mounted actuator as specified below, no substitutes.
1. Actuators: NEMA 7 enclosure without manual override shaft extension, PTC self regulating heater, Exxon Beacon 325 severe cold grease, 600 in-lbs output

torque for 2", 300 in-lbs output torque for 1 1/2" and 1". 5 second stroke time for 2", 10 sec stroke time for 1 1/2" and 1". Rated for operation to minus 50 degrees F. 115 VAC, single phase. GE Energy RCS Sure 49 for 2", Sure 24 for 1 1/2" and 1". No substitutions.

2.06 EQUIPMENT NAME AND OPERATIONAL TAGS

- A. Material: 2-inch diameter brass plate with 3/16-inch diameter hole drilled to secure to component as described in Part 3 – Installation. Lettering shall be stamped with the following information shown in Part 2 – Products, Section 2.06 Equipment Name and Operational Tags.
- B. Lettering shall be stamped with the following information:
 - 1. Name and Operational Tags: Provide name and operational tags for all pumps and valves in accordance with the pump and valve schedules in the Contract Drawings.
 - 2. Tags shall include component ID (e.g. TP-1, BV-15), normal operating condition (normally open or closed), component owner and any additional information required for proper operation.

2.07 MISCELLANEOUS PIPING ACCESSORIES

- A. Quick Connect Couplings: Aluminum body cam and groove fitting with dust cap. Male fitting with ANSI 150-pound class flanged, MPT, or FPT connection, as shown, 150 psig minimum working pressure. PT Coupling or approved equal.
- B. Cam Lock Couplings: Aluminum body cam and groove male fittings with FPT connection, 150 psi minimum working pressure. Provide dust cap with Buna-N seal for each fitting provided. PT couplings or equal.
- C. Dry break coupling: Aluminum body cam and groove fitting with dust cap with ANSI 150-pound class flanged, MPT, or FPT connection as shown on the Contract Drawings. 150 psig minimum working pressure. Each dry break coupling to include dust caps and appropriate adapters to connect to standard camlock fittings of the same size. PT Coupling Maxi-Dry Series MD20A or approved equal.
- D. Strainers: Flanged, carbon steel body, bottom clean-out Y-strainer with #10 mesh and blow-off tapping plug. Mueller Fig. 781, or approved equal.
- E. Flex Fitting: ANSI class 150 lbs., stainless steel annular corrugated inner hose with stainless steel double braided cover, MPT ends with 18" live length, unless shown otherwise. Pressure test at 110 psi and provide certification for each flex. Metraflex SST, or approved equal.
- F. Utility Markers: Continuous glass fiber and resin reinforced marker, one-piece, vandal and vehicle impact resistant. Provide Carsonite CUM 375 or approved equal.

2.08 PIPE SUPPORTS

- A. All pipe supports, clamps, fittings, and hardware shall be Hot Dip Galvanized in accordance with Section 09800.
- B. Support strut: Cold formed mild steel channel strut, hot dipped galvanized finish and slotted back unless specifically indicated otherwise.
 - 1. Standard strut: 12 gauge, 1-5/8 inch by 1-5/8 inch, Unistrut P1000T (HG), or approved equal.
 - 2. Double strut: 12 gauge, 1-5/8 inch by 3-1/4 inch, Unistrut P1001 (HG), or approved equal.
 - 3. Post Base: 1-5/8 inch by 1-5/8 inch, Unistrut P1887 (HG), or approved equal.
 - 4. Single Strut: 12 gauge, 1-5/8 inch by 1-3/8 inch, Unistrut P3000 (HG), or approved equal.
 - 5. Deep Strut: 12 gauge, 3-1/4 inch by 1-5/8 inch, Unistrut P5000 (HG), or approved equal.
 - 6. Shallow strut: 14 gauge, 1-5/8 inch by 13/16 inch, Unistrut P4100T (HG) or approved equal.
 - 7. Solid back strut: For welding to tanks or structures, 12 gauge, 1-5/8 inch by 1-5/8 inch, unfinished black steel, Unistrut P1000 (PL), or approved equal.
- C. Provide galvanized carbon steel fitting, brackets, channel nuts and accessories designed specifically for use with supplied strut.
- D. Pipe Clamps: Galvanized carbon steel two-piece pipe clamp designed to support pipe tight to strut. Unistrut P1117E-EG and P1119E-EG or approved equals.
- E. Pipe Straps: Carbon steel two-hole pipe strap. Unistrut P2558 (EG), no substitutes.
- F. Fasteners:
 - 1. Bolts, nuts and washers: Galvanized or zinc plated carbon steel unless stainless steel is specifically shown. Stainless steel shall be: Type 316L.
 - 2. Lags: Hot dipped galvanized steel unless stainless steel is specifically shown. Stainless steel shall be: Type 316L.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.
- B. Remove scale and dirt on inside and outside before assembly.

- C. Prepare piping connections to equipment with flanges or unions as shown in the Contract Drawings.
- D. Keep open ends of pipe free from scale and dirt. Protect open ends with temporary plugs or caps.

3.02 INSTALLATION

A. Steel Pipe

1. Install in accordance with manufacturer's instructions and applicable codes and standards.
2. Route piping in an orderly manner and maintain gradient.
3. Group piping whenever practical at common elevations.
4. Install piping to allow for expansion and contraction without stressing pipe, joints or connected equipment. Install valves to allow full operation without obstruction of operating handle.
5. Perform welding in accordance with ASME BPV, IX and API 1104. Welding procedures shall be submitted and approved. Visually inspect weld joints in accordance with API 1104. Welder shall be certified for the approved procedure and welder certification shall be submitted and approved.
6. Make threaded joints using pipe joint compound applied to the male threads. Hercules Grip, no substitution.
7. Coat flange gaskets with anti-seize compound prior to assembly.
8. Provide non-conducting dielectric connections wherever jointing dissimilar metals. Provide dielectric flange kits at all transitions between aboveground and buried piping.
9. Support piping and equipment as shown on the drawings using specified supports and fasteners. If not detailed on the drawings, support from structural members with pipe hangers, clamps or pipe straps specifically intended for the application. Do not support piping from connections to equipment. Provide piping supports spaced per the following table.

Pipe Size	Maximum Support spacing
1-1/2 inch	9 ft
2 inch	10 ft
2-1/2 inch	11 ft
3 inch	12 ft

4 inch	14 ft
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10. Provide piping supports as shown and as required to adequately support piping. Touch up all cut ends and damaged surfaces of galvanized steel and zinc plated supports and fasteners with spray-on cold galvanizing compound. ZRC, or approved equal.
11. Do not use stainless steel in contact with galvanized supports.
12. Provide clearance for installation of insulation and access to valves and fittings.
13. Label contents of all piping in accordance with ASTM A13.1.
14. Fasten name and operational tags on or adjacent to component with double safety wire or other approved means.

B. HDPE Containment Pipe

1. Install HDPE containment pipe outside of buried steel pipeline in the locations indicated in the contract drawings.
2. Permanent piping joints shall be performed by butt fusion welding unless otherwise indicated in the contract drawings or as approved by the Engineer. Any request to consider an alternate coupling method in the Work and/or approval of its use, should it be accepted, shall not cause an increase in the cost of the Work to the Authority.
3. Butt fusion of pipe and fittings shall be in accordance with the procedures and methods established by the pipe manufacturer, and as specified on the contract drawings.
4. For joining the HDPE piping, welding will only be performed by a Certified Fusion Operator. The Contractor shall provide a copy of HDPE Welder Certification(s) to the Engineer prior to the commencement of any HDPE pipe joining performed. The use of electro-fusion coupling shall be permitted where shown on the drawings and when approved by the engineer. Where specified, provide electro-fusion coupling in accordance with the Plans. Central Plastic's Electro Fusion couplings or approved equal.
5. Pipe welding shall not be conducted in water or when trench conditions are unsuitable for the Work. Keep water out of the trench until joining is completed. Secure open ends of pipe and close valves when Work is not in progress, so that no trench water, earth, or other substance will enter the pipe or fittings.
6. Only where shown on the contract drawings or when approved by the Engineer, flanged connections as described in paragraph 2.02 of this specification may be used. Provide for pressure tight performance as required.

3.03 UTILITY MARKERS

- A. Utility markers shall not be installed on drivable surfaces of trails or roads. Markers shall be clearly visible and out of the way of vehicles and pedestrians.
- B. Above Grade Pipe: Install utility markers every 50 feet along the pipe or as shown on the drawings.

3.04 TESTING

- A. Before operating any equipment or systems, make thorough check to determine that systems have been flushed and cleaned as required and equipment has been properly installed, lubricated and serviced in accordance with factory instructions.
- B. Steel Pipe:
 - 1. Isolate and pressure test each run of piping with compressed air at 125 psig minimum pressure for a minimum of one hour. Provide blind flanges, threaded caps or plugs at each end of the test section as needed. Test 100% of welds visually for leaks with a leak detection solution. Do not conceal pipe joints before pressure testing is complete. Isolate equipment and components rated for lesser pressures so as not to damage these.
 - 2. Pressure test piping system again after all equipment is installed at 75 psi for a minimum of one (1) hour, or the maximum rated pressure of the weakest component, whichever is less. Test 100% of welds and pipe joints for leaks with a leak detection solution. Piping system shall maintain pressure for one hour minimum.
 - 3. Notify Project Manager in writing seven (7) days in advance of pressure tests. Project Manager shall be present at all testing. Pressure testing performed without Project Manager present will be rejected, unless prior written approval is received from Project Manager.
 - 4. Pressure shall be maintained for sufficient time to complete the visual inspection of all joints but shall be not be less than one (1) hour.
 - 5. Care shall be taken to ensure that these pressures are not applied to vented tanks.
 - 6. Submit written procedures for testing, including test pressures, equipment to be used and items to be tested.
 - 7. Cut out, reweld and retest all leaking welded joints. Repair any leakage found and retest until system proves leak-free. Retesting after the repair of defects shall be performed at no cost to AEA.
 - 8. Certified test results shall be submitted to the Project Manager for approval.
 - 9. Test certification shall include gauge pressure, air temperature, time, date, witness, and pipeline identification.

C. HDPE Pipe: The installed HDPE pipe shall be tested as follows:

1. Isolate and pressure test piping with low-pressure air. Air shall be slowly supplied to the pipe until the internal air pressure reaches four (4) psi. At least two minutes shall be allowed for temperature stabilization before proceeding further.
2. The pipe shall be considered acceptable when tested at an average pressure of four (4.0) psi if the pressure remains constant for a minimum of 1 hour.
3. Pressure gauges shall be incremented in not more than ½ pound increments for accurate tests.
4. Safety braces shall be required to hold plugs in place and to prevent the sudden release of the compressed air. The Contractor's testing equipment shall be arranged in such a manner that a pressure relief device will prohibit the pressure in the pipeline from exceeding 10 PSI.
5. Submit written procedures for testing, including test pressures, equipment to be used and items to be tested.
6. Cut out, reweld and retest all leaking welded joints. Repair any leakage found and retest until system proves leak-free. Retesting after the repair of defects shall be performed at no cost to AEA.
7. Certified test results shall be submitted to the Project Manager for approval.
8. Test certification shall include gauge pressure, air temperature, time, date, witness, and pipeline identification.

PART 4 – BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 15192

PUMPS AND EQUIPMENT

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section includes fuel pumps and associated equipment. The intent of this specification, along with other specifications, and the accompanying Contract Drawings is to provide a complete and workable facility with complete systems as shown, specified and required by applicable codes.

1.02 PERFORMANCE REQUIREMENTS

- A. Design Service Conditions: All pumps and equipment components shall be rated for following service conditions:
 - 1. Fluids: Gasoline and Diesel fuel
 - 2. Operating temperature range: 0° F to 100° F
- B. Any referenced standards that do not comply with these service conditions shall be brought to the Engineer's attention immediately.

1.03 SUBMITTALS

- A. Submit under provisions of Section 01300.
 - 1. Shop Drawings: Indicate assembly, required clearances, and location and size of field connections.
 - 2. Product Data: Provide manufacturer's literature and data indicating rated capacities, weights, accessories, electrical nameplate data, and wiring diagrams.
 - 3. Manufacturer's Installation Instructions: Indicate rigging, assembly, and installation instructions.

PART 2 – PRODUCTS

1.04 PUMPS

- A. Transfer Pumps: Ductile iron, self-priming, centrifugal pump for petroleum service. Capable of pumping of gasoline or diesel fuel at an operating temperature of 0° F to 100° F. 2" NPT inlet & outlet, bronze impeller and self-lubricated, Buna-N mechanical seal. Close coupled to 3,450 rpm, explosion proof 2 HP, 230V, single phase, 60hz, motor. Gorman-Rupp 02K31-X2, no substitutes.
- B. Submersible Pumps: Submersible centrifugal type which installs through a standard 4" threaded tank opening. Designed for pumping of gasoline or diesel fuel at an operating temperature of 0° F to 100° F. All components shall be designed and assembled to facilitate disassembly and servicing from above without disrupting the discharge piping, leak detection equipment and vacuum sensor siphon systems.

Pumps shall be assembled with the pump inlet and impellers at the bottom for maximum liquid draw. The motor shall be mounted above the pump inlet for both cooled and lubrication by the liquid flow through and past the motor. Complete pump assembly shall meet the standards of UL 79 and shall be listed by UL, cUL, and ATEX.

1. Materials of Construction:

- a Packer/Manifold Head: Grey Cast Iron
- b Elastomers (o-rings): Fluorocarbon
- c Check Valve Seat: Bronze
- d Column Pipe: Schedule 40 black steel pipe
- e Motor outer shell: Aluminum
- f Stator shell: Type 301 Stainless Steel
- g Rotor shaft: Stainless Steel
- h Impellers & diffusers: Acetel (Celcon) plastic
- i Motor bearings: Carbon

2. Mechanical Features:

- a Multi-stage, dependent upon required flow rate, self-lubricating and easily removed from storage tank without disconnecting discharge piping, mechanical or electronic leak detectors or siphon systems. The pump and motor assembly shall be readily separable from the pump column pipe to allow for simple field replacement of the pump and motor.
- b Impellers shall be splined to the pump shaft to provide positive, non-slip rotation. Diffusers shall be tightly secured to prevent rotation
- c Pump inlet shall be horizontal to prevent drawing sediment from the tank bottom into the pump inlet. The inlet shall be provided with a particulate "Trapper" to prevent particulate from being ingested into the motor.
- d Manifold Head assembly shall consist of a manifold and extractable packer assembly and shall be completely sealed against product leakage into the ground and exterior water leakage into the storage tank. The discharge outlet shall be standard 2" NPT opening. The manifold shall have a built-in air purge screw, line check valve, pressure relief valve, and shall support dual vacuum sensor siphon systems when required. The extractable packer shall incorporate industrial die springs to break loose the o-ring seals when the flange nuts holding the extractable packer in place are removed. No physical lifting effort or special equipment shall be required to break the extractable packer seals.

- e The contractors box shall be built into the manifold head assembly and be completely isolated from the fuel path. The extractable packer assembly shall incorporate a lifting eye for safe extraction of the pump motor.
 - f The electrical disconnect shall be an integral part of the manifold assembly. The electrical disconnect shall automatically disconnect and sever electrical connection to the pump motor, without a swing joint, when the extractable packer assembly is removed. Re-insertion of the extractable packer and tightening of the flange nuts shall remake the electrical connection.
 - g The check valve shall incorporate a "Lock-n-Lift" feature that mechanically locks the check valve and lifts to provide a larger path to depressurize the line and manifold head assembly, returning fuel to the tank preventing service spills. The check valve shall provide pressure relief of the product line and be optimized for compatibility with Veeder-Root PLLD systems.
 - h The pump length shall be adjustable to fit various tank sizes, incorporating a collet gripping mechanism and setscrew as a locking mechanism allowing future resizing.
3. Electrical Features:
- i Motors shall be 208/230 volt, 60 cycle, single phase, 3450 RPM, permanent split capacitor type, continuous duty rated explosion proof in Class 1, Division 1, Group D locations. The motor windings shall be sealed against leakage of product or moisture and shall have a thermal overload device with automatic reset built into the motor cutoff when motor temperature reaches a level which may cause damage to the motor.
 - j Motors shall have a quick-disconnect type male/female connector readily separable for servicing without cutting or splicing of conducting wires. Wiring connections to the motor shall be disconnected by the quick-disconnect. Reconnecting motor to column pipe shall use an alignment dowel pin for positive realignment of electrical male/female connector

C. Portable Drainage Pump

1. Provide one portable self-priming centrifugal pump. Aluminum construction, 1" NPT suction and discharge ports, self-cleaning impeller, Viton mechanical seal, 1/3 HP ODP motor with 8 ft 115 V power cord. Carrying handle and base. 20 GPM at 18 ft total dynamic head, 15 ft. suction lift capacity. AMT/Gorman Rupp Model 2851-96 or equal.
2. Provide 1" NPT x cam and groove adapters for pump inlet and outlet, one 5 ft length of 1" ID hose with matching cam and groove couplers fitted to each end, one 6 ft length of 1" ID hose with cam and groove coupler fitted to one end, and one 10 ft length of 1" ID hose with cam and groove coupler fitted to one end. Hoses shall be reinforced synthetic rubber and shall be flexible to temperatures down to 0° F.

1.05 CUSTODY METER

- A. Total Control Systems 700-20SP 2-inch flanged connection capacity to 100 gpm, bi-directional Flow. Aluminum body with three rotors connected by timing gears, constructed for no metal-to metal contact within the measuring chamber. Linear accuracy: $\pm 0.15\%$ over full flow range. Repeatability: 0.02%. Operating temperature range: -40 to 160 degrees F. Approval for weights and measures: NIST.
 - 1. Materials of Construction:
 - a Housing: Anodized Aluminum
 - b Rotors: Anodized Aluminum
 - c Bearing plates & sleeves: Ni-resist
 - d Journals: Hard Chrome Stainless Steel
 - e Timing gears & internal hardware: Stainless Steel
 - f Seals: FKM
 - B. Configuration and accessories:
 - 1. Air Eliminator: Float and reed valve operated design to remove free air and vapor from the entering fluid.
 - 2. Strainer: 90 degree strainer with 100 mesh stainless steel screen.
 - 3. Preset Control Valve: Normally closed hydraulic piston type control valve mechanically linked to preset counter register.
 - 4. Register: Liquid measurement volume indication in US gallons. 5-digit large numeral reset display and 8 digit non-reset totalizer. Counter preset feature. Mechanical ticket printer. Temperature compensation.

1.06 FUEL FILTER

- A. Fuel Filter: 120 GPM, 2" flanged inlet and outlet, Max working pressure 150 PSI, with drain valve. Cim-Tek Viking 1F, PN 40187, Centurion Filter Housing, no substitutions.

PART 3 – EXECUTION

1.07 EXAMINATION

- A. Check equipment for damage that may have occurred during shipment. Repair damaged equipment as approved or replace with new equipment.

1.08 PREPARATION

- A. Protect bright finished shafts, bearing housings, and similar items until in service. No rust will be permitted.

1.09 INSTALLATION

- A. Install pumps and associated equipment in accordance with applicable codes and per manufacturer's installation instructions.
- B. Electrical installation shall be in accordance with NEC and Division 16 Specifications.

1.10 TESTING

- A. At completion of installation, demonstrate that pumps will deliver specified capacity.

PART 4 – BASIS OF MEASUREMENT AND PAYMENT

1.11 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

1.12 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to Bid Item A19 – Fuel Dispensing and Marine Header Above and Below Grade Piping and Equipment and no separate payment shall be made for the requirements of this section.

END OF SECTION

SECTION 15193

FUEL TANK APPURTENANCES

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section includes the installation of owner-furnished fuel tank appurtenances. The intent of this specification, along with other specifications, and the accompanying Contract Drawings is to provide a complete and workable facility with complete systems as shown, specified and required by applicable codes.

1.02 PERFORMANCE REQUIREMENTS

- A. Design Service Conditions: All fuel tank appurtenances shall be rated for the following service conditions:

1. Fluid: Diesel fuel
2. Operating temperature range: -50° F to 120° F

Any referenced standards that do not comply with these service conditions shall be brought to the Engineer's attention immediately.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Mobilize and install Owner provided tank accessories as required and as shown on the drawings.

2.02 TANK ACCESSORIES & APPURTENANCES

- A. The following tank accessories and appurtenances are owner-furnished for Contractor delivery to the site and installation.
1. 8" or 10" MPT Primary Emergency Vent: Provide heavy emergency vent, cast iron body, and flanged connection emergency vent with internal screen, set to open at 16 oz /sq-in pressure. Emergency vents shall be sized in accordance with UL 142, or as shown on drawings. Loose manholes not permitted. Morrison Bros., Co model no. 2440F with flanged adapter, or approved equal.
 2. Pressure/Vacuum Vent: Combination vent / overfill alarm shall be a threaded 2" pressure/vacuum vent with integral whistle overfill alarm. Set vent to open at 8 oz/sq-in pressure and 1 oz/sq-in vacuum. Set whistle to start at 85% of tank capacity unless otherwise indicated. Provide Morrison Bros. Model 922 or approved equal.
 3. Manhole: Provide 24-inch manhole with 5/16" steel lid (single punch), 1/4" mild steel ring with 7" riser height. Provide a complete set of bolts and

buna-n gasket for lid. 24" manhole nominal size. Clay & Bailey model no. MR820-0600 or approved equal.

4. Liquid Level Probe: Provide liquid level probe for 10' diameter above ground diesel fuel storage tank. Tank level monitoring sensor probe UL listed explosion proof, stainless steel shaft housing, model TSP-LL2-125-I probe and accessories specified on electrical equipment schedule.
 - a. Electrical Equipment Schedule: Top-mount tank probe with installation kit for 2" NPT riser, water tight compression gland fitting for cable entrance. Franklin Fuel Systems, no substitutes. Probe and riser length as indicated in tank installation details.
 - b. 10' Tank Probe: TSP-LL2-125-I
 - c. Float: TSP-IDF2 2" for diesel.
 - d. Installation Kit: TSP-K2A
5. Fill Limiter: Provide 2-inch FPT fill limiting valve, float type, mechanical shut-off valve, aluminum body, closed cell buna-N float, brass plunger, stainless steel trim, 100 PSI shut-off pressure. Provide valve with drop tube capable of being installed through 4-inch coupling for a 2-inch unit, valves shall be set as shown on drawings. Morrison Co. model 9095AA with model 419 drop tube, or approved equal.
6. Check Valve: Check valves shall be carbon steel, ANSI class 150 lbs. raised face flanged, swing check valve suitable for the service conditions. Crane no. 147, no substitutes.
7. Clock Gauge: 2-inch liquid level gauge shall be ss float operated clock gauge with readout in feet and inches, in 1/4 inch increments up to 12 feet. Aluminum body. 2-inch mpt connection, float shall be sized to fit through a 2-inch bung opening. Morrison Bros., Co. model no. 818, or approved equal.
8. Water Draw: Provide 1" water draw on 2" bung per drawings.
9. Gauge Hatch: 2" FTP gauge hatch on 2"x4" nipple, lockable brass cap, brass adapter, and brass chain, Buna-N gasket, 2-inch FPT connection. Morrison Bros., Co. Model No. 178, or approved equal.
10. Flanged Ball Valve: Flanged ball valves shall be ANSI class 150 lbs., cast carbon steel body, stainless steel ball, teflon seat and stuffing box seals, lockable lever handle, raised face flanged. All materials shall be suitable for the service conditions. NACE MR-01-75 conformance and fire safe per API 607. PBV C-5410-31-2236-FT-NL, no substitutes.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install tank appurtenances in accordance with applicable codes and per the manufacturer's installation instructions.

3.02 TESTING

- A. Calibrate level gauges to the tank and verify correct readings.
- B. Check operation of fill alarms and overfill protection valves prior to completion of the work.

PART 4 - BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 15195

FUEL DISPENSERS AND APPURTENANCES

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This Section includes procurement and installation of gasoline and diesel fuel dispensers as shown on the drawings including notes and details.

1.02 RELATED REQUIREMENTS

- A. Section 09900 Painting and Coatings

1.03 PERFORMANCE REQUIREMENTS

- A. Design Service Conditions: All fuel dispensers and components shall be rated for the following service conditions:
 - 1. Fluids: Gasoline and Diesel fuel
 - 2. Operating temperature range: 0° F to 120° F
- B. Any referenced standards that do not comply with these service conditions shall be brought to the Engineer's attention immediately.

1.04 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
 - 1. Provide a product list which identifies the products intended to satisfy the requirements of this specification. Catalog cuts for each product shall be included with the product list.
 - 2. Provide product certifications stating that the products intended for use meet the standards of this specification.

1.05 QUALITY ASSURANCE

- A. Codes and Standards: Comply with provisions of following (latest addition), except as otherwise indicated:
 - 1. American Institute of Steel Construction (AISC) "Code of Standard Practice for Steel Buildings and Bridges."
 - 2. AISC "Specifications for Structural Steel Buildings," including "Commentary."
 - 3. American Welding Society (AWS) D1.1 "Structural Welding Code - Steel."

- B. Qualifications for Welding Work: Qualify welding procedures and welding operators in accordance with AWS "Qualification" requirements.
 - 1. Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests.
 - 2. If recertification of welders is required, retesting will be Contractor's responsibility.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Dual Product Electronic dispenser: Provide dual product electronic dispenser for retail fuel sales. Dual Product Dispenser shall be UL listed electronic, two sided, two hose, dual (gasoline/diesel), pressure delivery dispensing unit. Provide 30 micron internal spin-on filters and 12 spare elements. Dispenser cabinet shall be stainless steel with generic graphics for Diesel and Unleaded Gasoline. Provide EPP and SCR Encrypted Pin Pad and secure card reader on each side of cabinet. Dispenser shall be certifiable for retail fuel sales and shall be compatible with the specified Point-Of-Sale System for preset and prepay sales capabilities. Gilbarco Encore 500S series dispenser, or approved equal.
- B. Miscellaneous Dispensing Components
 - 1. Retail Dispensing Facility Arctic Hose: 3/4 inch diameter, low diameter, fuel-rated, hose with static wire and brass male Scoville fittings each end, Goodyear Arctic Softwall plus or equal. Length = 18 ft. Provide multi-plane swivels at each end, Husky 0350 or equal. Provide double valve safety break, 250# maximum separation pull force, Husky 3360 with 2274 breakaway hose or approved equal.
 - 2. Dry-disconnect Adapter: Aluminum body cam and groove coupling female fitting with lever actuated positive shutoff valve 1-1/2" FNTF connection, Buna-N seals, and 150 psi minimum working pressure. PT maxi-dry coupler or equal.
 - 3. Dry-disconnect Adapter: Aluminum body cam and groove male fitting with dust cap. Spring loaded automatic shutoff poppet valve with 1-1/2" FNTF connection, Buna-N seals and 150 psi minimum working pressure. PT maxi-dry adapter or equal.
 - 4. Retail Dispensing Facility Breakaway Connection: UL listed 3/4 inch NPT x 3/4 inch NPT re-connectable breakaway designed to stop fuel flow when disconnected. OPW 66REC-1000 or approved equal.
 - 5. Retail Dispensing Emergency Shutoff Breakaway Valve: UL Standard 842 listed dispenser shear valve with fusible link. OPW 10 Series, or approved equal.
 - 6. Retail Dispensing Facility Hose Swivel: UL listed 3/4 inch NPT x 3/4 inch NPT swivel. OPW model No. 45-5060 or approved equal.

7. Retail Dispensing Hose Nozzle: UL listed automatic shut off, automotive fueling nozzle with hold open latch and color coded handle, red for gasoline and green for diesel. OPW 11BP-0300, or approved equal.
8. Truck Fill Dispensing Hose Nozzle: UL listed, mid-range flow nozzle capable of fueling 25 gallons per minute. Equipped with hold open latch and color coded handle, red for gasoline and green for diesel. OPW 1A-1-inch or approved equal.
9. Hose Reel: 110 VAC electric rewind hose reel capable of holding 50 feet of 1-1/2 inch I.D. hose. Reel shall be top rewind. Hannay 7528-19-21 (top rewind) with utility hose rollers and ball stop for 1" arctic hose, or approved equal. Note: contractor must specify right or left hand pipe connection configuration for each hose reel.
10. Static Grounding Reel: Enamel coated steel frame and reel with permanently sealed spring return. Provide with 50 feet of 1/8 inch galvanized carbon steel cable, minimum 100 ampere grounding clip, and stop ball. Hannay GR75 OAE.
11. Dispenser Sump Entry Boot: Pipe entry seal designed to provide universal flexibility for the pipe entry into the sump. Environ Flexible Entry Boot ENFEB - 8600 or approved equal.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install equipment per manufacturer's instructions.

PART 4 – BASIS OF MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT

- A. There is no measurement for this item.

4.02 BASIS OF PAYMENT

- A. All costs associated with these items shall be subsidiary to other bid items and will not be measured or paid for separately.

END OF SECTION

SECTION 16010
GENERAL ELECTRICAL PROVISIONS

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. Provide the labor, materials, equipment and test equipment necessary to furnish, install, and place into operation the power, motor, lighting, control, alarm, and associated electrical systems of this Contract. Connect motors, meters, panels, sensors, switches, and outlets or any other electrical device installed or provided as part of the project. Mark and identify circuits, terminal boards, equipment, enclosures, etc. with identification numbers, wire numbers, nameplates, and warning signs. Test, adjust and calibrate equipment and start-up all electrical equipment and its associated mechanical attachments as necessary to place the project into operation.
- B. Provide and install all control equipment and wiring to instruments and devices installed by others.
- C. Where the work of several crafts is involved, coordinate all related work to provide each system in complete and in proper operating order.
- D. Cooperate with all others involved in the project, with due regard to their work, to promote rapid completion.
- E. Local Conditions: The Contractor shall thoroughly familiarize himself with the work as well as the local conditions under which the work is to be performed. Schedule work with regard to seasons, weather, climate conditions, and all other local conditions which may affect the progress and quality of work.
- F. See Divisions 1 and 2 of which contain information and requirements that apply to work specified herein.
- G. It shall be the responsibility of the Contractor to provide electrical service to, connection and/or interconnection of various units of equipment supplied by others. The Contractor shall not be required to set in place or align motors or calibrate devices supplied as an integral part of equipment provided by others.
- H. System Commissioning
 - 1. The CONTRACTOR shall be responsible for the following pre-commissioning activities prior to the ENGINEER/OWNER's pre-commissioning and commissioning tasks:
 - a. Testing all control panel hardware, devices and wiring (in the factory and field) per the project specifications to ensure proper functioning.
 - b. Testing all connections and functioning of loops per the project specifications to ensure proper functioning.

- c. Test and calibrate all instrumentation and devices/equipment per the project specifications to ensure proper functioning.
 - d. Submit a blank calibration form listing all devices (instruments, valves, fuel management console) per the specifications for approval by the ENGINEER/OWNER a minimum of one month prior to beginning pre-commissioning. The CONTRACTOR shall complete the approved form during pre-commissioning to the satisfaction of the ENGINEER/OWNER.
 - e. Submit a blank functional system checklist for approval by the ENGINEER/OWNER a minimum of one month prior to beginning pre-commissioning. The CONTRACTOR shall complete the approved form during pre-commissioning to the satisfaction of the ENGINEER/OWNER.
 - f. Prove fuel management console programming and functionality to ensure control panels operate properly under programmed control.
 - g. The ENGINEER/OWNER shall have the option to witness all the CONTRACTOR's pre-commissioning tasks to ensure proper completion.
 - h. The ENGINEER/OWNER shall be provided a detailed schedule of the entire CONTRACTOR's pre-commissioning activities a minimum of one month prior to the work. The ENGINEER/OWNER shall review and approve the schedule before any pre-commissioning tasks are performed.
2. Pre-commissioning activities performed by the ENGINEER/OWNER: These activities shall not be scheduled until all the CONTRACTOR's pre-commissioning tasks are complete and verified to the satisfaction of the ENGINEER/OWNER. These activities shall include:
- a. Verify and validate functionality of the instruments and equipment. Any malfunctioning instruments/equipment installed by the CONTRACTOR shall be made functional by the CONTRACTOR within 48 hours of notice by ENGINEER/OWNER.
3. Commissioning by the ENGINEER/OWNER: These activities shall be scheduled once all the pre-commissioning tasks are complete and verified. These activities shall include:
- a. Coordinating with facility operators to ensure all system set points and functions are correct and meet the operator's needs and expectations.
 - b. The CONTRACTOR's pre-commissioning activities shall not be considered substantially complete until all requirements of the specifications have been met to the satisfaction of the ENGINEER/OWNER.

4. The ENGINEER/OWNER anticipates performing pre-commissioning and commissioning tasks at the same time as the substantial and final inspections, but is under no obligation to do so.

1.02 RELATED REQUIREMENTS

- A. This section applies to all Division 16 work and part of all other Division 16 sections.
- B. See Divisions 1 and 2 of which contain information and requirements that apply to work specified herein.
- C. See also the following Sections:
 5. Section 01300 Submittals
 6. Section 15175 Aboveground Fuel Storage Tanks
 7. Section 15191 Fuel Piping System
 8. Section 15192 Pump and Equipment
 9. Section 15193 Fuel Tank Appurtenances

1.03 ELECTRICAL SUPPLY

- A. Electrical power for this project is supplied from the Authority power plant.
- B. The Contractor shall furnish new utility services as indicated on the Plans. All utility work shall be performed in accordance with the applicable Authority requirements.
- C. The Contractor shall include in his bid all power company charges associated with the power utility service to the project. This may include but is not limited to, overhead and service drops. The Contractor shall pay all power company charges for materials, labor, one time non recurring construction costs (sometimes called excess facilities charge), and other costs assessed by the power company whether or not indicated on the Plans or specified.
- D. The Contractor shall provide installation of the electrical supply as indicated on the Plans. The Utility will inspect the installation for compliance with its requirements and the Contractor shall be required to correct any deficiencies noted by the Utility at no additional cost to the Owner.

1.04 TELEPHONE SERVICE

- A. Telephone service is not a part of this project.

1.05 CODES AND STANDARDS

- A. Codes: Perform all work in strict accordance with all applicable national, state, and local codes; including, but not limited to the latest legally enacted editions of the following specifically noted requirements:

1. NFPA 70, National Electric Code - NEC;
 2. ANSI-22, National Electrical Safety Code - NESC;
 3. Uniform Building Code - UBC; and
 4. Uniform Fire Code - UFC.
- B. Standards: Reference to the following standards infers that installation, equipment, and materials shall be within the limits for which it was designed, tested, and approved, in conformance with the current publications and standards of the following organizations:
1. American National Standards Institute - ANSI;
 2. American Society for Testing and Materials - ASTM;
 3. American Society of Heating, Refrigerating and Air Conditioning Consultants - ASHRAE (Standard 90-75);
 4. Factory Mutual - FM
 5. Institute of Electrical and Electronics Consultants - IEEE;
 6. National Electrical Contractors Association - NECA;
 7. National Electrical Manufacturers' Association - NEMA;
 8. National Fire Protection Association - NFPA, and
 9. Underwriters Laboratory - UL

1.06 SPECIFIC TERMINOLOGY

- A. Streamlining: In many instances, the products, reference standards, and other itemized specifications have been listed without verbiage. In these cases, it is implied that the Contractor shall provide the products and perform in accordance with the references listed.
- B. The word "Contractor" as used in Division 16 specifications shall mean "Electrical Contractor."
- C. The word "General Contractor" as used in Division 16 specifications shall mean the Contractor responsible for the project.
- D. "Furnish" means to purchase material as shown and specified, and cart the material to an approved location at the site or elsewhere as noted or agreed to be installed by supporting crafts.
- E. "Install" means to set in place and connect, ready for use and in complete and properly operating finished condition, material that has been furnished.
- F. "Provide" means furnish all products, labor, sub-contracts, and appurtenances required and install to a complete and properly operating, finished condition.

- G. "Rough-in and Connect" means provide an appropriate system connection such as conduit with "J" boxes, wiring, switches, disconnects, etc., and all wiring connections. Equipment furnished is received, uncrated, assembled and set in place under the Division in which it is specified.
- H. "Accessible" means arranged so that an appropriately dressed man 6-foot 2 inches tall, weighing 250 pounds, may approach the area in question with the tools and products necessary for the work intended, and may then position himself to properly perform the task to be accomplished, without disassembly or damage to the surrounding installation.
- I. "Serviceable" means arranged so that the component or product in question may be properly removed and replaced without disassembly, destruction, or damage to the surrounding installation.
- J. "Product" is a generic term which includes materials, equipment, fixtures, and any physical item used on the project.
- K. "Owner" is the Alaska Energy Authority (Authority).
- L. "Engineer" is the Project Manager as defined in the General Conditions of the Contract.

1.07 DRAWINGS, SPECIFICATIONS & SYMBOLS

- A. The Plans and Specifications are complementary; what is shown on one is as binding as if called for in both. Do not scale the Plans. Locations of devices, fixtures, and equipment are approximate unless dimensioned.
- B. The Plans are partly diagrammatic and do not show precise routing of conduits or exact location of all products, and may not show in minute detail all features of the installation; however, provide all systems complete and in proper operating order.
- C. Drawing symbols used for basic materials, equipment and methods are commonly used by the industry and should be universally understood. Special items are identified by a supplementary list of graphical illustrations, or called for on the Plans or in the specifications.

1.08 SUBMITTALS, MANUALS AND SHOP DRAWINGS

- A. Submit to the Engineer for review and approval, as soon as practical after the date of notice to proceed and before commencement of installation or fabrication of any materials or equipment, manuals containing detailed drawings, diagrams and instructions for installing, operating and maintaining the material and equipment proposed for installation in the electrical work.
- B. The manuals shall be supplied to the Engineer for review and approval in the quantities indicated in Division 1 specifications before any electrical equipment is shipped to the job site. Record ("As Built") drawings of the work shall be provided

upon completion of the work and shall be folded and punched for insertion into the manual after they are reviewed and approved by the Engineer.

- C. Manuals for the electrical system shall consist of three-post, expandable metal hinge binders labeled with the job name and the Contractor's name with tab dividers for each major type of equipment.
- D. Any drawings required to be prepared by the Contractor or his agent shall be of standard size no larger than 22-inch by 34-inch and with symbols similar to those used herein. Drawings shall be prepared using AutoCAD V.2004 or later.
- E. Provide manufacturer's installation, operation, maintenance, and service information, shop drawings, etc., for each panel, switchboard, motor control center, and equipment items furnished under the electrical work. Assemble and index each section listing the contents individually on the tab divider for that section. Compile a spare parts list and a supplier's index for each section and assemble in the section provided. Assemble records of all tests, measurements, and calibration settings made for each device. See Section 01300, Submittals.
- F. Submittals: Provide submittals for all products and systems described in Division 16 specifications and shown on the Plans to demonstrate compliance with the requirements of the project. Submit data not later than 60 days after Award of Contract. Furnish equipment submittals in the manner described elsewhere in these specifications. In addition, include data for review, and organize data, as noted below:
 - 1. Specific reference and/or drawings reference for which literature is submitted for review with an index, following specification format, and item by item identification.
 - 2. Manufacturer's name and address, and supplier's name, address, and phone number.
 - 3. Catalog designation or model number with rough-in data and dimensions.
 - 4. Operation characteristics.
 - 5. Complete customized listing of characteristics required. Indicate whether item is "As Specified" or "Proposed Substitution." Indicate any deviations on submittal. Mark out all non- applicable items. The terminology "As Specified" used without this customized listing is not acceptable.
 - 6. Wiring diagrams for the specific system.
 - 7. Coordination data to check protective devices.
 - 8. Working construction Drawings (Shop Drawings).
- G. Submittal Data:
 - 1. Prior to the submission of the required shop drawings, hold a meeting with all the trades and check the shop drawings for discrepancies, dimensional errors, omissions, contradictions, and departures from the

Contract requirements. The shop drawings shall then be corrected and submitted to the Engineer with appropriate notes.

2. With prior permission from the Engineer, partial submittals will be considered for review provided that they are complete sections, as listed below:
 - a. Individual Special Systems (Control Panels, etc.)
 - b. Lighting Fixtures, Lamps and Accessories
 - c. Service, Disconnects
 - d. Raceways, Fittings, and Supports
 - e. Wire and Cable
 - f. Wiring Devices
3. Mark submittal literature and shop drawings clearly and bind 8-1/2-inch by 11-inch literature in three- hole loose-leaf binders by individual sets.
4. Submittal review is for general design and arrangement only and does not relieve the Contractor from any of the requirements of the Contract Documents. Submittals will not be checked for quantity, dimension, fit or proper technical design of manufactured equipment. Where deviations of substitute product or system performance have not been specifically noted in the submittal by the Contractor, provision of a complete and satisfactory working installation of equal quality to system specified is the sole responsibility of the Contractor.

1.09 TESTS

- A. **FACTORY TESTS:** All control panels will be tested prior to shipping. Panel operation will be demonstrated using simulated inputs and alarm conditions. Tests will be observed by Engineer and will not be shipped until panel(s) meet the functional and technical requirements established in the specifications and drawings. Successful operation as determined by the Engineer will be acknowledged in writing.
- B. **FIELD TESTING:** The Contractor shall prepare and submit a test plan for review and approval by the Engineer.
 1. Field testing cannot take place without an approved test plan.
 - a. The Test Plan shall outline the tests planned for each item of equipment.
 - b. The Test Procedures shall identify the test equipment to be utilized, the action of each test step and the expected result so that a test technician who has no knowledge of the details of the equipment design shall be able to successfully conduct the test.
 2. In the presence of the Engineer,

- a. Test the equipment and electrical circuits for proper connection, continuity, and absence of undesirable shorts and grounds.
- b. Test wire and cable installation, when complete and again 72 hours prior to energization of the system.
- c. Check for continuity, visual damage, marking, and proper phase sequence before performing insulation testing.
 - 1) Megger bus work, switches, breakers and circuits phase-to-phase and phase-to-ground disconnecting and reconnecting equipment which cannot be meggered otherwise.
 - 2) The minimum acceptable steady-state value is 50 megohms. Ambient temperature and humidity during testing shall be recorded.
3. Verify operation, calibration, and settings of the meters, relays and indicating devices.
4. Check all auxiliary equipment, i.e., heaters, thermostats, lights, and all illuminated indicating devices and lamps, and all audible alarm devices to verify that they function properly.
5. Take distribution equipment test load readings after all loads are connected. Obtain the maximum reading for each phase and neutral with all lighting, appliances, motors (as applicable use largest combination), and other loads connected to the panels in service.
6. Test the resistance of the grounding electrodes in the presence of the Engineer.
 - a. The measurement shall be done with a ground ohmmeter or the IEEE Standard No. 550, Paragraph 3.42 method.
 - b. Testing shall be performed during normal dry weather conditions with at least 5 non-rain days elapsing prior to the test.
 - c. Measured resistance of the electrode to ground exceeding 3 ohms shall require supplemental electrode additions until electrode resistance to ground is less than 3 ohms.
 - d. Maximum equipment ground impedance is 25 ohms.
7. Check fuses with an ohmmeter; ring out wiring and busing; check operation of control and safety interlocks.
8. Test motor driven equipment motors before energization. Insulation test shall consist of megohmmeter check phase-to-ground, per IEEE Standard 43 or manufacturer's recommendations.
9. Load test each motor of motor driven equipment showing the following:
 - a. Nameplate ratings (horsepower), (speed), (voltage), (phase), (ampere rating of motor at full load).

- b. Measured load in amperes on lines 1-2.
- 10. Load test pump motors, noting the operating conditions at the time of the test. Motor test data shall show suction and discharge conditions (pressure, temperature, humidity, to where such conditions affect load).
- 11. Overload heaters shall be checked and the size on each phase shall be noted at this time on the test sheet.
- C. Report all test results in writing. Where tests disclose problem areas, retest after the defect has been corrected.
- D. Demonstrate to the Owner that the electrical installation is working by operating all electrical systems and equipment. Simulate control inputs, responses to outputs and alarm conditions and their acknowledgement, artificially where necessary, for complete system tests.
- E. Operate the electrical systems until acceptance of the work. Instruct The Owner's employees in the correct operation of all electrical and control systems under your jurisdiction.
- F. Any rework or repair of equipment required during or as a result of the testing shall be done by the Contractor at no additional expense to the Owner.
- G. The Contractor shall furnish to the Owner at the time the project is accepted, any special tools, calibration equipment, and testing apparatus specified or furnished by the equipment manufacturer for the proper adjustment and maintenance of the electrical equipment provided.

1.10 CODES AND INSPECTIONS

- A. Electrical work shall be installed in accordance with the latest edition of the National Electric Code and local and state codes in legal force in the project area.
 - 1. If the Contractor observes that the Plans and/or Specifications are at variance with such codes and regulations, he shall promptly notify the Engineer in writing.
 - 2. Should the Contractor perform any work in non-compliance with the above-mentioned codes and regulations without such notice to the Engineer, the Contractor shall bear all costs arising therefrom.
- B. The above codes are referenced to establish minimum requirements and wherever this specification requires higher grades of material or workmanship than required by the codes, this specification shall prevail.
- C. All electrical work shall be performed by Alaska licensed Journeyman Electricians or licensed Apprentice Electricians under the direct supervision of a licensed Electrical Administrator.
- D. Submit written proof of all Journeyman and Apprentice Electricians' current licenses.

- E. Submit certification for tests and inspections required by the electrical inspector having jurisdiction. Certificates of approval that are issued shall be transmitted to the Owner with a copy to the Engineer.
- F. The Contractor shall pay all costs and fees required by inspecting and other agencies required for his work.
- G. Cooperate with the Engineer and provide assistance at all times for the inspection of the electrical work performed under this Contract. Remove covers, operate machinery, or perform any reasonable work which, in the opinion of the Engineer, will be necessary to determine the completeness, quality, or adequacy of the work.

1.11 COORDINATION

- A. Electrical Plans are partly diagrammatic and it is not the intent to show in detail all features of work or exact physical arrangement of equipment. The location of outlets and equipment are approximate unless dimensioned. The exact locations and routing of conduits shall be governed by structural conditions and physical interferences and by the location of electrical terminations on equipment. Equipment shall be located and installed so that it will be readily accessible for operation and maintenance.
- B. If conduit is placed incorrectly with respect to equipment connections or if equipment connections are relocated without appropriate changes in the electrical work, and the resulting work is not coordinated, the work affected shall be removed and re-installed at the Contractor's expense, even if removal and replacement of structural and/or mechanical parts of the work are necessary.
- C. The Contractor shall schedule his work to coordinate through the General Contractor and with all other subcontractors, power and telephone utilities in order to maintain job progress and to avoid conflicts with equipment installation or work done by the various trades.
- D. The Contractor is responsible for maintaining required clearspace. Should the Contractor become aware of a clearspace violation or if the installation of electrical equipment as shown produces a clearspace violation, notify the Engineer in writing before proceeding with the installation.

1.12 LOCATIONS.

- A. If hazardous location boundaries exist, they will be shown on the drawings. Locations for seal-off fittings shall be field determined by the Contractor.
- B. Wet Locations: Wet locations shall include all areas underground (below grade), in direct contact with the earth, areas subject to saturation with water or other liquids from splashing, surface water, exposed to the weather and unprotected.

1.13 RECORD DRAWINGS

- A. Reference requirements stated elsewhere in these specifications.

- B. In addition to other requirements, mark up a clean set of Plans as the work progresses, to show the dimensioned location and routing of all electrical work which will become permanently concealed. Show routing or work in permanently concealed blind spaces within the facility. Show complete routing and sizing of any significant revisions to the systems shown.
- C. Maintain Record drawings in an up-to-date fashion in conjunction with the actual progress of installation. "Record" progress mark-ups shall be available on-site for examination by the Engineer at all times.
- D. Prepare wiring diagrams on reproducible media using AutoCAD V2004 or later for all individual special systems as installed. Identify all components and show all wire and terminal numbers and connections.
- E. Prior to substantial completion, deliver these drawings and their disk files in both .dwg and full size .pdf format to the Engineer and obtain a written receipt.

1.14 OPERATING INSTRUCTIONS

Prior to final acceptance, instruct the Owner on the proper operation and maintenance of all electrical systems and equipment under this contract. Make available a qualified technician for each component of the installation for this instruction. Give these operating instructions after the operation and maintenance manuals have been furnished to the Engineer.

1.15 OPERATION AND MAINTENANCE MANUALS

- A. Provide Operation and Maintenance Manuals in the manner described elsewhere in these specifications. In addition, organize manual and include data and narrative as noted below. Bind each manual in a hard-backed loose-leaf binder.
- B. Provide a separate chapter for each section of the electrical specifications with subchapters for each class of equipment or system. Provide a table of contents for each chapter, and each major item in each chapter, to indicate the page number of each. Label all pages to assure correct placement in manual. Identify each piece of equipment with its associated nameplate number, i.e. pump P-1A, etc.
- C. Operating Sequence Narrative:
 - 1. In each chapter, describe the procedures necessary for personnel to operate the system and equipment covered in that chapter.
 - 2. Describe procedures for start-up, operation, emergency operation and shutdown of each system. If a particular sequence is required, give step-by-step instructions in that order.
 - 3. Describe all seasonal adjustments which should be accomplished for each system.
 - 4. Provide the above descriptions in typewritten, simple outline, narrative form.

- D. Maintenance Instructions:
 - 1. Provide complete information for preventive maintenance for each product, including recommended frequency of performance for each preventive maintenance task.
 - 2. Provide all information of a maintenance nature covering warranty items, etc., which have not been discussed in the manufacturer's literature or the operating sequence narrative.
 - 3. Provide complete informational data for all the spare and replacement parts for each product and system. Properly identify each component by part number and manufacturer.
- E. Manufacturers' Brochures: Include manufacturers' descriptive literature covering all products used in each system, together with illustrations, exploded views and renewal parts lists. Highlight all applicable items and instructions, or mark-out non-applicable items. Brochure bearing submittal review stamp are not acceptable.
- F. Shop Drawings: Provide a copy of all corrected, approved shop drawings for the project either with the manufacturers' brochures or properly identified in a separate subsection.

1.16 INSTRUCTION OF OPERATING PERSONNEL

- A. Provide services of qualified representative of supplier of each item or system listed below to instruct the Owner in operation and maintenance of item or system.
- B. Make instruction when system is complete of number of hours indicated, and performed at time mutually agreeable.
 - 1. Electrical Distribution Equipment: 2 hours
 - 2. Alarm and Control Panels: 2 hours per panel
- C. Have approved operating and maintenance data, and parts lists for all equipment on hand at the time of instruction.

1.17 PROJECT COMPLETION AND DEMONSTRATION

- A. Tests: During final inspection, conduct operating tests for approval.
- B. Demonstrate installation to operate satisfactorily in accordance with requirements of Contract Documents. Should a portion of installation fail to meet requirements of Contract Documents, repair or replace items failing to meet requirements until items can be demonstrated to comply.
- C. Have instruments available for measuring, voltage and current values and for demonstration of continuity, ground, or open circuit conditions. Furnish personnel to assist in taking measurements and making tests.

- D. In the event that systems are not complete and fully operational at the time of Final Inspection, all costs of any subsequent inspections shall be borne by the Contractor at no additional cost to the Owner.

1.18 CERTIFICATE OF COMPLETION

- A. Submit, at time of request for Final Inspection, a completed letter in the following format:

I, _____(Name), of _____(Firm), certify that the Electrical Work is complete in accordance with Contract Plans and Specifications, and authorized change orders (copies of which are attached hereto), and will be ready for Final Inspection as of _____(Date). I further certify that the following Specification requirements have been fulfilled:

1. Megger readings performed, ____ copies of log attached.
2. Operating manuals completed and instructions of operating personnel _____ performed _____(Date).

_____(Signed)
Engineer

3. Record drawings up-to-date and ready to deliver to Engineer.
4. Emergency systems tested and fully operational.
5. All other tests required by Specifications have been performed.
6. All systems are fully operational. Project is ready for Final Inspection.

SIGNED: _____ DATE: _____

TITLE: _____

PART 2 – MATERIALS

Not used.

PART 3 – EXECUTION

Not used.

END OF SECTION

SECTION 16100

BASIC MATERIALS AND METHODS

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This Section describes specific requirements, products, and methods of execution which are typical throughout the Electrical Work of this Project. Additional requirements for the specific systems will be found in the Division specifying those systems.

1.02 RELATED REQUIREMENTS

- A. Section 16010 General Electrical Provisions
- B. All other Division 1, 2, 15 and 16 Specifications

1.03 COORDINATION

- A. Layout all the work in advance and avoid conflict with other Work in progress. Physical dimensions shall be determined from Civil and Structural plans. Verify locations for junction boxes, disconnect switches, stub-ups, etc., for connection to equipment furnished by others, or in other Divisions of this Work.

1.04 SERVICEABILITY OF PRODUCTS

- A. Furnish all products to provide the proper orientation of serviceable components to access space provided.
- B. Coordinate installation of all products to allow proper service areas for any items requiring periodic maintenance inspection or replacement.
- C. Replace or relocate all products incorrectly ordered or installed.

1.05 ACCESSIBILITY OF PRODUCTS

- A. Arrange all work to provide access to all serviceable and/or operable products. Layout work to optimize net usable access space within confines of space available. Advise Engineer, in a timely manner, of areas where proper access or required clearspace cannot be maintained. Furnish Layout Drawings to verify this claim, if requested.
- B. Provide access doors in ceilings, walls, floors, etc., for access to j-boxes, automatic devices, and all serviceable or operable equipment in concealed spaces.

PART 2 – PRODUCTS

2.01 PRODUCTS FURNISHED IN DIVISION 16

- A. All products furnished and installed in permanent construction shall be new, full-weight, standard in every way, and in first class condition.
- B. All equipment furnished by the Contractor shall be listed by and shall bear the label of Underwriters' Laboratories, Incorporated, (UL) or of an independent testing laboratory acceptable to the local Code- enforcement agency having jurisdiction.
- C. Products shall be identical with apparatus or equipment which has been in successful operation for at least two years. All products of similar class or service shall be of one manufacturer.
- D. Capacities, sizes, and dimensions given are minimum unless otherwise indicated. All systems and products proposed for use on this project shall be subject to review for adequacy and compliance with Contract Documents.

2.02 PRODUCTS FURNISHED IN OTHER DIVISIONS

- A. Controls, including conduit, wiring, and control devices required for the operation of systems furnished in other Divisions shall be installed in accordance with Division 16 Specifications.
- B. All equipment furnished by the Contractor shall be listed by and shall bear the label of Underwriters' Laboratories, Incorporated, (UL) or of an independent testing laboratory acceptable to the local Code-enforcement agency having jurisdiction.
- C. All work on the project that falls under the jurisdiction of the electrical trade shall be performed by Licensed Electricians in possession of Alaska State Fitness Cards in conformance with the Electrical Specifications.
- D. Provide complete power connections to equipment including but not limited to feeders, connections, disconnects and motor running overcurrent protection. Where starters are provided as part of a packaged product, overcurrent heaters shall be provided.

2.03 IDENTIFICATION

- A. Equipment Labels and Nameplates:
 - 1. Provide rigid engraved labels and nameplates of laminated plastic 1/16-inch thick with white letters on a black or gray background. Label for emergency equipment shall be red with white letters.

- a. Securely attach labels with two screws, minimum, per label, unless rating of panel is affected, use epoxy.
 - b. Temporary markings not permitted on equipment. Repaint trims housings, etc., where markings cannot be readily removed. Refinish defaced surfaces.
 - c. No labeling abbreviations will be permitted without prior approval.
2. Label and Nameplate Locations:
 - a. Provide 1/2-inch minimum height letters on following equipment:
 - 1) Service disconnects (red background).
 - 2) Secondary feeder breakers in distribution equipment. Designation as required by load served.
 - 3) Special equipment housed in cabinets, as designated on plans, on outside of door.
 - b. Provide 1/4-inch minimum height letters on:
3. Disconnects and starters for motors or fixed appliances - (include item designation and branch feeder circuit number); and
4. Designated electrical equipment.
- B. Branch Circuit Panelboard Schedules: Provide neatly typed schedule (odd numbered circuits on left side or top, even on right side or bottom) under plastic jacket or protective cover to protect the schedule from damage or dirt. Securely mount on inside face of panelboard door. Define briefly, but accurately, nature of connected load (i.e., Lighting, interior; receptacles, work bench; etc.) as approved.
- C. Empty Conduits: Provide tags with typed description of purpose, and location of opposite end, wired to each end of conduits provided for future equipment.
- D. Conduits: Mark all conduits entering or leaving panels with indelible black magic marker with the circuit numbers of the circuits contained inside.
- E. Junction Boxes: Mark the circuit numbers of wiring on all junction boxes with steel covers. Mark with indelible black marker.
- F. Conductors:
 1. Branch circuit conductors shall be color coded as indicated in Section 16120, Wire and Cable.
 2. Control and alarm circuit conductors
 - a. Field conductors shall be identified by destination panel and terminal block designations.
 - b. Internal (Control Panel) numbering system shall be provided by the Contractor. The numbering system shall assign each logical

conductor set a unique identification number that will be reflected on the as-built drawings.

PART 3 – EXECUTION

3.01 STORAGE AND HANDLING

- A. All items shall be delivered and stored in original containers, which shall indicate manufacturer's name, the brand, and the identifying number.
- B. Items subject to moisture and/or thermal damage shall be stored in a dry, heated place.
- C. All items shall be covered and protected against dirt, water, chemical and/or mechanical damage.

3.02 PROTECTION OF PRODUCTS

- A. The Contractor shall be held responsible for products to be installed under this Contract.
- B. The Contractor will be required to make good, at his own cost, any injury or damage which said products may sustain before Final Acceptance.

3.03 INSTALLATION

- A. All products shall be installed by skilled craftsmen. The norms for execution of the work shall be in conformity with NEC Chapter 3 and the NECA "Standards of Installation," which herewith is made part of these Specifications.
- B. WORKING SPACE AND REQUIRED CLEARANCES ABOUT ELECTRIC EQUIPMENT (600 VOLTS, NOMINAL, OR LESS): Sufficient access and working space shall be provided and maintained about all electric equipment to permit ready and safe operation and maintenance of such equipment.
 - 1. WORKING CLEARANCES: Except as elsewhere required or permitted in the NEC, the dimension of the working space in the direction of access to live parts operating at 600 volts, nominal, or less and likely to require examination, adjustment, servicing, or maintenance while energized shall not be less than indicated in NEC. Distances shall be measured from the live parts if such are enclosed. Concrete, brick, or tile walls shall be considered as grounded.
 - 2. In addition to the dimensions shown in the table, the work space shall not be less than 30 inches wide in front of the electric equipment.
 - 3. CLEAR SPACES: Working space required by this section shall not be used for storage. When normally enclosed live parts are exposed for inspection or servicing, the working space, if in a passageway or general open space, shall be suitably guarded.

4. Where clear space has been penetrated by ground level piping. Platforms providing the required footprint (30X36 minimum) shall be provided at no additional cost to the Authority.
- C. Repair all surfaces and furnish all required products and labor to maintain fire-proof, air-tight and water- proof characteristics of the construction.
- D. Installation of all equipment shall be in accordance with manufacturer's instructions.

3.04 SUPPORT SYSTEMS

- A. All materials used shall be hot dipped galvanized. Where support elements are field cut, exposed metal shall be coated with spray-on galvanizing.
- B. Support from structure only.
- C. Conduits shown to be run at grade shall be supported every 10 feet by wood sleepers as shown on the drawings. Conduits may share fuel piping sleepers if installed such that neither system will require removal during maintenance or replacement.

3.05 MOUNTING HEIGHTS

- A. Mounting heights shall be above finished floor (AFF) or above finished grade as noted below, unless otherwise shown or indicated.
 1. Lighting Switches, 46 inches to center
 2. Receptacles shall be mounted not less than 36" above the platform walkways.
- B. Other mounting heights are indicated on the Drawings by detail. Specific dimensions AFF are shown adjacent to the symbol.

3.06 CUTTING AND PATCHING

- A. Obtain written permission from the Engineer before cutting or piercing structural members.
- B. Sleeves through floors and walls to be galvanized iron pipe, flush with walls, ceilings or finished floors, sized to accommodate the raceway. Interstitial space around conduit passing through sleeves shall be filled with non-hardening duct sealant.

3.07 PROTECTIVE FINISHES

- A. Take care not to scratch or deface factory finish on electrical apparatus and devices. Repaint all marred or scratched surfaces.
- B. Provide hot dip galvanized components for ferrous materials exposed to the weather.

3.08 CLEAN-UP AND COMMISSIONING

- A. Throughout the Work, the Contractor shall keep the work area reasonably neat and orderly by periodic clean-ups.
- B. As independent parts of the installation are completed, they may be commissioned and utilized during construction.

3.09 WARRANTY

- A. Unless otherwise specified, the Warranty starts on the date Written Notice is given that the project is complete and all required corrections have been made. Warranty shall certify that all defects in products or workmanship shall be promptly repaired or replaced by the Contractor, to the satisfaction of the Authority, for a period of one year, except when, in the opinion of the Engineer such failure is due to neglect or carelessness by the Authority.

3.10 OPERATIONAL INSTRUCTIONS

- A. The Contractor shall instruct the Authority in the operation of the products shown and/or specified. Allow one day on-site in base bid for Division 16.

END OF SECTION

SECTION 16110

CONDUITS AND FITTINGS

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section describes specific requirements, products, and methods of execution relating to conduit and conduit fittings approved for use on this project. Type, size and installation methods shall be as shown on the Plans, required by Code and specified in these specifications.

1.02 RELATED REQUIREMENTS

- A. Section 16010 General Electrical Provisions
- B. Section 16100 Basic Materials and Methods
- C. Section 16450 Grounding

1.03 QUALITY ASSURANCE

- A. Conduit and conduit fittings shall be standard types and sizes as manufactured by a nationally recognized manufacturer of this type of materials and be in conformity with applicable standards and UL listings.

1.04 SUBMITTALS

- A. Shop Drawings and Product Data: Submit shop drawings and product data for the products of this section in compliance with Section 16010, General Electrical Provisions.

PART 2 – PRODUCTS

2.01 GALVANIZED RIGID CONDUIT (GRC)

- A. Galvanized rigid conduit shall be mild steel with continuous welded seam, hot-dip galvanized complying with ANSI C80.1 and shall be UL listed.
- B. Elbows, bends, and fittings shall be made of full weight materials complying with the above and shall be coated and threaded the same as conduit.
- C. Threads for conduit shall be tapered and clean cut. All threads shall be hot dip galvanized after cutting.
- D. Conduit shall be 1/2-inch trade size or larger and shall be manufactured by Allied Tube and Conduit Corp., Triangle PWC, Inc., or approved equal.

2.02 INTERMEDIATE METAL CONDUIT (IMC)

- A. Intermediate metal conduit shall be mild steel, hot-dip galvanized complying with Fed. Spec. WWC-581 and shall be UL listed.
- B. Elbows, bends, and fittings shall be made of full weight materials complying with the above and shall be coated and threaded the same as conduit.
- C. Threads for conduit shall be tapered and clean cut. All threads shall be galvanized after cutting.
- D. Conduit shall be 1/2-inch trade size or larger and shall be manufactured by Allied Tube and Conduit Corp., Triangle PWC, Inc., or approved equal.

2.03 LIQUIDTIGHT FLEXIBLE METAL CONDUIT

- A. Liquidtight flexible conduit shall be manufactured from galvanized steel strip, sealed with a polyvinyl outer jacket and shall be UL listed.
- B. Fittings shall be designed for use with liquidtight flexible conduit and shall maintain electrical continuity throughout fittings and conduit.
- C. Liquidtight flexible metal conduit shall be 1/2-inch trade size or larger and shall be manufactured by O-Z/Gedney Co., Southwire Co., or approved equal.

2.04 FITTINGS

- A. Expansion fittings shall be O.Z. type AX, EX, EXDS, TX, or EXE; Crouse Hinds type XJ; or approved equal.
- B. Fittings utilized with rigid steel shall be galvanized steel. Conduit bushings shall be of the insulated type. Where grounding bushings are required, insulated grounding bushings with pressure type lugs shall be provided. Lock rings shall be of the sealing gland type. Provide conduit bushings on all penetrations without hubs.
- C. Fittings for liquid-tight flexible conduit shall be steel or malleable iron, of a type incorporating a threaded grounding cone, nylon or plastic compression ring, and a tightening gland, providing a low resistance ground connection. All throats shall be insulated.
- D. Seal-Off fittings shall be listed for the Class and Division required (or greater). Provide fittings that do not require de-rating conduit fill capacities or adjust conduit size to accommodate fitting limitations. Complete sealing after final acceptance is complete and all wiring has been verified.
- E. Fittings used in Hazardous locations shall be approved for use if approval is required.

PART 3 – EXECUTION

3.01 CONDUIT USAGE

- A. Galvanized rigid conduit shall be used for all wiring in classified areas and general wiring, except as otherwise specified herein or indicated on the Plans.
- B. Suitably protected (bituminous wrap or other coating) rigid conduit shall be used for underground, in slab or direct burial installations.
- C. Intermediate metal conduit may be used for general wiring and in place of rigid conduit, except as otherwise specified herein or indicated on the Plans.
- D. Liquidtight flexible steel conduit shall be used in lengths 18 to 24 inches for connections to motors or equipment subject to vibration. Longer lengths may be used for equipment connection if grounding conductor is installed through conduit. Flex conduit may be used in Class I, Division 2 locations with approved fittings.

3.02 CONDUIT INSTALLATION, GENERAL

- A. Install conduit exposed.
- B. Conduit field joints shall be cut square and reamed smooth. Threads shall be cleanly cut and joints drawn up tight. After make-up all exposed, non-galvanized surfaces of completed joint shall receive two coats of Zinc rich paint equal to "Zinc it", manufactured by CRC. No running threads will be permitted.
- C. Offsets and bends shall be made carefully, without reducing cross sectional area, and shall not be less than the radius of standard elbows.
- D. Convenience outlets, switches, and other devices located on walls shall be serviced from above, unless otherwise indicated.
- E. Install expansion fittings where conduits cross structural expansion joints.
- F. Raceways penetrating vapor barriers or traversing from warm to cold areas shall be sealed (at the penetration point) with a non-hardening duct sealing compound to prevent the accumulation of moisture.
- G. All metal conduits shall have insulating bushings and shall have locknuts inside and outside of enclosure box, etc. Conduits smaller than 1-1/4-inch trade size shall be equipped with bushings and shall have locknuts inside and outside of enclosure.
- H. All conduit runs shall be grounded in an effective and approved manner at point of origin and shall maintain a continuous ground throughout all runs, cabinets, pull boxes, and fittings from point of service to all outlets.
- I. All conduit stubbed up out of floor and termination inside of an enclosure shall have insulating grounding bushings installed.

- J. Conduit Supports:
 - 1. Support conduits by wall brackets, pipe straps and unistrut sections, or trapeze hangers spaced not more than 10 feet on center.
 - 2. Conduits shall be supported from the structural system. Provide additional support as required for junction and pull boxes.
 - 3. Conduit risers along poles 1" and smaller may be secured using 2-hole galvanized straps. Conduits larger than 1" shall be supported using offset brackets and appropriate pipe straps.
 - 4. Where structural supports are not available provide wood block supports as shown on the drawings.
- K. All conduit runs shall be completed and cleaned free from foreign matter inside before conductors are drawn in. After installation conduit ends shall be plugged or capped to prevent the entrance of foreign materials.
- L. All conduits not used by this Contract shall have a pull wire installed and securely tied off at each end for future conductor installation.

END OF SECTION

SECTION 16120

WIRE AND CABLE

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section describes specific requirements, products, and methods of execution relating to wire and cable, 600 volts or less, approved for use on this project.

1.02 RELATED REQUIREMENTS

- A. Section 16010 General Electrical Provisions
- B. Section 16100 Basic Materials and Methods

1.03 QUALITY ASSURANCE

- A. All conductors shall be sized according to American Wire Gauge (AWG). Stranding, insulation, rating, and geometrical dimensions shall conform to Underwriters Laboratory Specifications.
- B. All conductors shall be copper, with the exception of the overhead triplex conductors from the power plant riser weatherheads to the bulk fuel farm riser weatherheads. See Section 16300 for triplex cable specifications.

PART 2 – PRODUCTS

2.01 SERVICE RISER CABLE

- A. Insulation shall be 600 volt Type XHHW-2.

2.02 FEEDER AND BRANCH CIRCUIT WIRING

- A. Insulation shall be 600 volt type XHHW-2. Wiring in fixture channels shall be rated 90 degrees C. or over, 600 volt. Do not install thermoplastic insulated conductors when the temperature is below 0 degrees F.

2.03 FLEXIBLE CORD

- A. All flexible cord shall be type SOW-A or for larger size cable, type G.

2.04 MISCELLANEOUS

- A. Miscellaneous wire and cable for special purpose applications and not covered in the categories as indicated above, shall be as shown on the Plans and/or required by the intended use.

2.05 MINIMUM SIZE

- A. Unless specified otherwise, minimum wire sizes shall be as follows:
 - 1. All 120 volt homeruns over 75 feet; No. 10 AWG
 - 2. Branch circuit wiring; No. 12 AWG
 - 3. Low voltage switching circuits if a part of an approved cable assembly; No. 20 AWG (No. 16 AWG otherwise)
 - 4. Cable or conductors for other special systems shall be as described in other sections of the specifications, noted on the Plans, or recommended by the equipment manufacturer.

2.06 MISCELLANEOUS CONDUCTORS AND ACCESSORIES

- A. Control wiring 120V shall be Class C stranded copper conductor with Type MTW insulation. Minimum conductor size shall be No. 14 AWG or 16 AWG for PLC applications.
- B. Multi-conductor control cables shall be XHHW insulated, Class B stranded conductors in overall PVC jacket. Color coding shall be per IPCEA Method No. 1.
- C. Cords shall be stranded copper conductor Type SOW-A with green insulated grounding conductor.
- D. Connectors for splicing copper conductors shall be; "Scotchlok" insulated spring connectors for No. 18 through No. 6 AWG solid conductors; insulated, solid-barrel, crimp type plated copper alloy connectors for No. 18 through No. 6 AWG stranded conductors; plated copper alloy compression splicing sleeves installed by high-pressure compression tools for No. 4 and larger size stranded conductors.
- E. Insulating materials for splices shall be "Scotchfill" or equal for filling bolted or irregular areas before taping with Scotch No. 88, 33 plus or equal 7 mil vinyl plastic tape.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Conduit shall be completely installed, free from obstructions, and clean before installing conductors. Provide conductors from outlet to outlet and splice only at outlet or junction boxes. Install all conductors in a single raceway at one time and leave sufficient cable at all fittings or boxes. Keep minimum bending radii. Lubricants for wire pulling, if used, shall conform to UL requirements for the insulation and raceway material.

3.02 CONDUCTOR SUPPORT

- A. Provide conductor supports as recommended by the NEC or cable manufacturer in vertical conduits.

3.03 SPLICING

- A. No splicing or joints will be permitted in either feeder or branch circuits except at outlet or accessible junction boxes. Utilize compression type solderless connectors when making splices or taps in conductors No. 8 AWG or larger. Utilize pre-insulated connectors, 3M Company "Scotchlok" or Ideal Industries, Inc. "Super Nut" for splices and taps in conductors No. 10 AWG and smaller. Tape all splices and joints with Scotch No. 88 plastic tape to secure insulation strength equal to that of the conductors joined. Keep splices in underground junction boxes, handholes, and manholes to an absolute minimum. Where splices are necessary, use resin splicing kits manufactured by the 3M Company, St. Paul, Minnesota to totally encapsulate the splice.

3.04 CONDUCTOR TERMINATION

- A. Stranded Conductors: Provide all power, control, communication and alarm conductors that terminate on equipment or terminal strips with compression type solderless lugs. T and B "Sta-Kon" terminals, or approved equal.

3.05 CONDUCTOR PHASE COLOR CODING

- A. All service, feeder and branch circuit conductors throughout the project's secondary electrical system shall be color coded as follows:

<u>Phase</u>	<u>120/240VAC</u>
L1	Black
L2	Red
Neutral	White
Ground	Green/Bare

- B. Where color code conductors are not commercially available, colored non-aging plastic tape may be utilized when permitted by code.

END OF SECTION

SECTION 16130

OUTLET BOXES

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section describes general requirements, products and methods of execution relating to outlet boxes for use with wiring devices and lighting fixture outlets approved for use on this project. All boxes shall be sized per NEC - Article 370.

1.02 RELATED REQUIREMENTS

- A. Section 16010 General Electrical Provisions
- B. Section 16100 Basic Materials and Methods

1.03 QUALITY ASSURANCE

- A. UL approval for intended usage shall constitute proof of acceptable quality.

PART 2 – PRODUCTS

2.01 CAST BOXES

- A. Device boxes shall be Type FS or FSD as required.
- B. Boxes shall be equipped with mounting lugs, threaded hubs and gasketed covers and used in the following locations:
 - 1. All exterior locations;
 - 2. All wet or damp locations;
 - 3. Where exposed to mechanical damage;
 - 4. All exposed interior locations below 48 inches above floor;
 - 5. Where shown on Plans.

2.02 GALVANIZED PRESSED STEEL BOXES

- A. May be used wherever they are permitted by code, except in areas indicated in Paragraph 2.1 above.

2.03 GROUNDING SCREW

- A. All pressed steel boxes shall have a drilled and tapped hole in the back of the box for a grounding screw.

2.04 ACCESSORIES

- A. Box covers, extension rings, bases, hanger bars, etc., for use in connection with the installation, shall be approved for use in the various applications.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Outlet Boxes shall be securely fastened in position and supported independently of the conduit system.
- B. Boxes shall be installed true to the building lines and at equal heights in conformity with mounting heights specified elsewhere in other sections of the specifications.
- C. Provide the best suitable box for each outlet requirement.
- D. Boxes shall have only the holes necessary to accommodate the conduits at point of installation. All boxes shall have lugs or ears to secure covers.
- E. All boxes shall be accessible.

END OF SECTION

SECTION 16131

PULL AND JUNCTION BOXES

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section describes general provisions, products and methods of execution relating to pull and junction boxes approved for use on this project. Furnish all such boxes, whether shown or not, in order to conform to requirements for maximum pulling length and maximum number of bends allowed.

1.02 RELATED REQUIREMENTS

- A. Section 16010 General Electrical Provisions
- B. Section 16100 Basic Materials and Methods
- C. Section 16130 Outlet Boxes

1.03 QUALITY ASSURANCE

- A. Pull and junction boxes 150 cubic inches and smaller shall conform to Section 16130.
- B. Pull and junction boxes larger than 150 cubic inches shall conform to Underwriters Laboratory (UL) standard 50-1970, Cabinets and Boxes. The UL label shall constitute proof of acceptable quality.

PART 2 – PRODUCTS

2.01 PULL AND JUNCTION BOXES

- A. Pull and junction boxes shall conform to Article 370 of the NEC and the following requirements:
 - 1. Sheet metal boxes shall be approved for use in all dry, interior, non-hazardous locations.
 - 2. Boxes exposed to rain or installed in wet locations shall be NEMA 4 or as noted.
 - 3. Boxes installed underground shall be either precast concrete or cast iron.
 - 4. Special boxes, as noted on the Plans, shall be installed in areas of specific service and/or hazards.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. All boxes shall be installed so that covers are readily accessible and adequate working clearance is maintained after completion of the installation.

END OF SECTION

SECTION 16140

WIRING DEVICES

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section describes general provisions, products, and methods of execution relating to line voltage wiring devices approved for use on this project.

1.02 RELATED REQUIREMENTS

- A. Section 16010 General Electrical Provisions
- B. Section 16100 Basic Materials and Methods

1.03 QUALITY ASSURANCE

- A. Manufacturers mentioned and catalog numbers specified are for establishment of type, configuration, and quality. Other manufacturers and types may be submitted for approval.

PART 2 – PRODUCTS

2.01 SWITCHES

- A. Provide wiring devices indicated. Catalog numbers shown are Leviton unless noted otherwise. Equal devices manufactured by Pass and Seymour, Slater, Bryant, Hubbell and G.E. are acceptable. Provide all similar devices of same manufacturer. Provide gray device color.
- B. Provide 20 AMP, 120/277V rated switches with Underwriters Laboratory approved for tungsten lamp loads or inductive loads without de-rating. Switches shall be as follows:
 - 1. Single Pole: Cat# CSB1-20G
 - 2. Three-Way: Cat# CSB3-20G
 - 3. 4-way: Cat# CSB4-20G
 - 4. Double-pole: Cat# CSB2-20G
- C. Switches requiring ratings and configurations different from those listed above shall be provided as shown on the Plans and/or required by the equipment served.

2.02 RECEPTACLES

- A. Provide grounding type receptacles as follows, or as required to match equipment furnished in this or other Divisions.

1. 20A-125V
 2. NEMA 5-20R
 3. Indicator Light
 4. Leviton Cat# 8898-T or 7899-T
- B. Outlets requiring ratings and configurations different from those listed above shall be provided as shown on the Plans and/or required by the equipment served.

2.03 PLATES / COVERS

- A. Provide weatherproof cover plates for all surface mounted wiring devices.
- B. Install blank covers on all boxes without devices or fixtures.
- C. Provide Stainless Steel plates for all flush mounted wiring devices.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install all wiring devices indicated complete with cover plates. Cover plates shall fit snugly on box and line up true with adjacent building lines.
- B. All switches shall be installed so their handles move in a vertical plane.
- C. Door/gate swings shall be checked and, if necessary, switches shall be relocated to place them on the striker side of the door/gate on single door/gate installations.

END OF SECTION

SECTION 16160

MOTOR STARTERS

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section describes general requirements, products, and methods of execution relating to manual and magnetic motor starters provided in this and other Divisions. Overloads shall be furnished and installed in Division 16.

1.02 RELATED REQUIREMENTS

- A. Section 16010 General Electrical Provisions
- B. Section 16100 Basic Materials and Methods

1.03 QUALITY ASSURANCE

- A. Equipment shall be of the latest approved designs manufactured by a nationally recognized manufacturer and in conformity with the governing NEMA standards.

PART 2 – PRODUCTS

2.01 AC FRACTIONAL HORSEPOWER MANUAL STARTERS

- A. The manual starter shall consist of a manually operated toggle switch equipped with melting alloy-type thermal overload relay.
- B. Thermal unit shall be one-piece construction and interchangeable. Starters shall be inoperative if thermal unit is removed.

2.02 AC MANUAL STARTERS – LINE VOLTAGE TYPE

- A. Manual starters shall be constructed and tested in accordance with the latest published NEMA or IEC standards.
- B. The manual starters shall consist of a manually operated switch equipped with melting alloy type thermal overload relays in every phase conductor. The overload relays shall be trip-free and the starter shall be inoperative if any thermal unit is removed. Thermal units must be one-piece construction.
- C. Starters shall be furnished in a NEMA 12 general purpose enclosure unless otherwise indicated on the Plans (such as open type for control panels) or required by the conditions of the area in which they are installed.
- D. Manual starters with contactor combination are specified by Manufacturer and model number for control panel applications. See control components schedule on the plans for listing.

2.03 AC MAGNETIC STARTERS – LINE VOLTAGE TYPE

- A. Motor starters shall be across-the-line magnetic type rated in accordance with NEMA standards, sizes and horsepower ratings.
- B. Starters shall be mounted in Local Control Panels or individually in their own NEMA rated enclosures as shown on the Plans.
- C. Starters shall be furnished with ambient compensated, Class 10, adjustable, overload relays in every phase conductor.
- D. Starters through NEMA size three shall be equipped with double break silver alloy contacts. All contacts shall be replaceable without removing power wiring or removing starter from panel.
- E. Coils shall be of molded construction and shall be 120VAC.
- F. Starters shall be suitable for the addition of at least four external electrical interlocks of any arrangement normally open or normally closed.
- G. All individually enclosed starters shall have enclosure mounted red running pilot light.

2.04 ACCESSORIES

- A. Provide push-buttons, selector switches, pilot lights, elapsed time meters, etc., as indicated on the Plans or as required herein and elsewhere in these specifications. Device shall be standard components normally supplied from the factory with the starters.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Coordinate all details pertaining to the motor control equipment with the Division of these specifications where the equipment is specified.
- B. Align starters in control panels to permit logical location of mechanical reset pushbutton.

3.02 CONTROL WIRING

- A. Control wiring and control devices shall be provided under the specification section in which the controlled equipment is specified.

3.03 DISCONNECT

- A. Provide a disconnect switch for each motor remotely located, adjacent to the motor, unless the motor is in sight of and within 25 feet of its overcurrent device.

3.04 CONNECTIONS

- A. Provide liquid-tight flexible conduit connections to motors and other equipment subject to vibration. Minimum length 12 inches.

3.05 NAMEPLATES

- A. Provide nameplates for all starters. Coordinate names with mechanical equipment lists.

3.06 OVERLOAD PROTECTION

- A. Install overload protection. Verify that protection corresponds to motor full load current and that motors starts and operates properly.

END OF SECTION

SECTION 16164

PANELBOARDS

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. The work under this section includes furnishing and installing panelboards and related appurtenances, complete.

1.02 RELATED REQUIREMENTS

- A. Section 16010 General Electrical Provisions

1.03 QUALITY ASSURANCE

- A. Panelboards shall be UL listed and shall comply with the NEC.

1.04 SUBMITTALS

- A. Shop Drawings and Product Data: Submit shop drawings and product data for the products of this section in compliance with Section 16010, General Electrical Provisions.
- B. Operation and Maintenance Manuals: Submit operation and maintenance manuals for the products of this section in compliance with Section 16010, General Electrical Provisions.

PART 2 – PRODUCTS

2.01 PANELBOARDS

- A. A nameplate shall be provided listing panel type and ratings.
- B. Bus bars for the mains shall be of copper, sized in accordance with UL standards. Unless otherwise noted, full size neutral bars shall be included. Bus bar taps for panels with single pole branches shall be arranged for sequence phasing of the branch circuit devices.
- C. The short circuit rating of the assembled panelboard shall be as indicated on the Plans and in accordance with UL standards and their test verification.
- D. All panelboards shall be fitted with an equipment ground bar.
- E. Boxes shall be rated for NEMA 3R environment. Boxes shall be of sufficient size to provide a minimum gutter space of 4 inches on all sides. Lighting panel boxes shall use three-piece construction wrapper sheet for back and two sides with removable top and bottom ends.

- F. Hinged doors covering all switching device handles shall be included in all panel trims, except that panelboards having individual metal clad externally operable dead-front units may be supplied without such doors.
- G. Doors in panelboard trims shall conform to the following:
 - 1. In making switching device handles accessible, doors shall not uncover any live parts.
 - 2. Doors shall have flush-type cylinder lock and catch. Door hinges shall be concealed. All locks shall be keyed alike. A directory frame and card having a transparent cover shall be furnished on each door. Directory shall be typed, not handwritten.
 - 3. The trims shall be fabricated from code gauge sheet steel.
- H. All exterior and interior steel surfaces of the panelboard trims shall be properly cleaned and finished with ANSI-61 paint over a rust-inhibiting phosphatized coating.
- I. Breakers shall be rated as specified in Section 16180, Overcurrent Protective Devices.
- J. Single pole 15 and 20 ampere circuit breakers shall be UL listed as "Switching Breakers" and carry SWD marking.

2.02 MANUFACTURERS

- A. Square D
- B. Cutler Hammer
- C. Substitutions: Approved Equal

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install panelboards as indicated on the Plans. Support wall-mounted Panelboards from the structure with no weight bearing on conduits.
- B. Install panelboards so top breaker is not higher than 6 feet above the floor.
- C. Distribute and arrange conductors neatly in the wiring gutters. Contractor shall maintain the largest practical bending radius of conductors.
- D. Connect grounding electrode conductor to the equipment grounding terminal bar. Verify that the ground bar is securely bonded to the load center or panelboard cabinet and that it is not connected to the neutral bar except at "service equipment" as permitted in the latest revision of NEC Article 250.

- E. Inspect and remove any debris, scrap wire, etc. from the cabinet interior before installing fronts.

END OF SECTION

SECTION 16170

DISCONNECTS

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This Section describes general requirements, products, and methods of execution relating to fusible and non-fusible disconnecting devices approved for use on this project.

1.02 RELATED REQUIREMENTS

- A. Section 16010 General Electrical Provisions
- B. Section 16100 Basic Materials and Methods
- C. Section 16180 Overcurrent Protective Devices

1.03 QUALITY ASSURANCE

- A. Devices shall be of the latest approved design as manufactured by a nationally recognized manufacturer and in conformity with UL listings and the governing NEMA standards.

PART 2 – PRODUCTS

2.01 SAFETY SWITCHES

- A. Safety switches, fusible and non-fusible shall conform to NEMA Standards KSI-1969 for Type HD (Heavy Duty).
- B. Switch Interior: All switches shall have switch blades which are fully visible in the OFF position when the door is open. Switches shall be of dead-front construction with permanently attached arc suppressors. Lugs shall be UL listed for copper and/or aluminum cables and front removable.
- C. Switch Mechanism: Switches shall have a quick-made and a quick-break operating handle and mechanism which shall be an integral part of the box, not the cover. Switches shall have a defeatable dual cover interlock to prevent unauthorized opening of the switch door in the ON position or closing of the switch mechanism with the door open. The switch shall be capable of being locked in the OFF position with three padlocks.
- D. Enclosures: Switch enclosure shall be suitable for the environment in which the switch is mounted. NEMA 1 enclosure shall be code gauge, UL 98, sheet steel, treated with a rust inhibiting phosphate and finished in gray, baked enamel. NEMA 3R enclosure - same requirements as NEMA 1 except galvanized prior to painting. Special purpose enclosures such as NEMA 4, 5, 7 and 12, shall be cast aluminum or stainless steel.

- E. Rating: Ampere, volt and horsepower ratings, as well as number of poles and presence of neutral bar shall be shown on the nameplate.

2.02 CIRCUIT BREAKERS

- A. Circuit breakers used as disconnects shall meet requirements specified in Section 16180, Overcurrent Protective Devices. Enclosures for same shall meet the requirements as specified above.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Coordinate all details pertaining to size of equipment, and requirements to enclosures, ratings, etc., so as to provide the most suitable unit for the intended purpose.
- B. Provide nameplates for all disconnects. Coordinate names with mechanical equipment lists.

END OF SECTION

SECTION 16180

OVERCURRENT PROTECTIVE DEVICES

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This Section describes general requirements, products, and methods of execution relating to overcurrent protective devices approved for use on this project. Type, duty rating and characteristics, fault interrupting capability and coordination requirements shall be determined from the Plans and the following specifications.

1.02 RELATED REQUIREMENTS

- A. Section 16010 General Electrical Provisions
- B. Section 16100 Basic Materials and Methods
- C. Section 16164 Panelboards
- D. Section 16170 Disconnects

1.03 QUALITY ASSURANCE

- A. Devices shall be the latest approved design as manufactured by a nationally recognized manufacturer and in conformity with applicable standards and UL listed.

PART 2 – PRODUCTS

2.01 MOLDED CASE CIRCUIT BREAKERS

- A. Molded case circuit breakers shall be suitable for individual as well as panelboard mounting. Bolt-on type, unless "plug-on" type specifically allowed.
- B. The breakers shall meet NEMA and/or UL specifications as applicable to frame and size, standard rating and interrupting capability.
- C. The breakers shall be one-, two-, or three-pole as scheduled, operate manually for normal ON-OFF switching and automatically under overload and short circuit conditions.
- D. Operating handle shall open and close all poles simultaneously on a multi-pole breaker. Operating mechanism shall be trip-free so that contacts cannot be held closed against abnormal overcurrent or short circuit condition.

2.02 FUSIBLE SWITCHES

- A. Fusible switches shall be designed for individual mounting as specified in Section 16170, Disconnects, or for panelboard mounting.
- B. Switches designed for panelboard mounting shall have the same properties as specified for the individually mounted switches.
- C. Switches shall conform to NEMA and UL 67 standard.
- D. Switches shall be used in conjunction with fuses as specified in the following in order to constitute a complete "Overcurrent Protective Device".

2.03 FUSES

- A. Fuses of the sizes and types specified on the Plans shall be installed. Fuses shall be capable of interrupting the prospective symmetrical fault current. Furnish to the Authority one complete set of spare fuses of each rating installed. Provide fuse puller(s) for fuse sizes used.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Size devices as required by the load being served.

END OF SECTION

SECTION 16190

SUPPORTING DEVICES

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. Support and align raceways, cabinets, boxes, fixtures, etc., in an approved manner and as specified.

1.02 RELATED REQUIREMENTS

- A. Section 16110 Conduits and Fittings
- B. Section 16130 Outlet Boxes
- C. Section 16500 Lighting Fixtures

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Support raceways on approved types of wall brackets, ceiling trapeze hangers, or malleable iron straps.
 - 1. "Kindorf", "Unistrut", or equal.
 - 2. Plumbers perforated strap not permitted as means of support.
 - 3. Support used for exterior equipment shall be galvanized or Stainless steel.
- B. Earthquake anchorages:
 - 1. Anchor equipment weighing more than 100 pounds to the building structure to resist lateral earthquake forces.
 - 2. Total lateral (earthquake) force shall be 1.00 times the equipment weight acting laterally in any direction through the equipment center of gravity. Provide adequate backing at structural attachment points to accept the forces involved.
 - 3. Provide equipment supported by flexible isolation mounts with earthquake restraining supports positioned as close to equipment as possible without contact in normal operation (earthquake bumpers). The maximum lateral displacement due to the computed earthquake force from above shall not exceed 1.5 inches. Floor mounted equipment weighing less than 2000 pounds may have one 6-inch by 6-inch by 3/8-inch by 18-inch steel angle bolted to the floor with four 5/8-inch diameter bolts placed on each of four sides of the equipment.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Conduits and equipment shall be mounted using strut or similar supports unless otherwise noted.
- B. Do not strap conduits to fuel piping. When run in parallel with exposed fuel piping maintain adequate separation to allow maintenance to take place on either piping or conduit system so that the other does not have to be removed when maintenance is required.
- C. Where conduits are buried (parallel) with fuel piping maintain a minimum 1-foot separation.

END OF SECTION

SECTION 16450

GROUNDING

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section describes general requirements, products, and methods of execution relating to the furnishing and installation of a grounding system complete as required for this project.

1.02 RELATED REQUIREMENTS

- A. Section 16010 General Electrical Provisions
- B. Section 16100 Basic Materials and Methods

1.03 MINIMUM REQUIREMENTS

- A. The minimum requirement for the system shall conform to Article 250 of the NEC.
- B. Unless specified elsewhere, the ohmic values for grounds and grounding systems shall be as follows.
 - 1. For grounding metal enclosures and frames for electrical and electrically operated equipment: 5 ohms maximum.
 - 2. For grounding systems to which electrical utilization equipment and appliances are connected: 5 ohms maximum.
 - 3. For grounding secondary distribution systems, neutrals, noncurrent carrying metal parts associated with distribution systems, and enclosures of electrical equipment not normally within reach of other than authorized and qualified electrical operating and maintenance personnel: 10 ohms maximum.
 - 4. For individual transformer and lightning arrester grounds on distribution systems: 10 ohms maximum.
 - 5. For equipment not covered in the above: 10 ohms maximum

PART 2 – PRODUCTS

2.01 GROUND RODS, CONDUCTORS AND APPURTENANCES

- A. All ground rods and conductors for ground systems shall be as follows:
 - 1. Ground rods to be 3/4-inch by 10-foot copper clad steel.
 - 2. Grounding conductor for building service ground to be #6 AWG bare copper.

3. Ground ring shall be #2/0 AWG bare copper.
4. Tank, platform and structure grounding shall be as noted on the drawings. If not shown, #6 AWG copper is the minimum size. Bond in accordance with manufacturer's requirements.

2.02 CONNECTIONS

- A. Joints in grounding conductors and mats below grade shall be made with exothermic welds. Terminations above grade shall be made with exothermic welds, except where noted.

PART 3 – EXECUTION

3.01 SERVICE AND STRUCTURE GROUND

- A. Provide Service Ground.
- B. Create a Grounding Electrode System (GES) for this project by connecting the following:
 1. The service system's grounded neutral conductor.
 2. All connections shown on the Grounding Plan drawings and connections in accordance with NEC.
 3. The service entrance board and/or main disconnect ground bus and all conduits entering and leaving the board/disconnect.
 4. Other items or equipment called for on the Plans.
 5. Current carrying capacity of the grounding and bonding conductors shall be in conformity with Table 250-94 of the NEC.
- C. All structure and tank bonding shall be in accordance with manufacturer's recommended practice.

3.02 EQUIPMENT GROUND

- A. The raceway system shall be bonded in conformity with NEC requirements to provide a continuous ground path. Where required by code or where called for on the Plans, an additional grounding conductor shall be sized in conformity with Table 250-95 of the NEC.
- B. Provide separate grounding conductor securely bonded and effectively grounded to both ends of all non-metallic raceways and all flexible conduit.
- C. Each fuel tank shall be bonded to the ground at two separate locations.
- D. If non-metallic enclosures are provided, all metal conduits terminating or entering the enclosure shall be bonded together with approved bonding bushings and #6 AWG copper cable.
- E. Fences shall be bonded to the equipment ground.

3.03 SUBMITTAL DATA

- A. Provide typewritten report on the ground test for each ground system installed under this contract.

END OF SECTION

SECTION 16500

LIGHTING FIXTURES

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section describes general requirements, products, and methods of execution relating to lighting fixtures approved for use on this project.

1.02 RELATED REQUIREMENTS

- A. Section 16010 General Electrical Provisions
- B. Section 16100 Basic Materials and Methods
- C. Section 16550 Lamps, Ballasts, Accessories

1.03 QUALITY ASSURANCE

- A. The fixture shall be a standard cataloged item as described on the Plans and as made by a nationally recognized manufacturer and UL approved.

1.04 SUBMITTALS

- A. Submit per Section 16010.

PART 2 – PRODUCTS

2.01 GENERAL

- A. Provide fixtures in conformance with Fixture Schedule.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Fixture Installation: Install fixtures per plans.
- B. Cleaning: After construction of total project is completed, wash dirty luminaires inside and out with a non-abrasive mild soap or cleaner. Clean luminaire plastic lenses with antistatic cleaners only. Touch up all painted surfaces of luminaires with high-grade exterior enamel.

END OF SECTION

SECTION 16900

CONTROL/ALARM PANELS

PART 1 – GENERAL

1.01 SCOPE OF WORK

- A. This section describes specific requirements, products, and methods of execution relating to the construction and furnishing of Control/Alarm panels used on this project.

1.02 RELATED REQUIREMENTS

- A. Section 16010 General Electrical Provisions
- B. Section 16100 Basic Materials And Methods
- C. Section 16120 Wire and Cable

1.03 QUALITY ASSURANCE

- A. All Control/Alarm panels shall be listed or labeled per Section 16100, Basic Materials and Methods.

1.04 SUBMITTALS

- A. In addition to the requirements stated elsewhere in these specifications, the following items shall be included in the submittal:
 - 1. Quality Assurance: State how supplier intends on satisfying the Listing/Labeling requirements in Paragraph 1.03 above.
 - 2. Components: Include a listing of all components provided in or on the panel. List shall include the components labeling (or listing) installation instructions, allowable ambient environment, and operation characteristics. "Cut" sheets are an acceptable format if all required data is presented in a readable manner. Where options are identified as available but not provided they shall be marked out. Alternately identify only those options intended to be supplied with the component if none, then state so on the submittal.
- B. Environmental Calculations: Provide calculations verifying that allowable component environment will not be exceeded or will be maintained via heating/cooling and the manner with which the environment will be maintained.

PART 2 – PRODUCTS

2.01 ENCLOSURES

- A. Enclosures

1. In all non-hazardous areas enclosures shall be NEMA 4X. If stainless steel, provide with brushed finish. Non-metallic enclosures are acceptable if available. Where possible, penetrations shall be made in such a manner to maintain the NEMA 4X rating. If this is not possible, the penetrations shall be made in such a manner to minimize entry of foreign materials into the enclosure.
 2. Enclosures shall be wall or rack mounted. Internal control components shall be mounted on a removable mounting pan. Mounting pan shall be finished white.
- B. Enclosure dimensions shall be based on door mounted component size and layout, components contained within, including terminal strips and wiring gutter.
- C. Enclosures shall be insulated and internal heating supplied to maintain temperatures 10F above the highest minimum operating temperature of any of the components installed in the panel.

2.02 CONTROL PANELS (CP)

- A. The Contractor shall furnish the CP(s) to satisfy the functional requirements on the drawings. Each CP shall be fabricated with UL labeled components and the CP's shall be Listed as Assemblies. Panels not specifically specified as being provided in other Sections of the Specification shall be furnished and installed under this Section. All panels shall be wired under this Section.
- B. The CP controls shall be 120 volt maximum. Control conductors shall be copper, #14 AWG minimum, SIS or MTW, 600V."
- C. Each CP shall be provided with identified terminal strips for the connection of all external conductors. The Contractor shall provide sufficient terminal blocks to connect 25 percent additional conductors for future use. Termination points shall be identified in accordance with the plans. The terminal strip listed shows only external connections and internal numbering is to be provided by the manufacturer. All equipment associated with the CP(s) shall be ready for service after connection of conductors to equipment, controls, and CP(s).
- D. All internal wiring shall be factory-installed and shall be contained in plastic raceways or troughs having removable covers. Wiring to door-mounted devices shall be extra flexible and anchored to doors using wire anchors cemented in place. Exposed terminals of door-mounted devices shall be guarded to prevent accidental personnel contact with energized terminals.
- E. The control power disconnect shall have a door-mounted handle unless otherwise specified or shown.
- F. Identification of panel-mounted devices, conductors, and electrical components shall meet the requirements specified elsewhere.
- G. All panel-mounted devices shall be mounted a minimum of 3 feet above finished floor elevation.

2.02 CP COMPONENTS

- A. As listed on the Plans

2.03 FACTORY TESTING

- A. Each CP shall be factory assembled, and tested for sequence of operation prior to job site delivery.
- B. Factory test shall be scheduled and the Project Manager and Engineer notified 2 weeks prior to testing.
- C. All panels to be provided for this project shall be tested during the same session.
- D. Factory test will be witnessed by the Engineer or other Authority - designated representative. Panels may not be shipped until tests are completed to the Engineer's approval. Approval must be in writing.
- E. If panel manufacturer is outside of the state, all expenses required to bring the Engineer or Authority's representative to the manufacturer's facility shall be borne by the Contractor.

2.04 SPARE PARTS

- A. Provide a minimum of 10% spare lamps (minimum 2) and one spare lens for each color pilot lamp in each panel.
- B. For each panel, provide 1 each relay, motor starter, contactor, switch and pushbutton of types contained within that panel. Components shall be delivered to the Authority in original shipping boxes suitable for long term storage.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. CP(s) shall be installed in accordance with the requirements specified Division 16 and in accordance with the Manufacturer's recommendations.
- B. CP(s) shall be protected at the job site from loss, damage, and the effects of weather. CP(s) shall be stored in an indoor, dry location. Heating shall be provided in areas subject to corrosion, and humidity.
- C. CP(s) interiors, and exteriors shall be cleaned, and coatings shall be touched up to match original finish upon completion of the work.
- D. Conduit, conductors, and terminations shall be installed in accordance with the requirements specified elsewhere.

3.02 FIELD TESTING

- A. Functional Test

1. Panel operation will be demonstrated after all components and sensors associated with each panel have been installed and individually tested and calibrated or adjusted.
 2. The demonstration shall be witnessed by Engineer or other designated Authority representative.
 3. AUTO functions may be tested with simulated inputs. Input to be enabled as near to the actual device as possible, i.e., at the float terminals in the case of float controls.
- B. Panel functions to be tested include all manual and automatic functions, all alarms and status displays and the emergency shutdown where installed. The Functional Narratives and Operational Instructions on the drawings will form the basis of the operational test.
- C. Acceptance.
1. Contractor will repair, replace as necessary components/sensors that fail. Testing will be repeated until panels are accepted.
 2. Travel, labor and subsistence costs for subsequent trips to the project site to test the panels shall be borne by the Contractor.

END OF SECTION

APPENDIX A

Geotechnical Report



GEOTECHNICAL REPORT

For

Kake Rural Power System and Bulk Fuel Upgrade
Kake, Alaska

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April 15, 2016

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GEOTECHNICAL REPORT KAKE RURAL POWER SYSTEM AND BULK FUEL UPGRADE ALASKA INDUSTRIAL DEVELOPMENT AND EXPORT AUTHORITY/ ALASKA ENERGY AUTHORITY KAKE, ALASKA

1.0 INTRODUCTION

Upgrades are currently planned for the Power Plant System and bulk fuel storage facility (tank farm) in the City of Kake, Alaska. The Rural Power System Upgrade (RPSU) for the Inside Passage Electric Cooperative (IPEC) consists of designing and constructing a new power plant and associated piping. The Bulk Fuel Upgrade (BFU) for the Kake Tribal Corporation (KTC) consists of the replacement of the existing KTC fuel tanks, marine header, vehicle dispensers, and truck fill dispenser, and construction of a new tank farm.

HDL Engineering Consultants, LLC (HDL) has completed a Concept Design Report (CDR) and is under contract with the Alaska Industrial Development and Export Authority/Alaska Energy Authority (AIDEA/AEA) to produce design plans for both the RPSU and BFU. In order to design the projects, a geotechnical evaluation was conducted to evaluate the subsurface conditions near the locations of the proposed upgrades and construction.

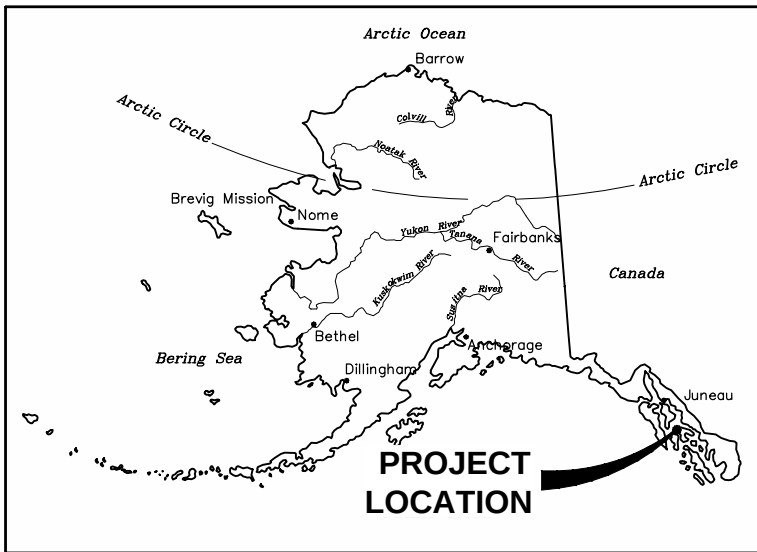
The purpose of this report is to present the results of subsurface explorations and laboratory testing and provide geotechnical recommendations for the proposed RPSU and BFU. The geotechnical recommendations for the project include foundation and site development. Included in this report are descriptions of the site, test pit logs, laboratory test results, interpretation of the subsurface conditions, and recommendations for the proposed construction.

2.0 SITE AND PROJECT DESCRIPTION

The proposed project sites are located south of Kake along Keku Road as shown on Figure 1 – Vicinity Map. The new IPEC power plant is proposed to be located on the same lease parcel as the existing power plant along the east side of Keku Road. The proposed IPEC power plant is to be modular construction with the generator and associated equipment housed within the structure. The proposed power plant is expected to develop average static foundation loads of approximately 1600 pounds per square foot.

The proposed location of the KTC tank farm has moved during the design process. The originally proposed location for the tank farm was farther upslope compared to the currently proposed location. The currently proposed KTC tank farm is on a parcel owned by the City of Kake, approximately 200 to 300 feet east-southeast of the existing IPEC storage tanks. The proposed storage area will consist of:

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ALASKA INDUSTRIAL DEVELOPMENT AND
EXPORT AUTHORITY
ALASKA ENERGY AUTHORITY

1
KAKE RURAL POWER SYSTEM
AND BULK FUEL UPGRADE
KAKE, AK
VICINITY MAP

- Two (2) 27,000-gallon, horizontal gasoline tanks
- Two (2) 27,000-gallon, horizontal diesel tanks (diesel)
- Two (2) 27,000-gallon, horizontal diesel tanks (diesel #1)
- One (1) 20,000-gallon dual product horizontal dispensing tank (diesel #1, #2)
- One (1) 10,000-gallon, single product dispensing tank.

Fills up to approximately 4-feet thick are anticipated to level the pad at the proposed tank farm. An oil and gas resistant geomembrane liner will be placed beneath the tank farm and over an area of contaminated soils.

The existing fuel dispensing station and truck fill located at the existing KTC Sales Building west of Keku Road will be replaced. The proposed truck fill facility will be located approximately 40-feet southwest of the proposed KTC tank farm and consist of a slab on grade concrete pad that is sloped to direct spilled fluids to a containment sump. The proposed containment sump will be approximately 2.5-feet wide, 4-feet deep and 22-feet long. A pre-engineered canopy is planned to cover the truck fill location and will be supported columns with an approximate spacing of 15-feet by 20-feet. The expected loads at the columns is approximately 20 kips.

The piping is proposed to be upgraded to current standards as part of the project. Up to six (6) lines that are up to 3-inches in diameter will be constructed along the pipe alignment. The piping will be located below grade from the marine header until it crosses Keku Road. The piping will continue below grade to the truck fill station and above grade to the tank farm.

The tanks in the existing IPEC storage area will be replaced with four (4), 20,000-gallon, horizontal diesel tanks. The current plans also call for the removal and replacement of the liner from the existing IPEC storage area. Two (2) 20,000-gallon tanks will be temporarily relocated to the area northwest of the existing power plant to facilitate construction. To level the temporary tank pad site, fills up to approximately 3 feet thick are anticipated.

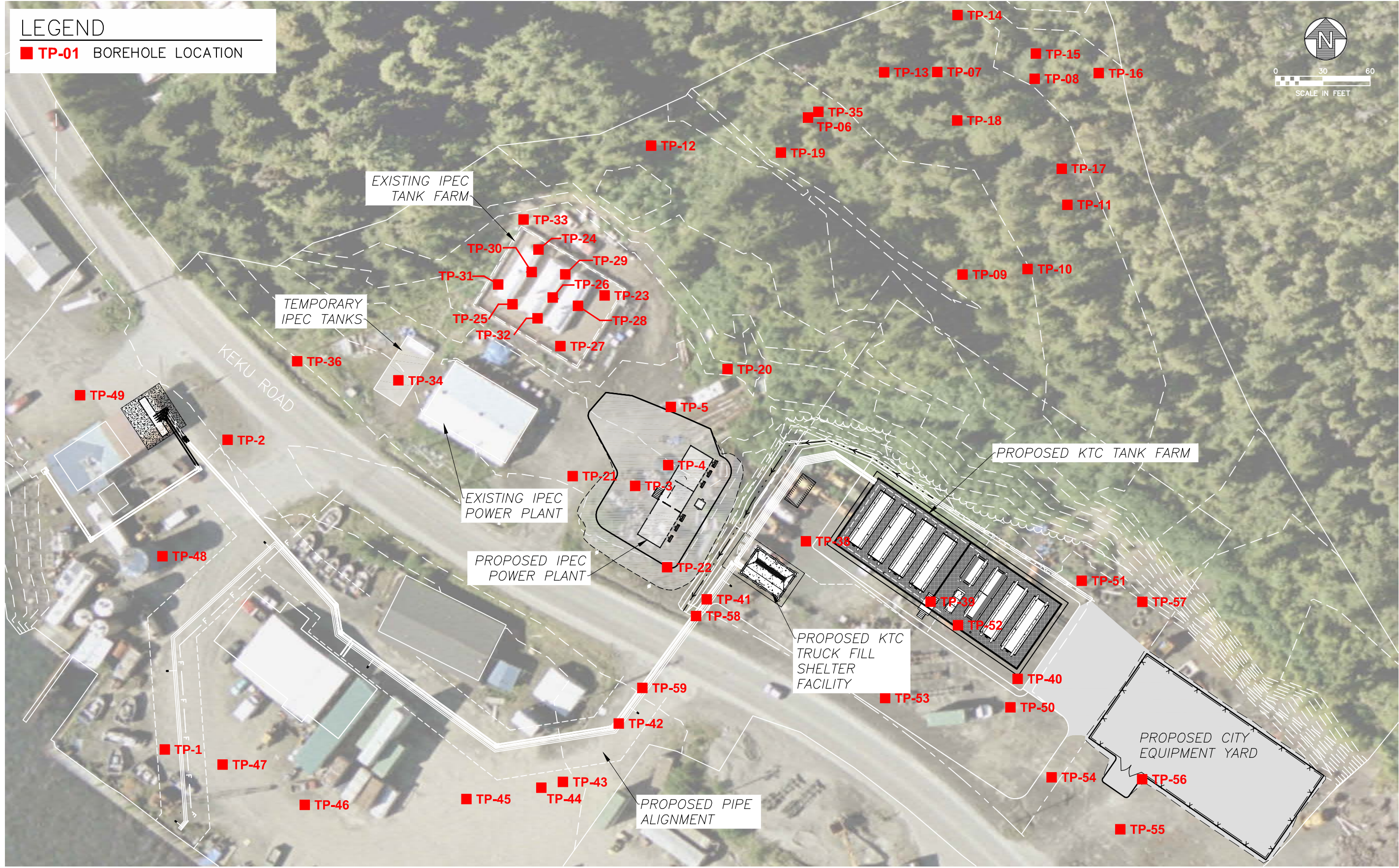
Refer to Figure 2 – Test Pit Location Map for further details of the existing site configuration, proposed piping, storage tanks, access road, and power plant.

3.0 EXISTING LITERATURE REVIEWED

HDL reviewed geotechnical data available from previously completed evaluations in the area. Test holes and test pits were dug, and rock outcrops were evaluated in the area and discussed in reports composed by Golder Associates and R&M Engineering, Inc. in 2009 and 1993, respectively. A brief summary of the reports reviewed is provided below.

- *Geotechnical Investigation Report, Kake to Seal Point Road, Golder Associates, October 2009*
A subsurface evaluation was performed to investigate the conditions along the proposed road from Kake to Seal Point Road. The exploration consisted of 30 test pits, excavated to depths ranging from 6.5 to 16 feet below existing ground surface (bgs). Six

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(6) borings were drilled to a maximum depth of 35.5 feet and six (6) rock cores were drilled to an average depth of 60.1 feet. The project started approximately 2.0 miles south of the proposed site. Additional subsurface information was gathered from 41 test pits, borings, and soil probes performed in 2007 as part of the project. Subsurface conditions varied along the length of the proposed project. In general, glacial and post-glacial sand and gravel deposits were found at the surface followed by silt and peat with varying thicknesses of silty clay strata to shallow bedrock.

Laboratory testing on the silty clay strata included unidirectional consolidation which resulted in an average preconsolidation pressure (P_c) of 3,550 pounds per square foot (psf), an initial void ratio (e_0) of 0.95, an average Compression Index (c_c) of 0.3, an average Recompression Index (c_r) of 0.1, and an average Coefficient of Consolidation (c_v) for 90% consolidation of 32.5 inch²/day at 1,000 psf.

Bedrock was described as fresh to slightly weathered, fractured, jointed with iron-oxide staining, dark gray to green, very fine to fine grained, medium strong to strong, greywacke, and fresh to slightly weathered, jointed and calcite veined, dark gray, medium strong argillite. The rock was described as having uniaxial compressive strength between 3,500-15,000 psi.

In addition to the investigation report for the new roadway, a material source investigation was performed on an existing limestone quarry seven (7) miles southeast of Kake. Four (4) borings were performed along with mapping of the on-site material source. Overlying the bedrock was approximately five (5) feet of glacial silt along with trees and plants common to the area. The primary target rock was described as fresh to slightly weathered, jointed with orange staining, calcite veins, orangish tan, strong to very strong, limestone with fossils. Overall, the rock source was characterized by low fracture intensity and high compressive strength.

- Geotechnical Investigation Report, Kake Elementary School, R&M Engineering, December 1993

A field investigation was performed for the Kake Elementary School located approximately 0.5 miles north of the proposed project. Five (5) test borings were performed to a maximum depth of 19.5 feet bgs. The borings encountered varying overburden ranging in thickness from 0.5 feet to 12 feet, overlying bedrock. Bedrock was generally described as soft, thinly stratified greywacke and argillite.

In general, the previous subsurface evaluations suggested a thin vegetated mat underlain by varying thicknesses of glacial and post-glacial deposits followed by shallow greywacke and argillite bedrock. Groundwater was encountered at varying depths during test pit excavation and borehole drilling, but generally ranged from at the surface to 13 feet bgs.

4.0 SITE CONDITIONS

The following sections describe the general geology and climate of the region. Observations of the condition of the existing facilities and a nearby quarry are also provided below.

4.1 General Geology

The project site is located in the Kupreanof Lowland section of the Coastal Trough Province. Like most of Southeast Alaska, this area has been heavily glaciated and post-glacial deposits cover shallow bedrock. As described in the Physiographic Divisions of Alaska¹, the section generally contains islands having local relief of 300 to 500 feet and a typical maximum relief of 1,000 to 1,500 feet. The lowland islands are separated by a network of waterways and occasional round, hummocky summits 2,000 to 3,000 feet in elevation are scattered throughout the region.

Kake is located within the Alexander Terrane, which is made up of sedimentary, volcanic, and metamorphic rock.² Bedrock at the project location is assumed to be a part of the Cannery Formation, which is composed of thinly interbedded chert, argillite, greywacke, limestone, and pillow basalts that range from Devonian to Permian in age.³ The dominant rock types of the Cannery Formation near Kake are thinly bedded, gray, tuffaceous volcanic argillite and fine-grained gray tuffaceous volcanic greywacke, overlying black and teal-green chert. Thin to medium bedded, siliceous oolitic limestone and volcanic pillow basalts occur locally throughout the formation. The Cannery Formation has been intensely deformed by regional folding and faulting making its thickness and exact stratigraphy difficult to assess. The Kake Anticline trends northwest following the coast of Kupreanof Island and runs through the City of Kake.⁴

There are no glaciers or permafrost near the project location. However, there are numerous streams that traverse the region and generally follow the troughs created by the glacial ice sheets.

4.2 Climatology

Kake is located within the southeast maritime climate zone, which is generally characterized by cool summers, mild winters, and rainy weather year round. The average temperature in the month of July is approximately 55°F while the average temperature in the month of January is approximately 31°F.⁵ Kake receives an average of 54 inches of rain per year and 44 inches of snow.⁶

¹ Wahrhaftig, Clyde, 1965. "Physiographic Divisions of Alaska", U.S. Geological Survey Professional Paper 482

² Stowell, Harold Hilton. Geology of Southeast Alaska: Rock and Ice in Motion. Fairbanks: U of Alaska, 2006. Print.

³ Karl, S.M., Layer, P.W., Harris, A.G., Haeussler, P.J., and Murchey, B.L., 2010, The Cannery Formation--Devonian to Early Permian arc-marginal deposits within the Alexander Terrane, Southeastern Alaska, in Dumoulin, J.A., and Galloway, J.P., eds., Studies by the U.S. Geological Survey in Alaska, 2008-2009: U.S. Geological Survey Professional Paper 1776-B, 45 p.

⁴ Muffler, L.J.Patrick., 1967, Stratigraphy of the Keku Islets and neighboring parts of Kuiu and Kupreanof Islands, southeastern Alaska: U.S. Geological Survey Bulletin 1241-C, p. C1-C52, 1 sheet, scale 1:63,360

⁵ Western Regional Climate Center. (2006). *Kake, Alaska*. <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?akake>.

⁶ United States of America. Department of Commerce, Community, and Economic Development. Community and Regional Affairs. N.p.: n.p., n.d. Community Database. Web. 07 May 2015.

<<http://commerce.state.ak.us/cra/DCRAExternal/community/Details/9aa30fae-6452-4097-83b9-10a4cd761165>>.

4.3 Observations of Existing Facilities

The general condition of the existing IPEC facilities was observed for signs of embankment instability or settlement. There were no signs of instability or settlement observed at the existing power plant. There were no signs of instability observed along the embankment supporting the existing IPEC bulk fuel storage tanks. There was separation between base of existing storage tank #3 and fourteen (14) of the underlying timber supports (seven (7) on each side). The separation was generally greater at the ends of the tank and decreased toward the center with up to 0.6 inches of separation measured. No visible separation was observed more than approximately 11 feet from the ends of the tank.

4.4 Observations of Breakwater Pit

We understand that the Breakwater Pit, (also known as the McCartney Pit) is the most commonly used source of aggregate in the Kake area and the general condition of the pit was observed. The quarry is located approximately 7.5 miles north of the proposed projects along McCartney Road and is reported to be one of the more frequently used material sources in the area. Stockpiles of riprap, 3-foot minus, and 3-inch minus material were observed. The stockpiles of riprap material generally consisted of sorted boulders which appeared to be consistent with DOT&PF Standard Specifications, 2015 (Specifications), for Class III riprap. The 3-foot minus material generally consisted of unsorted, shotrock product that ranged in size from 3-foot diameter boulders to fine sand passing the #100 sieve. The 3-inch minus material generally consisted of well-graded gravel, fine to coarse, some sand, fine to coarse, trace silt.

The rock appeared to be composed mainly of slightly weathered, dark-gray to greenish-gray greywacke. Red-orange and blue-green staining was observed on weathered surfaces and fracture planes. The rock was generally medium to very thickly bedded with a total outcrop height ranging between 3 and 40 feet.

The quarry was approximately 1,000 to 1,200 feet long and 300 feet wide. The quarry was split into two working sections, a north section and south section. Surface water was observed in multiple locations, including, but not limited to, a small stream running along the north edge of the quarry and a small drainage splitting the north and south sections.

5.0 FIELD EXPLORATIONS

HDL staff observed excavation of fifty-nine (59) test pits, designated TP-01 through TP-59 near the formerly and currently proposed locations of the modular power plant, tank farm, and other improvements. HDL also observed the condition of an exposed rock face located immediately northeast of the proposed KTC tank farm and visited the Breakwater Pit located 7.5 miles north of the project. Field work was performed in three mobilizations: between May 26th and May 28th, 2015; October 19th and October 22nd, 2015; and January 27th and January 29th, 2016. Fieldwork was performed in general accordance with the procedures outlined in the Alaska Department of Transportation and Public Facilities (DOT&PF) "Alaska Geotechnical Procedures Manual", dated 2007.

Test pits near the proposed fuel lines and power plant were located in the field by bearing and tape measurements from existing features. Test pits near the previously proposed tank farm location were located using a handheld GPS. Test pits near the currently proposed KTC tank farm were located by survey. Refer to Figure 3, Test Pit Location Map, for the approximate test pit locations.

A Caterpillar® 420E backhoe was used to excavate test pits TP-01 and TP-02. A Caterpillar® 225DLC excavator was used to excavate test pits TP-03 through TP-12. A Hitachi EX100 excavator was used to excavate test pits TP-13 through TP-22 and TP-38 through TP-59. Test pits TP-23 through TP-37 were dug with hand tools. Dynamic Cone Penetration (DCP) tests were performed at select locations and intervals within the test pits to evaluate the relative in situ soil densities in general accordance with procedures outlined in the United States Army Corps of Engineers (USACE) report “Description and Application of Dual Mass Dynamic Cone Penetrometer”, dated May 1992. DCP blow counts are reported as blows per 1¾-inch interval, which is defined as the Penetration Resistance (PR).

Test pits were advanced to depths of approximately 0.5 to 17.0 feet bgs. An experienced HDL Engineering Assistant, Jeremy Dvorak, E.I.T., was present during excavation to locate the test pits, collect samples, log subsurface conditions, and observe groundwater depths, where encountered. Recovered soils were described in the field in general accordance with ASTM International Standard (ASTM) D2488. Samples were collected and delivered to HDL’s laboratory for further testing. Environmental screening was performed by Braunstein Geological & Environmental Services (BGES) at test pits TP-38 through TP-50, TP-52, and TP-53. Please see the February 2016 report by BGES, *Kake Bulk Fuel Upgrades, Kake, Alaska, Environmental Soils Assessment Report*, for more information.

Soil descriptions were confirmed or modified according to the Unified Soil Classifications System (USCS), as summarized on Figure A1, based on the laboratory test results. As appropriate, samples were given a frost design classification in accordance with a modified United States Army Corps of Engineers (USACE) system as presented as Figure A2, Frost Design Soil Classification.

The test pit logs corresponding to the currently proposed project locations are included in Appendix A. The test pit logs corresponding to the previously proposed project locations are included in Appendix C.

6.0 LABORATORY TESTING

Laboratory testing of the soil samples was conducted at HDL’s American Association of State Highway and Transportation Officials (AASHTO) Materials Reference Laboratory (AMRL) accredited and USACE validated laboratory. Select laboratory tests were performed on samples recovered from the boring logs to confirm and/or modify field classifications and evaluate the properties of the soil.

Thirty-two (32) moisture content tests were performed in accordance with ASTM D2216. Sixteen (16) particle size analyses were performed in accordance with ASTM D422, two (2) of which included hydrometer tests. Six (6) P₂₀₀ tests, which measures the amount of material finer than the #200 sieve, were performed in accordance with ASTM D1140. Seven (7) Atterberg Limits tests performed in accordance with ASTM D4318. Ten (10) samples were tested for determination of organic content by the ignition method in accordance with ASTM D7348. One (1) Consolidation test was performed in accordance with ASTM 4186.

The results of the laboratory tests are depicted on the test pit logs A and C. The particle size distribution curves are also included in Appendix A. The consolidation test results and Atterberg Limit test results are included in Appendix C.

7.0 SUBSURFACE CONDITIONS

Test pits were excavated to evaluate subsurface conditions near the currently proposed KTC tank farm, IPEC power plant, marine header piping, and truck fill facility. In general, test pits west of Keku Road were excavated on what appeared to be man-made land (fill) composed of shot rock, clay, organics and miscellaneous trash to depth. Test pits excavated near the proposed power plant, tank farm, and truck fill facility encountered a layer of granular fill over bedrock. The subsurface conditions near the currently proposed improvements are further summarized below, and detailed information may be found on the test pit logs in Appendix A. Subsurface conditions at previously proposed locations are detailed in the boring logs within Appendix C, but will not be discussed further.

7.1 Proposed Power Plant

Four (4) test pits, designated TP-3, TP-4, TP-5, TP-21 were excavated near the proposed power plant. Test pits ranged in depth from 1.0 to 4.0 feet bgs. The test pits encountered layer of gravel that appeared to be a road surface course at the ground surface, that was 0.2 to 0.5 feet thick. Gravel fill was encountered below the surface course and was underlain by fractured bedrock. Based on laboratory test results, the moisture content of the gravel ranged from 1.7% to 4.1%. The measured fines content ranged from 4.4% to 7.7%, indicating non-frost susceptible (NFS) to slightly frost susceptible (F1) soils.

Bedrock was encountered at depths ranging from 0.5 to 2.0 feet bgs, and averaged 1.3 feet bgs. The CAT 225 DLC used to excavate the test pits was able to excavate up to 4.7 feet into the bedrock but the depth of bedrock excavation was typically must less.

7.2 Existing IPEC Tank Farm

Ten (10) test pits, TP-23 through TP-32, were excavated within the existing IPEC tank farm containment area to evaluate the depth of the fill above the liner. A layer of relatively uniform, sub-angular to sub-rounded gravel that was 0.6 to 1.2 feet thick was encountered in these test pits. Based on laboratory test results, the measured fines content of the gravel was 0.8%, indicating NFS soils. No groundwater was encountered in these test pits.

One (1) test pit, TP-33, was excavated near the existing IPEC tank farm pad to evaluate the embankment materials. The test pit was excavated to a depth of 4.5 feet bgs. The test pit encountered fill soils predominantly composed of shot rock gravel and pea gravel to the depth of the test pit. The test pit quickly filled with ground water as it was being excavated. Groundwater levels at the site will fluctuate depending on the season, temperature, and precipitation. Groundwater levels during construction may be higher or lower than those encountered in the test pits.

7.3 Currently Proposed KTC Tank Farm

Six (6) test pits, TP-38 through TP-40, TP-50, TP-52, and TP-53, were excavated near the proposed tank farm. Test pits ranged in depth from 1.5 feet to 6.0 feet bgs. In general, the test pits encountered a thin layer of gravel at the surface that appeared to be a road surface course that was 0.1 to 1.0 feet thick. Gravel was encountered below the surface course. Bedrock was encountered in all of the test pits in the area of the proposed tank farm. The depth to bedrock and observed depth of bedrock excavation in the test pits near the proposed KTC tank farm is summarized in Table 1, below. Due to site conditions and weather, stormwater and ground water was observed flowing into five (5) of the six (6) test pits, between the surface and 1.0 foot bgs. Groundwater levels at the site will fluctuate depending on the season, temperature, and precipitation. Groundwater levels during construction may be higher or lower than those encountered in the test pits.

Table 1 – Bedrock Conditions

Test Pit	Depth to Bedrock (ft bgs)	Depth of Bedrock Excavation (ft) ⁽¹⁾
TP-38	5.0	0.0
TP-39	3.0	0.0
TP-40	2.0	4.0
TP-50	1.5	0.5
TP-52	1.5	0.0
TP-53	1.0	2.0

⁽¹⁾ Test pits excavated with Hitachi EX100 Excavator with a 4-foot wide bucket with teeth.

7.4 Marine Header/Fuel Supply Piping

Thirteen (13) test pits, TP-1, TP-2, TP-41 through TP-49, TP-58 and TP-59 were excavated to evaluate the subsurface conditions near the new marine header piping. Test pits southwest of Keku Road ranged in depth from 4.0 feet to 9.0 feet bgs. In general, these test pits encountered a gravel surface course between 0.3 and 0.5 feet thick, underlain by fill material composed of what appeared to be shot rock, clay, and debris. Based on anecdotal evidence, the area southwest of Keku road consists entirely of fill material.

TP-42 and TP-43 encountered a 1.0 foot thick layer of clay fill between 1.0 and 2.5 feet bgs. TP-44 encountered a layer of clay fill that extended from 2.5 feet bgs to 8.5 feet bgs. The test pit was terminated when what appeared to be the frame of a vehicle was encountered. TP-1 and TP-2 were terminated due to difficult excavation in cobbles and gravel.

The proposed pipe alignment changed after the completion of the geotechnical Field Explorations. Based on the test pits and anecdotal evidence, fill materials similar to those described above are anticipated along the currently proposed alignment southwest of Keku Road.

Test pits TP-41 and TP-58 ranged in depth from 0.8 feet to 1.0 feet bgs. Stormwater was flowing across the surface at test pits TP-41 and TP-58 toward the drainage ditch along Keku Road. Gravel was encountered at the surface and was underlain by bedrock.

Based on laboratory test results, the moisture content of the gravel in test pits TP-1 and TP-2 ranged from 2.8% to 5.8%. Groundwater was not encountered in TP-1, TP-2, TP-42 through TP-49, and TP-59. Stormwater was encountered at the surface in TP-41 and TP-58 due to precipitation.

7.5 Truck Fill Facility

Three (3) test pits, TP-38, TP-41, and TP-58 were excavated near the proposed truck fill facility. The test pits ranged in depth from 0.8 feet to 5.0 feet bgs, with the shallower test pits closer to Keku Road. Gravel was encountered in TP-38, TP-41, and TP-58 and was underlain by bedrock. Stormwater and groundwater was observed between the surface and 1.0 foot bgs in all three test pits.

7.6 Temporary Tank Pad

One (1) test pit, TP-34, was excavated to evaluate the subsurface conditions near the proposed temporary tank pad. TP-34 was excavated to 1.5 feet bgs and encountered gravel, cobbles, and boulders down to the test pit termination depth. TP-34 was terminated due to difficult excavation in cobbles and gravel. Stormwater and groundwater was observed flowing into the test pit.

7.7 Exposed Rock Face

The bedrock conditions were observed along the rock face located northeast of the proposed tank farm. The bedrock observed consisted of slightly weathered to moderately weathered, light-to dark-gray greywacke. Red-orange and blue-green staining was observed on weathered surfaces and fracture planes. The rock was generally medium to very thickly bedded with a total outcrop height ranging between 10 and 35 feet. The rock transitioned from highly fractured to massive at multiple locations along the exposed face with displacement observed at some of these locations. Local folding was also present at a number of locations along the rock face.

One (1) strike and dip measurement was collected resulting in a bedding plane strike of approximately 110° with a measured dip of 24°NE. In general, this was consistent with observations of the majority of the rock face. Localized fractures were observed near the

northeast corner of the proposed KTC tank farm that were not consistent with the general orientation of much of the face. Two strike and dip measurements were collected in this area resulting in a bedding plane strike of approximately 120°- 135° with a measured dip of approximately 35° - 50° SW.

7.8 Aggregate Stockpiles

Three test pits, TP-51, TP-56, and TP-57 were excavated in stockpiles of aggregate located on or near the proposed tank farm. TP-51 and TP-57 were performed in a stockpile of material that was reportedly excavated from Keku Road. The material generally consisted of well-graded gravel with sand and silt. Cobbles and boulders were also present.

TP-56 was performed in a stockpile of material that was excavated from Gunnak Creek. The material generally consisted of well-graded gravel with sand and silt. Cobbles and boulders were also present.

8.0 ENGINEERING ANALYSIS & RECOMMENDATIONS

Design of any structure's foundation must consider the bearing support capabilities of the supporting soils as well as the expected settlements and effects of seasonal frost action. In addition, geotechnical considerations must be accounted for in the design of other components of the project. A summary of the geotechnical considerations identified, options for design and construction, and geotechnical recommendations are provided below.

8.1 Site Work

The following sections provide a summary of several geotechnical considerations for site development.

8.1.1 Site Preparation

To grade the site, the Contractor should remove all surface soils containing significant organic contents to a depth approved by the Engineer. After removal of the surface organics, the exposed subgrade should be proof rolled to confirm a firm, unyielding surface in the presence of the Engineer. If deleterious soils are noted during site preparation, the soils should be over-excavated and replaced with compacted Structural Fill at the direction of the Engineer. The Structural Fill should be placed in lifts not exceeding 8 inches loose thickness and compacted to a density of at least 95 percent of the maximum density as determined by the Modified Proctor compaction procedure, ASTM D1557. The maximum dimensions of any particle of the fill material shall not be greater than two-thirds (2/3) of the compacted thickness of the layer in which it is placed.

Where deleterious materials are encountered near proposed foundations, they should be completely removed throughout the foundation influence zone, which can be defined by extending a line outward and downward from the bottom edges of the footing on a slope of 1-horizontal to 1-vertical (1H:1V).

Erosion control should be utilized on all slopes. Erosion Control Aggregate should be utilized on slopes with a relationship between (1H:1V) and (1.5H:1V). Slopes shallower than (1.5H:1V) should either utilize erosion control aggregate facing or be seeded.

Stripped surface soils should not be utilized for Structural Fill, but may be used as topsoil in areas to be seeded.

The risk of damage to the oil and gas resistant geomembrane liner and the containment liner should be reduced by placing two layers of non-woven geotextile fabric above and below the geomembrane liner. A minimum of eighteen (18) inches of fill should be placed above the geomembrane liner over contaminated soils outside the containment berm. A minimum of ten (10) inches of fill should be placed above the geomembrane liner below or inside the containment berm. A minimum of six (6) inches of fill should be placed above the containment liner.

The non-woven geotextile fabric should have a minimum weight of eight (8) oz per square yard and 450 pound minimum CBR puncture strength, per ASTM D-6241. One potential geotextile that meets these requirements is Mirafi 180N.

8.1.2 Bedrock Removal

Removal of bedrock may be required in areas of the projects including but not limited to the proposed truck fill facility, and the below-ground section of the pipe alignment northeast of Keku Road, as well as beneath Keku Road. Based on site observations and evidence from nearby construction projects, bedrock is rippable in some sections but not in others. Based on anecdotal evidence, a hydraulic breaker attachment on an excavator may be able to break the rock to obtain the design grades

8.1.3 Aggregate Materials

The Structural Fill should be a reasonably well graded aggregate meeting the gradation detailed in Table 2, Aggregate Materials Specifications. The driving surface of the proposed project should consist of material meeting the Specifications requirements for Aggregate Surface Course, Gradation E-1 (E-1, Surface Course, CASC). Gradation requirements are detailed in Table 2, Aggregate Materials Specifications. The Erosion Control Aggregate and Bedding Material should be aggregate meeting the gradation detailed in Table 2, Aggregate Material Specifications. It is likely that material meeting the specifications for Surface Course, Structural Fill, Bedding Material, and Erosion Control Aggregate will be locally available.

The drainage rock material placed over the containment liner should consist of rounded or sub-rounded, clean, uniform, gravel. Gradation requirements are detailed in Table 2, Aggregate Material Specifications. It is likely that rounded gravel meeting these requirements will have to be imported.

The aggregate materials should not contain muck, frozen material, roots, sod or other deleterious matter, and not have a PI greater than six (6) percent. The Structural Fill and Aggregate Surface Course should be placed in lifts not exceeding 8 inches loose thickness and

compacted to a density of at least 95 percent of the maximum density as determined by the Modified Proctor compaction procedure, ASTM D1557. The drainage rock material should be placed and lightly compacted with hand operated compactors.

Table 2 – Aggregate Material Specifications

SIEVE	Material				
	Structural Fill	Bedding Material	Erosion Control Aggregate	Surface Course	Drainage Rock Material
8"	-	-	100	-	-
6"	-	-	50-80	-	-
4"	-	-	25-50	-	-
3"	100	-	0-25	-	-
2"	75-100	-	0-10	-	-
1"	-	100	-	100	100
3/4"	-	-	-	70-100	90-100
1/2"	-	-	-	-	50-70
3/8"	-	-	-	50-85	20-50
No. 4	15-60	15-60	-	35-65	0-10
No. 8	-	-	-	20-50	-
No. 50	-	-	-	13-30	-
No. 100	-	-	-	-	-
No. 200	0-10	0-10	0-1	8-15	0-1

8.2 Seismic Analysis

The site characterization criteria found in the 2009 International Building Code (Code) should be used for design. The seismic design criteria are found in Chapter 16, Section 1613 of the Code. The Code requires that the site characterization be determined by soil and rock parameters. Based on the subsurface conditions encountered, we recommend the site be considered Seismic Site Class "D". The maximum considered earthquake ground motion spectral response accelerations for short period and for one-second peaks were calculated utilizing the United States Geological Survey's (USGS's) Earthquake Hazards Program; results of which are summarized in the table below.

Table 3 – Seismic Design Criteria

IBC 2012 Seismic Design Criteria	Value
Spectral Response at Short Periods, S_s	0.422
Spectral Response at 1-Second Period, S_1	0.353
Site Class	D
Site Coefficient F_a	1.462
Site Coefficient F_v	1.695
Site Adjusted Spectral Response at Short Periods, S_{MS}	0.617
Site Adjusted Spectral Response at 1-second Periods, S_{M1}	0.598

8.3 Foundation Analyses

Design of any structure's foundation must consider the bearing support capabilities of the supporting soils as well as the expected total and differential settlements. The foundation system must also consider the risk of failure and the cost of construction.

The proposed tank farm is generally underlain by gravel above bedrock as shown on the test pit logs. Based on the subsurface conditions and the proposed structure, the proposed fuel storage tanks and containment berms can be supported by shallow spread footing foundations.

The proposed power plant will be constructed on an embankment of compacted Structural Fill underlain by shallow bedrock. Therefore, we recommend a shallow, spread footing foundation system be used to support the proposed power plant.

The proposed truck fill facility will be located in an area of gravel underlain by shallow bedrock. Therefore, a shallow foundation system is recommended at this location as well. Refer to the discussion below for additional information.

8.3.1 Allowable Bearing Pressures

The proposed power plant, fuel storage tanks, and truck fill facility will be constructed on an embankment of compacted, Structural Fill. Assuming the Structural Fill will have an internal friction angle of at least 34 degrees, the recommended allowable bearing capacity is 3,000 psf for the proposed power plant and fuel storage tanks. The recommended allowable bearing capacity is 1,800 psf for the proposed truck fill facility. The proposed power plant and fuel storage tanks should be underlain by a minimum of one (1) foot of compacted Structural Fill or Surface Course.

The fill at the existing tank facility appeared to be consistent with the fill west of Keku Road. It appears that the separation observed between the existing tanks and timber foundations was due to poor compaction of the gravel on the liner. We recommend an allowable bearing capacity of 3,000 psf for the replacement tanks in the existing tank facility.

The proposed temporary tank pad will be constructed on an embankment of compacted, Structural Fill. Assuming the Structural Fill will have an internal friction angle of at least 34 degrees, the recommended allowable bearing capacity is 3,000 psf for the proposed temporary tank pad. The proposed temporary tank pad should be underlain by a minimum of one (1) foot of compacted Structural Fill or Surface Course.

These recommendations assume that fill will consist of Structural Fill that is placed and compacted to a minimum of 95% of the maximum dry density per ASTM D1557. It also assumes that the proposed foundations will remain in contact with the underlying soils and separation will not occur. Foundations should not bear directly on bedrock and a minimum of one (1) foot of Structural Fill should be placed between the base of the foundation and bedrock.

8.3.2 Settlement

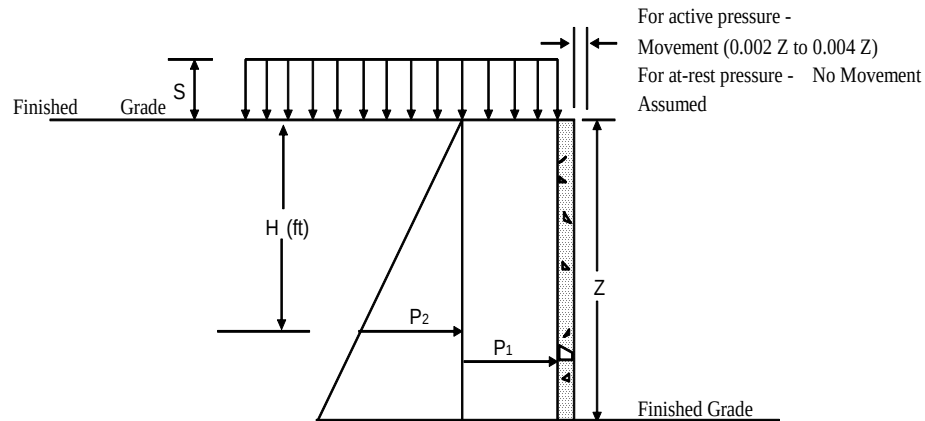
The granular materials at the proposed sites will be subject to settlement due to elastic compression as a result of the loads applied. The anticipated total and differential settlement is expected to be less than 1-inch and 0.5 inches over a distance of 50 feet for foundations bearing on granular materials.

8.3.3 Sliding

We understand that cast-in-place concrete will be used to construct the foundation systems for the fuel storage tanks, and dispensing facility. The recommended sliding coefficient is 0.55. If upon completion of foundation excavation, subsurface conditions differ from those assumed above, we should be contacted to determine whether our recommendations need to be modified.

8.4 Lateral Loads

Based on the proposed design, the truck fill containment sump will experience unbalanced backfill levels on opposite sides and should be designed for earth pressures at least equal to those indicated in the following table. Earth pressures will be influenced by structural design of the walls, conditions of wall restraint, methods of construction and/or compaction and the strength of the materials being restrained. Two wall restraint conditions are shown. Active earth pressure is commonly used for design of freestanding cantilever retaining walls and assumes wall movement. The "at rest" condition assumes no wall rotation. The recommended design lateral earth pressures are for steel or reinforced concrete walls and do not include a factor of safety or any provision for possible hydrostatic pressure on the walls.



EARTH PRESSURE CONDITIONS	COEFFICIENT FOR BACKFILL TYPE	EQUIVALENT FLUID PRESSURE (pcf)	SURCHARGE PRESSURE, P_1 (psf)	EARTH PRESSURE, P_2 (psf)
Active (K_a)	Structural Fill - 0.28	41	$(0.28)S$	$(41)H$
At-Rest (K_o)	Structural Fill - 0.44	64	$(0.44)S$	$(64)H$
Passive (K_p)	Structural Fill - 3.6	522	---	---

Conditions applicable to the above recommendations include:

- For active earth pressure, wall must rotate about base, with top lateral movements 0.002 Z to 0.004 Z, where Z is wall height
- For passive earth pressure, wall must move horizontally to mobilize resistance.
- Uniform surcharge, where S is surcharge pressure
- In-situ soil backfill weight a maximum of 145 pcf
- Horizontal backfill, compacted to at least 95% of the ASTM D1557 maximum dry density
- Loading from heavy compaction equipment not included
- No groundwater acting on wall
- No safety factor included
- Ignore passive pressure in frost zone

Backfill placed against walls should consist of Structural Fill. For the values to be valid, the backfill should extend out from the base of the wall at an angle of at least 45 and 60 degrees from vertical for the active and passive cases, respectively. Additional design considerations are required where these conditions are not met.

These pressures do not include the influence of surcharge loads during construction, traffic, equipment or floor loading, which should be added.

8.5 Pipe Foundations

The piping from the marine header to the tank farm will be underground from the header to the proposed truck fill facility. From there, the pipes will be above ground and supported by braces founded on shallow cast-in-place concrete piers placed on 12 inches of NFS gravel. These braces will be located approximately every ten feet along the above-ground section of piping. These shallow pads will be designed to resist lateral and vertical movements. The foundation should bear on competent soil below the surface organics or other deleterious material.

8.6 Frost Susceptibility

Kake is in a region of mild freeze and thaw cycles. Soils throughout the project site ranged from frost susceptible (F4) to non-frost susceptible (NFS). The Structural Fill with up to 10 percent fines will be more susceptible to frost action than if NFS fill was used and seasonal frost related movements could be as much as 0.5 inches. The risk of movement due to frost action could be reduced if NFS material was used but the NFS material would likely cost more.

8.7 Available Construction Materials

Based on our observations of Breakwater Pit, laboratory testing and field observations of nearby material stockpiles, and phone conversations with local contractors, material sources around Kake are capable of producing the Structural Fill, Bedding Material, and Surface Course recommended in this report. During the most recent field exploration multiple test pits were performed in aggregate stockpiles located near the project site. These stockpiles contained aggregate from local material sources. Based on laboratory testing, these stockpiles may be able to meet the requirements for Structural Fill and Bedding Material, however screening of oversized material may be required. Independent verification of the quality and quantity of available materials was beyond the scope of this project.

8.8 Drainage and Dewatering

The site should be graded to direct surface water away from the proposed tank farm, proposed power plant, existing tank fill facility, and the proposed truck fill station.

Based on observed groundwater depths, subdrains are not required for the anticipated shallow foundation system. However, shallow groundwater and surface water infiltration should be anticipated for all excavations.

8.9 Utility Trenches

The marine header pipelines southwest of Keku Road will likely encounter gravel and cobbles to a depth of approximately four (4) feet bgs. These soils should provide adequate pipe support provided the in situ soils are consistent with those encountered in the test pits. Settlement in this area may be caused by the changing of load conditions. Storage of fill, equipment, and/or shipping containers should be avoided in areas directly above the proposed pipelines.

The marine header pipelines immediately northeast of Keku Road and near the truck fill facility will likely encounter gravel followed by shallow bedrock between 0.8 and 5.0 feet bgs. Bedrock should either be ripped using an excavator, broken using a hydraulic breaker attachment on an excavator or blasted to obtain the necessary grade. The transition between areas where bedrock removal and soil excavation will be required for pipeline construction will likely occur beneath or near to Keku Road. However, the precise location is unknown.

Bedding Material should meet the requirements described in section 8.1.3 and the bedding should be a minimum of 12 inches thick.

Structural Fill should be used as backfill, above the bedding material. Compaction requirements for trench materials above the pipe are largely dependent upon the type of material and future support requirements. As a guide, below roadways or parking lots, the trench material should be compacted to 95 percent of the maximum dry density as measured per ASTM D1557. In non-structural areas, the relative compaction should be a minimum of 90 percent of the maximum dry density as measured by per ASTM D1557.

8.10 Excavations and Shoring

It is assumed that temporary excavations will be needed to support utility and potentially foundation construction. We estimate that Structural Fill and the on-site shot rock fill will stand at an estimated relationship of 1.5 horizontal to 1 vertical on a temporary basis and 2 horizontal to 1 vertical on a long term basis. The on-site silts and clays will stand near vertical on a temporary basis so long as they are protected from degradation from surface water. The above slopes assume a dewatered condition. Unsupported trench walls with steeper slopes may be unstable and could potentially fail. If steeper trench walls are required we recommend that vertical bracing be designed to withstand a rectangular lateral soil pressure distribution and if it is below the water table, water pressure must be accounted for in the pressure distribution. Additional loads from adjacent equipment and structures must also be accounted for in the pressure distribution.

Dewatering or other groundwater control techniques may be required to maintain an open trench in the project area. As stated previously, groundwater levels are variable and can fluctuate. The need for dewatering will depend on the time of year for construction and the depth of the trench. Heavy precipitation may cause soils to become saturated and less stable. Surface water should be directed away from the excavations.

It is recommended that the trench side slopes, trench bottom conditions, and dewatering efforts be made the responsibility of the contractor as he is present on a day to day basis and can adjust his efforts to obtain the needed stability, trench conditions, and meet the applicable Alaska and Federal Occupational Safety and Health Administration (OSHA) safety regulations. Deviation from the OSHA stipulations requires the approval of a licensed Professional Geotechnical Engineer.

9.0 CLOSURE AND LIMITATIONS

The analysis and conclusions included in this report are based on site conditions as they exist in the test pits completed by HDL. The analysis and conclusions assume that the exploratory test pits are representative of the subsurface conditions throughout the site, that is, that the subsurface conditions everywhere are not significantly different from those disclosed in the test pits. If, during construction, subsurface conditions are different from those encountered, advise us at once so we can review these conditions.

If substantial time has elapsed between submission of this report and the start of work at the site, or if conditions have changed because of natural causes or construction operations at or adjacent to the site, we recommend that this report be reviewed to determine the applicability of the conclusions considering the time lapse or changed conditions.

Unanticipated soil conditions are commonly encountered and cannot be fully determined by merely taking soil samples or advancing borings. Such unexpected conditions frequently require additional expenditure to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs.

Prepared by:
HDL Engineering Consultants, LLC

Reviewed By:
HDL Engineering Consultants, LLC

Jeremy Dvorak, E.I.T
Engineering Assistant

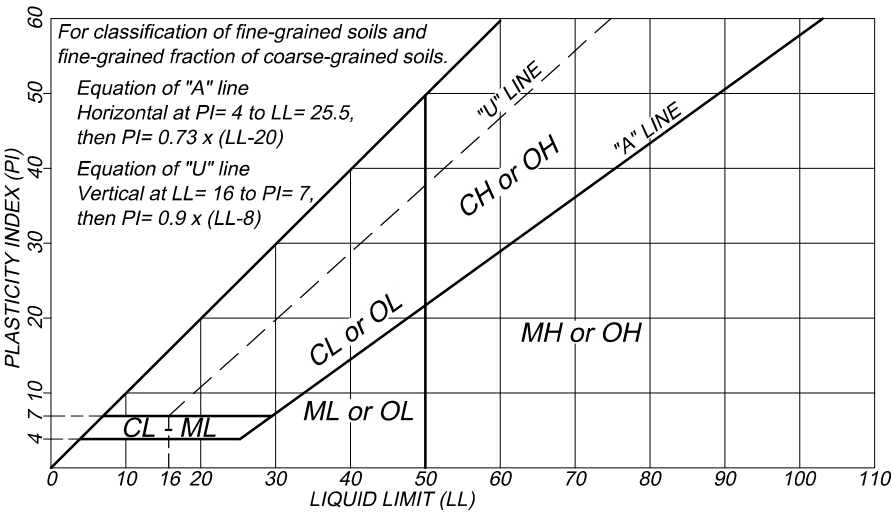
Doug P. Simon, P.E.
Geotechnical Manager

APPENDIX A

Figure A1	Unified Soil Classification System
Figure A2	Frost Design Soil Classification
Figures A3-A41	Test Pit Logs
Figure A42	Grain Size Distribution Curves

UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Names			Soil Classification	
			Generalized Group Descriptions	
COARSE-GRAINED SOILS More than 50% retained on No. 200 sieve	GRAVELS 50% or more of coarse fraction retained on No. 4 sieve	CLEAN GRAVELS Less than 5% fines	GW	Well-graded Gravels
			GP	Poorly-graded Gravels
		GRAVELS with fines More than 12% fines	GM	Gravel & Silt Mixtures
			GC	Gravel & Clay Mixtures
	SANDS More than 50% of coarse fraction passes No. 4 sieve	CLEAN SANDS Less than 5% fines	SW	Well-graded Sands
			SP	Poorly Graded Sands
		SANDS with FINES More than 12% fines	SM	Sand & Silt Mixtures
			SC	Sand & Clay Mixtures
FINE-GRAINED SOILS 50% or more passes the No. 200 sieve	SILTS AND CLAYS Liquid limit 50% or less	INORGANIC	ML	Non-plastic & Low Plasticity Silts
			CL	Low-plasticity Clays
		ORGANIC	OL	Non-plastic and Low Plasticity Organic Clays
				Non-plastic and Low Plasticity Organic Silts
	SILTS AND CLAYS Liquid limit greater than 50%	INORGANIC	CH	High-plasticity Clays
			MH	High-plasticity Silts
		ORGANIC	OH	High plasticity Organic Clays
				High Plasticity Organic Silts
HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor		PT	Peat



FROST DESIGN SOIL CLASSIFICATION
(Modeled after U.S. Army Corps of Engineers Standards)

<i>GROUP</i>	<i>KIND OF SOIL</i>	<i>P200</i>	<i>TYPICAL SOILS</i>
<i>NFS</i>	<i>Sand or Gravel</i>	<i>0 to 6</i>	<i>SW, SP GW, GP</i>
<i>F1</i>	<i>Gravelly Soils</i>	<i>6 to 10</i>	<i>GM, GW-GM, GP-GM</i>
<i>F2</i>	<i>Gravelly Soils Sands</i>	<i>10-20 6-15</i>	<i>GM, GW-GM, GP-GM SW, SP, SM, SW-SM, SP-SM</i>
<i>F3</i>	<i>Gravelly Soils Sands, except very fine silty sands Clays $PI > 12$</i>	<i>Over 20 Over 15</i>	<i>GM, GC SM, SC CL, CH CL, CH</i>
<i>F4</i>	<i>All Silts Very fine silty sands Clays, $PI < 12$ Varved clays and other fine-grained, banded sediments</i>	<i>Over 15</i>	<i>ML, MH SM CL, CL-ML CL and ML CL, ML, and SM; CL, CH, and ML; CL, CH, ML, and SM</i>

P200 = percent passing the number 200 sieve

Figure A3

LOG OF TEST PIT

TEST PIT # TP-2

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: CAT 420E

Hole Type: Excavation

Field Crew: Lloyd Davis

Total Depth: 6.5 feet

Date: 5/27/2015

Geologist: J. Dvorak

Location: Near Gas Station

Offset:

Lat/Long: 56.962989876/-133.923418667

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
SUBSURFACE MATERIAL									
0	GRAB	S-1				Poorly-graded GRAVEL, fine; with sand, fine to coarse; little silt; gray, dry, (Surface course)	0.0		
1						COBBLES, up to 11.8" diameter; angular, with gravel, fine to coarse; some sand, coarse; trace silt; dark brownish gray, dry, (Shot Rock Fill)	0.5		
2						COBBLES, up to 11.8" diameter; angular, with gravel, fine to coarse; some sand, coarse; trace silt; dark brown to black, moist	2.0		
3						DCP Results @ 3': PR= 3			
4						DCP Results @ 4': PR= 3			
5						DCP Results @ 5': PR= 3, Moisture =5.8%			
6									
						BOH 6.5	Bedrock encountered at ~6.5 ft bgs; test pit terminated due to practical refusal. Hand dug test pit using pick in advance of excavator. No free water encountered upon completion of excavation.	6.5	

LOG OF TEST PIT

TEST PIT # TP-4

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: CAT 225 DLC

Hole Type: Excavation

Field Crew: Lloyd Davis

Total Depth: 4.0 feet

Date: 5/27/2015

Geologist: J. Dvorak

Location: West of Proposed Power Plant

Offset:

Lat/Long: 56.962948645/-133.922015887

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	
							Time	
							Date	
							Symbol	
							SUBSURFACE MATERIAL	
0	GRAB	S-1			Well-graded GRAVEL, fine; with sand, fine to coarse; little silt; trace organics; gray, dry, (Surface Course)	0.0		
						0.3		
1					Well-graded GRAVEL, fine to coarse, angular; some sand, fine to coarse; little silt; trace cobbles up to 5" in diameter; grayish brown, dry, F1 P200= 7.7%, Moisture =4.1% DCP Results @ 0.75': PR= 16	1.3		
2					Bedrock, highly fractured; black with orange staining, dry			
3								
4					BOH 4 Terminated Test Pit after digging into bedrock for 2-5 minutes. Hand dug test pit using pick in advance of excavator. No free water encountered upon completion of excavation.	4.0		

LOG OF TEST PIT

TEST PIT # TP-5

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: CAT 225 DLC

Total Depth: 1.0 feet

Hole Type: Excavation

Date: 5/27/2015

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Location: Northwest of Proposed Power Plant

Offset:

Lat/Long: 56.963049887/-133.922008271

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	
							Time	
							Date	
							Symbol	
SUBSURFACE MATERIAL								
0					Poorly-graded GRAVEL, fine; with sand, fine to coarse; little silt; gray, dry, (Surface coarse)	0.0		
				<td>Practical refusal of DCP @ 0.2': 50 blows/0.5"</td> <td>0.5</td>	Practical refusal of DCP @ 0.2': 50 blows/0.5"	0.5		
1					Bedrock, highly fractured; black with orange staining, dry	1.0		
				BOH 1	Bedrock Terminated Test Pit after practical refusal. Hand dug test pit using pick in advance of excavator. No free water encountered upon completion of excavation.			

Figure A7

LOG OF TEST PIT

TEST PIT # TP-21

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Total Depth: 2.0 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Location: Between Existing and Proposed Power Plant

Offset:

Lat/Long: 56.962929/-133.92232

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	
							Time	
							Date	
							Symbol	
							SUBSURFACE MATERIAL	
0					Poorly-graded GRAVEL, fine; with sand, fine to coarse; little silt; dark brown to black, moist to wet, (Surface course)	0.0		
1					Well-graded GRAVEL, fine to coarse; with sand, fine to coarse; dark brown to black, moist to wet, (Shot Rock Fill)	1.0		
2				BOH 2	Bedrock encountered at ~2 ft bgs; test pit terminated due to practical refusal. No free water encountered upon completion of excavation.	2.0		

LOG OF TEST PIT

TEST PIT # TP-23

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 0.6 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

Geologist: J. Dvorak

Location: Existing Bulk Fuel Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	
							Time	
							Date	
							Symbol	
	SUBSURFACE MATERIAL							
0					Poorly-graded GRAVEL, fine, subangular to subrounded; with sand, fine to coarse; light brown to black, moist, (Pea Gravel)	0.0		
					Encountered liner at ~0.64 ft bgs; test pit terminated. No free water encountered upon completion of excavation.	0.6		

LOG OF TEST PIT

TEST PIT # TP-24

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 0.6 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

Geologist: J. Dvorak

Location: Existing Bulk Fuel Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	
							Time	
							Date	
							Symbol	
0						SUBSURFACE MATERIAL		
						Poorly-graded GRAVEL, fine, subangular to subrounded; with sand, fine to coarse; light brown to black, moist, (Pea Gravel)	0.0	
					BOH 0.57	Encountered liner at ~0.57 ft bgs; test pit terminated. No free water encountered upon completion of excavation.	0.6	

LOG OF TEST PIT

TEST PIT # TP-25

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 1.2 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

Geologist: J. Dvorak

Location: Existing Bulk Fuel Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
SUBSURFACE MATERIAL									
0	GRAB	S-1		GP		Poorly-graded GRAVEL with sand, (GP); light brown to black, moist, (Pea Gravel), NFS P200 =0.8%, Sa =41.2%, Gr =58.0%, Moisture =4.6%	0.0		
1					BOH 1.15	Encountered liner at ~1.15 ft bgs; test pit terminated. No free water encountered upon completion of excavation.	1.2		

LOG OF TEST PIT

TEST PIT # TP-26

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 0.7 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

Geologist: J. Dvorak

Location: Existing Bulk Fuel Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data			
	Sample Type	Field Number	Sample				Depth in (ft.)			
							Time			
							Date			
							Symbol			
0	SUBSURFACE MATERIAL									
						Poorly-graded GRAVEL, fine, subangular to subrounded; with sand, fine to coarse; light brown to black, moist, (Pea Gravel)		0.0		
						Encountered liner at ~0.73 ft bgs; test pit terminated. No free water encountered upon completion of excavation.		0.7		

LOG OF TEST PIT

TEST PIT # TP-27

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 0.7 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

Geologist: J. Dvorak

Location: Existing Bulk Fuel Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data			
	Sample Type	Field Number	Sample				Depth in (ft.)			
							Time			
							Date			
							Symbol			
0						SUBSURFACE MATERIAL				
						Poorly-graded GRAVEL, fine, subangular to subrounded; with sand, fine to coarse; light brown to black, moist, (Pea Gravel)			0.0	
						Encountered liner at ~0.66 ft bgs; test pit terminated.			0.7	
						No free water encountered upon completion of excavation.				

LOG OF TEST PIT

TEST PIT # TP-28

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 0.6 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

Geologist: J. Dvorak

Location: Existing Bulk Fuel Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data			
	Sample Type	Field Number	Sample				Depth in (ft.)			
							Time			
							Date			
							Symbol			
0						SUBSURFACE MATERIAL				
					BOH 0.56	Poorly-graded GRAVEL, fine, subangular to subrounded; with sand, fine to coarse; light brown to black, moist, (Pea Gravel)			0.0	
						Encountered liner at ~0.56 ft bgs; test pit terminated.			0.6	
						No free water encountered upon completion of excavation.				

LOG OF TEST PIT

TEST PIT # TP-29

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 0.6 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

Geologist: J. Dvorak

Location: Existing Bulk Fuel Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data			
	Sample Type	Field Number	Sample				Depth in (ft.)			
							Time			
							Date			
							Symbol			
0						SUBSURFACE MATERIAL			0.0	
					BOH 0.6	Encountered liner at ~0.60 ft bgs; test pit terminated. No free water encountered upon completion of excavation.			0.6	

LOG OF TEST PIT

TEST PIT # TP-30

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 0.7 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

Geologist: J. Dvorak

Location: Existing Bulk Fuel Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
SUBSURFACE MATERIAL									
0					Poorly-graded GRAVEL, fine, subangular to subrounded; with sand, fine to coarse; light brown to black, moist, (Pea Gravel)	0.0			
				BOH 0.68	Encountered liner at ~0.68 ft bgs; test pit terminated. No free water encountered upon completion of excavation.	0.7			

LOG OF TEST PIT

TEST PIT # TP-31

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 0.9 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

Geologist: J. Dvorak

Location: Existing Bulk Fuel Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample			Depth in (ft.)		
						Time		
						Date		
						Symbol		
0					SUBSURFACE MATERIAL			
					Poorly-graded GRAVEL, fine, subangular to subrounded; with sand, fine to coarse; light brown to black, moist, (Pea Gravel)			0.0
				BOH 0.93	Encountered liner at ~0.93 ft bgs; test pit terminated. No free water encountered upon completion of excavation.			0.9

LOG OF TEST PIT

TEST PIT # TP-32

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 0.9 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

Geologist: J. Dvorak

Location: Existing Bulk Fuel Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
SUBSURFACE MATERIAL									
0						Poorly-graded GRAVEL, fine, subangular to subrounded; with sand, fine to coarse; light brown to black, moist, (Pea Gravel)	0.0		
					BOH 0.91	Encountered liner at ~0.91 ft bgs; test pit terminated. No free water encountered upon completion of excavation.	0.9		

LOG OF TEST PIT

TEST PIT # TP-34

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 1.5 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

Geologist: J. Dvorak

Location: Center of Proposed Temporary Tank Pad

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)	0	
							Time		
							Date		
							Symbol	▽	
SUBSURFACE MATERIAL									
0					Well-graded GRAVEL, fine to coarse, angular; with cobbles; some sand, coarse; little silt; brown and gray, wet	0.0			
1					COBBLES, angular; with boulders; some gravel, fine to coarse; little sand, coarse; trace silt; brown and gray, wet	1.0			
				BOH 1.5	Terminated Test Pit at ~1.5 ft bgs due to practical refusal of hand tools. Groundwater flowing quickly into test pit.	1.5			

LOG OF TEST PIT

TEST PIT # TP-38

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Hole Type: Excavation

Field Crew: Lloyd Davis

Total Depth: 5.0 feet

Date: 1/27/2016

Geologist: J. Dvorak

Location: North of Truck Fill Facility

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	1
0							Time	
1							Date	
2	GRAB	S-1					Symbol	▽
3							SUBSURFACE MATERIAL	
4							Well-graded GRAVEL, fine to coarse; angular, some sand, fine to coarse; trace silt; brown to gray, wet, (Surface Course)	
5							DCP Results @ 0': PR= 10	
							Well-graded GRAVEL, fine to coarse; angular, with sand, fine to coarse; trace to little clay; trace cobbles; gray, wet, Smells like diesel, F1	
							DCP Results @ 1': PR=15	
							Increase in larger cobbles P200 =6.0%, Moisture =5.0%	
							DCP Results @ 2': PR=17	
							DCP Results @ 3': PR=18	
							Bedrock encountered at ~5 ft bgs; test pit terminated due to practical refusal. Stormwater and groundwater flowing quickly into test pit.	

LOG OF TEST PIT

TEST PIT # TP-39

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Hole Type: Excavation

Field Crew: Lloyd Davis

Total Depth: 3.0 feet

Date: 1/28/2016

Geologist: J. Dvorak

Location: Just East of Fenced in Lot

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
0							0		
							Time		
							Date		
							Symbol	∇	
SUBSURFACE MATERIAL									
0							Well-graded GRAVEL, fine to coarse; angular, some to with sand, fine to coarse; trace silt; brown to black, wet, (Surface Course)		0.0
1	GRAB	S-1					DCP Results @ 0': PR=19		0.3
2							Well-graded GRAVEL, fine to coarse; angular, with cobbles some boulders; brown to black, wet, slight smell of diesel, NFS		
							P200 =1.3%, Moisture =4.1%		
							DCP Results @ 1': PR=30		
3						BOH 3	Bedrock encountered at ~3 ft bgs; test pit terminated due to practical refusal. Stormwater and groundwater flowing quickly into test pit.		3.0

LOG OF TEST PIT

TEST PIT # TP-40

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Total Depth: 6.0 feet

Hole Type: Excavation

Date: 1/28/2016

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Location: South Edge of Proposed Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)	1	
							Time		
							Date		
							Symbol	▽	
SUBSURFACE MATERIAL									
0						Well-graded GRAVEL, fine to coarse; angular, with sand, fine to coarse; some cobbles; trace silt and boulders; brown to black, wet, (Surface Coarse)		0.0	
1	▽					DCP Results @ 0': PR=23		1.0	
2						Well-graded GRAVEL, fine to coarse; angular, with cobbles, angular; little to some sand, fine to coarse; trace silt and boulders; brownish black, wet		2.0	
3						Bedrock, fractured, weathered			
4									
5									
6						Terminated test pit at ~6 ft bgs due to practical refusal. Stormwater and groundwater flowing quickly into test pit.		6.0	

LOG OF TEST PIT

TEST PIT # TP-41

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: Proposed Pipe Alignment North of Keku Road

Equipment Type: Hitachi EX100

Total Depth: 1.0 feet

Offset:

Hole Type: Excavation

Date: 1/28/2016

Lat/Long:

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)	0	
							Time		
							Date		
							Symbol	▽	
0						SUBSURFACE MATERIAL			
						Well-graded GRAVEL, fine to coarse; angular, with sand, fine to coarse; some cobbles and organics; trace silt; gray to black, wet, Surface water		0.0	
1						Bedrock encountered at ~1 ft bgs; test pit terminated due to practical refusal. Stormwater flowing quickly into test pit.		1.0	

LOG OF TEST PIT

TEST PIT # TP-42

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: Proposed Pipe Alignment South of Keku Road

Equipment Type: Hitachi EX100

Total Depth: 6.0 feet

Offset:

Hole Type: Excavation

Date: 1/28/2016

Lat/Long:

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
SUBSURFACE MATERIAL									
0							Well-graded GRAVEL, fine to coarse; angular, some sand, fine to coarse; trace silt; brown to gray, wet, (Surface Course)		0.0
									0.3
1							Well-graded GRAVEL, fine to coarse; angular, with sand, fine to coarse; some cobbles; trace to little boulders and silt; trace organics; brownish black, moist, (FILL)		
2							Well-graded GRAVEL, fine to coarse; angular, with cobbles, angular; some sand, fine to coarse; little boulders; trace silt and organics; brownish black, moist, (FILL); Muffler Encountered;		2.0
3							CLAY, with gravel, fine to coarse; little to some cobbles; trace organics; gray, moist, (FILL)		3.0
4							Well-graded GRAVEL, fine to coarse; angular, with cobbles, angular; some sand, fine to coarse; little boulders; trace silt and organics; brownish black, moist, (FILL)		4.0
5									
6									
						BOH 6	Terminated test pit at ~6 ft bgs. No free water encountered upon completion of excavation.		6.0

LOG OF TEST PIT

TEST PIT # TP-43

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: Proposed Pipe Alignment South of Keku Road

Equipment Type: Hitachi EX100

Total Depth: 8.5 feet

Offset:

Hole Type: Excavation

Date: 1/28/2016

Lat/Long:

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
							SUBSURFACE MATERIAL		
0						Well-graded GRAVEL, fine to coarse; angular, some sand, fine to coarse; trace silt; brown to gray, wet, (Surface Course)	0.0		
1						Well-graded GRAVEL, fine to coarse; angular, with sand, fine to coarse; some cobbles; trace to little boulders and silt; trace organics; grayish brown, moist to wet, (FILL)	0.3		
2									
3						CLAY, with boulders; little to some gravel and cobbles; gray, moist, (FILL)	2.5		
4						CLAY, gray, moist, (FILL)	3.0		
5									
6									
7									
8									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									
									

LOG OF TEST PIT

TEST PIT # TP-44

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Total Depth: 4.0 feet

Hole Type: Excavation

Date: 1/28/2016

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Location: South of Keku Road

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	
							Time	
							Date	
							Symbol	
SUBSURFACE MATERIAL								
0							Well-graded GRAVEL, fine to coarse; angular, some sand, fine to coarse; trace silt; brown to gray, wet, (Surface Course)	0.0
								0.3
1							COBBLES, angular, with gravel, fine to coarse; some sand, fine to coarse; little boulders; trace silt; gray, moist to wet, (FILL)	1.0
							CLAY, gray, moist to wet, (FILL)	
2							COBBLES, angular, with gravel, fine to coarse; some sand, fine to coarse; little boulders; trace silt; brownish gray, moist to wet, (FILL)	2.0
3								
4								
						BOH 4	Terminated test pit at ~4 ft bgs. No free water encountered upon completion of excavation.	4.0

LOG OF TEST PIT

TEST PIT # TP-47

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Hole Type: Excavation

Field Crew: Lloyd Davis

Total Depth: 4.0 feet

Date: 1/28/2016

Geologist: J. Dvorak

Location: North of Marine Header

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	
							Time	
							Date	
							Symbol	
SUBSURFACE MATERIAL								
0							Well-graded GRAVEL, fine to coarse; angular, some sand, fine to coarse; trace silt; brown to gray, wet, (Surface Course)	0.0
1							Well-graded GRAVEL, fine to coarse; angular, with cobbles, angular; some sand, fine to coarse; trace to little silt and boulders; grayish brown, moist, (FILL)	0.5
2							Increase in boulders up to ~2 feet in diameter	1.0
3								
4							Terminated test pit at ~4 ft bgs. No free water encountered upon completion of excavation.	4.0

LOG OF TEST PIT

TEST PIT # TP-48

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Total Depth: 4.0 feet

Hole Type: Excavation

Date: 1/28/2016

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Location: Southwest of Dispensing Station

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
							SUBSURFACE MATERIAL		
0						COBBLES, angular, with gravel, fine to coarse; some sand, fine to coarse; trace silt; gray to black, wet, (FILL)	0.0		
1						Well-graded GRAVEL, fine to coarse; angular, with cobbles, angular; some sand, fine to coarse; trace silt and boulders; gray to black, wet, (FILL)	1.0		
2									
3									
4						BOH 4	Terminated test pit at ~4 ft bgs. No free water encountered upon completion of excavation.	4.0	

LOG OF TEST PIT

TEST PIT # TP-49

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Hole Type: Excavation

Field Crew: Lloyd Davis

Total Depth: 4.0 feet

Date: 1/28/2016

Geologist: J. Dvorak

Location: Northwest of Dispensing Station

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	
							Time	
							Date	
							Symbol	
SUBSURFACE MATERIAL								
0							Well-graded GRAVEL, fine to coarse; angular, some sand, fine to coarse; trace silt; brown to gray, wet, (Surface Course)	0.0
1							Well-graded GRAVEL, fine to coarse; angular, with sand, fine to coarse; some cobbles; trace to little boulders and silt; gray, wet, (FILL)	0.3
2								
3							Large boulder encountered, ~2 feet in diameter.	3.0
4							Terminated test pit at ~4 ft bgs. No free water encountered upon completion of excavation.	4.0

LOG OF TEST PIT

TEST PIT # TP-50

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Hole Type: Excavation

Field Crew: Lloyd Davis

Total Depth: 2.0 feet

Date: 1/29/2016

Geologist: J. Dvorak

Location: Southwest of TP-40

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	1
0							Time	
1							Date	
2							Symbol	▽
SUBSURFACE MATERIAL								
0.0							Well-graded GRAVEL, fine to coarse; angular, some sand, fine to coarse; trace silt; brown to gray, wet, (Surface Course)	
0.3							DCP Results @ 0': PR= 33	
1.5							Well-graded GRAVEL, fine to coarse; angular, with sand, fine to coarse; some cobbles; trace silt and boulders brownish gray, moist	
2.0							Practical refusal of DCP @ 1': 50 blows/1.25"	
							Bedrock, fractured, weathered	
							Terminated test pit at ~2 ft bgs due to practical refusal.	
							No free water encountered upon completion of excavation.	

LOG OF TEST PIT

TEST PIT # TP-51

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Hole Type: Excavation

Field Crew: Lloyd Davis

Total Depth: 5.0 feet

Date: 1/29/2016

Geologist: J. Dvorak

Location: Northwest Corner of Proposed Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
SUBSURFACE MATERIAL									
0						Well-graded GRAVEL, fine to coarse; angular, with sand, fine to coarse; some cobbles; little silt; trace boulders; grayish brown, moist	0.0		
1									
2									
3									
4									
5									
						BOH 5	Terminated test pit at ~5 ft bgs. No free water encountered upon completion of excavation. (Stockpile of Material Taken from Keku Road)	5.0	
					</				

LOG OF TEST PIT

TEST PIT # TP-52

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Total Depth: 1.5 feet

Hole Type: Excavation

Date: 1/29/2016

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Location: Southwest of Proposed Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)	1	
							Time		
							Date		
							Symbol	▽	
SUBSURFACE MATERIAL									
0						Well-graded GRAVEL, fine to coarse; angular, some sand, fine to coarse; trace silt; brown to gray, wet, (Surface Course)	0.0 0.3		
1	▽					Well-graded GRAVEL, fine to coarse; angular, with cobbles, angular; some sand, fine to coarse; trace boulders and silt; brownish gray, wet	1.5		
					BOH 1.5	Bedrock encountered at ~1.5 ft bgs; test pit terminated due to practical refusal. Stormwater and groundwater flowing quickly into test pit.			

LOG OF TEST PIT

TEST PIT # TP-53

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: Between New Truck Fill Station and Keku Road

Equipment Type: Hitachi EX100

Total Depth: 3.0 feet

Offset:

Hole Type: Excavation

Date: 1/29/2016

Lat/Long:

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
							SUBSURFACE MATERIAL		
0					Well-graded GRAVEL, fine to coarse; angular, some sand, fine to coarse; trace silt; brown to gray, wet, (Surface Course)	0.0			
1					Well-graded GRAVEL, fine to coarse; angular, with sand, fine to coarse; some cobbles; little silt; grayish brown, moist	0.5			
2					Bedrock, fractured, weathered	1.0			
3					Terminated test pit at ~3 ft bgs due to practical refusal. No free water encountered upon completion of excavation.	3.0			

LOG OF TEST PIT

TEST PIT # TP-54

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Total Depth: 3.0 feet

Hole Type: Excavation

Date: 1/29/2016

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Location: South of Proposed Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	
							Time	
							Date	
							Symbol	
SUBSURFACE MATERIAL								
0							Well-graded GRAVEL, fine to coarse; angular, some sand, fine to coarse; trace silt; brown to gray, wet, (Surface Course)	0.0
1							Well-graded GRAVEL, fine to coarse; angular, with sand, fine to coarse; little silt; trace cobbles; brownish gray, moist to wet, (FILL)	0.5
2							Asphalt	1.2
3							Well-graded SAND, fine to coarse; with gravel, fine to coarse; some silt; brown, moist to wet, (FILL)	1.3
							Bedrock	1.4
							Terminated test pit at ~3 ft bgs due to practical refusal. No free water encountered upon completion of excavation.	3.0

LOG OF TEST PIT

TEST PIT # TP-55

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Total Depth: 2.0 feet

Hole Type: Excavation

Date: 1/29/2016

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Location: Southeast of TP-54 and South of TP-56

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
SUBSURFACE MATERIAL									
0							Well-graded GRAVEL, fine to coarse; angular, some sand, fine to coarse; trace silt; brown to gray, wet, (Surface Course)		0.0
									0.1
1							Well-graded GRAVEL, fine to coarse; angular, with sand, fine to coarse; little to some silt; trace cobbles; grayish brown, moist to wet		1.0
2							Bedrock		
						BOH 2	Terminated test pit at ~2 ft bgs due to practical refusal. No free water encountered upon completion of excavation.		2.0

LOG OF TEST PIT

TEST PIT # TP-56

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Hole Type: Excavation

Field Crew: Lloyd Davis

Total Depth: 2.0 feet

Date: 1/29/2016

Geologist: J. Dvorak

Location: South Side of City Stockpile Ramp

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
	SUBSURFACE MATERIAL								
0	GRAB	S-1			Well-graded GRAVEL, fine to coarse; angular, with sand, fine to coarse; some cobbles; little silt; trace boulders; grayish brown, moist, F1	0.0			
1					P200 =8.8%, Sa =28.2%, Gr =63.0%, Moisture =8.3%				
2									
				BOH 2	Terminated test pit at ~2 ft bgs. No free water encountered upon completion of excavation. (City Stockpile taken from Gunnak Creek)	2.0			

LOG OF TEST PIT

TEST PIT # TP-57

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Total Depth: 14.0 feet

Hole Type: Excavation

Date: 1/29/2016

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Location: North of Proposed Tank Farm

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
SUBSURFACE MATERIAL									
0	GRAB	S-1				Well-graded GRAVEL, fine to coarse; angular, with sand, fine to coarse; some cobbles; little silt; trace boulders; grayish brown, moist, F1		0.0	
1									
2						P200 =8.5%, Sa =39.5%, Gr =52.0%, Moisture =6.0%			
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14					BOH 14	Terminated Test Pit at ~14.0 ft bgs due to caving conditions No free water encountered upon completion of excavation. (Stockpile of Material Taken from Keku Road)		14.0	
			</						

B USCS LOG OF TEST PIT 13-039_13-040 KAKE BORING LOGS.GPJ HDL MODIFIED.GDT 4/12/16

LOG OF TEST PIT

TEST PIT # TP-58

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Total Depth: 0.8 feet

Hole Type: Excavation

Date: 1/29/2016

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Location: Between TP-41 and Keku Road

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)	0	
							Time		
							Date		
							Symbol	▽	
0						SUBSURFACE MATERIAL			
						Well-graded GRAVEL, fine to coarse; angular, with cobbles, angular; some sand, fine to coarse; little silt; brownish black, wet		0.0	
						Bedrock Bedrock encountered at ~.75 ft bgs; test pit terminated due to practical refusal. Stormwater and groundwater flowing quickly into test pit.		0.8	

LOG OF TEST PIT

TEST PIT # TP-59

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Total Depth: 9.0 feet

Hole Type: Excavation

Date: 1/29/2016

Field Crew: Lloyd Davis

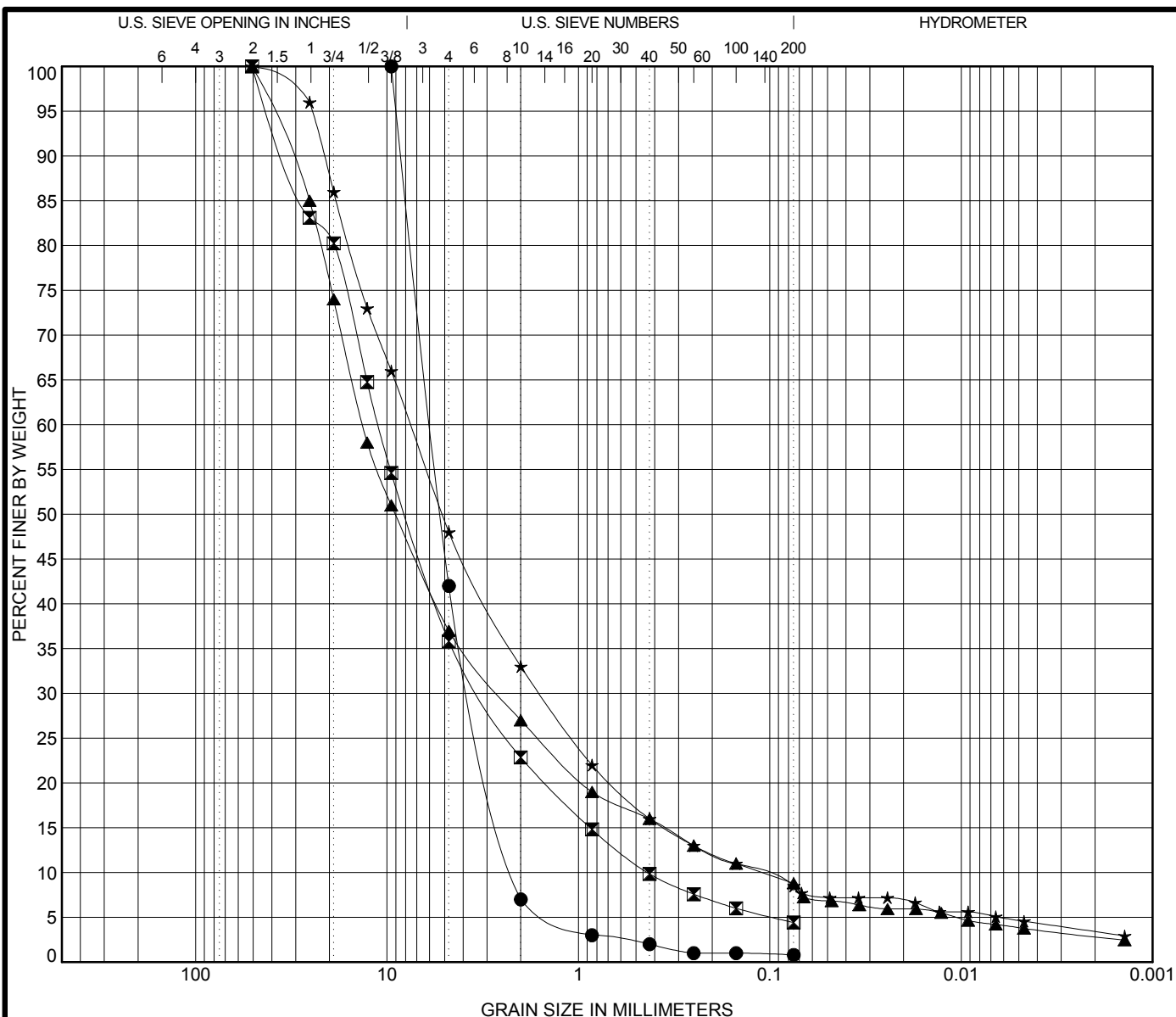
Geologist: J. Dvorak

Location: South of Keku Road, North of TP-42

Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
SUBSURFACE MATERIAL									
0							Well-graded GRAVEL, fine to coarse; angular, some sand, fine to coarse; trace silt; brown to gray, wet, (Surface Course)		
									0.0
1							Well-graded GRAVEL, fine to coarse; angular, with cobbles, angular; some sand, fine to coarse; trace to little silt and organics; grayish brown, moist, (FILL)		
									0.3
2									
3									
4							Well-graded GRAVEL, fine to coarse; angular, with cobbles, angular; some sand, fine to coarse; little clay and organics; brownish gray, moist, (FILL)		
									4.0
5									
6									
7									
8									
9							Terminated test pit at ~9 ft bgs. No free water encountered upon completion of excavation.		
									9.0



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification			LL	PL	PI	Cc	Cu
●	TP-25	DEPTH 0.0	Poorly-Graded GRAVEL with Sand (GP)						0.98	2.73
☒	TP-3	DEPTH 0.3	WELL-GRADED GRAVEL with SAND (GW)						2.16	25.51
▲	TP-56	DEPTH 1.0							4.60	122.01
★	TP-57	DEPTH 2.0							2.93	66.33

Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TP-25	DEPTH 0.0	9.5	5.89	3.531	2.154	58.0	41.2	0.8	
☒	TP-3	DEPTH 0.3	50.8	11.085	3.223	0.435	64.2	31.4	4.4	
▲	TP-56	DEPTH 1.0	50.8	13.356	2.593	0.109	63.0	28.2	8.8	
★	TP-57	DEPTH 2.0	50.8	7.54	1.584	0.114	52.0	39.5	8.5	



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GRAIN SIZE DISTRIBUTION

Project: Kake Rural Power System and Bulk Fuel Upgrade

Client: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Project Number: 13-039, 13-040

APPENDIX B

Figure B1-B20	Test Pit Logs
Figure B21	Atterberg Limit Test Results
Figure B22-B23	Grain Size Distribution Curves
Figure B24-B49	Consolidation Test Results

LOG OF TEST PIT

TEST PIT # TP-6

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: West Corner of Previous Tank Farm Location

Equipment Type: CAT 225 DLC

Total Depth: 8.0 feet

Offset:

Hole Type: Excavation

Date: 5/27/2015

Lat/Long: 56.963554/-133.921575

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)	5.5	
							Time		
							Date		
							Symbol	▽	
SUBSURFACE MATERIAL									
0	GRAB	S-1		ML GP		Organic Topsoil, with vegetation; dark brown, moist Org =660.0%		0.0	
1	GRAB	S-2				Sandy SILT, (ML); dark brown, wet, F4 Org =3900.0%		1.0	
2	GRAB	S-3				P200 =62.7%, Sa =34.7%, Gr =2.6%, Moisture =151.1%		1.5	
3						Poorly-graded GRAVEL, (GP); with sand, trace organics; brown, wet, NFS P200 =4.1%, Sa =46.3%, Gr =48.7%, Moisture =14.1%		3.0	
4	GRAB	S-4				CLAY; with sand, fine to medium; gray, wet, F4			
5						P200= 94.1%, Moisture =41.0%			
6									
7									
8									
					BOH 8	Bedrock encountered at ~8 ft bgs; test pit terminated due to practical refusal. Groundwater encountered at 5.5 ft bgs.		8.0	

Figure B1

LOG OF TEST PIT

TEST PIT # TP-7

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: Northwest Edge of Previous Tank Farm Location Equipment Type: CAT 225 DLC

Total Depth: 10.5 feet

Offset: Hole Type: Excavation

Date: 5/27/2015

Lat/Long: 56.963634/-133.921164 Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample			Depth in (ft.)	9	
						Time		
						Date		
						Symbol	▽	
SUBSURFACE MATERIAL								
0	GRAB	S-1		CL		Organic Topsoil, with vegetation; dark brown, moist Org =235.5%	0.0	
1								
2	GRAB	S-2				Poorly-graded SAND, with clay and gravel; brown, wet, F1 P200 =7.4%, Sa =69.1%, Gr =23.5%, Moisture =36.5%	1.5	
3								
4						(CL); CLAY; gray, wet	3.5	
5	GRAB	S-3				Moisture =33.0%, PI =15, LL = 35		
6						SILT; with sand, fine; gray, wet	5.5	
7								
8								
9	▽							
10								
					BOH 10.5	Bedrock encountered at ~10.5 ft bgs; test pit terminated due to practical refusal.	10.5	

B USCS LOG OF TEST PIT 13-039_13-040 KAKE BORING LOGS.GPJ HDL MODIFIED.GDT 4/25/16

Figure B2

LOG OF TEST PIT

TEST PIT # TP-8

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: North Corner of Previous Tank Farm Location

Equipment Type: CAT 225 DLC

Total Depth: 9.0 feet

Offset:

Hole Type: Excavation

Date: 5/27/2015

Lat/Long: 56.963623/-133.920854

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)	9	
							Time		
							Date		
							Symbol	▽	
SUBSURFACE MATERIAL									
0	GRAB	S-1		CL		Organic Topsoil, with vegetation; dark brown, moist	0.0		
	GRAB	S-2				Silty SAND, dark brown, moist, F4 P200 =44.4%, Sa =55.1%, Gr =0.5%, Moisture =172.5%	0.5		
1						Poorly-graded SAND, with clay and gravel; dark brown, moist, NFS	1.3		
2	GRAB	S-3				P200 =5.7%, Sa =53.5%, Gr =40.8%, Moisture =21.6%			
3									
	GRAB	S-4				Lean CLAY, (CL); gray, wet, soft to medium stiff, F4 P200= 99.5%, Moisture =37.2%, PI =25, LL = 43 Pocket Pen Results @ 3.5': 0.5 TSF	3.3		
4									
5									
6						Pocket Pen Results @ 5.5': 0.5 TSF			
7									
8									
9	▽					Bedrock encountered at ~9 ft bgs; test pit terminated due to practical refusal.	9.0		

LOG OF TEST PIT

TEST PIT # TP-9

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: South Corner of Previous Tank Farm Location

Equipment Type: CAT 225 DLC

Total Depth: 15.0 feet

Offset:

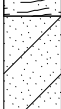
Hole Type: Excavation

Date: 5/27/2015

Lat/Long: 56.963282/-133.921081

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	
							Time	
							Date	
							Symbol	
SUBSURFACE MATERIAL								
0	GRAB	S-1		SM		Organic Topsoil, with vegetation; dark brown, moist, strong organic odor	0.0	
1						(SM); Silty SAND; dark brown, moist, F4	1.3	
2	GRAB	S-2				P200 =37.8%, Sa =61.7%, Gr =0.5%, Moisture =238.9%, PI =NP, LL =NV		
3	GRAB	S-3				CLAY; gray, wet, soft to medium stiff Pocket Pen Results @ 3.0': 0.5 TSF	2.7	
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
								
								
								
								
								
								
								
								

B USCS LOG OF TEST PIT 13-039_13-040 KAKE BORING LOGS.GPJ HDL MODIFIED.GDT 4/25/16

Figure B4

LOG OF TEST PIT

TEST PIT # TP-10

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: CAT 225 DLC

Hole Type: Excavation

Field Crew: Lloyd Davis

Total Depth: 9.0 feet

Date: 5/27/2015

Geologist: J. Dvorak

Location: South Edge of Previous Tank Farm Location

Offset:

Lat/Long: 56.963292/-133.920874

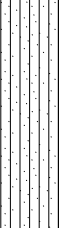
Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)	5.5	
							Time		
							Date		
							Symbol	▽	
SUBSURFACE MATERIAL									
0	GRAB	S-1		GP		Organic Topsoil, with vegetation; dark brown, moist	0.0		
0.2					SILT; with sand, fine to coarse; trace organics dark brown, wet, roots up to 1-3" in diameter, F4	0.2			
1									
2						P200= 66.9%, Moisture =266.3%, Org =145.8%			
3									
4	GRAB	S-2				Well-graded SAND, fine to coarse; some gravel, fine to coarse; some silt; gray, wet, F4	3.5		
5						P200 =22.1%, Sa =52.3%, Gr =25.6%, Moisture =15.3%			
5.5									
6							Poorly-graded GRAVEL, (GP); with sand; gray, wet, NFS	5.5	
7									
8									
9	GRAB	S-3				P200 =3.7%, Sa =34.6%, Gr =61.2%, Moisture =9.7%	9.0		
						Terminated Test Pit at ~9.0 ft bgs due to caving conditions			

Figure B5

LOG OF TEST PIT

TEST PIT # TP-11

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: East Corner of Previous Tank Farm Location

Equipment Type: CAT 225 DLC

Total Depth: 15.0 feet

Offset:

Hole Type: Excavation

Date: 5/27/2015

Lat/Long: 56.963404/-133.920748

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							Time		
							Date		
							Symbol		
SUBSURFACE MATERIAL									
0						Organic Topsoil, with vegetation; dark brown, moist		0.0	
						SILT; with sand, fine; trace organics; brown, wet		0.2	
1	GRAB	S-1				Org =3.0%			
2									
3	GRAB	S-2		GP		Poorly-graded GRAVEL with sand, (GP); dark brown, wet, NFS		3.0	
4						P200 =3.6%, Sa =38.9%, Gr =57.1%, Moisture =16.3%			
5	GRAB	S-3		CL		Lean CLAY, (CL); some sand, fine to medium; trace silt; gray, wet, medium stiff to stiff, F4		4.5	
						Pocket Pen Results @ 5': 0.75-2.0 TSF, Moisture =33.4%, PI =16, LL = 35			
6									
7									
8									
9									
10									
11									
12									
13									
14									
15						BOH 15	Terminated Test Pit at ~15 ft bgs. No free water encountered upon completion of excavation.	15.0	

BUSCS LOG OF TEST PIT 13-039_13-040 KAKE BORING LOGS.GPJ HDL MODIFIED.GDT 4/25/16

Figure B6

LOG OF TEST PIT

TEST PIT # TP-12

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: Northeast of Previous Tank Farm Location

Equipment Type: CAT 225 DLC

Total Depth: 7.0 feet

Offset:

Hole Type: Excavation

Date: 5/27/2015

Lat/Long: 56.963504/-133.922074

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification Frozen Zone	Soil Graphic	Ground Water Data			
	Sample Type	Field Number	Sample			Depth in (ft.)			
						Time			
						Date			
						Symbol			
	SUBSURFACE MATERIAL								
0	GRAB	S-1			Well-graded SAND, fine to coarse; some silt; little clay; little organics; brown, moist, (Fill Material)	0.0			
1									
2									
3									
4									
5									
6					Abandoned copper line encountered	6.0			
7					BOH 7 Terminated Test Pit at ~7 ft bgs due to copper pipes. No free water encountered upon completion of excavation.	7.0			

LOG OF TEST PIT

TEST PIT # TP-13

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: Southwest Corner of Previous Tank Farm Location Equipment Type: Hitachi EX100

Total Depth: 6.0 feet

Offset: Hole Type: Excavation

Date: 10/20/2015

Lat/Long: 56.963635/-133.921333 Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
							3		
							Time		
							Date		
							Symbol	▽	
							SUBSURFACE MATERIAL		
0							Organic Mat, moist		0.0
							Organic Topsoil, moist		0.5
1	GRAB	S-1					Poorly-graded SAND, fine to coarse; with clay; little organics; trace gravel; brown, moist		1.0
							Moisture =64.5%, Org =13.6%		
2							DCP Results @ 1': PR= 3		
							DCP Results @ 2': PR= 1		
3	GRAB	S-2					Poorly-graded SAND, coarse; with gravel, fine to coarse; little clay; trace organics; dark brown to black, wet		3.0
							Org =5.1%		3.5
4							DCP Results @ 3': PR= 8		4.0
							Moisture =26.6%		
5							Well-graded GRAVEL, fine to coarse; with sand, fine to coarse; trace clay; gray, wet		
							DCP Results @ 3.5': PR= 4		
6							CLAY, with sand, fine; gray, moist, stiff to very stiff		5.5
							Pocket Pen Results @ 4': 1.5-2.5 TSF		6.0
							Well-graded GRAVEL, fine to coarse; with clay; some sand, fine to coarse; gray, wet		
							Bedrock encountered at ~6 ft bgs; test pit terminated due to practical refusal.		

Figure B8

TEST PIT # TP-14

LOG OF TEST PIT

TEST PIT # TP-15

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: Northcentral Corner of Previous Tank Farm Location Equipment Type: Hitachi EX100

Total Depth: 10.0 feet

Offset: Hole Type: Excavation

Date: 10/20/2015

Lat/Long: 56.963666/-133.92086 Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)	2.5	
							Time		
							Date		
							Symbol	▽	
SUBSURFACE MATERIAL									
0	GRAB	S-1				Organic Mat		0.0	
1						COBBLES, angular; with gravel, fine to coarse; some sand, fine to coarse; little organics; trace boulders; gray and black, moist to wet		0.3	
2									
3						Well-graded GRAVEL, fine to coarse; with sand, fine to coarse; trace to little clay and organics; dark brown to black, moist to wet Org =8.4% Moisture =25.1%		2.5 3.0	
4						CLAY, trace sand, fine; gray, wet, stiff to very stiff Pocket Pen Results @ 3': 1.5-3 TSF Pocket Pen Results @ 4': 1.5-2.5 TSF			
5									
6									
7									
8									
9									
10						BOH 10	Bedrock encountered at 10 ft bgs on southern end of test pit and 3 ft bgs on northern end of test pit. Terminated Test Pit due to practical refusal.		10.0

Figure B10

TEST PIT # TP-16

LOG OF TEST PIT

TEST PIT # TP-17

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: Southeast Corner of Previous Tank Farm Location Equipment Type: Hitachi EX100

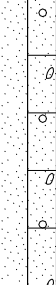
Total Depth: 17.0 feet

Offset: Hole Type: Excavation

Date: 10/20/2015

Lat/Long: 56.963464/-133.920764 Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)	0	
							Time		
							Date		
							Symbol	▽	
SUBSURFACE MATERIAL									
0	ST	ST-2	CL		Poorly-graded SAND, fine to coarse; with gravel, fine to coarse; little clay; little organics; dark brown, wet	0.0			
1									
2									
3									
4									
5					CLAY, (CL); gray, wet, soft, F4 Pocket Pen Results @ 4': 0.25-0.5 TSF P200 =99.6%, Moisture =47.2%, PI =20, LL = 38 Moisture =59.7%	4.0			
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17	BOH 17	Terminated Test Pit at ~17 ft bgs. Standing water on surface; Stormwater and groundwater flowing quickly into test pit. Moved over approximately 3 feet south to push ST-2 from 4-6 ft bgs.	17.0						

B USCS LOG OF TEST PIT 13-039_13-040 KAKE BORING LOGS.GPJ HDL MODIFIED.GDT 4/25/16

Figure B12

LOG OF TEST PIT

TEST PIT # TP-18

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Location: Immediately South of Previous Tank Farm Location Equipment Type: Hitachi EX100

Total Depth: 9.0 feet

Offset: Hole Type: Excavation

Date: 10/20/2015

Lat/Long: 56.963544/-133.921095 Field Crew: Lloyd Davis

Geologist: J. Dvorak

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	
0							0	
							Time	
							Date	
							Symbol	▽
SUBSURFACE MATERIAL								
0							Organic Mat, moist	0.0
1	GRAB	S-1					Well-graded SAND, fine to coarse; with gravel, fine to coarse; little to some clay; little organics; dark brown, moist Moisture =68.2%, Org =10.4%	0.5
2							DCP Results @ 2': PR= 9	
3							Well-graded GRAVEL, fine to coarse; with sand, coarse; trace clay; gray, wet DCP Results @ 2.8': PR= 2	2.8
4				CL			CLAY, (CL); gray, moist to wet, medium stiff to stiff, F4 Pocket Pen Results @ 4': 0.5-2.0 TSF	4.0
5	ST	ST-3					P200 =97.9%, PI =24, LL = 42 Moisture =37.9%	
6								
7								
8								
9								
						BOH 9	Bedrock encountered at ~9 ft bgs; test pit terminated due to practical refusal. Standing water on surface; Stormwater and groundwater flowing quickly into test pit. Moved over approximately 3 feet south to push ST-3 from 4.5-5.9 ft bgs.	9.0

Figure B13

LOG OF TEST PIT

TEST PIT # TP-19

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Total Depth: 1.0 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: Lloyd Davis

Geologist: J. Dvorak

Location: Southwest of TP-06

Offset:

Lat/Long: 56.963493/-133.921661

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data			
	Sample Type	Field Number	Sample				Depth in (ft.)			
							Time			
							Date			
							Symbol			
SUBSURFACE MATERIAL										
0						Organic Mat, moist		0.0		
1						Well-graded GRAVEL, fine to coarse; with sand, medium to coarse; little clay; little organics; brownish black, moist		0.5		
						Bedrock encountered at ~1 ft bgs; test pit terminated due to practical refusal.		1.0		
						No free water encountered upon completion of excavation.				

LOG OF TEST PIT

TEST PIT # TP-20

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Hitachi EX100

Hole Type: Excavation

Field Crew: Lloyd Davis

Total Depth: 4.0 feet

Date: 10/20/2015

Geologist: J. Dvorak

Location: Northeast of TP-05

Offset:

Lat/Long: 56.963116/-133.921828

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data	
	Sample Type	Field Number	Sample				Depth in (ft.)	
							Time	
							Date	
							Symbol	
SUBSURFACE MATERIAL								
0					Organic Mat	0.0		
1					Poorly-graded GRAVEL, fine; with sand, fine to coarse; trace to little silt; brownish gray, moist, (Pea Gravel Surface Course)	0.3		
					Poorly-graded SAND, fine to medium; with silt; gray, moist	0.8		
2					CLAY, gray, wet, very soft Pocket Pen Results @ 1.8': 0 TSF	1.8		
3					Well-graded GRAVEL, fine to coarse; some sand, fine to coarse; some clay; gray, wet	3.0		
4					Bedrock encountered at ~4 ft bgs; test pit terminated due to practical refusal. No free water encountered upon completion of excavation.	4.0		
				BOH 4				

TEST PIT # TP-33

LOG OF TEST PIT

TEST PIT # TP-35

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 3.0 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

Geologist: J. Dvorak

Location: North of TP-06

Offset:

Lat/Long: 56.963564/-133.921542

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data			
	Sample Type	Field Number	Sample				Depth in (ft.)	1.5		
							Time			
							Date			
							Symbol	▽		
SUBSURFACE MATERIAL										
0						Organic Mat		0.0		
						Organic Topsoil		0.5		
1						Well-graded GRAVEL, fine to coarse; with sand, fine to coarse; little to some silt; trace to little organics; dark brown and gray, wet		1.0		
2										
3						Terminated Test Pit at ~3.0 ft bgs due to practical refusal of hand tools.		3.0		

LOG OF TEST PIT

TEST PIT # TP-36

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT : Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 2.0 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

Geologist: J. Dvorak

Location: West of Existing Power Plant

Offset:

Lat/Long: 56.963127/-133.923198

Depth (Feet)	Sample Data			USCS Classification Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample			Depth in (ft.)		
						Time		
						Date		
						Symbol		
						SUBSURFACE MATERIAL		
0					Organic Topsoil	0.0		
1					Well-graded GRAVEL, fine to coarse, angular; with sand, fine to coarse; some silt; trace organics; dark brown to black, wet	0.5		
					Well-graded GRAVEL, fine to coarse, angular; with sand, fine to coarse; little clay; trace organics; tan and dark brown, wet	1.0		
2					Terminated Test Pit at ~2.0 ft bgs due to practical refusal of hand tools. Groundwater flowing quickly into test pit.	2.0		

LOG OF TEST PIT

TEST PIT # TP-37

PROJECT NUMBER: 13-039, 13-040

PROJECT: Kake Rural Power System and Bulk Fuel Upgrade

CLIENT: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Equipment Type: Shovel

Total Depth: 4.0 feet

Hole Type: Excavation

Date: 10/20/2015

Field Crew: J. Dvorak

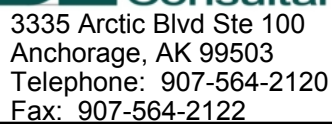
Geologist: J. Dvorak

Location: North of TP-20

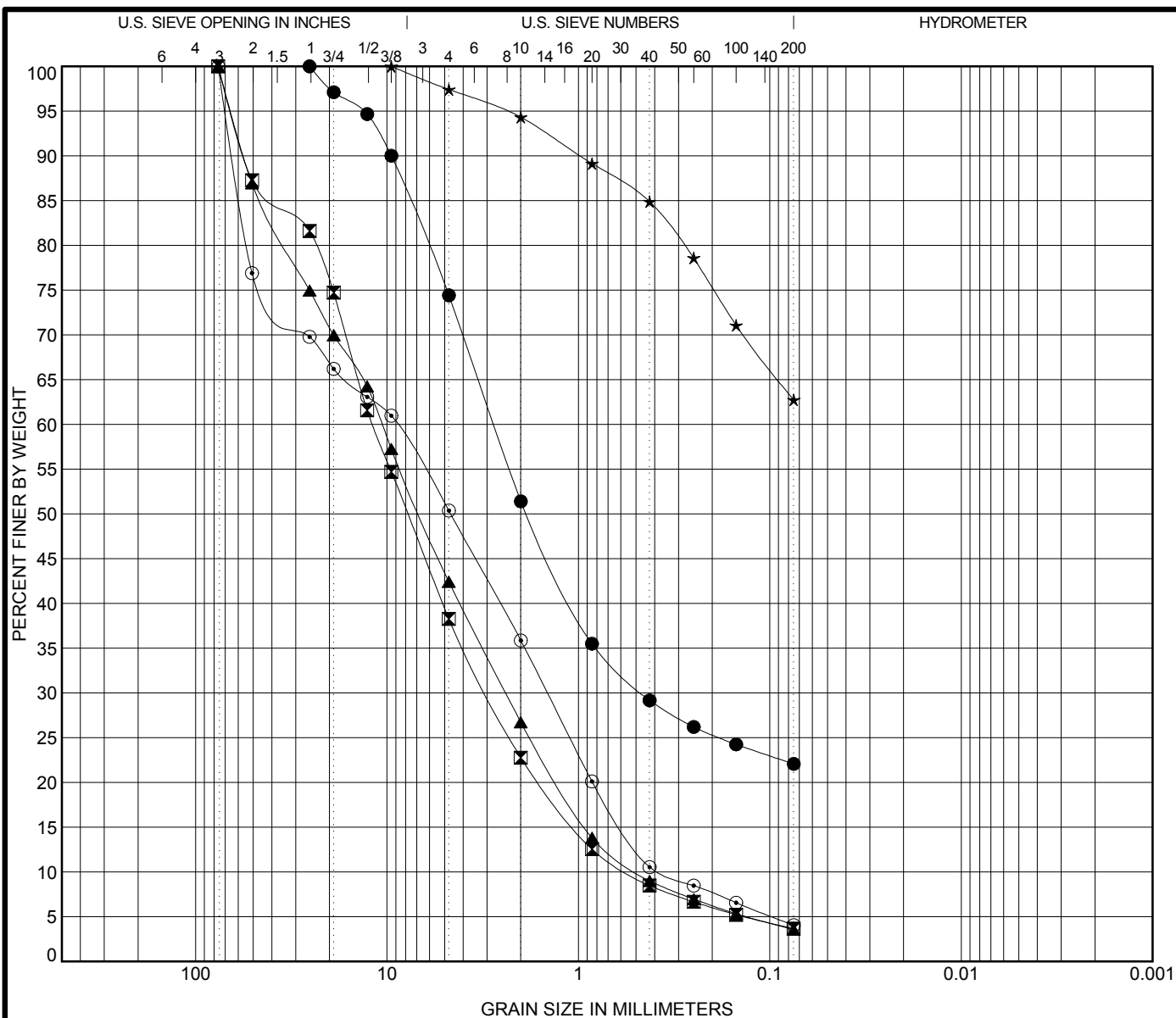
Offset:

Lat/Long:

Depth (Feet)	Sample Data			USCS Classification	Frozen Zone	Soil Graphic	Ground Water Data		
	Sample Type	Field Number	Sample				Depth in (ft.)		
0							0		
							Time		
							Date		
							Symbol	▽	
SUBSURFACE MATERIAL									
0							Organic Mat		0.0
1							Well-graded GRAVEL, fine to coarse; with sand, fine to coarse; little silt; trace organics; black, wet		0.5
2							Practical Refusal of hand tools at ~1.5 ft bgs. Drove metal pipe into bottom of hole to a depth of 4 ft bgs.		
3									
4						BOH 4	Terminated test pit at ~4ft bgs due to practical refusal of metal pipe. Groundwater flowing quickly into test pit.		4.0



Project: Kake Rural Power System and Bulk Fuel Upgrade	
Client: Alaska Industrial Development and Export Authority/Alaska Energy Authority	
Project Number: 13-039, 13-040	



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification					LL	PL	PI	Cc	Cu
●	TP-10	DEPTH 4.0	Silty SAND with Gravel (SM)									
☒	TP-10	DEPTH 8.8	Poorly-Graded GRAVEL with Sand (GP)								1.37	21.54
▲	TP-11	DEPTH 3.5	WELL-GRADED GRAVEL with SAND(GW)								1.10	21.69
★	TP-6	DEPTH 1.2										
⊙	TP-6	DEPTH 1.6	POORLY GRADED GRAVEL with SAND(GP)								0.64	24.09
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	TP-10	DEPTH 4.0	25.4	2.763	0.465		25.6	52.3	22.1			
☒	TP-10	DEPTH 8.8	76.2	11.88	2.993	0.552	61.2	34.6	3.7			
▲	TP-11	DEPTH 3.5	76.2	10.647	2.395	0.491	57.1	38.9	3.6			
★	TP-6	DEPTH 1.2	9.5				2.6	34.7	62.7			
⊙	TP-6	DEPTH 1.6	76.2	8.916	1.455	0.37	48.7	46.3	4.1			



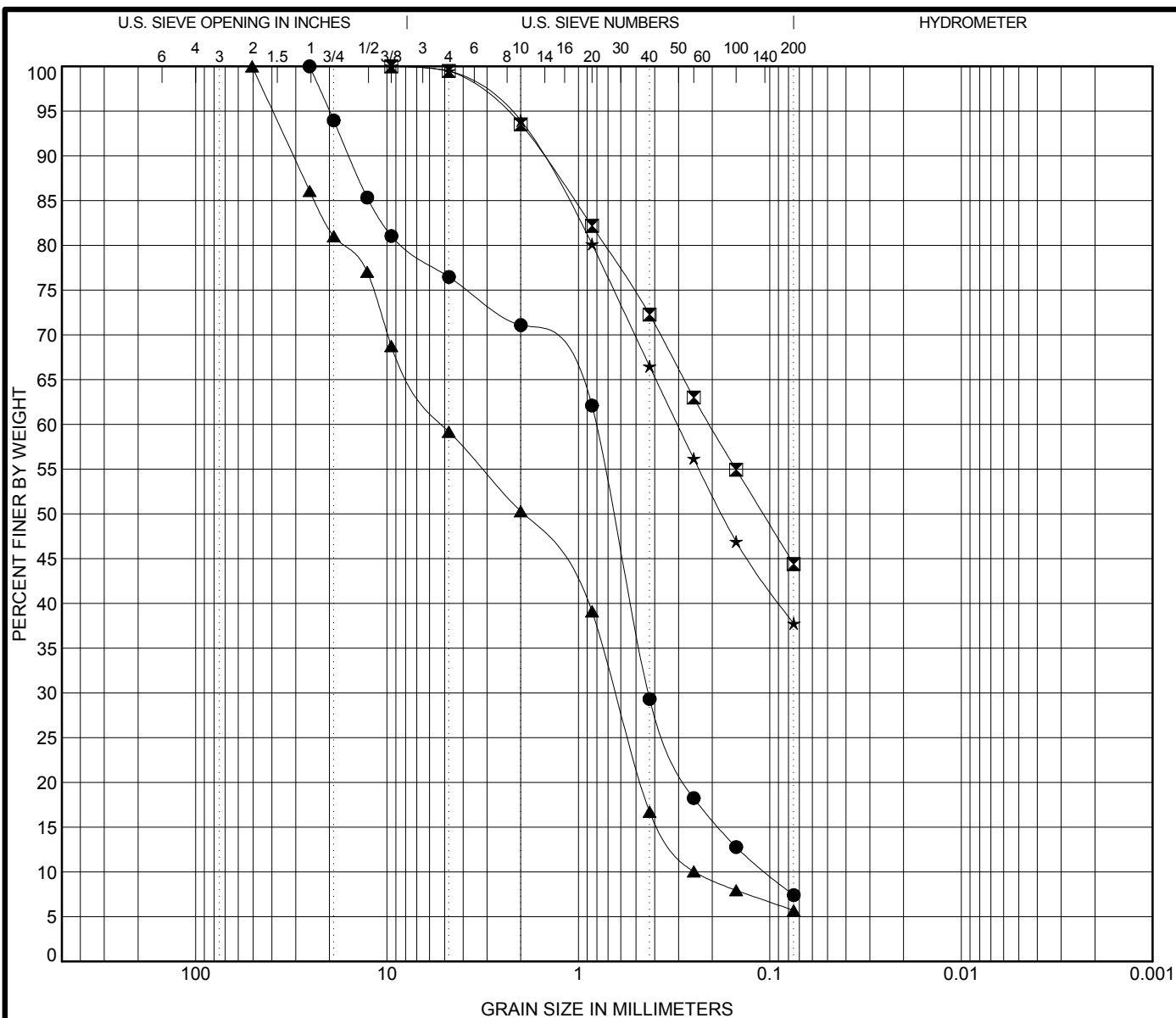
3335 Arctic Blvd Ste 100
Anchorage, AK 99503
Telephone: 907-564-2120
Fax: 907-564-2122

GRAIN SIZE DISTRIBUTION

Project: Kake Rural Power System and Bulk Fuel Upgrade

Client: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Project Number: 13-039, 13-040



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification			LL	PL	PI	Cc	Cu
●	TP-7	DEPTH 2.0	Poorly-Graded SAND with Clay and Gravel (SP-SC)						2.18	7.76
☒	TP-8	DEPTH 0.7								
▲	TP-8	DEPTH 2.0	Poorly-Graded SAND with Clay and Gravel						0.33	20.46
★	TP-9	DEPTH 2.0	Silty SAND (SM)			NP	NP	NP		
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	TP-7	DEPTH 2.0	25.4	0.813	0.431	0.105	23.5	69.1	7.4	
☒	TP-8	DEPTH 0.7	9.5	0.207			0.5	55.1	44.4	
▲	TP-8	DEPTH 2.0	50.8	5.04	0.641	0.246	40.8	53.5	5.7	
★	TP-9	DEPTH 2.0	9.5	0.304			0.5	61.7	37.8	



3335 Arctic Blvd Ste 100
Anchorage, AK 99503
Telephone: 907-564-2120
Fax: 907-564-2122

GRAIN SIZE DISTRIBUTION

Project: Kake Rural Power System and Bulk Fuel Upgrade

Client: Alaska Industrial Development and Export Authority/Alaska Energy Authority

Project Number: 13-039, 13-040

Consolidation Report

Client : HDL
Project : 13-040-05
Date: 11/2/2015

WO # 34564
Lab # 1983
Frame # LoadTrac-III

Boring : Unknown
Sample # ST2
Depth : 7.5" from bottom

Wet Sample Weight (g)	134.30
Dry Sample Weight (g)	194.97
Sample Height (in)	1.00
Ring Diameter (in)	2.50
Initial Dry Density (lb/ft3)	67.47
Initial Wet Density (lb/ft3)	104.23
Area of Sample (in2)	4.91
Volume of Sample (in3)	4.91
Volume of Solids (in3)	2.00
Height of Solids (in)	0.41
Initial Height of Voids (in)	0.59
Initial Volume of Voids (in3)	2.91
Volume of Water (in3)	2.89
Initial Degree of Saturation (%)	99.48
Initial Void Ratio, e0	1.45
0.42 e0	0.61
Specific gravity (Estimated)	2.65
Volume of Solids	40.8%
Volume of Voids	59.2%

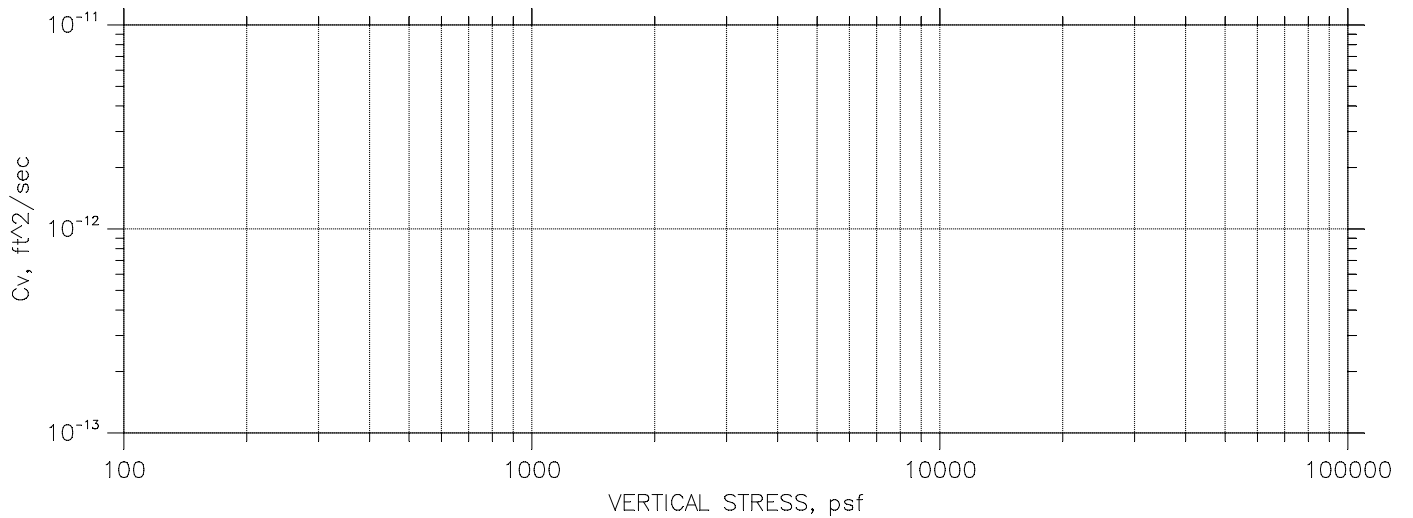
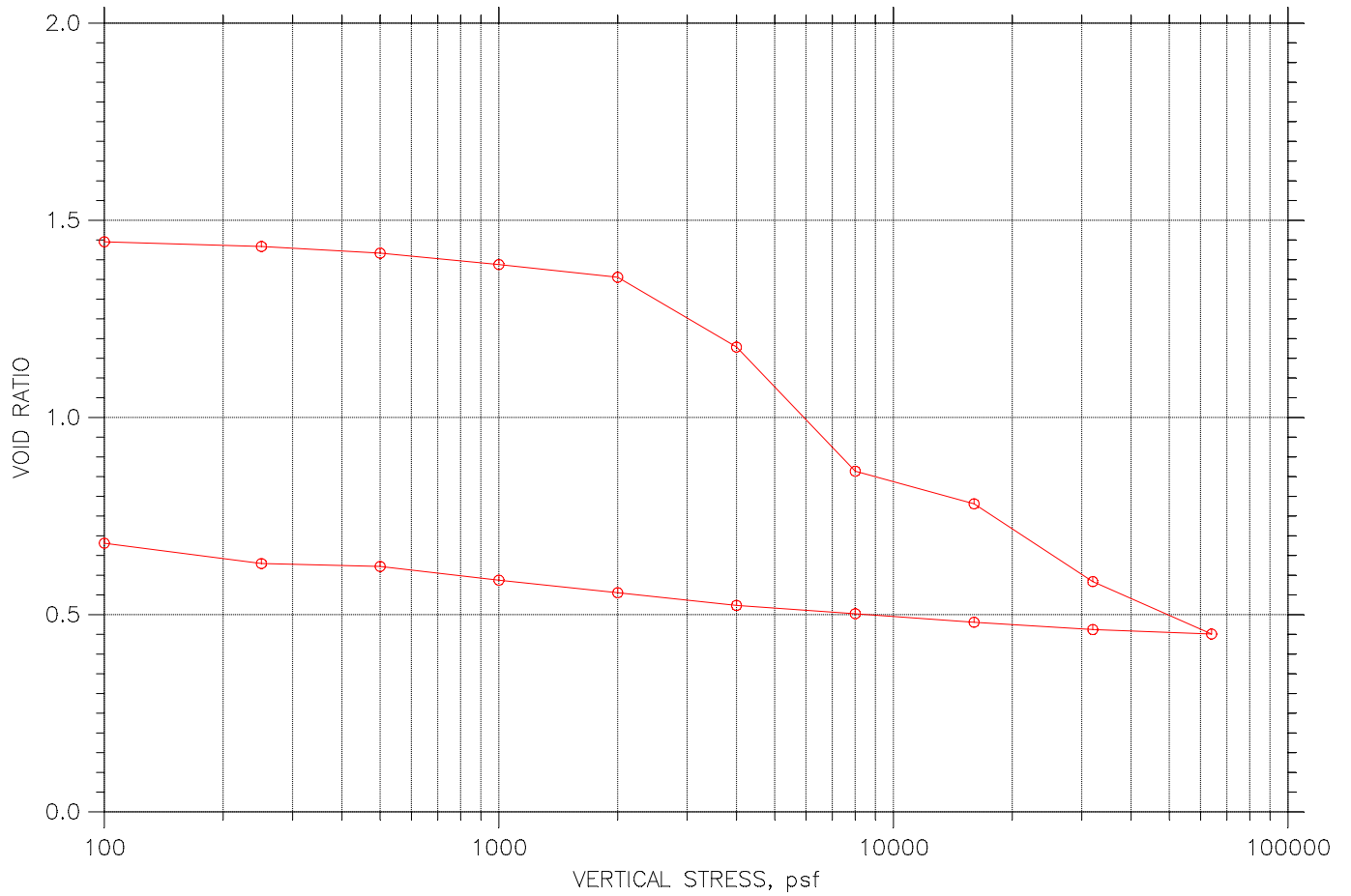
Load Number	Stress (psf)	Δ Height (in)	Void Ratio	Percent Strain at End
1	100	-0.003	1.45	0.26
2	250	-0.008	1.43	0.75
3	500	-0.014	1.42	1.44
4	1000	-0.026	1.39	2.62
5	2000	-0.039	1.36	3.93
6	4000	-0.112	1.18	11.20
7	8000	-0.240	0.86	24.00
8	16000	-0.274	0.78	27.40
9	32000	-0.354	0.58	35.40
10	64000	-0.408	0.45	40.80
11	32000	-0.404	0.46	40.40
12	16000	-0.396	0.48	39.60
13	8000	-0.387	0.50	38.70
14	4000	-0.379	0.52	37.90
15	2000	-0.366	0.56	36.60
16	1000	-0.353	0.59	35.30
17	500	-0.338	0.62	33.80
18	250	-0.335	0.63	33.50
19	100	-0.314	0.68	31.40

Moisture Content			
	Trimmings	Initial	Final
Wet + Tare	211.45	242.37	220.40
Dry + Tare	144.50	194.97	194.97
Tare	16.20	108.07	108.07
Wet Weight	195.25	134.30	112.33
Wt. Water	66.95	47.40	25.43
Wt. Dry Soil	128.30	86.90	86.90
% Moisture	52.18	54.55	29.26

Comments:

Consolidation Test

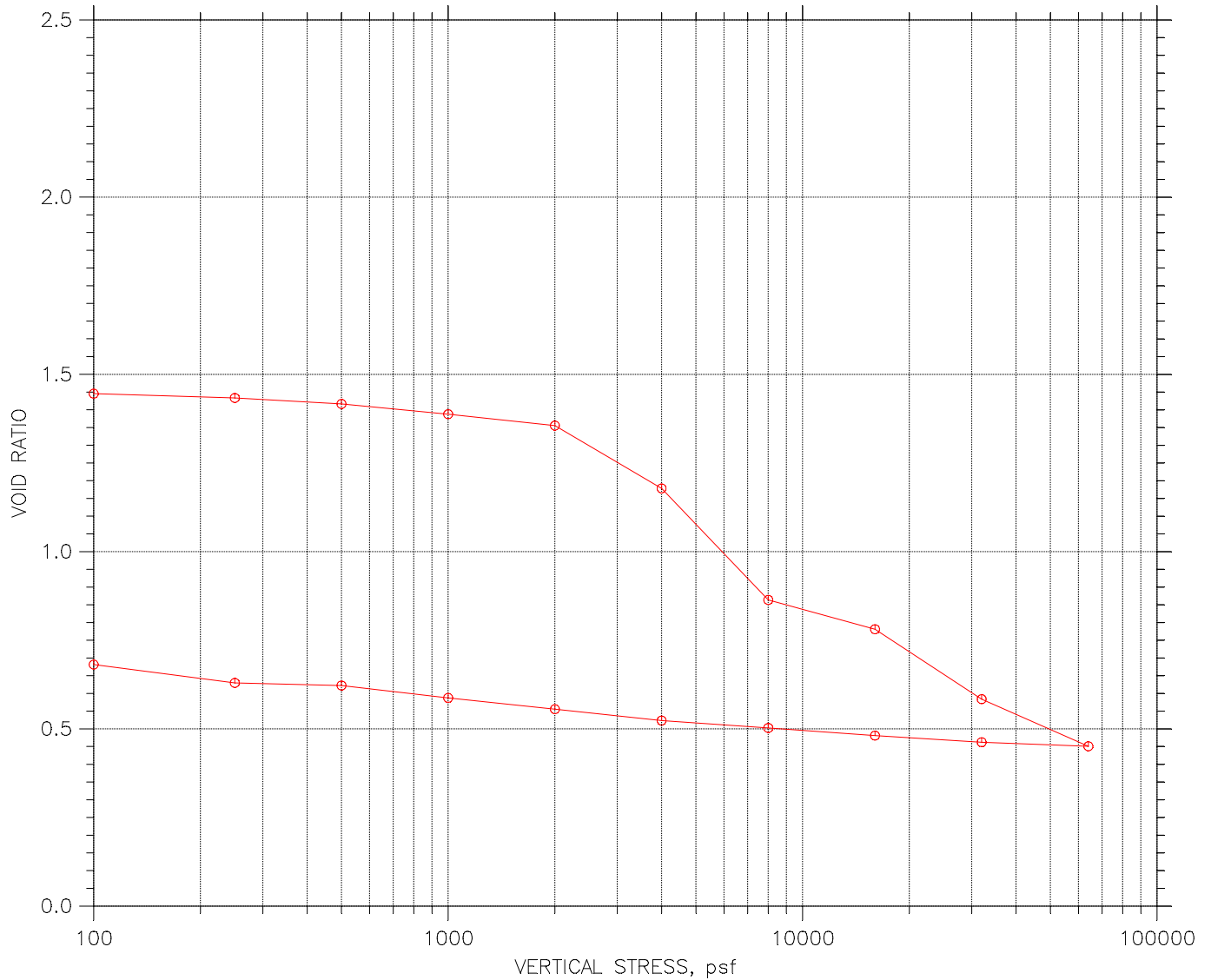
SUMMARY REPORT



Project: 13-040-05	Location:	Project No.: 34564
Boring No.: -	Tested By: PEP	Checked By:
Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
Depth: -	Sample Type:	Elevation: -
Description:		
Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		
Displacement at End of Primary		

Consolidation Test

SUMMARY REPORT

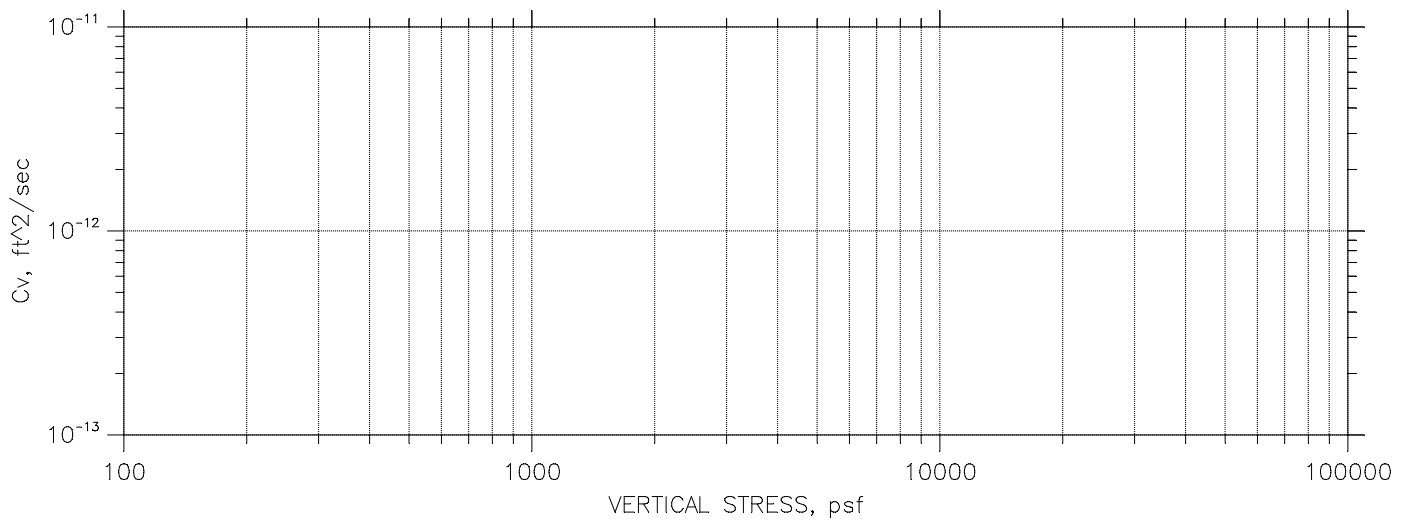
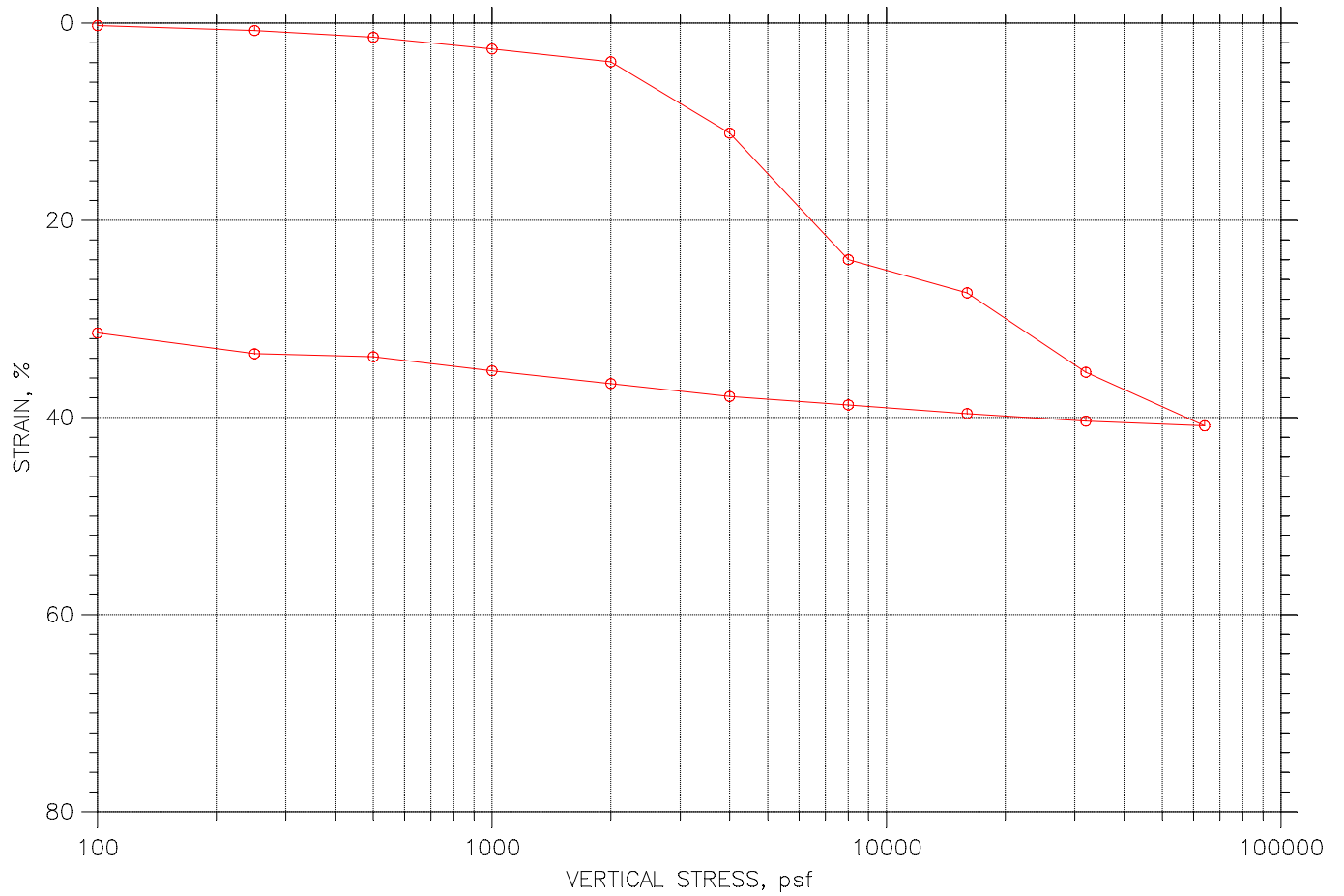


					Before Test	After Test
Overburden Pressure: 0 psf				Water Content, %	54.54	29.26
Preconsolidation Pressure: 0 psf				Dry Unit Weight, pcf	67.471	98.399
Compression Index: 0				Saturation, %	99.54	113.81
Diameter: 2.499 in		Height: 1 in		Void Ratio	1.45	0.68
LL: ---	PL: ---	PI: ---	GS: 2.65	Back Pressure, psf	0	0

	Project: 13-040-05		Location:	Project No.: 34564
	Boring No.: -		Tested By: PEP	Checked By:
	Sample No.: ST2		Test Date: 11/2/15	Test No.: 1
	Depth: -		Sample Type:	Elevation: -
	Description:			
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%			
	Displacement at End of Primary			

Consolidation Test

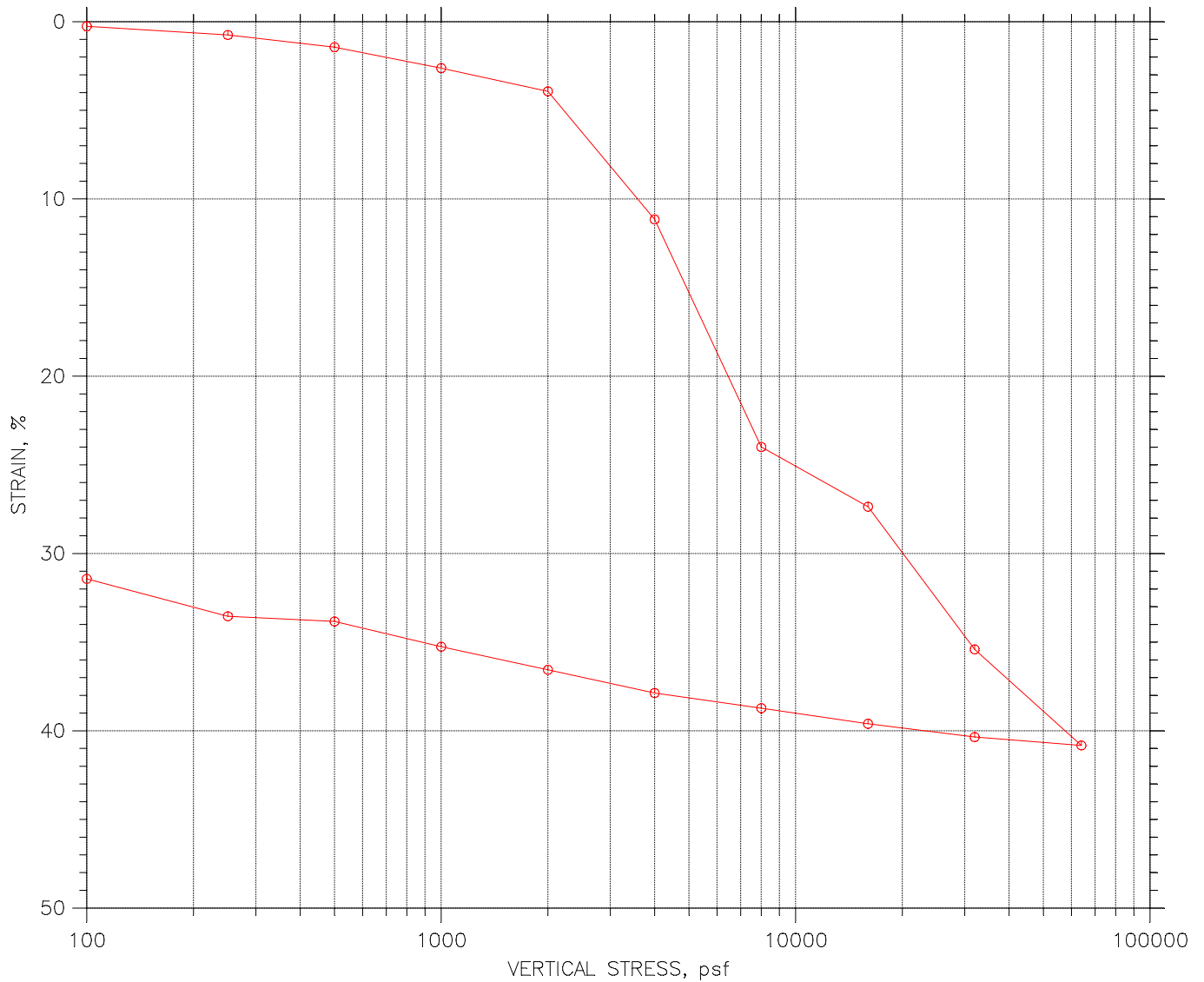
SUMMARY REPORT



	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		
	Displacement at End of Primary		

Consolidation Test

SUMMARY REPORT

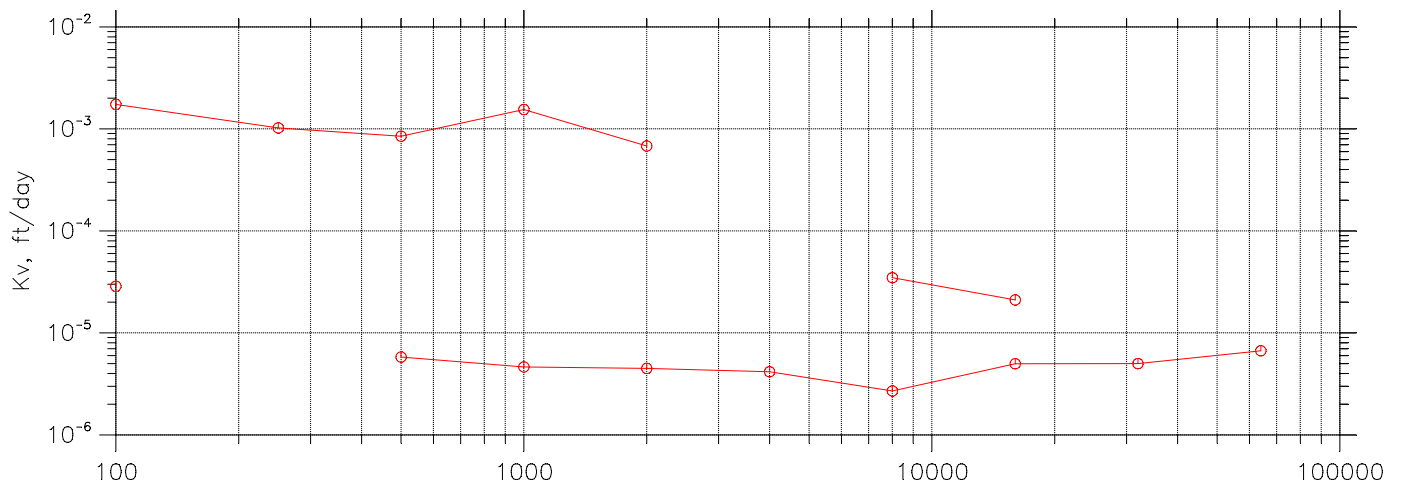
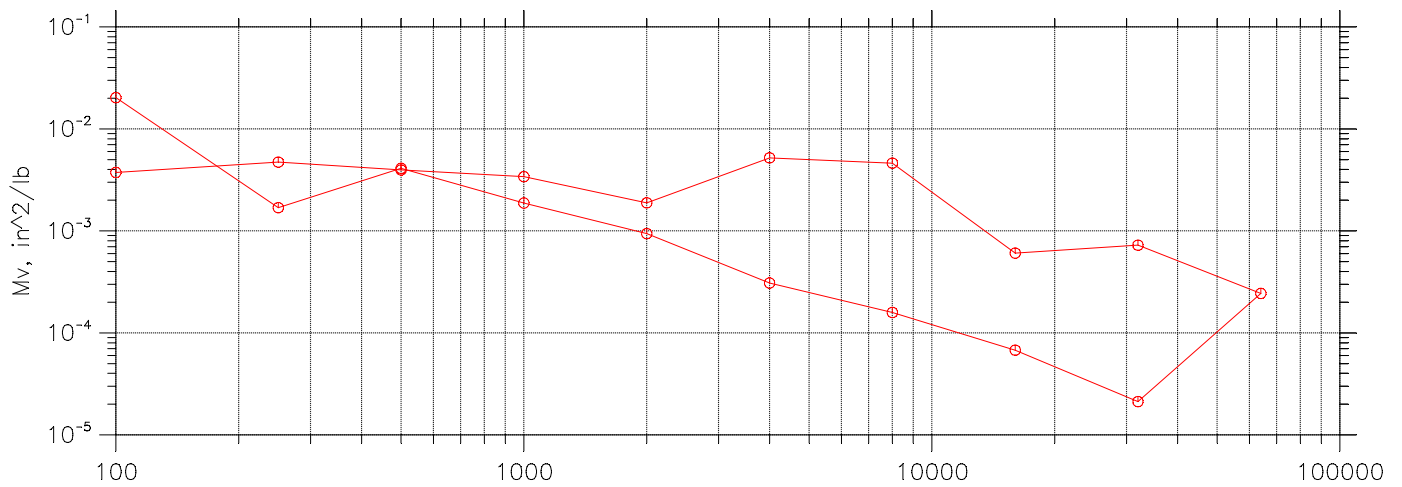
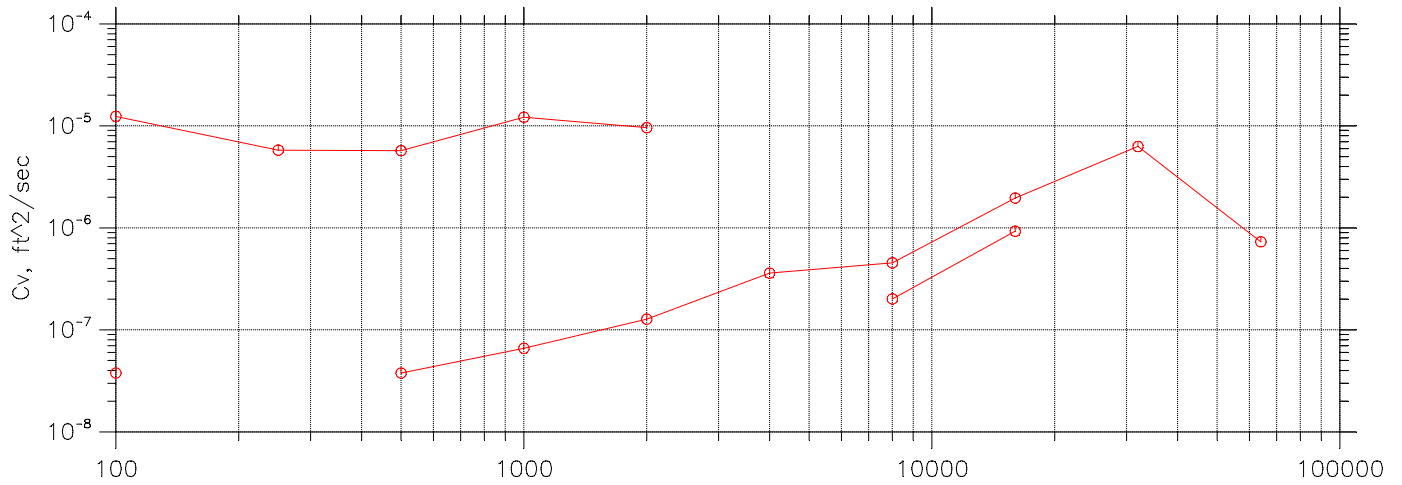


					Before Test	After Test
Overburden Pressure: 0 psf				Water Content, %	54.54	29.26
Preconsolidation Pressure: 0 psf				Dry Unit Weight, pcf	67.471	98.399
Compression Index: 0				Saturation, %	99.54	113.81
Diameter: 2.499 in		Height: 1 in		Void Ratio	1.45	0.68
LL: ---	PL: ---	PI: ---	GS: 2.65	Back Pressure, psf	0	0

	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		
	Displacement at End of Primary		

Consolidation Test

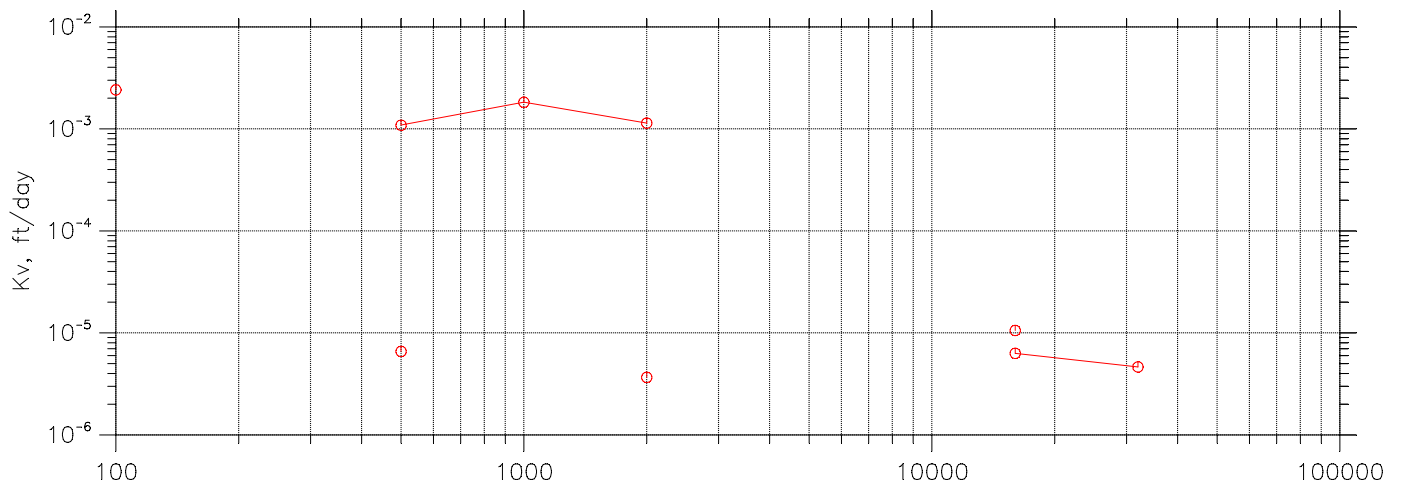
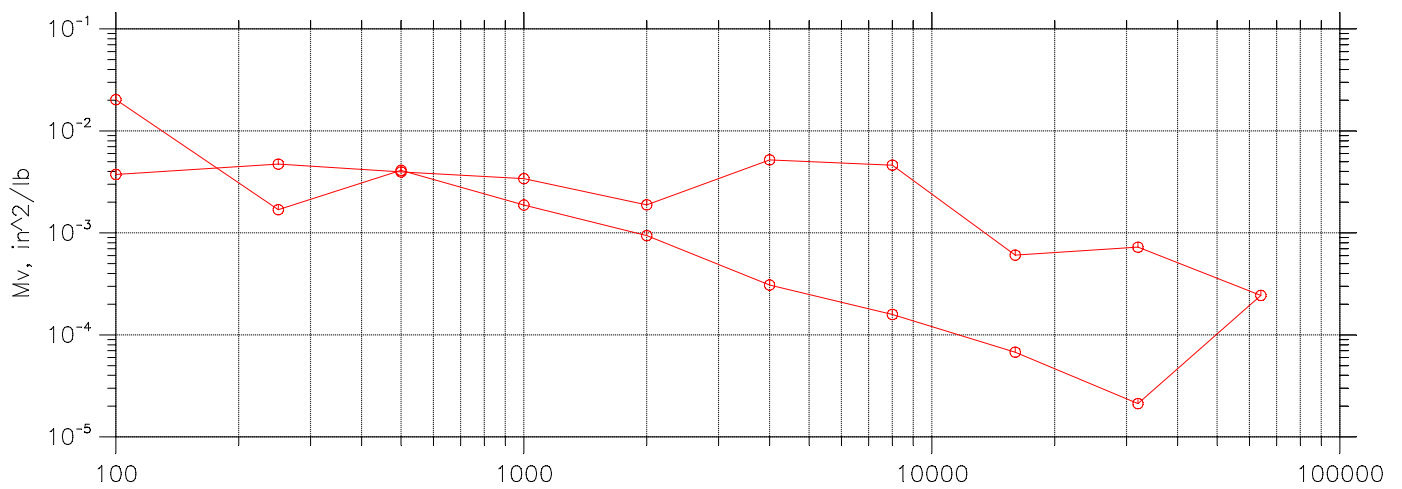
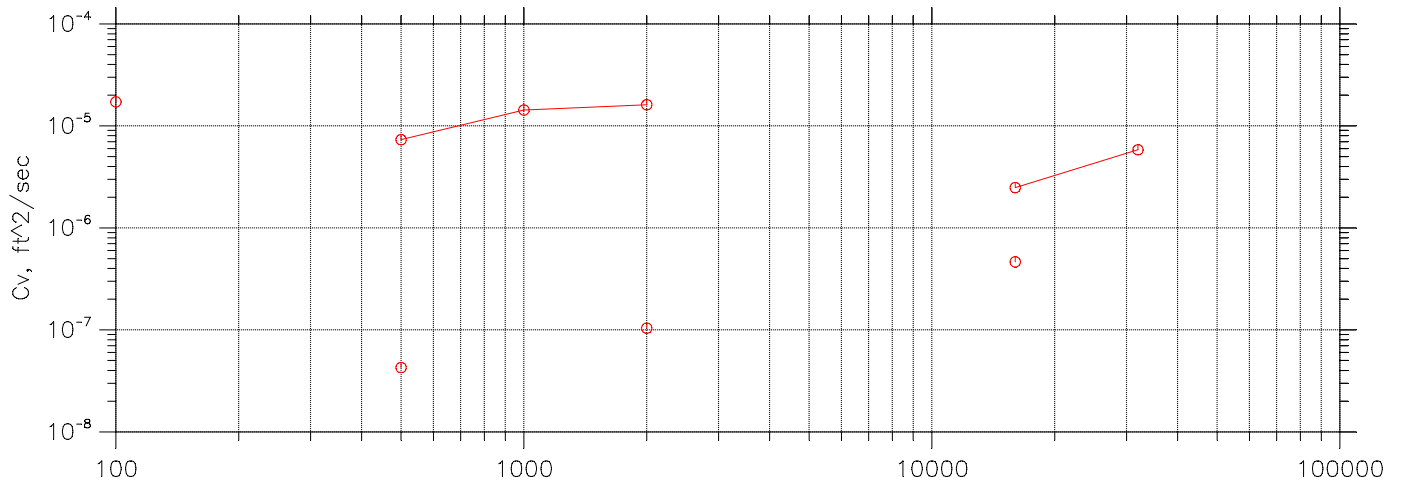
ROOT of TIME COEFFICIENTS



Project: 13-040-05	Location:	Project No.: 34564
Boring No.: -	Tested By: PEP	Checked By:
Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
Depth: -	Sample Type:	Elevation: -
Description:		
Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		
Displacement at End of Primary		

Consolidation Test

LOG of TIME COEFFICIENTS



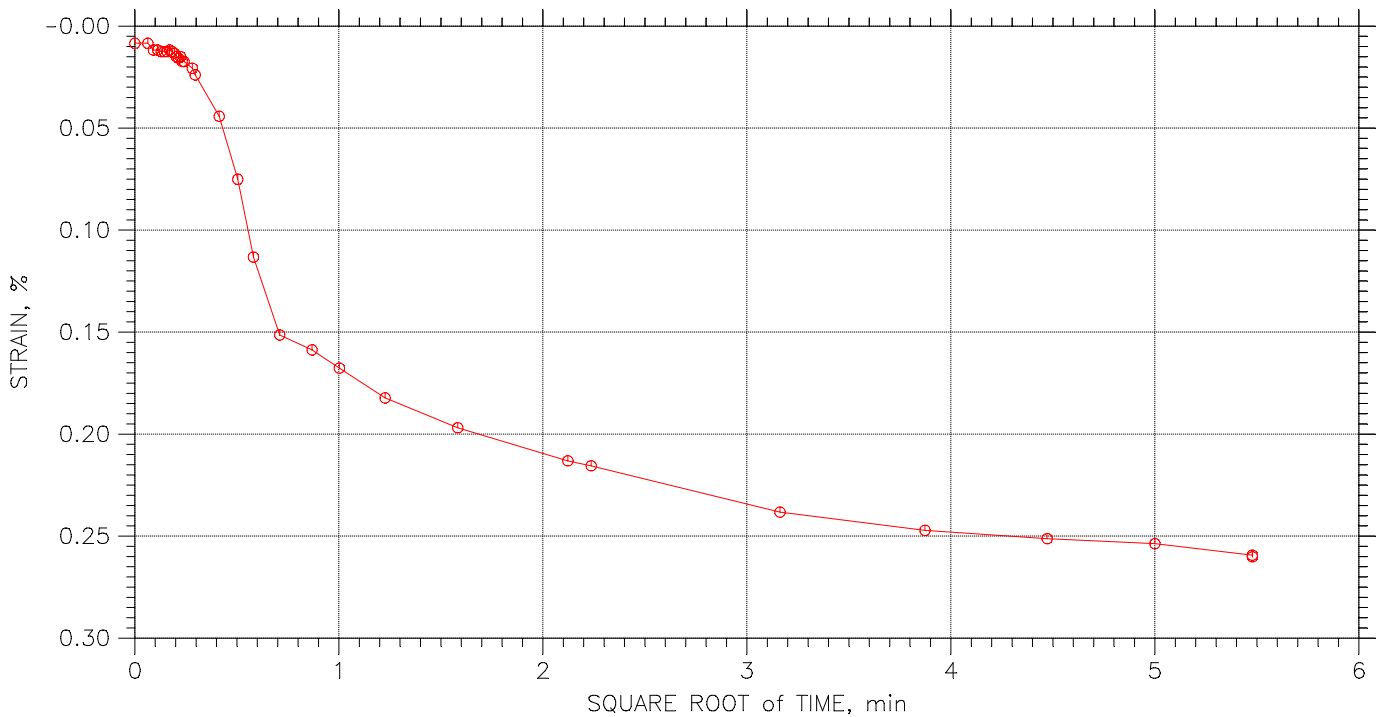
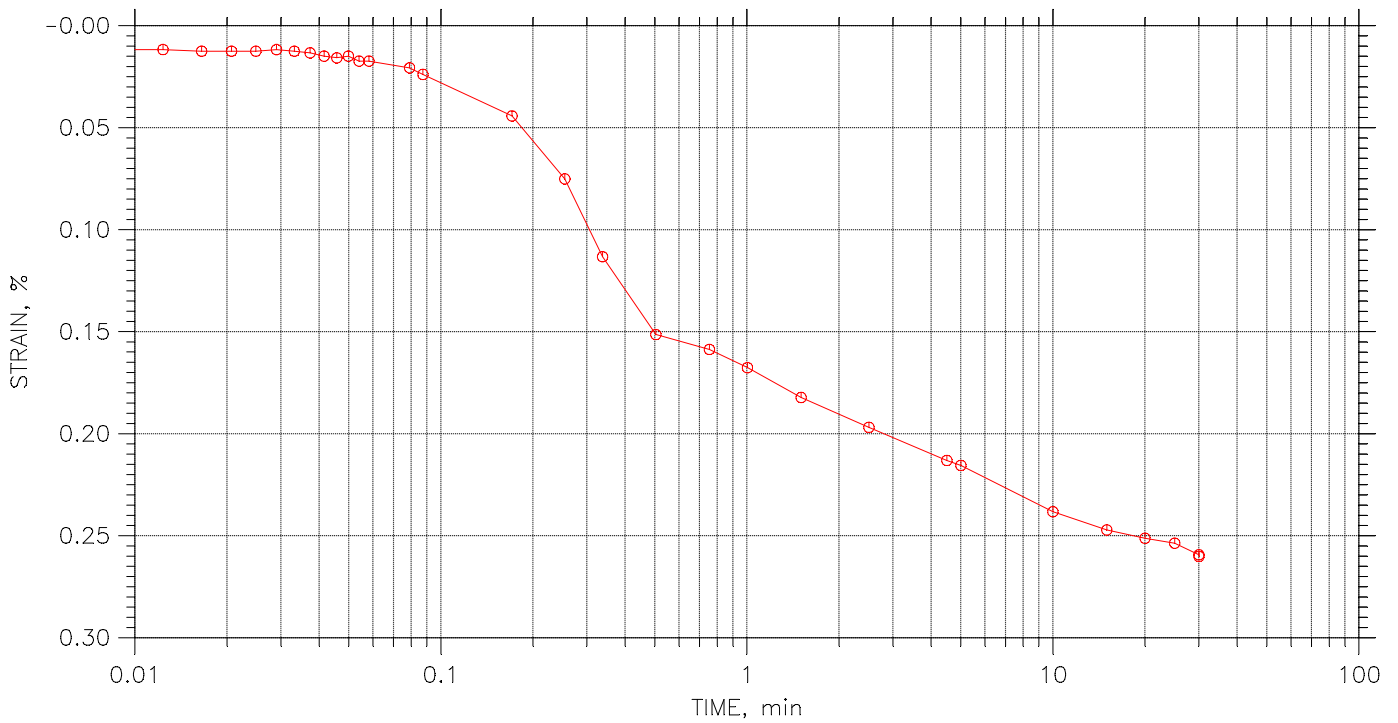
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		
	Displacement at End of Primary		

Consolidation Test

TIME CURVES

Constant Load Step 1 of 19

Stress: 100 psf



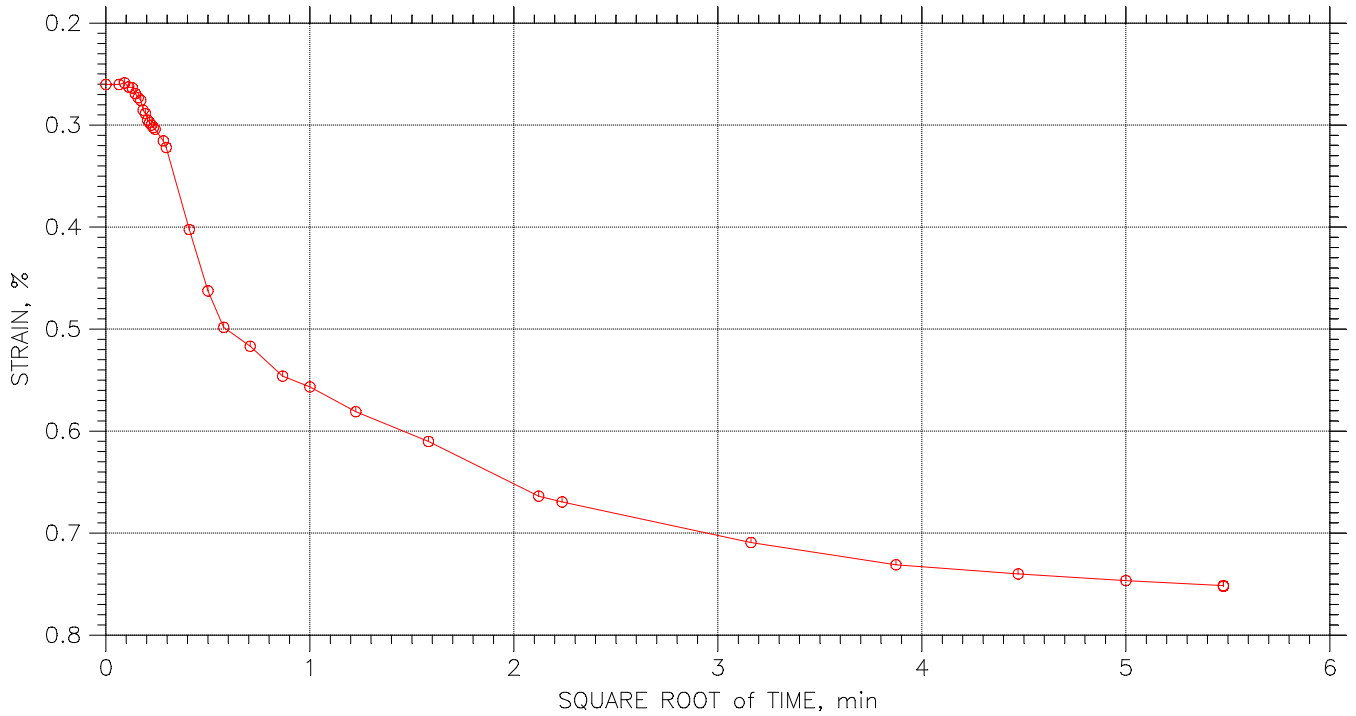
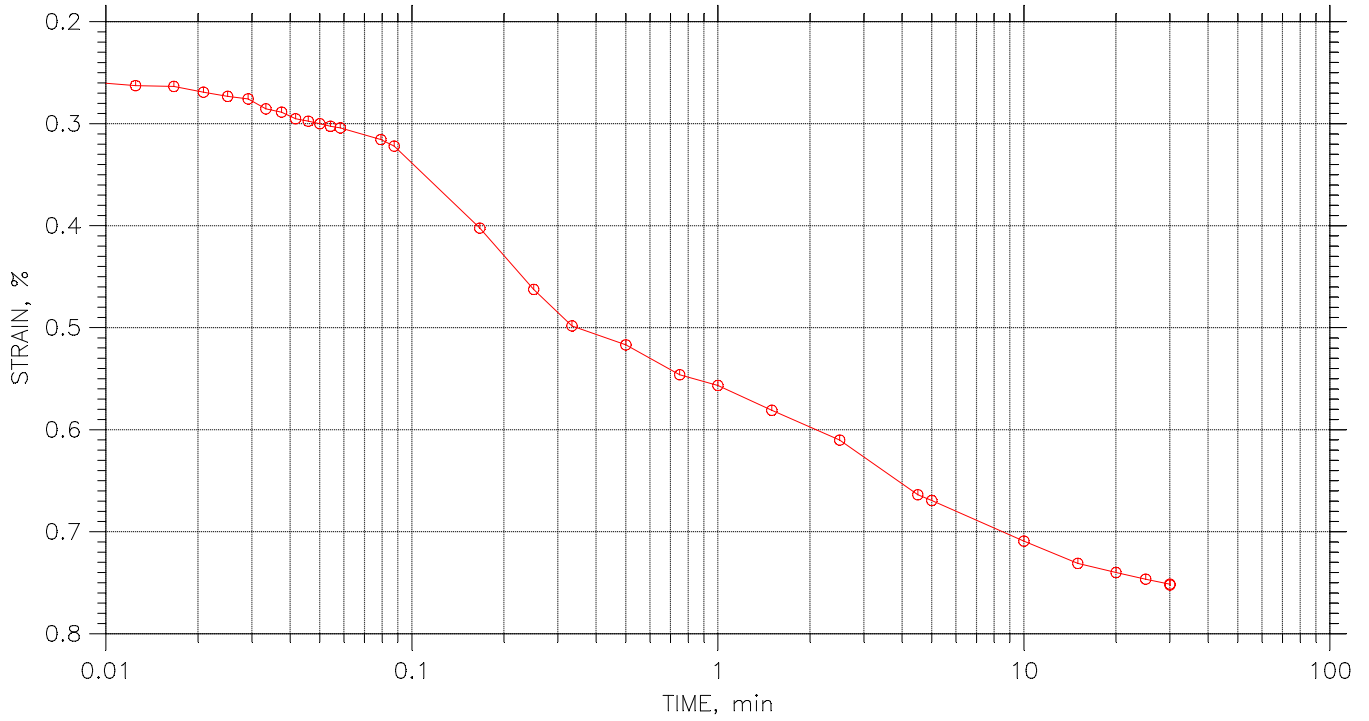
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	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 2 of 19

Stress: 250 psf



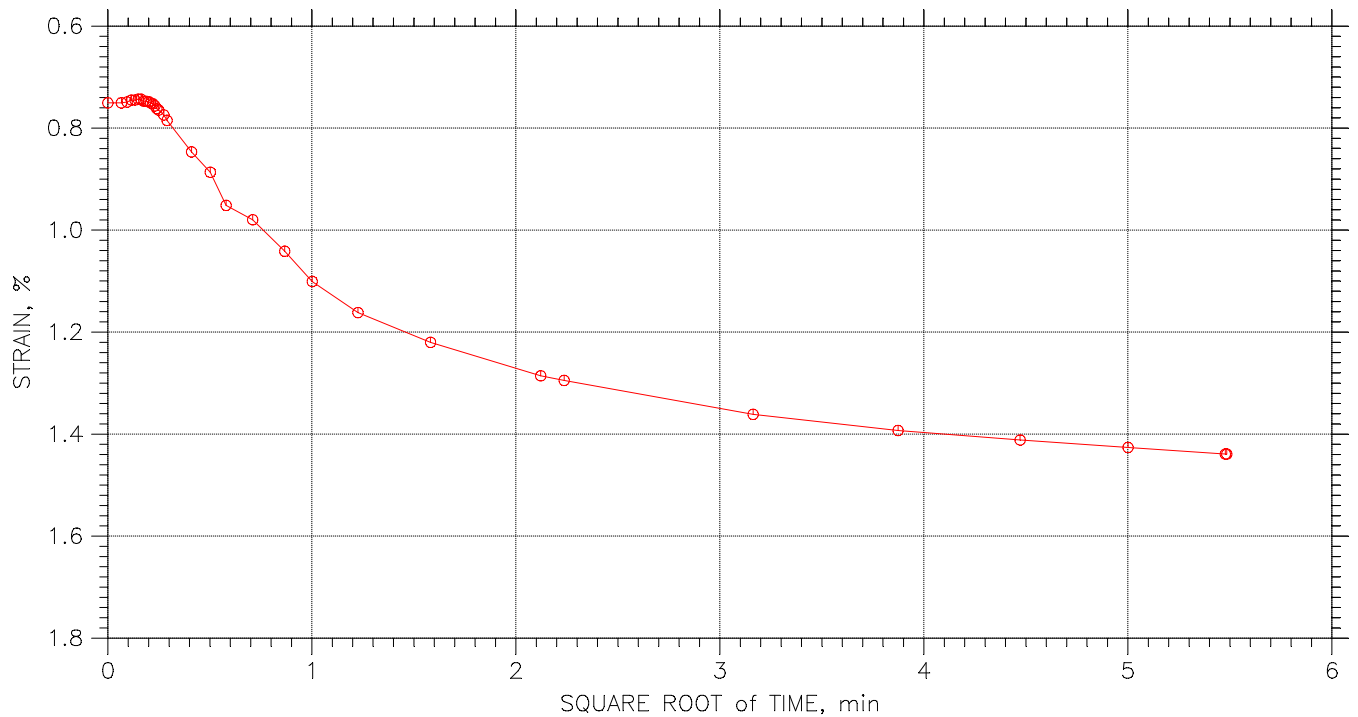
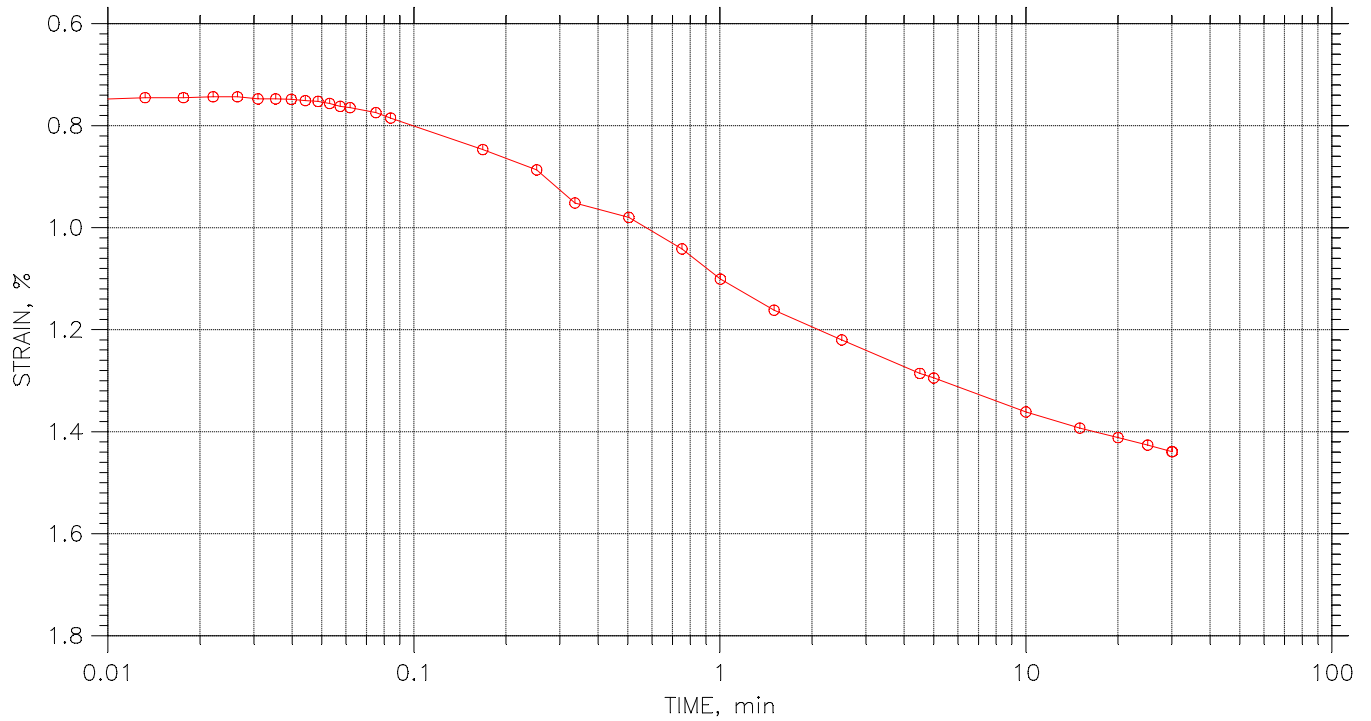
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 3 of 19

Stress: 500 psf



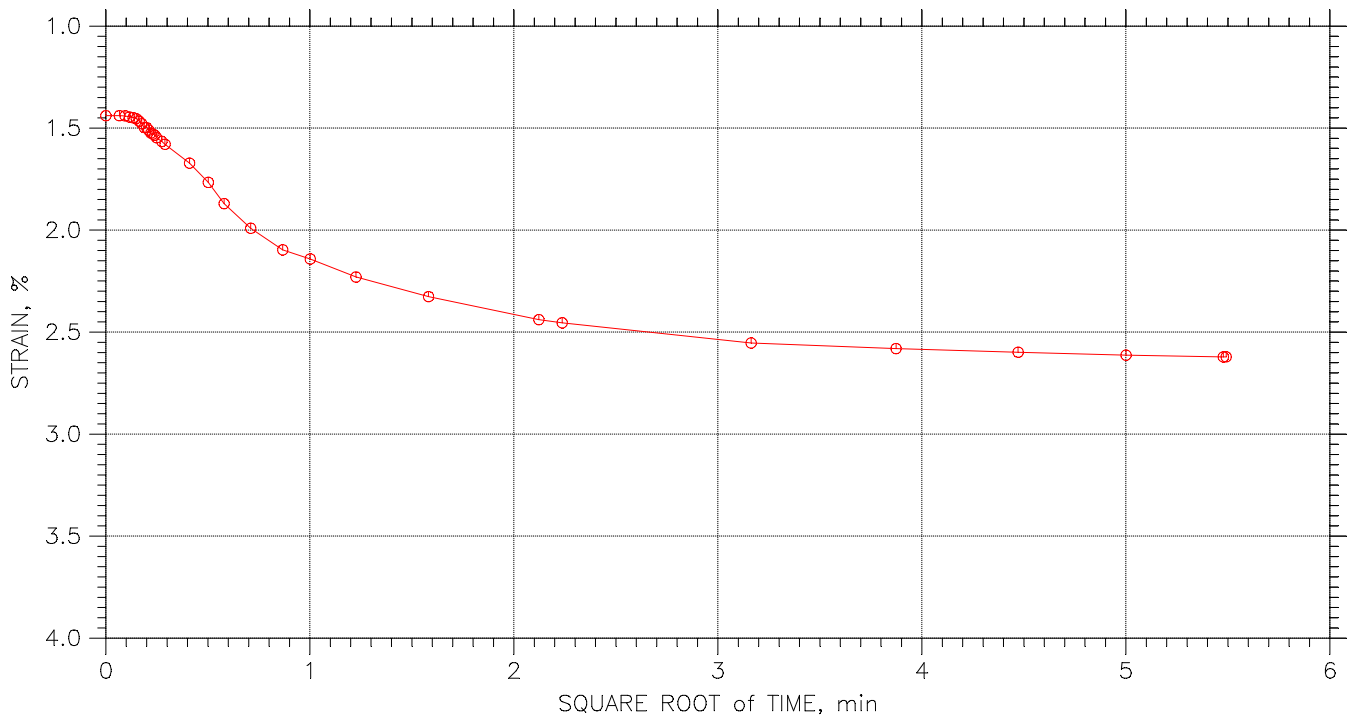
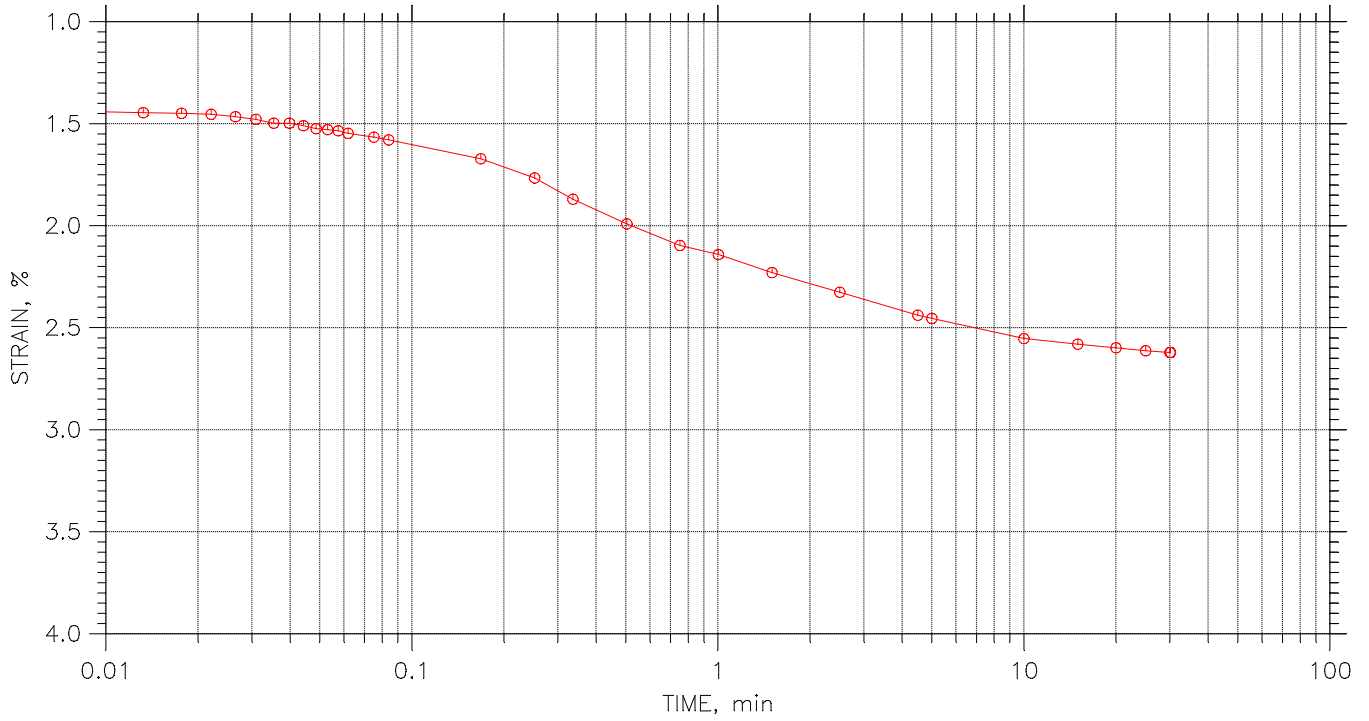
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 4 of 19

Stress: 1000 psf



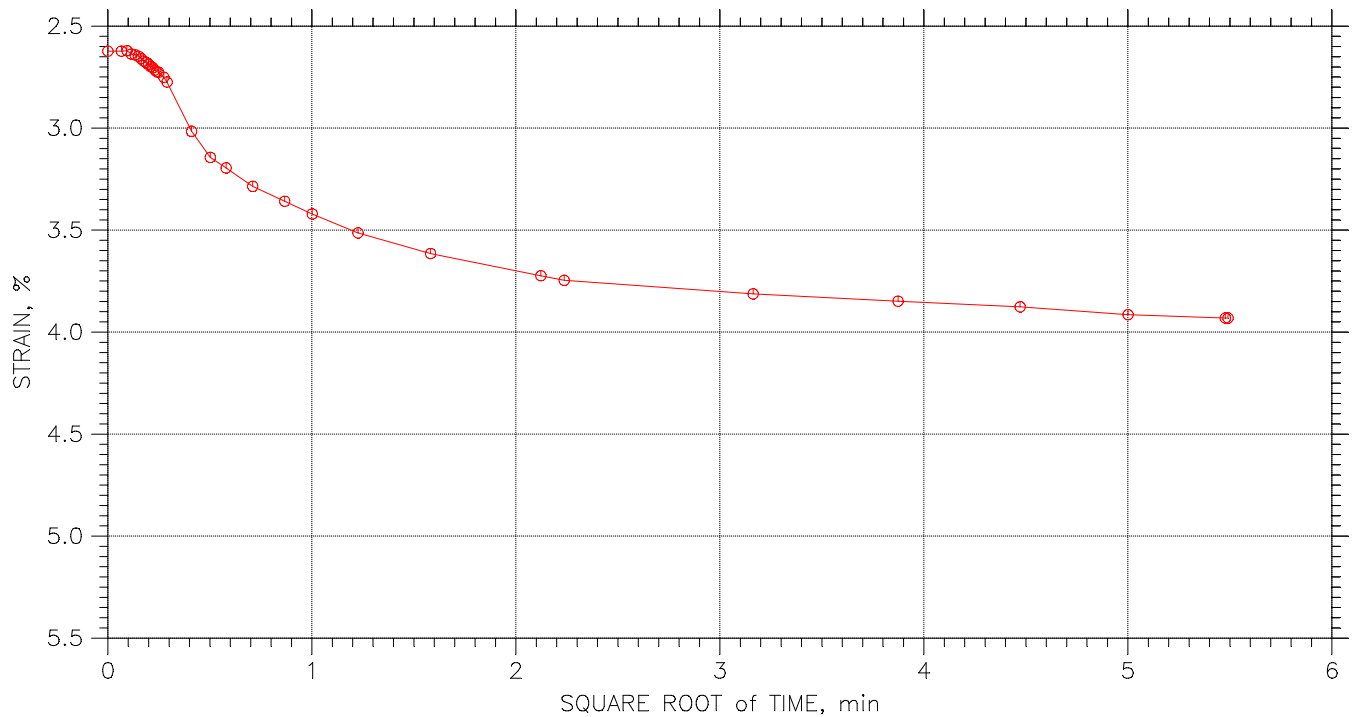
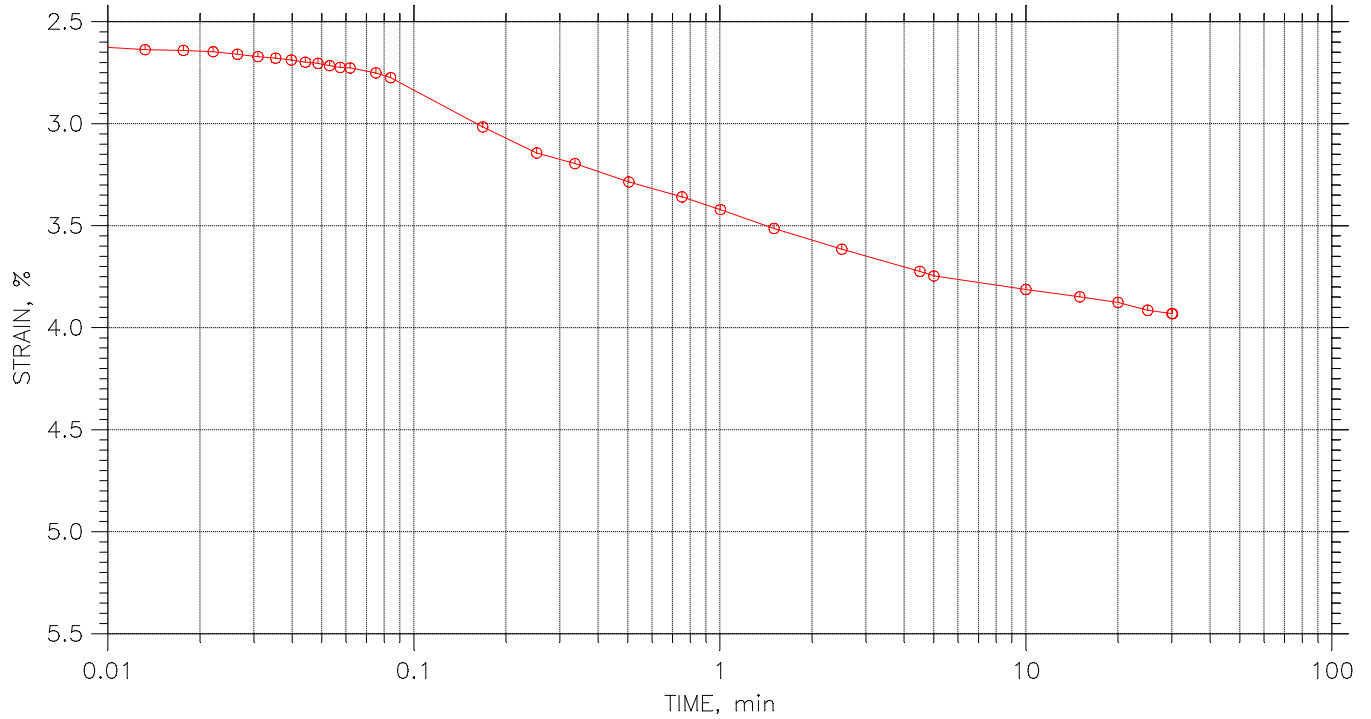
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 5 of 19

Stress: 2000 psf



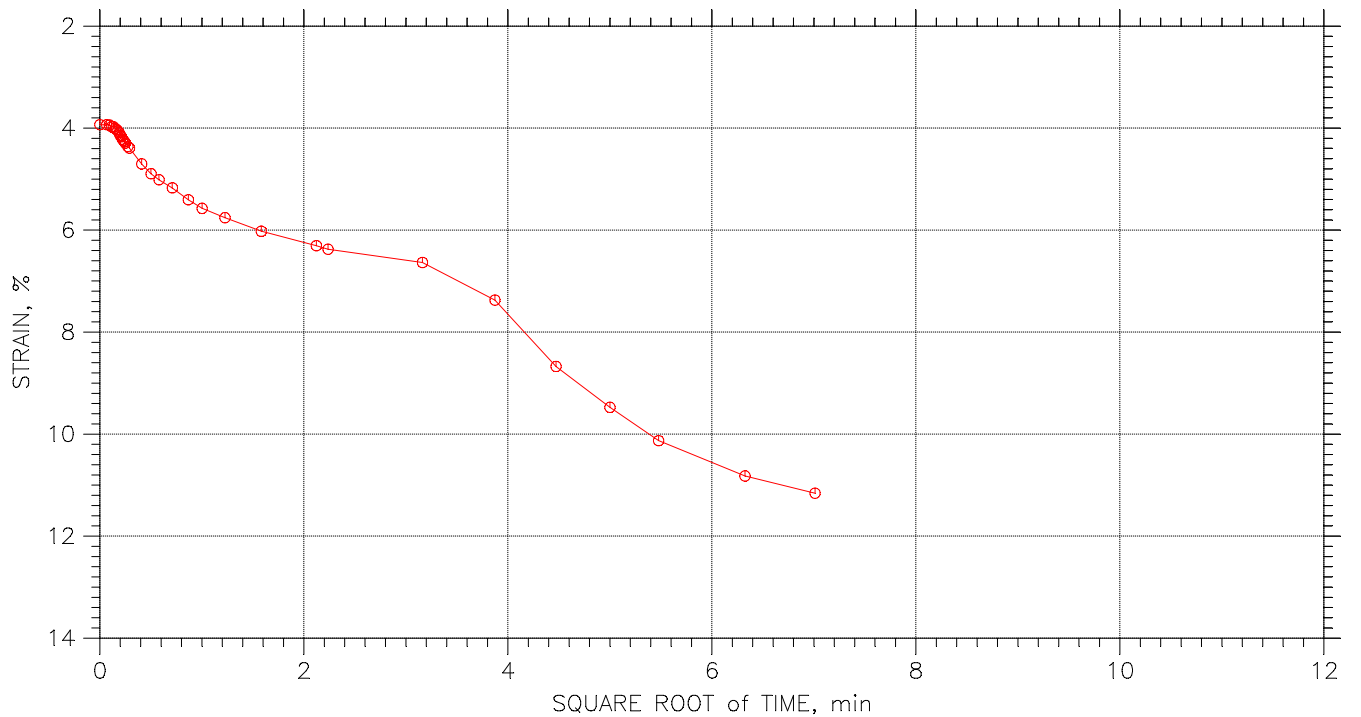
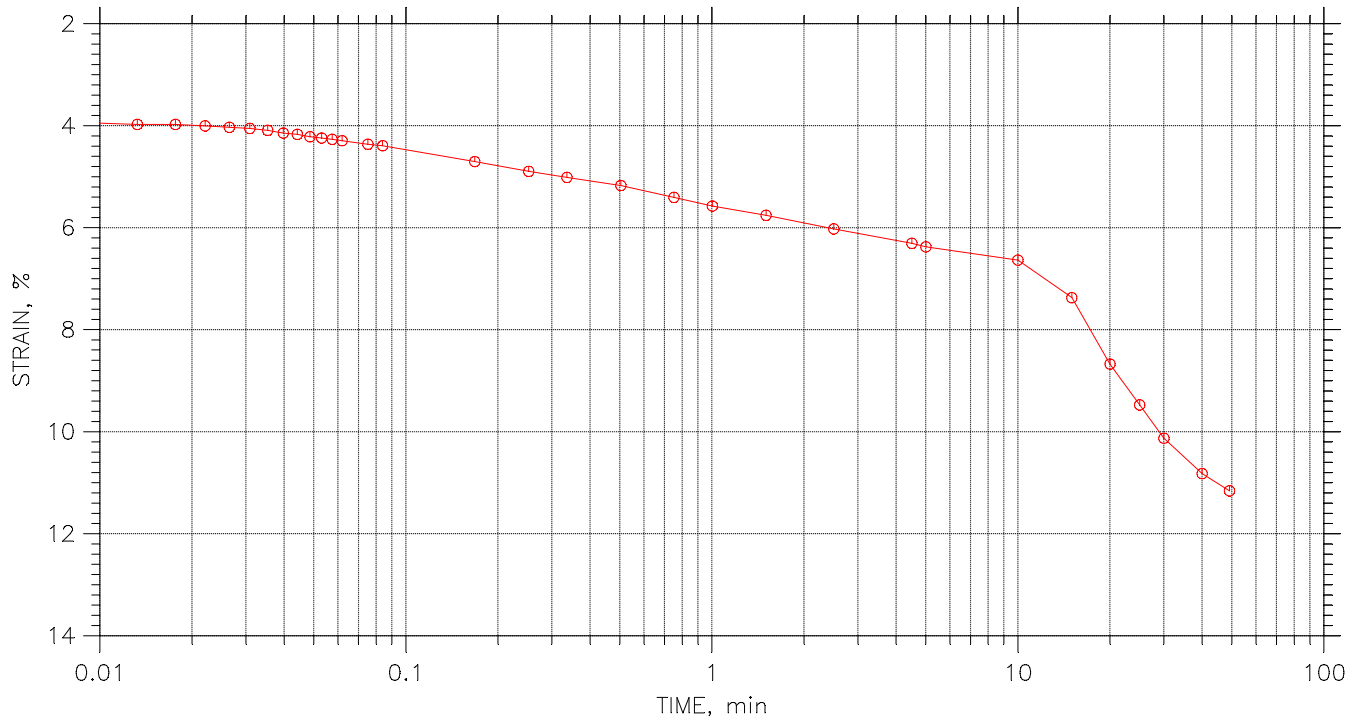
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 6 of 19

Stress: 4000 psf



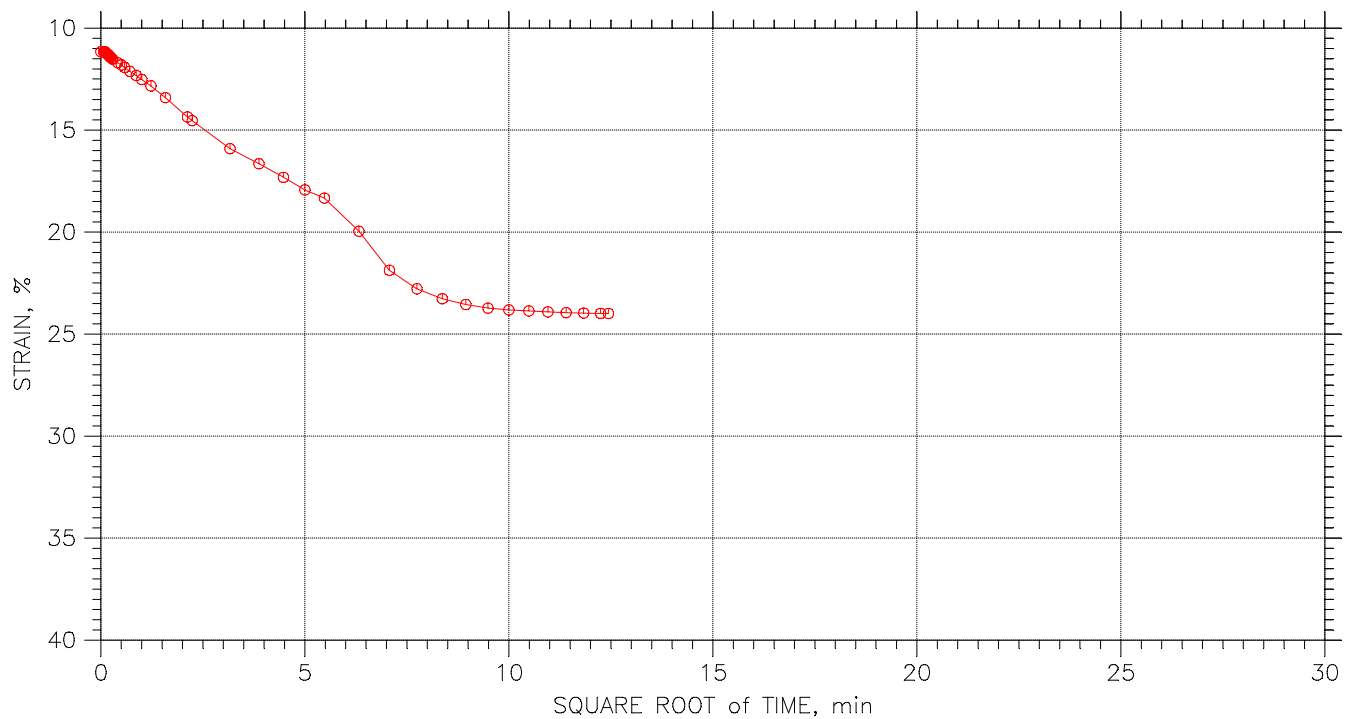
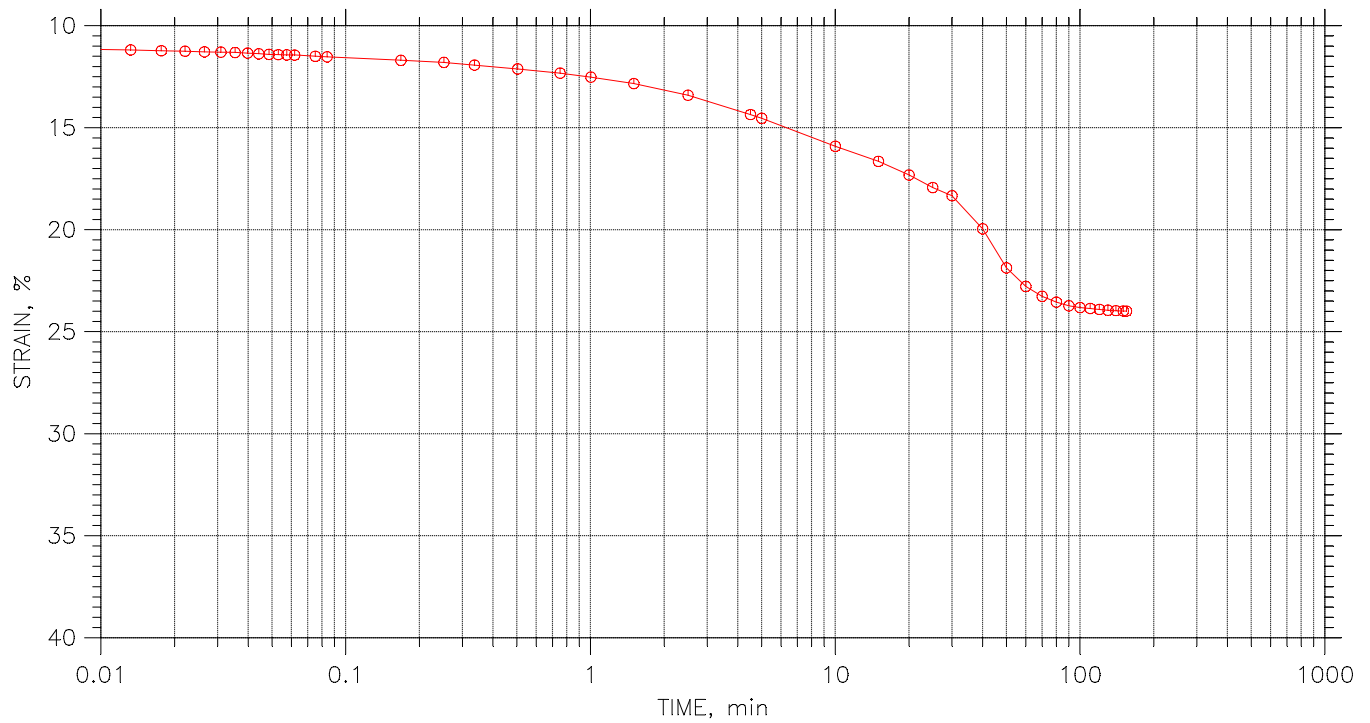
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 7 of 19

Stress: 8000 psf



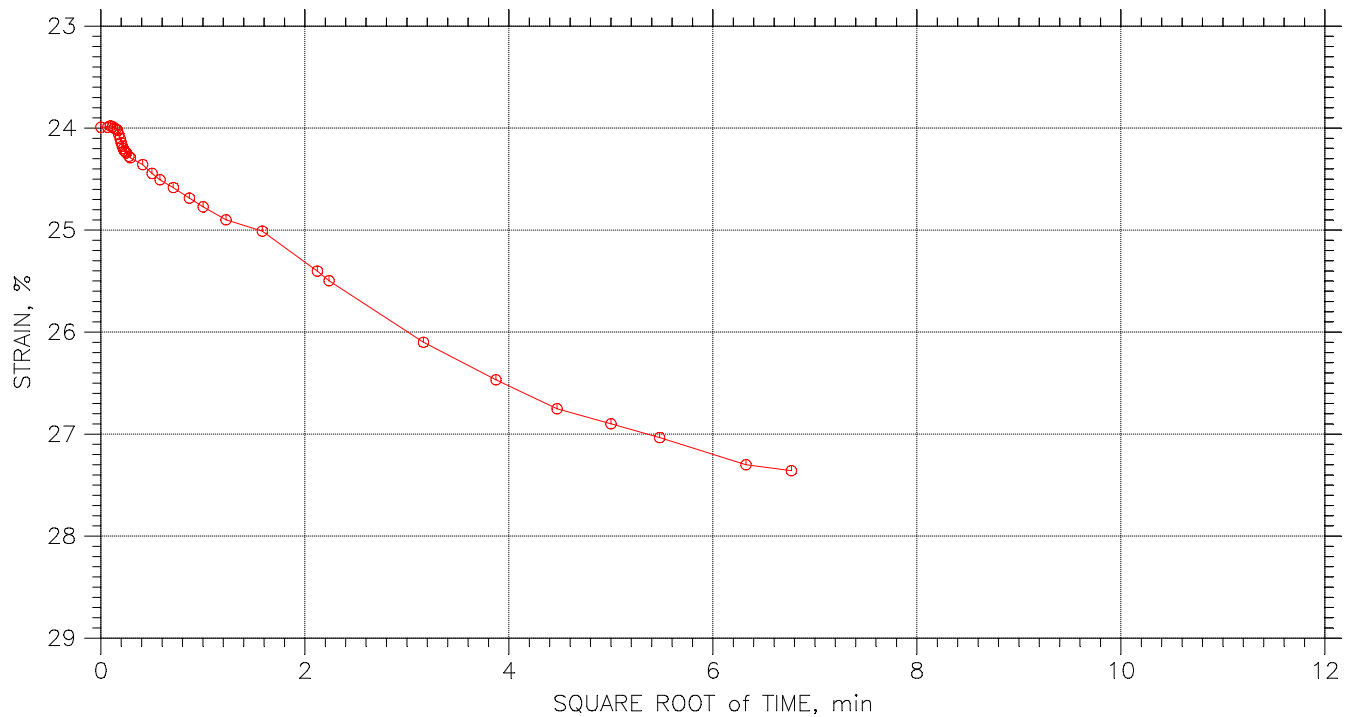
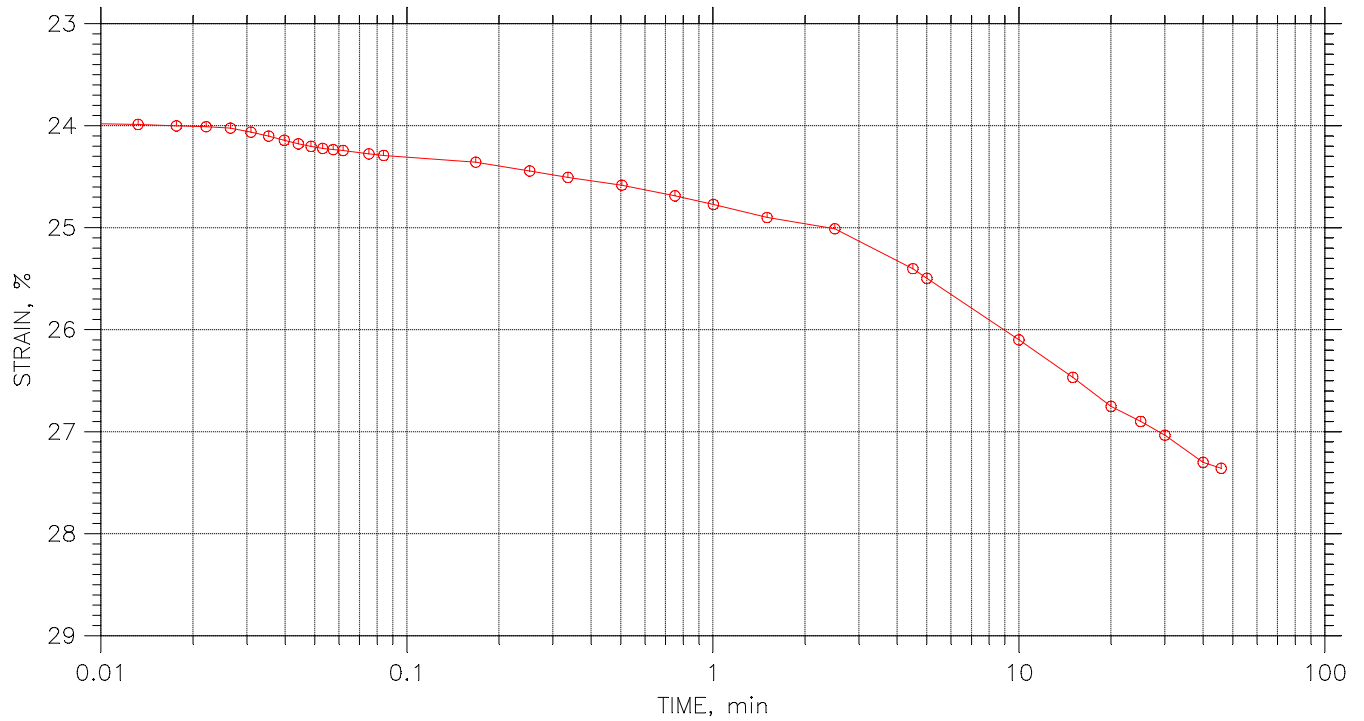
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 8 of 19

Stress: 16000 psf



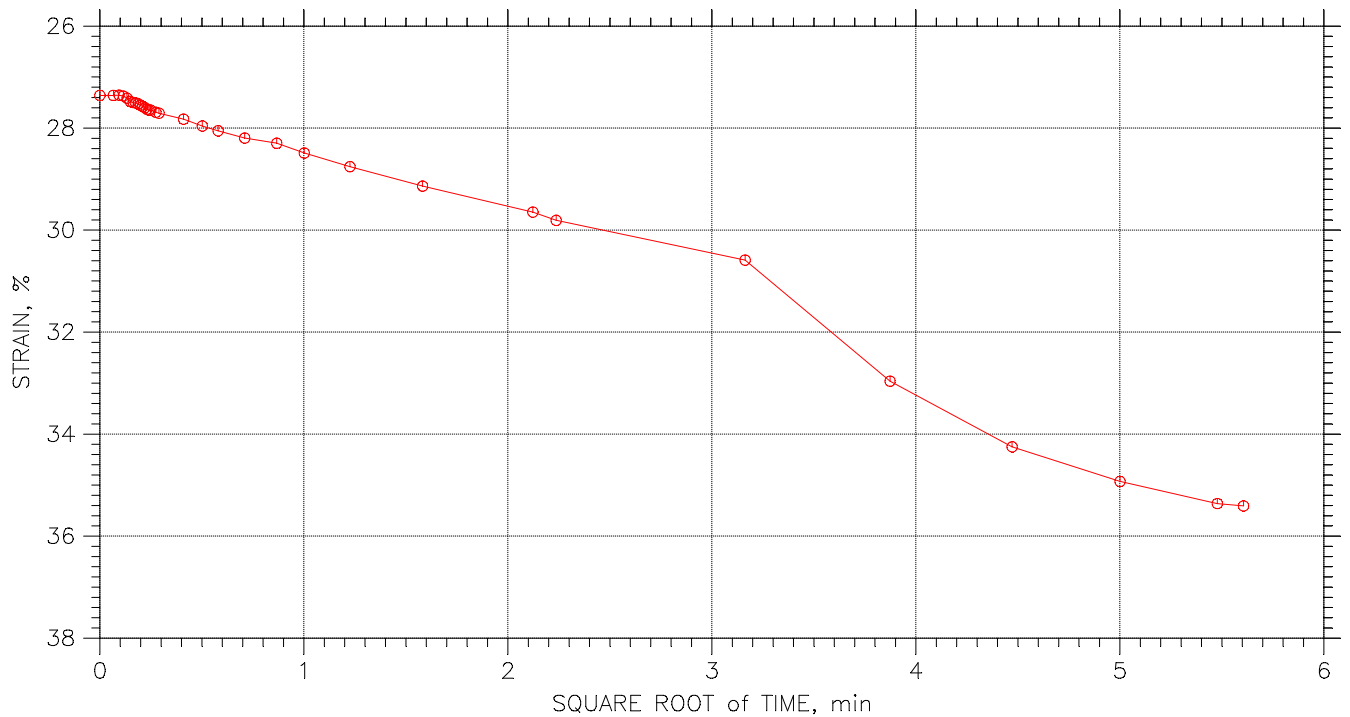
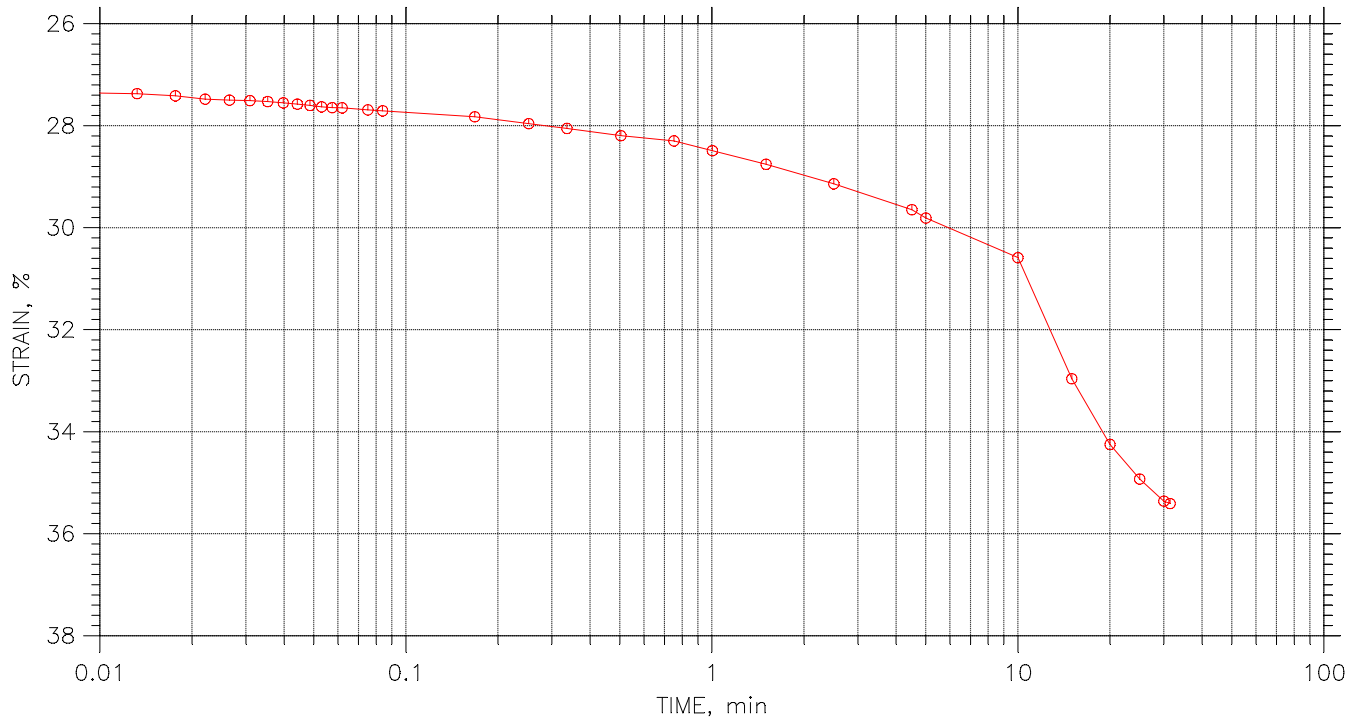
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 9 of 19

Stress: 32000 psf



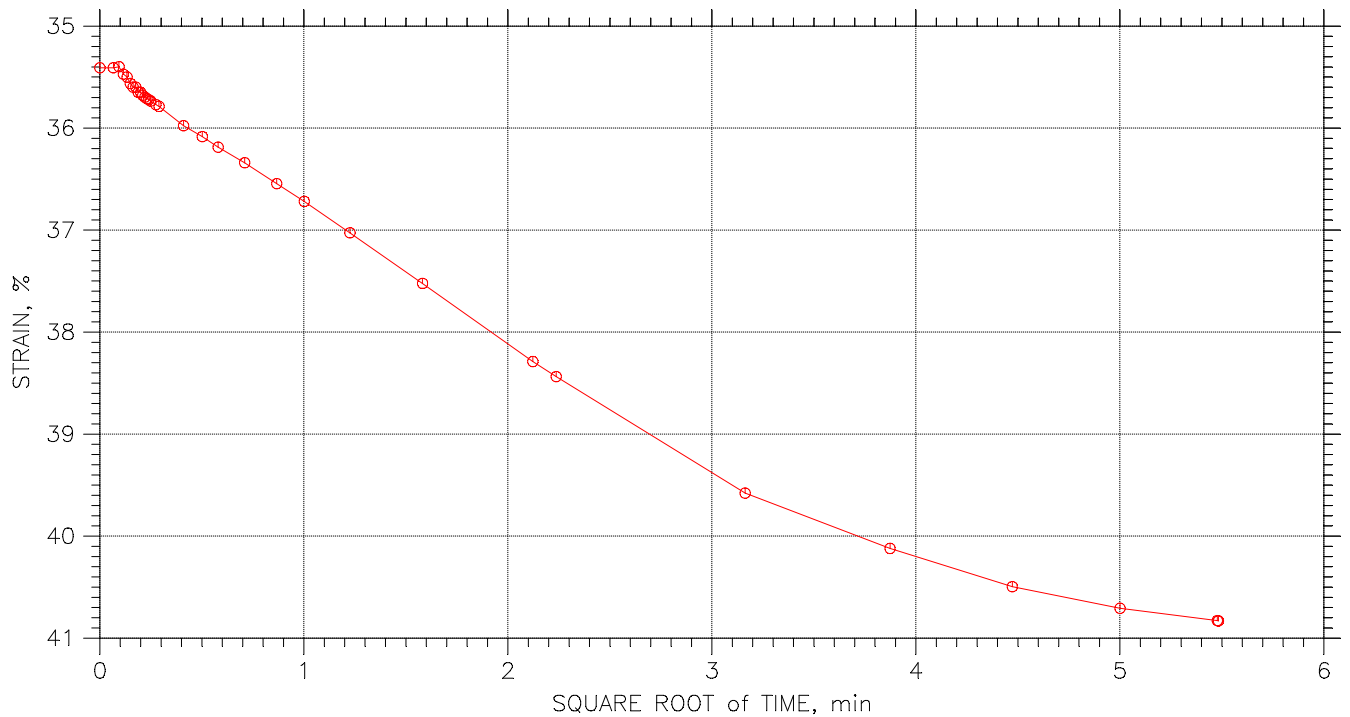
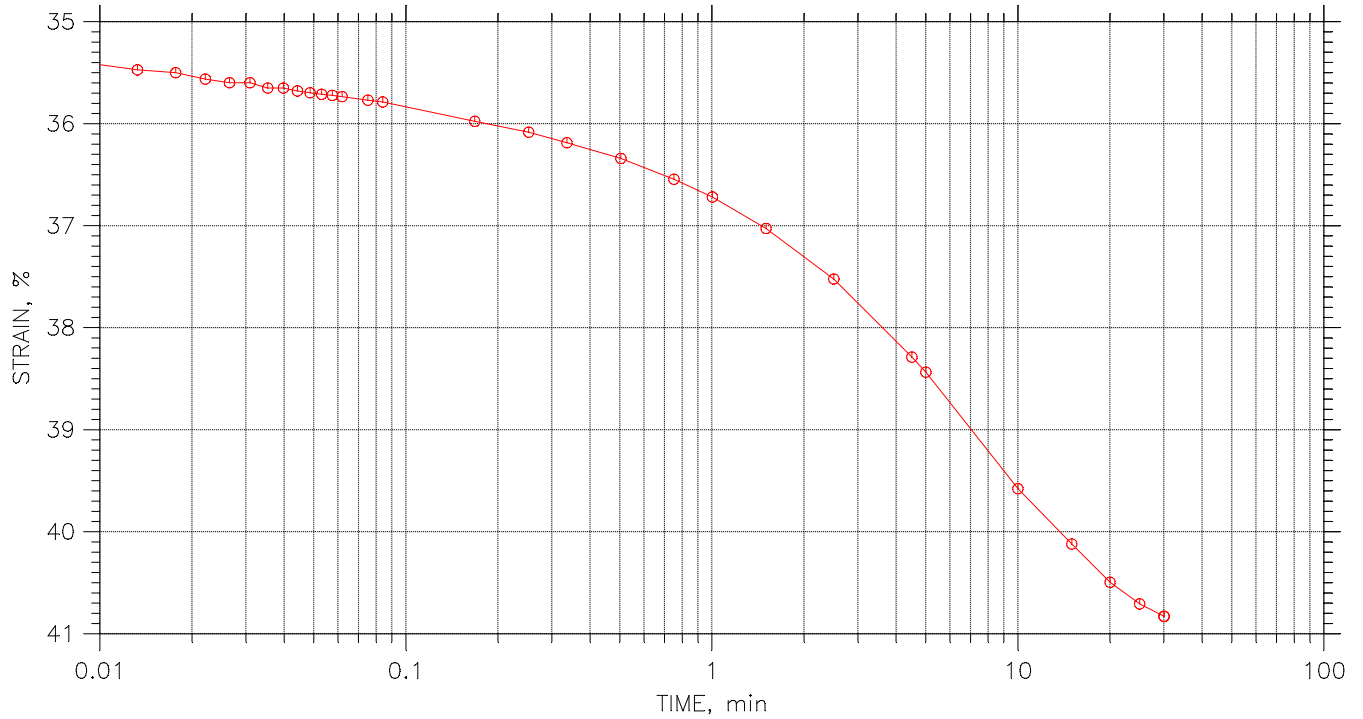
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 10 of 19

Stress: 64000 psf



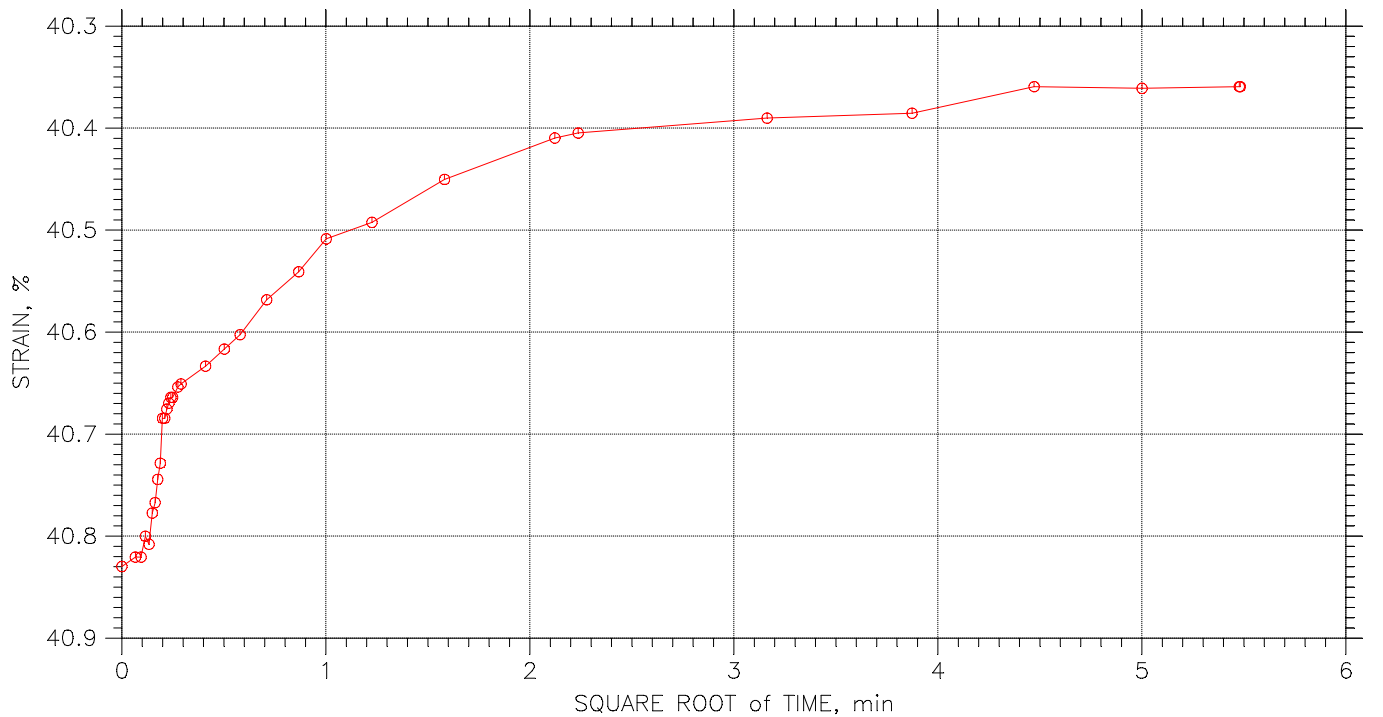
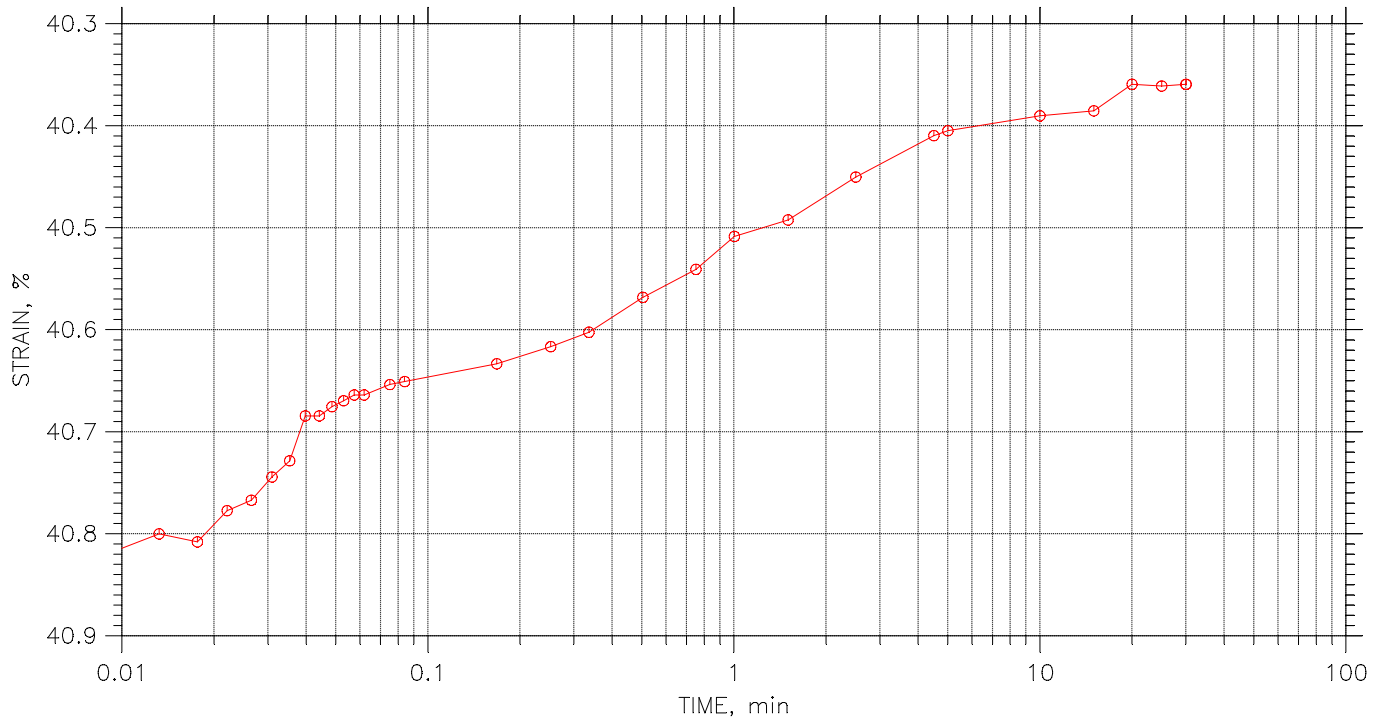
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 11 of 19

Stress: 32000 psf



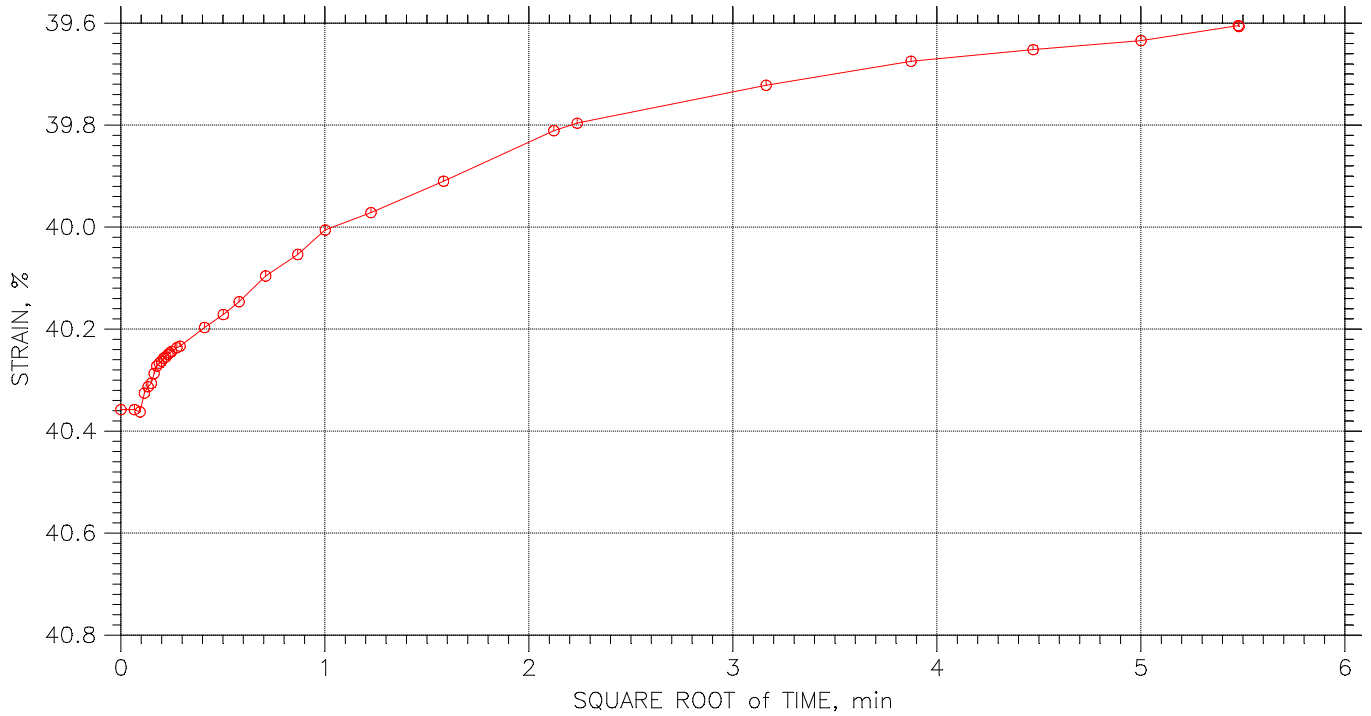
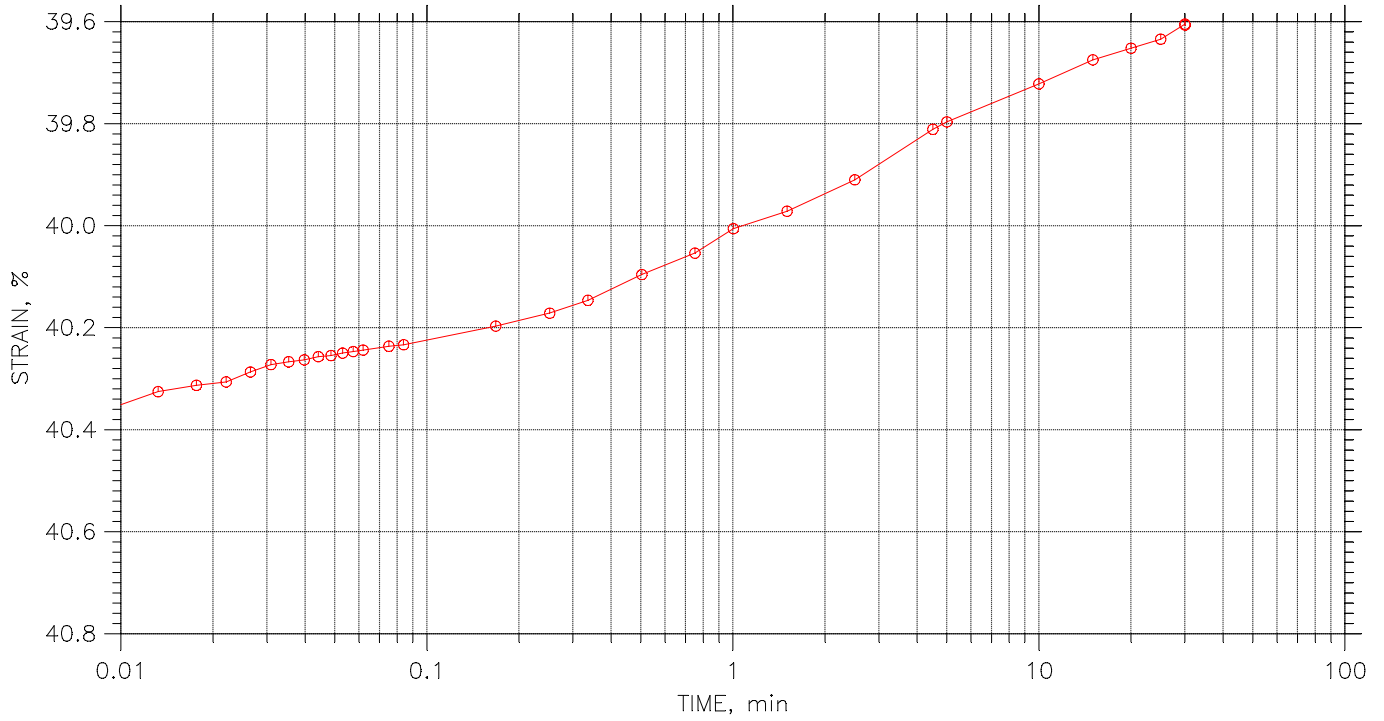
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 12 of 19

Stress: 16000 psf



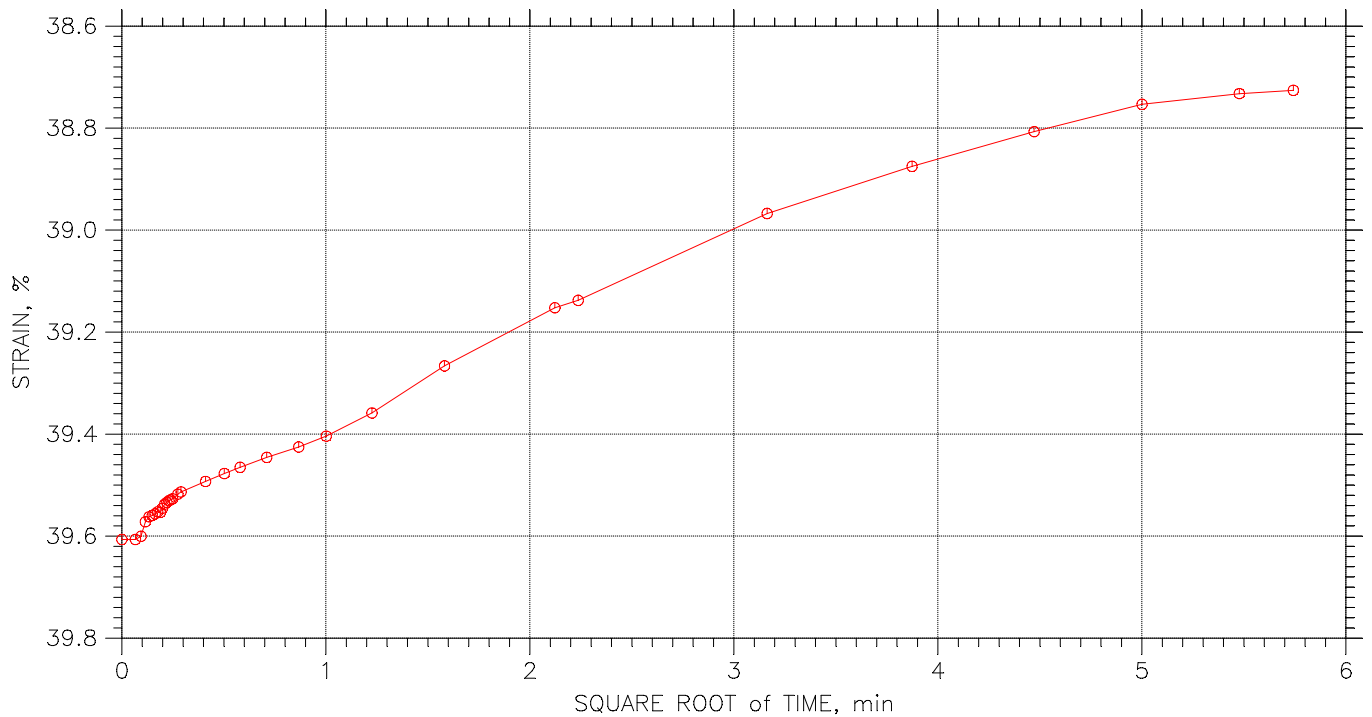
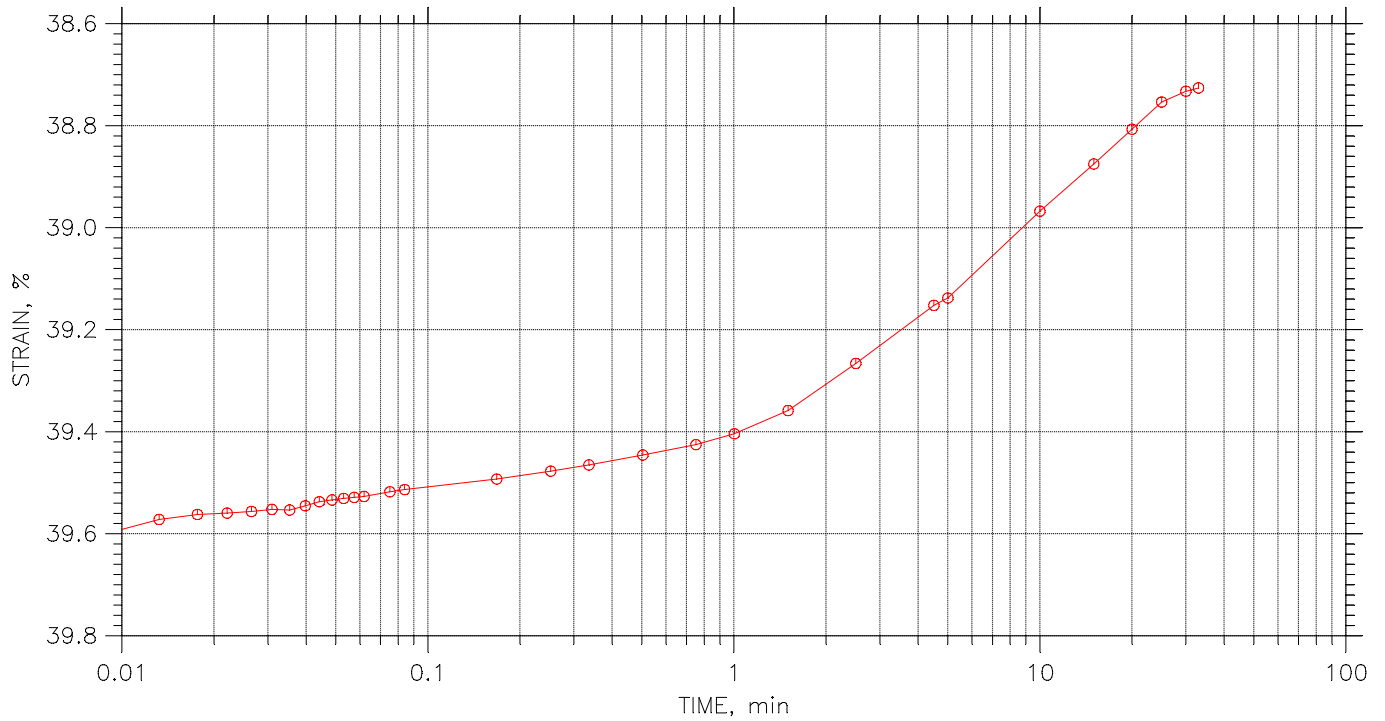
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 13 of 19

Stress: 8000 psf



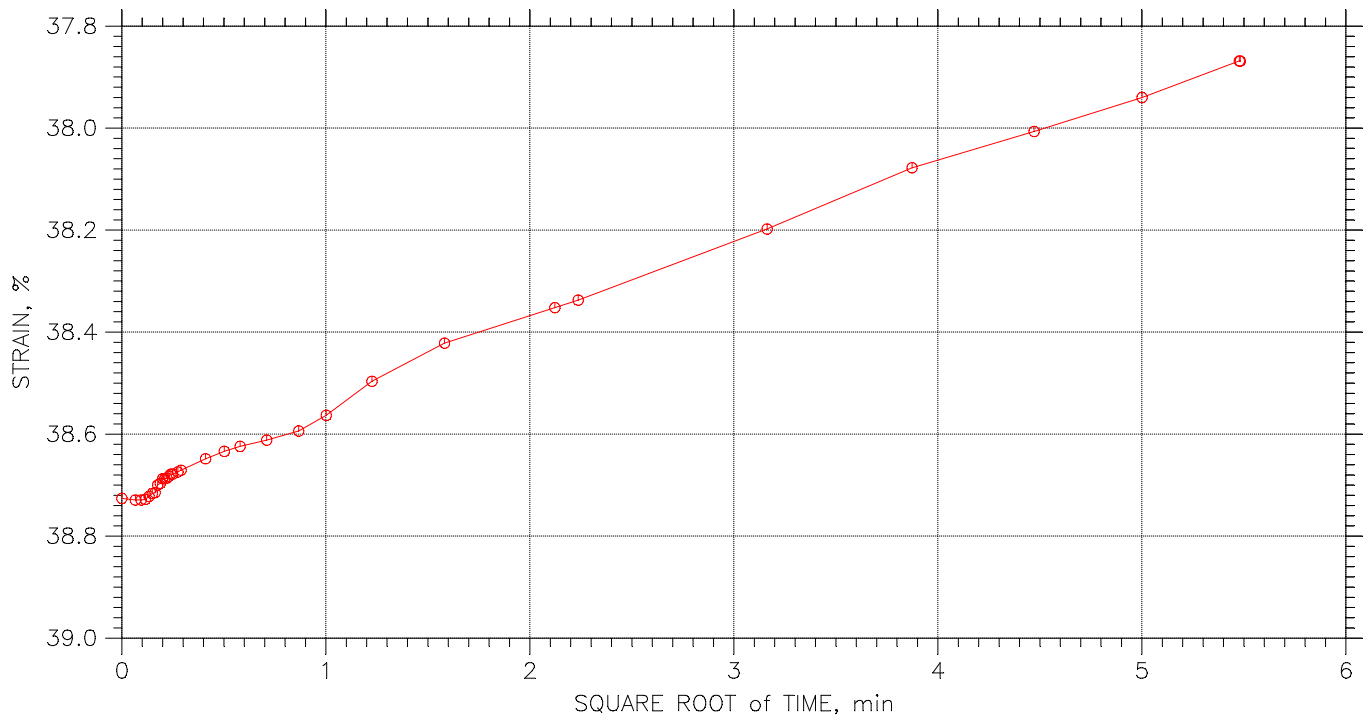
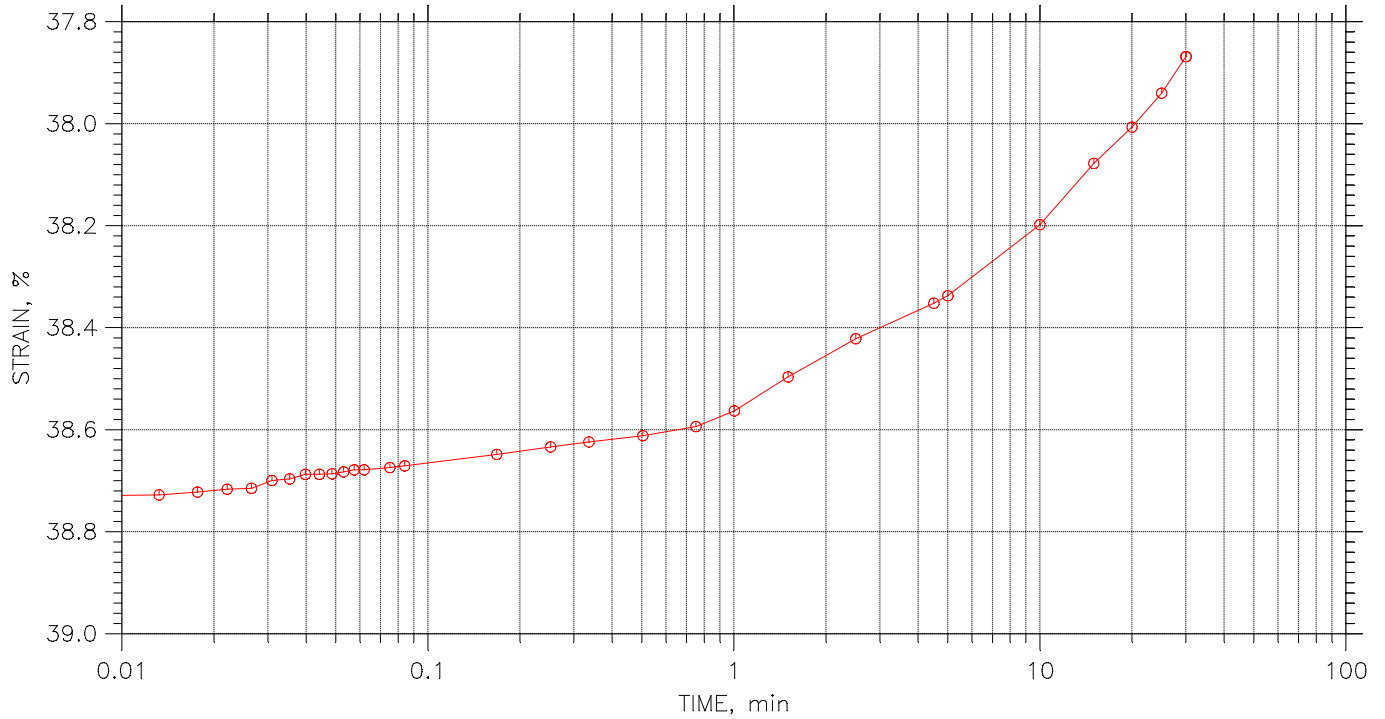
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 14 of 19

Stress: 4000 psf



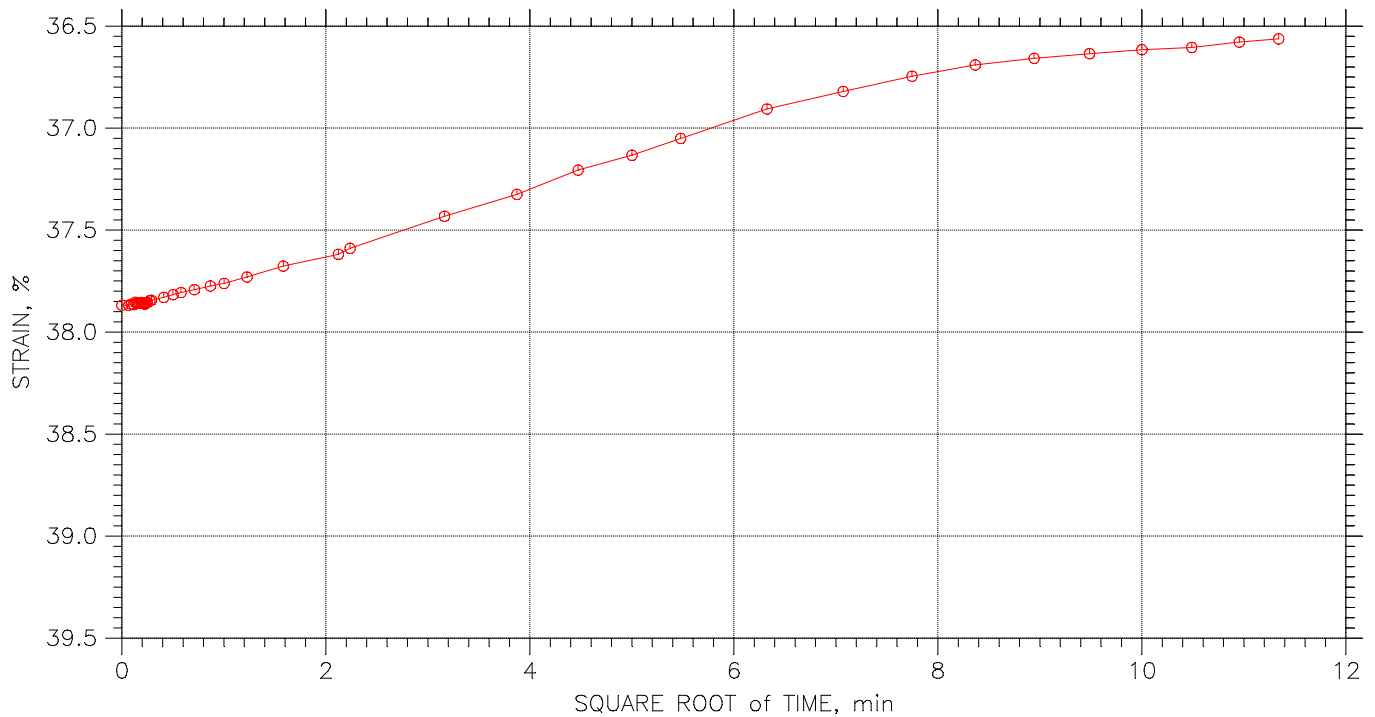
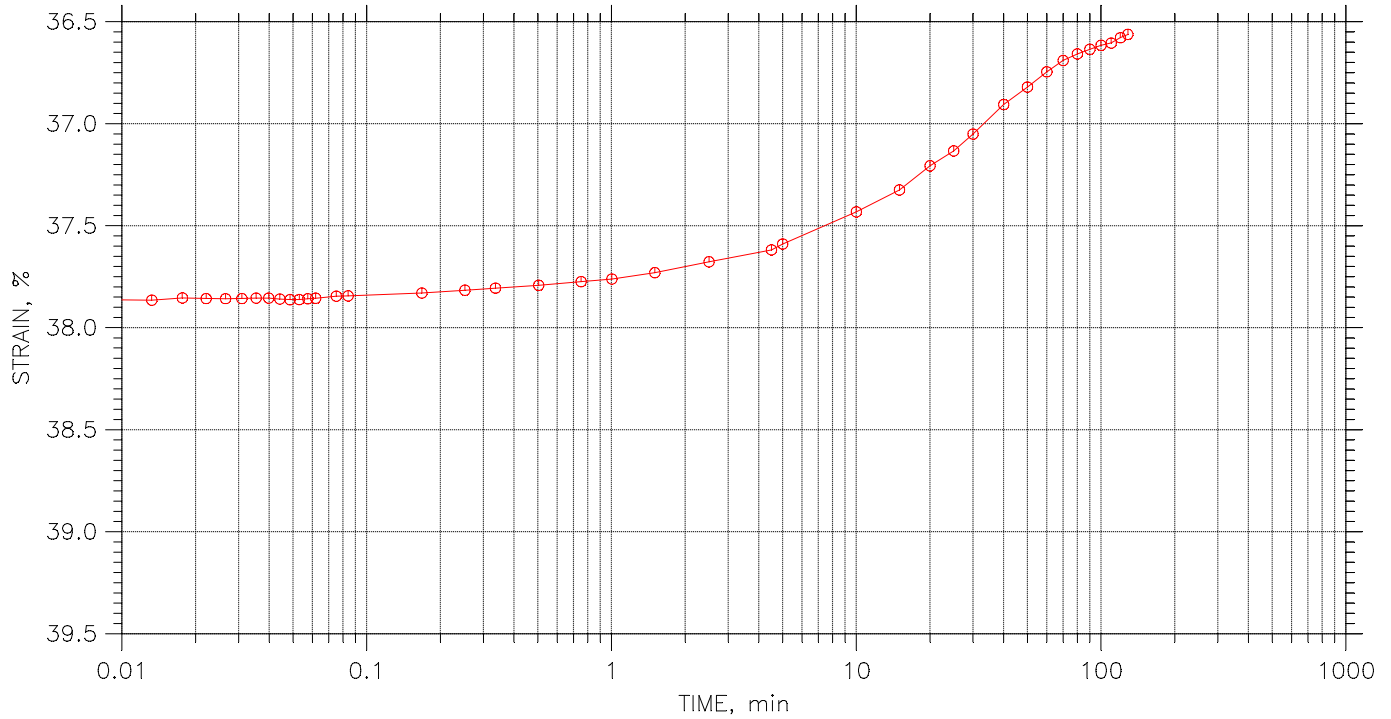
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 15 of 19

Stress: 2000 psf



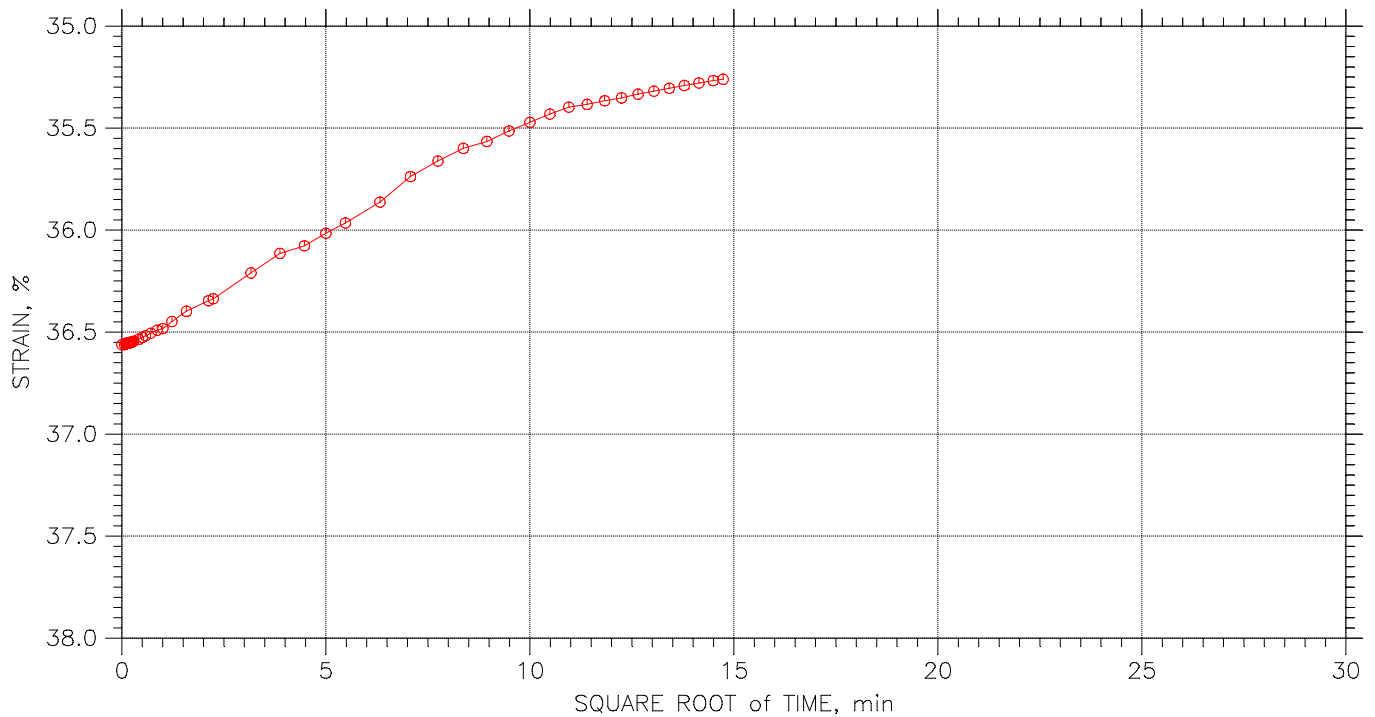
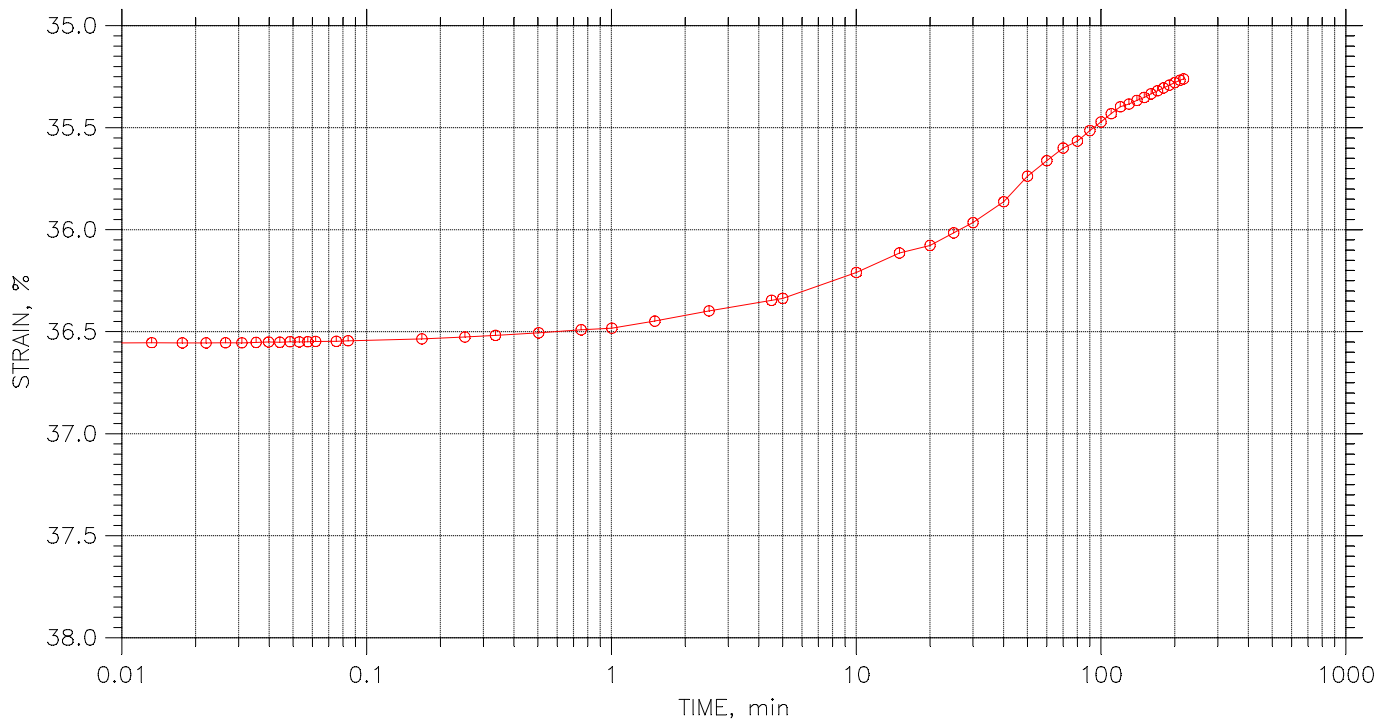
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 16 of 19

Stress: 1000 psf



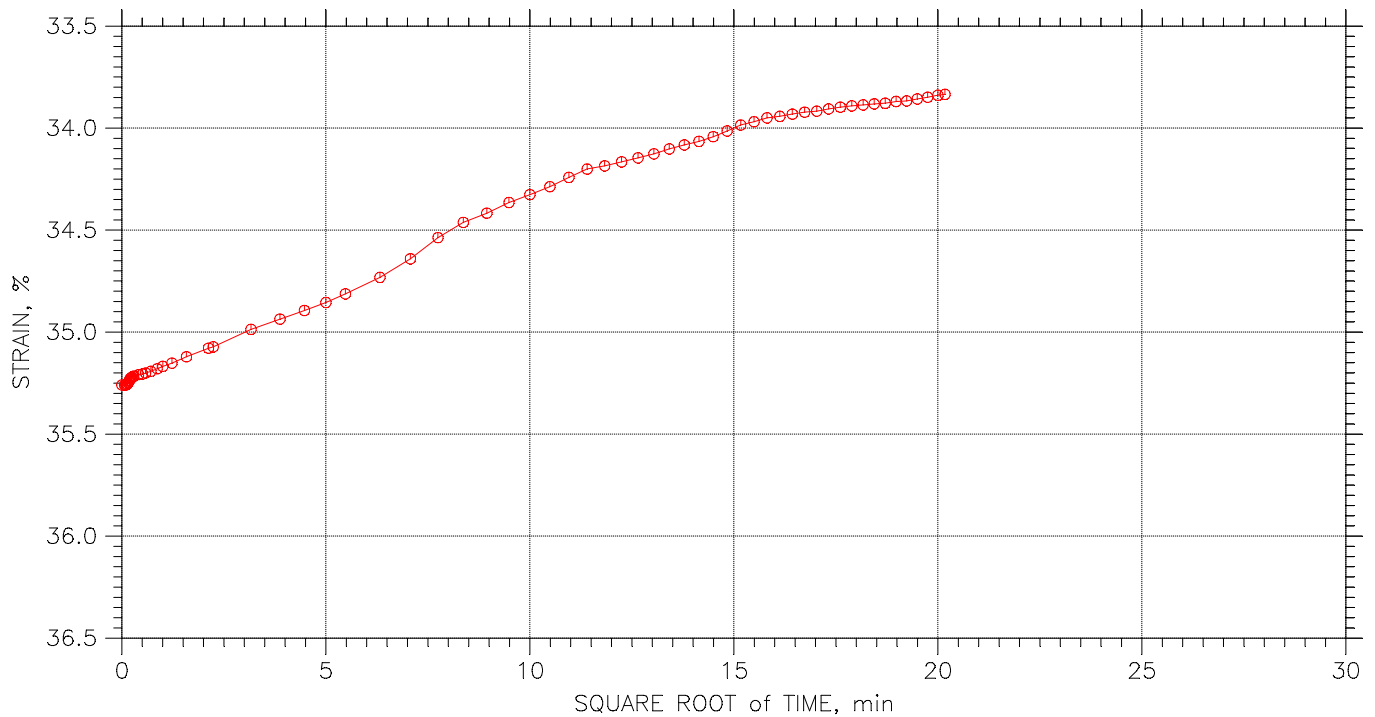
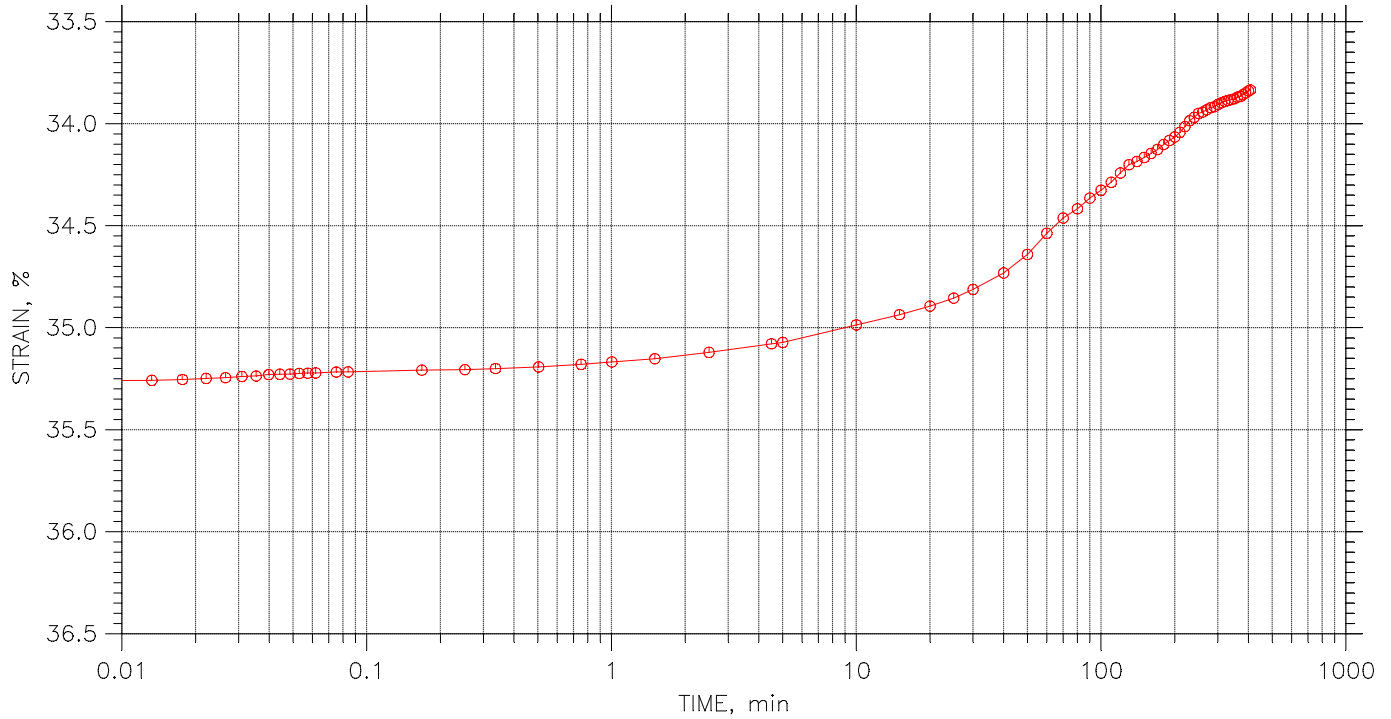
	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 17 of 19

Stress: 500 psf



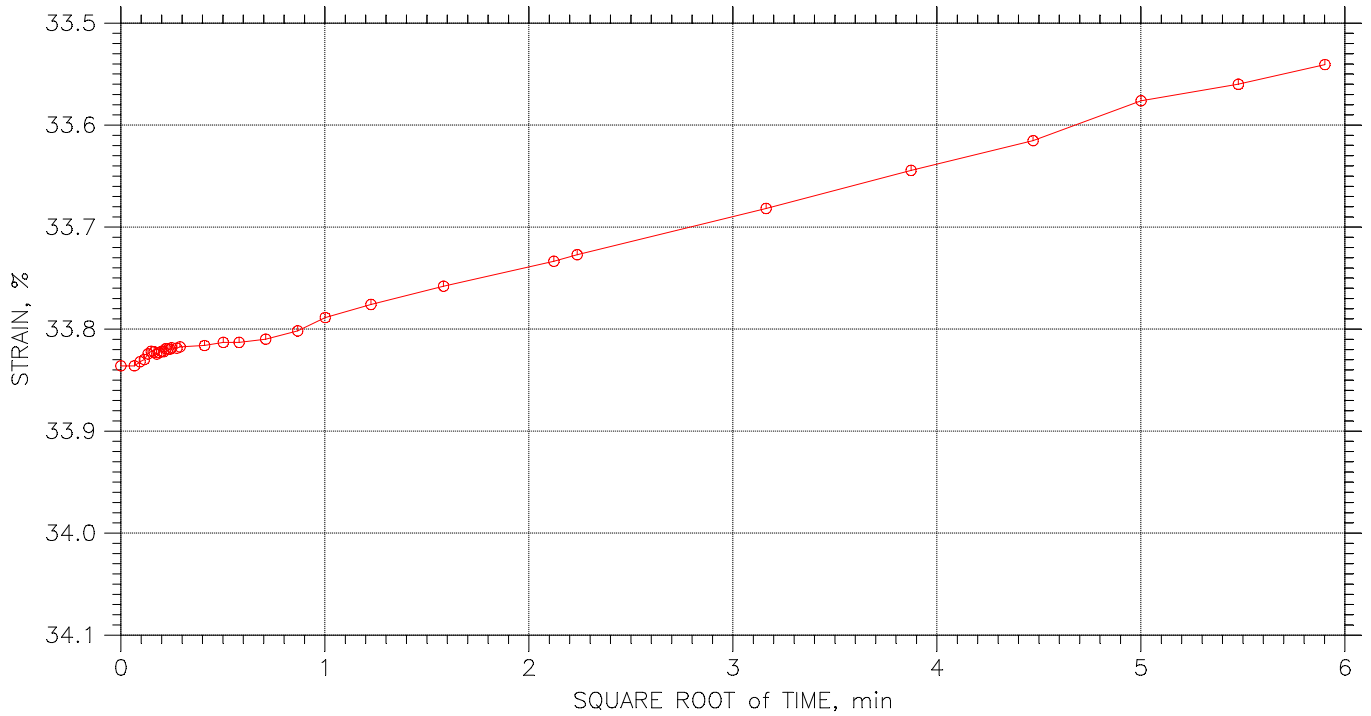
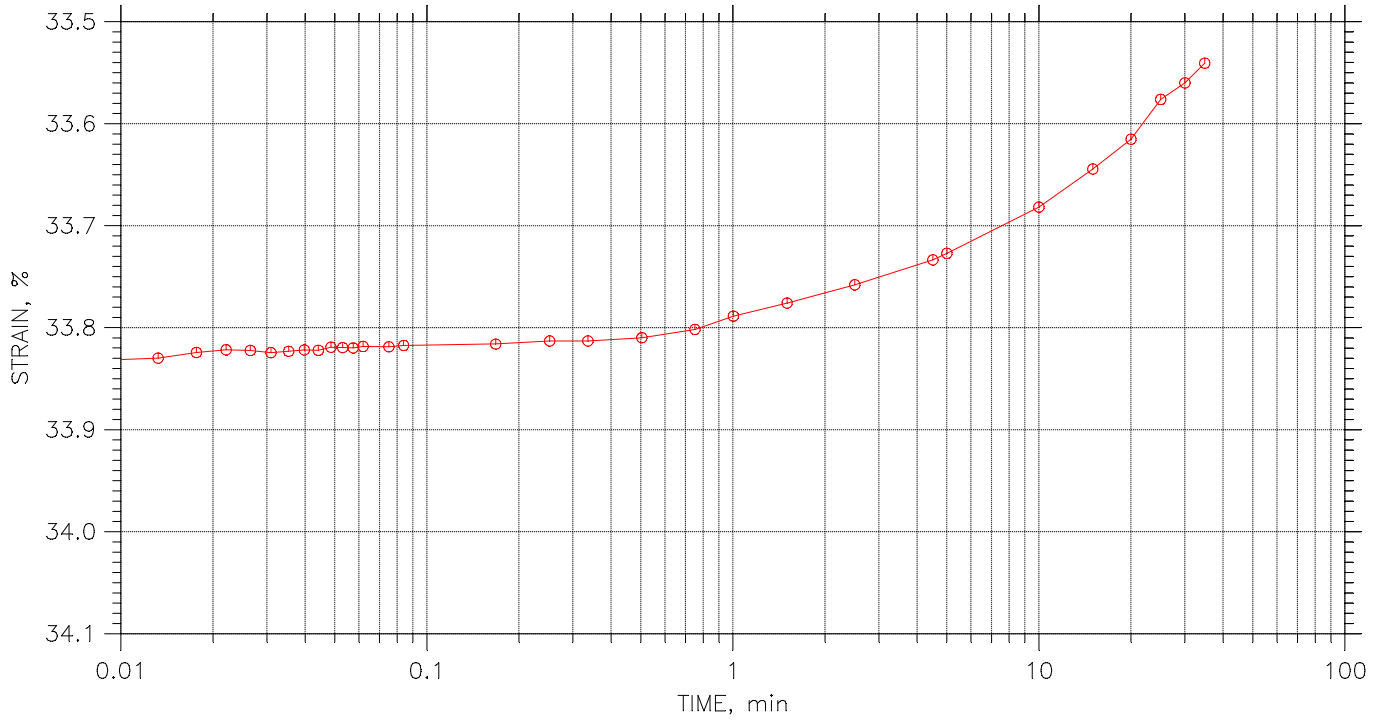
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	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 18 of 19

Stress: 250 psf



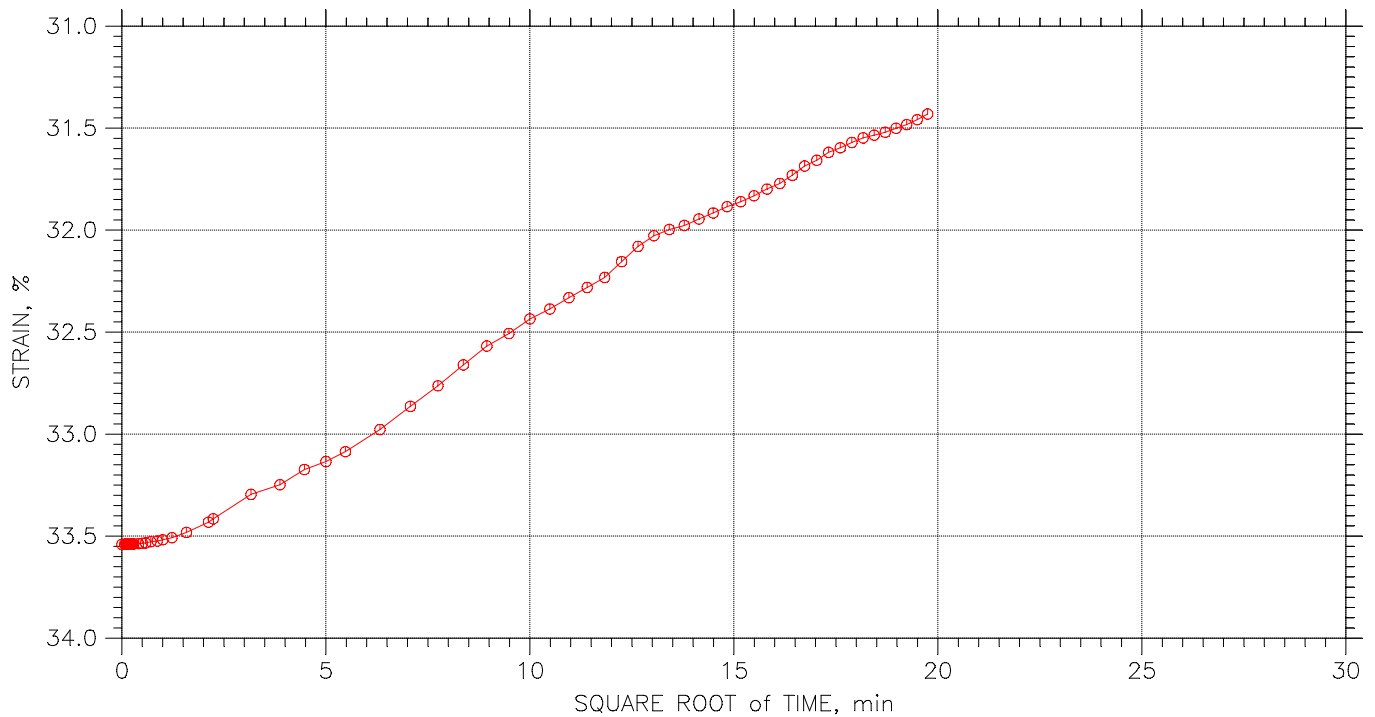
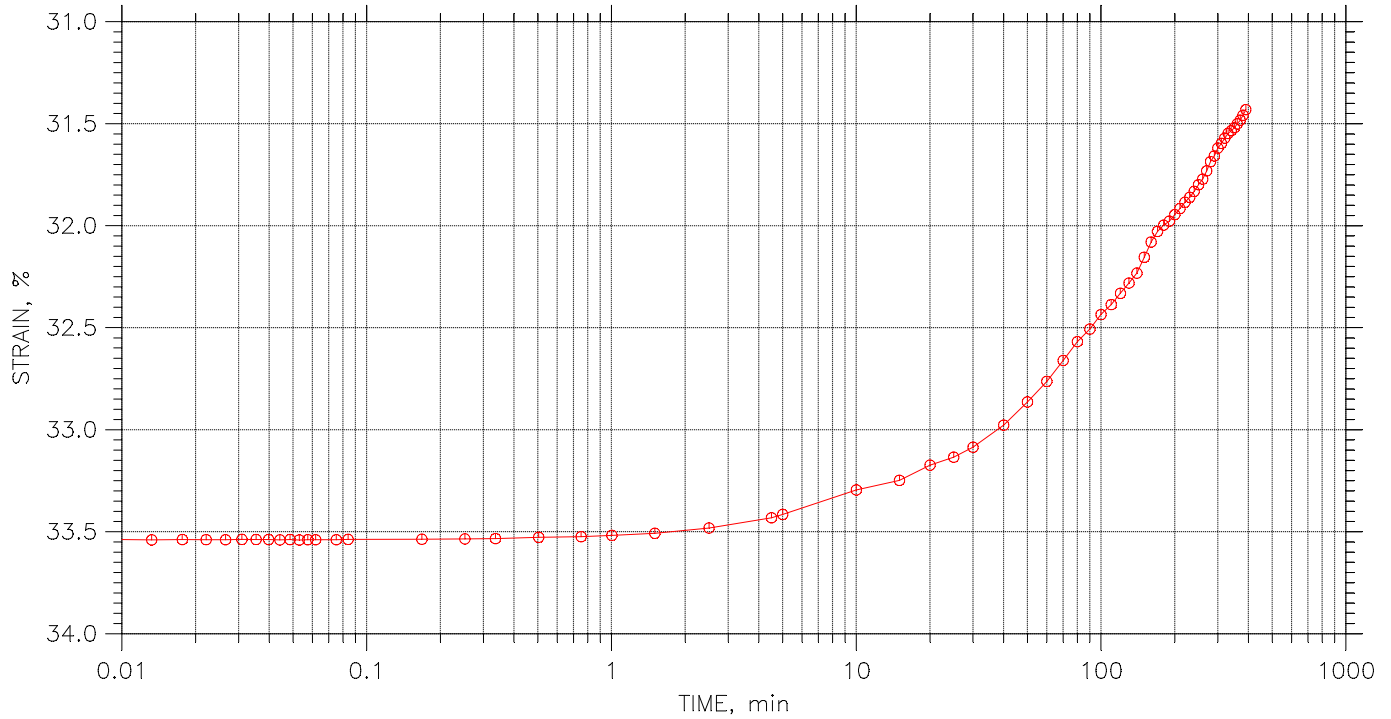
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	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

Consolidation Test

TIME CURVES

Constant Load Step 19 of 19

Stress: 100 psf



	Project: 13-040-05	Location:	Project No.: 34564
	Boring No.: -	Tested By: PEP	Checked By:
	Sample No.: ST2	Test Date: 11/2/15	Test No.: 1
	Depth: -	Sample Type:	Elevation: -
	Description:		
	Remarks: Specific gravity estimated at 2.65; if incorrect saturation values may calculate > 100%		

APPENDIX B

Permits

MEMORANDUM**DATE:** April 4, 2016**TO:** File**FROM:** Owen Means, Environmental Specialist **RE:** Kake BFU/RPSU Projects
No Preconstruction Notification under Nationwide Permit 18 – Minor DischargesCIVIL
ENGINEERINGGEOTECHNICAL
ENGINEERINGTRANSPORTATION
ENGINEERINGENVIRONMENTAL
SERVICES

PLANNING

SURVEYING
& MAPPINGCONSTRUCTION
ADMINISTRATIONMATERIAL
TESTINGRIGHT-OF-WAY
SERVICES

The purpose of this memorandum is to document the above-referenced project's impacts to waters of the U.S. and notification requirements to the U.S. Army Corps of Engineers.

Project Description

The Alaska Energy Authority (AEA) is proposing to construct a new bulk fuel storage facility and power generation facility in Kake, Alaska (Figure 1). The new facilities would be owned and operated the Kake Tribal Corporation (KTC) and Inside Passage Electric Cooperative (IPEC), respectively.

The project would consist of the following (Figure 2):

- New KTC bulk fuel tank farm facility, including access driveway, gravel pad, on-grade secondary containment structure with poured concrete dike walls, and fuel tanks.
- Vehicle dispensing equipment, including vehicle dispenser at the KTC retail sales site, truck fill dispenser with canopy and containment sump, and marine dispenser piping at proposed dock location.
- Distribution piping, including marine header fill lines, truck fill and vehicle dispensing distribution piping, and marine dispensing distribution piping at new dock location.
- New IPEC power plant facility, including gravel pad and generator module building.
- New bulk fuel storage tanks installed in the existing IPEC tank farm secondary containment dike.
- New main community step up transformer.

The existing power plant and tank farm in the community of Kake, Alaska are outdated and in need of upgrades. The purpose of this project is to provide code compliant facilities with sufficient storage capacity to support Kake's retail fuel needs, increase generator efficiency, mitigate safety and environmental concerns, reduce operation and maintenance costs, and provide opportunities for future alternative energy and heat recovery system integration to the community.

Impacts to Waters of the U.S.

Waters of the U.S. present in the project area include a small stream carrying a small but relatively permanent flow of water between forested wetlands uphill from the project area to Keku Strait. Within the project area, the stream is conveyed within a ditch between the proposed tank farm and power plant sites.

The proposed project would excavate soils within the portion of the stream in the project area to a depth of approximately 1 foot below the ordinary high water mark (OHWM). An impermeable liner will be installed and covered with 6 inches (4.8 cubic yards [cy]) of bedding material and 6 inches (4.8 cy) of drain rock (Figures 3-4). Total fill placement would be 9.6 cy into 0.01 acre/130 linear feet of stream channel.

Nationwide Permit Authorization

Nationwide Permit (NWP) 18 (attached) authorizes minor discharges of fill material into waters of the U.S. if the following criteria are met:

- a) The quantity of discharged material and the volume of area excavated do not exceed 25 cy below the plane of the OHWM. *The proposed project would excavate and discharge 9.6 cy below the OHWM.*
- b) The discharge will not impact more than 0.10 acre of waters of the U.S. *The proposed project would impact 0.01 acre of waters of the U.S.*
- c) The discharge is not placed for the purpose of a stream diversion. *The proposed project would not realign the stream.*

The requirement to submit a pre-construction notification (PCN) to USACE does not apply if the meets the following criteria:

- (1) The quantity of discharged material and the volume of area excavated do not exceed 10 cy below the OHWM. *The proposed project would excavate and discharge 9.6 cy below the OHWM.*
- (2) The discharge is in a special aquatic site, including wetlands. *As defined at Code of Federal Regulations (CFR) 40 CFR 230.3(q-1) and 40 CFR 230.40-45, the proposed project would not impact any special aquatic site or wetlands.*

For these reasons, the project is authorized under NWP 18 for minor discharges and no PCN is required for the project. AEA is not proposing any compensatory mitigation for the project. Nationwide Permit General Conditions 12, 14, and 21 and Alaska Regional Conditions E, G, and H apply to this project (attached).

RE: Kake BFU/RPSU Projects

No Preconstruction Notification under Nationwide Permit 18 – Minor Discharges

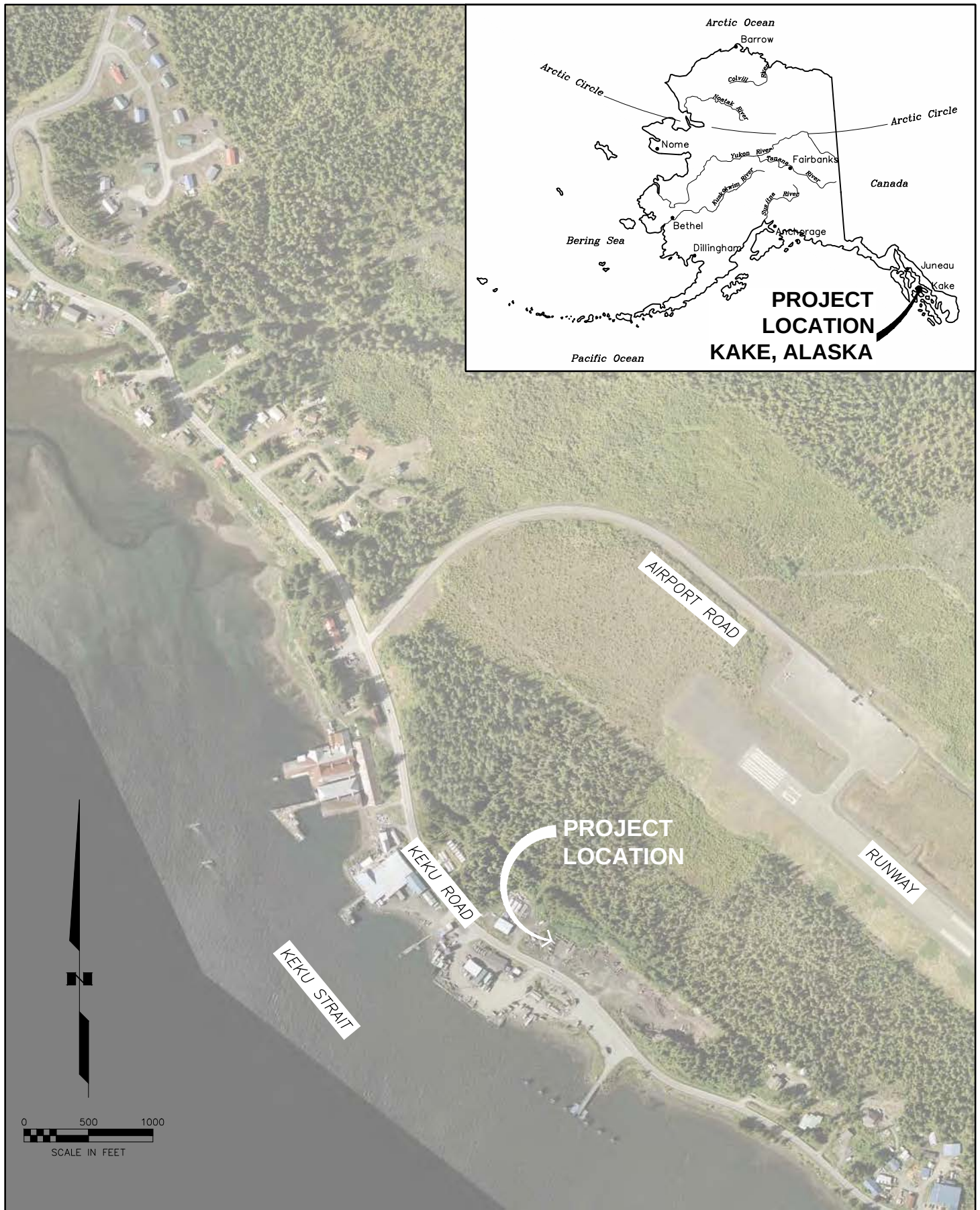
April 4, 2016

Page 3 of 3

Enclosed: Figure 1: Location and Vicinity Map
 Figure 2: Project Overview
 Figure 3: Plan View
 Figure 4: Section Views
 Figure 5: Marine Header Section
 Nationwide Permit 18 – Minor Discharges
 Nationwide Permit General Conditions
 Nationwide Permit Alaska District Regional Conditions

cc: Karl Reiche, P.E., AEA Project Manager
 Mark Swenson, P.E., HDL Project Manager

H:\jobs\13-040 Kake Bulk Fuel Upgrades (AIDEA AEA-Term)\06 - Environmental\CAD\DRAWINGS\404\fig.1, 1=1, 02-15-16 at 08:33 by WJB
LAYOUT: Layout1

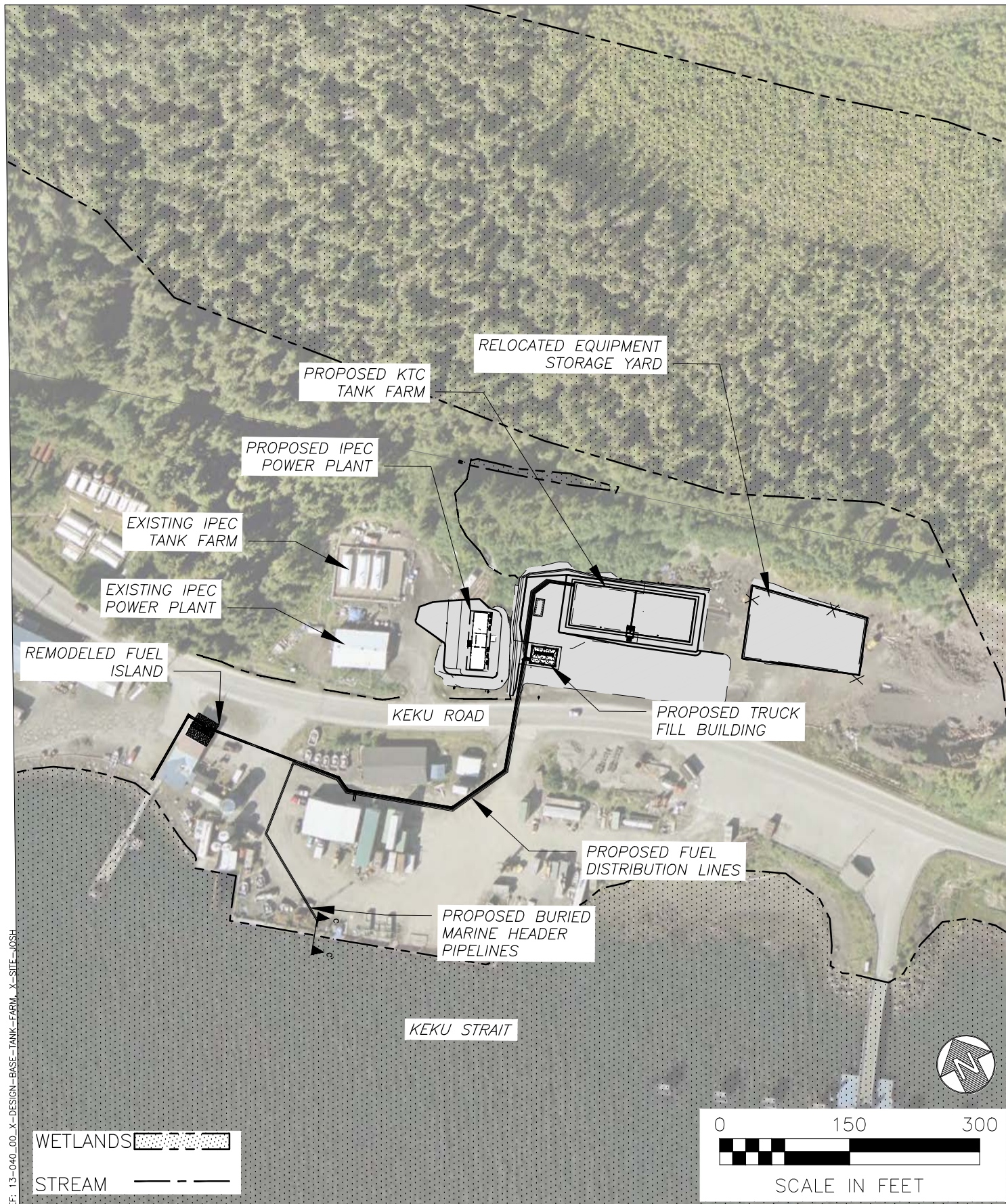


USGS: Petersburg D-6
Sec 4 of T. 57S, R. 73E, Copper River Meridian

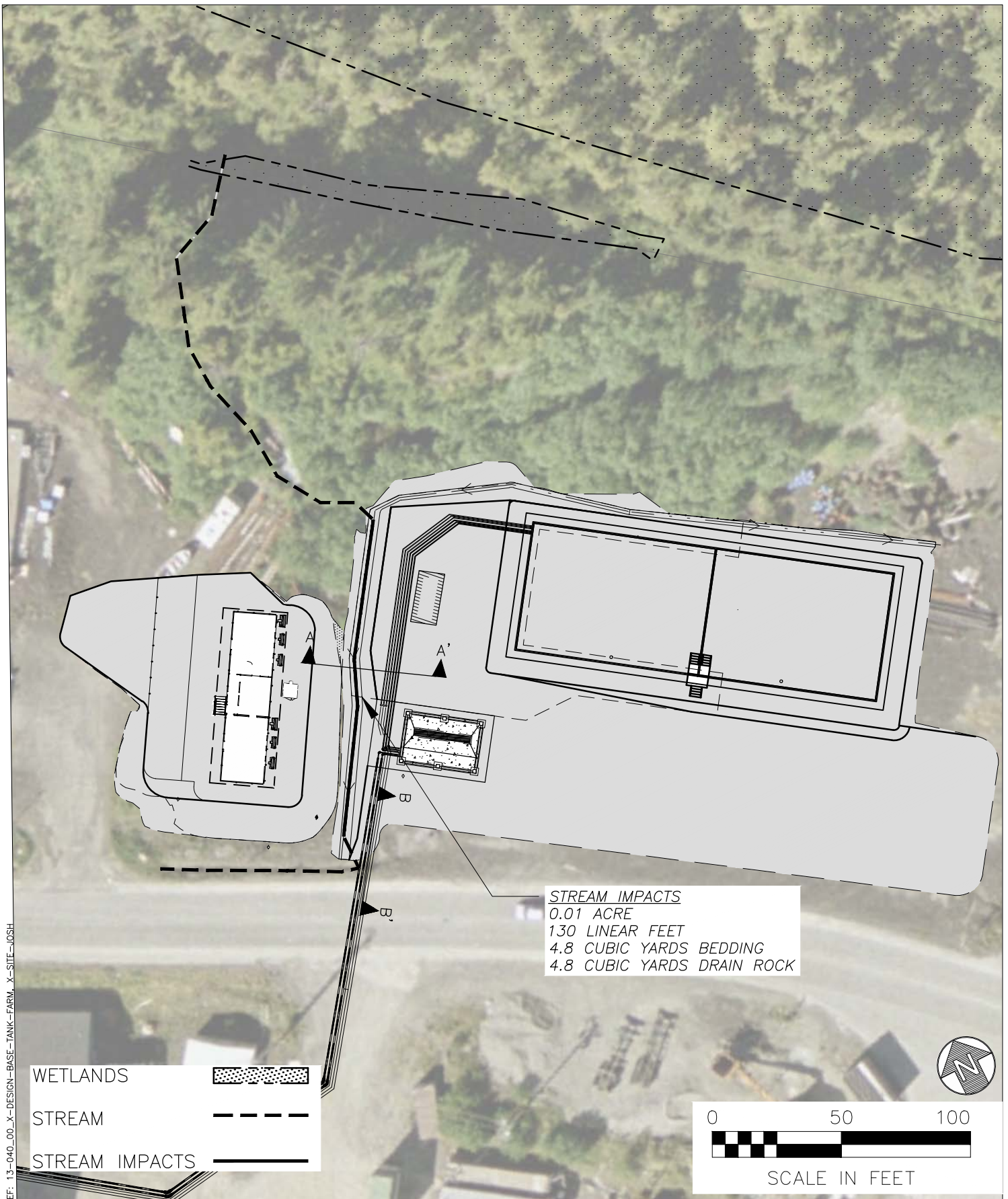
Kake Bulk Fuel Upgrades
And Rural Power
System Upgrades

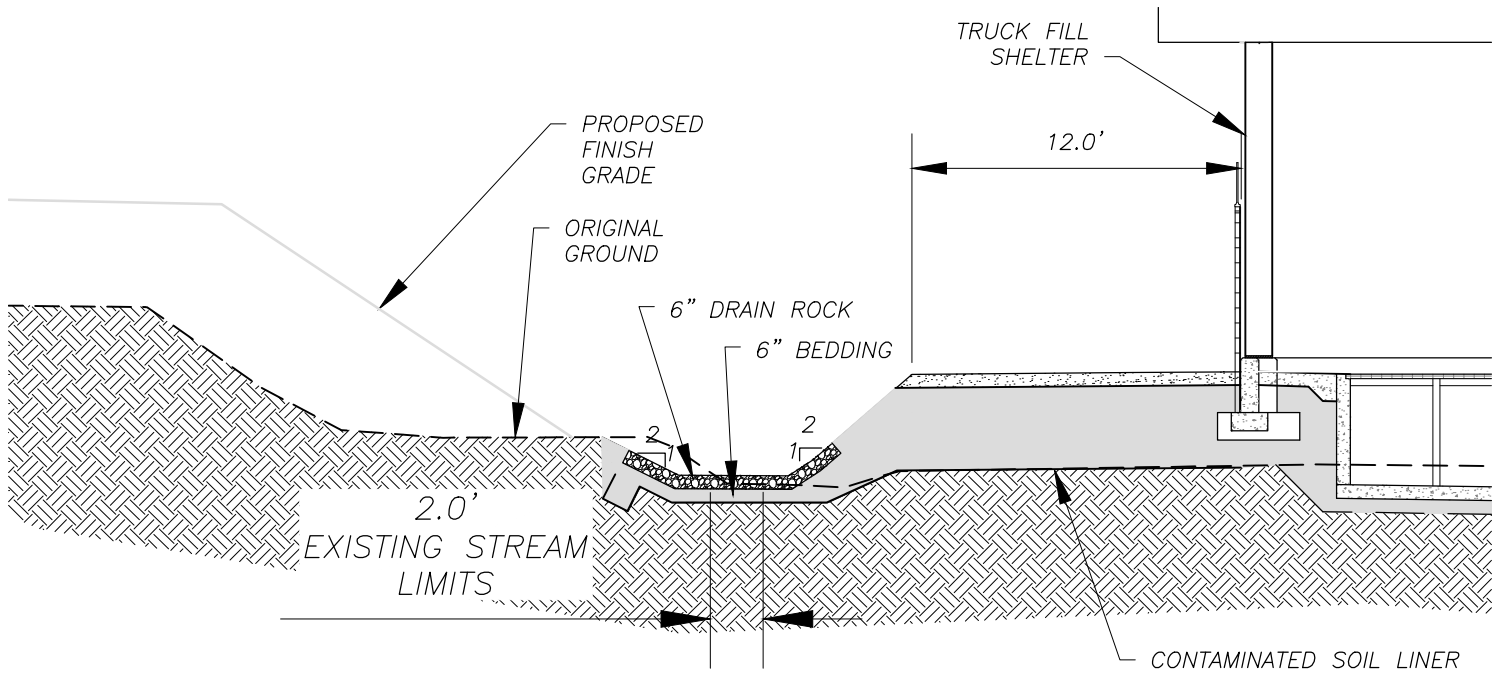
Figure 1
Location and Vicinity Map

H:\jobs\13-040 Kake Bulk Fuel Upgrades (AIDEA AEA-Term)\06 - Environmental\CAD\DRAWINGS\404\13-040_00_404_1=1_03-24-16 at 09:22 by WJB
LAYOUT: FIG. 2.
XREF: 13-040_00_X-DESIGN-BASE-TANK-FARM_X-SITE-JOSH

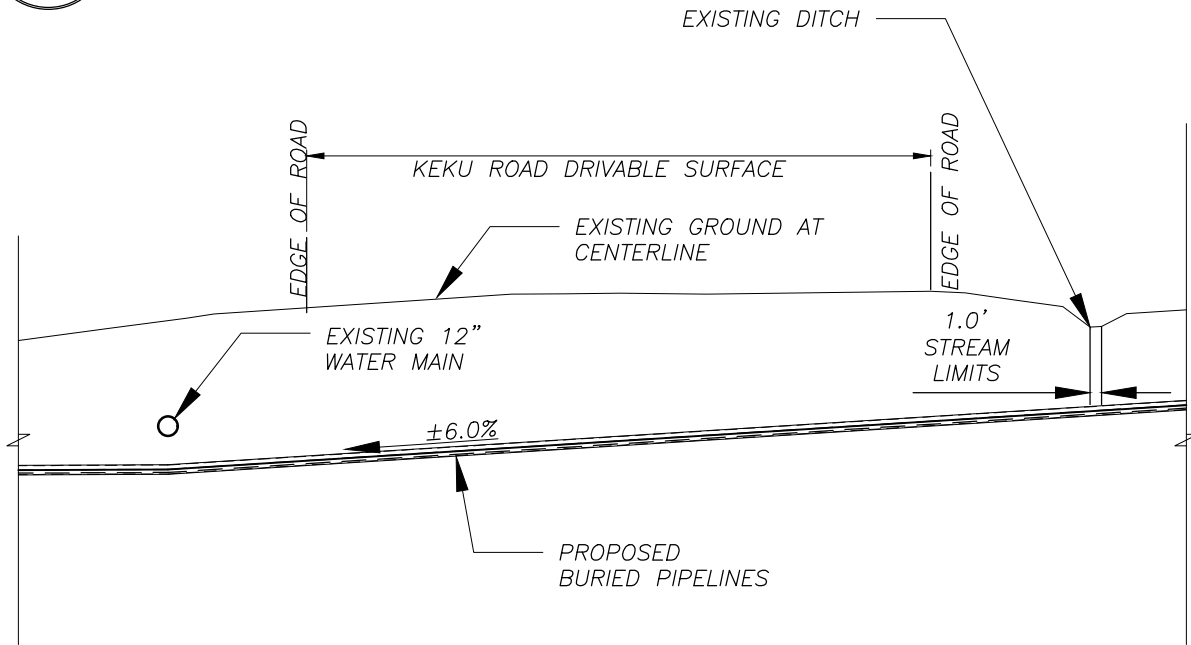


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LAYOUT: FIG. 3
XREF: 13-040_00_X-DESIGN-BASE-TANK-FARM_X-SITE-JOSH



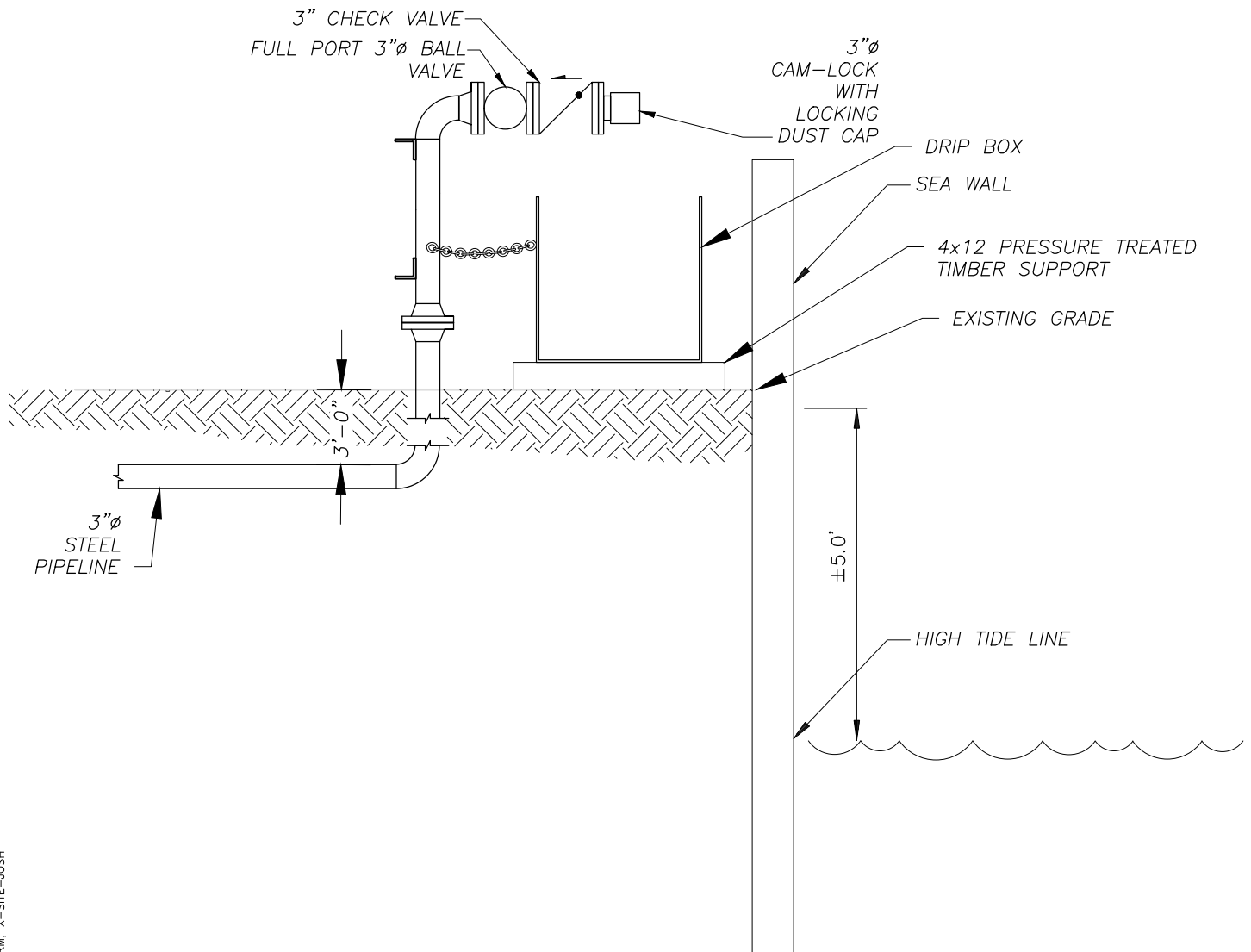


A-A
FIG. 4 DITCH SECTION
SCALE: NONE



B-B
FIG. 4 DITCH SECTION
SCALE: NONE

H:\jobs\13-040 Koke Bulk Fuel Upgrades (AIDEA AEA-Term)\06 - Environmental\CAD\DRAWINGS\404\13-040_00_404_1=1, 03-31-16 at 07:33 by WJB
LAYOUT: fig 5
XREF: 13-040_00_X-DESIGN-BASE-TANK-FARM, X-SITE-JOSH



C-C'
FIG. 4 MARINE HEADER SECTION
SCALE: NONE

SGS P...rs...-6
Sc 4 o T. 57SR. 7 E Co...R...M...dia

ak...k...rad
Add Rural Power
S...m...rad

Figure 5
Marine Header Section

18. Minor Discharges. Minor discharges of dredged or fill material into all waters of the United States, provided the activity meets all of the following criteria:

(a) The quantity of discharged material and the volume of area excavated do not exceed 25 cubic yards below the plane of the ordinary high water mark or the high tide line;

(b) The discharge will not cause the loss of more than 1/10-acre of waters of the United States; and

(c) The discharge is not placed for the purpose of a stream diversion.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) The discharge or the volume of area excavated exceeds 10 cubic yards below the plane of the ordinary high water mark or the high tide line, or (2) the discharge is in a special aquatic site, including wetlands. (See general condition 31.) (Sections 10 and 404)

Nationwide Permit General Conditions

1. Navigation
2. Aquatic Life Movements
3. Spawning Areas
4. Migratory Bird Breeding Areas
5. Shellfish Beds
6. Suitable Material
7. Water Supply Intakes
8. Adverse Effects from Impoundments
9. Management of Water Flows
10. Fills Within 100-Year Floodplains
11. Equipment
12. Soil Erosion and Sediment Controls
13. Removal of Temporary Fills
14. Proper Maintenance
15. Single and Complete Project
16. Wild and Scenic Rivers
17. Tribal Rights
18. Endangered Species
19. Migratory Bird and Bald and Golden Eagle Permits
20. Historic Properties
21. Discovery of Previously Unknown Remains and Artifacts
22. Designated Critical Resource Waters
23. Mitigation
24. Safety of Impoundment Structures
25. Water Quality
26. Coastal Zone Management
27. Regional and Case-by-Case Conditions
28. Use of Multiple Nationwide Permits
29. Transfer of Nationwide Permit Verifications
30. Compliance Certification
31. Pre-Construction Notification

C. Nationwide Permit General Conditions

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as applicable, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP. Every person who may wish to obtain permit authorization under one or more NWPs, or who is currently relying on an existing or prior permit authorization under one or more NWPs, has been and is on notice that all of the provisions of 33 CFR §§ 330.1 through 330.6 apply to every NWP authorization. Note especially 33 CFR § 330.5 relating to the modification, suspension, or revocation of any NWP authorization.

1. Navigation.

(a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity,

and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a “study river” for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species.

(a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which “may affect” a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation

to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity “may affect” or will have “no effect” to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps’ determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have “no effect” on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the “take” of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with “incidental take” provisions, etc.) from the

U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where “take” means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word “harm” in the definition of “take” means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.noaa.gov/fisheries.html> respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any “take” permits required under the U.S. Fish and Wildlife Service’s regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such “take” permits are required for a particular activity.

20. Historic Properties.

(a) In cases where the district engineer determines that the activity may affect properties

listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation

specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWP 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that

compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area

along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature: “When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

(Transferee)

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification.

(a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer’s receipt of the complete PCN

and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is “no effect” on listed species or “no potential to cause effects” on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee’s right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project’s purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination:

(1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

ALASKA DISTRICT REGIONAL CONDITIONS FOR 2012 NATIONWIDE PERMITS

REGIONAL CONDITION A - Additional Pre-Construction Notification (PCN) Requirements¹

1. NWP 6, Survey Activities: 3-D seismic surveys employing ocean bottom cables.
2. NWP 13, Bank Stabilization: Projects require a PCN when specified by NWP 13 and/or the proposed methods and techniques are not included in Streambank Revegetation and Protection: A Guide for Alaska Revised 2005 (Walter, Hughes and Moore, April 2005) (Guide) or its future revisions.

The Guide is available at
<http://www.adfg.alaska.gov/index.cfm?adfg=streambankprotection.main>

Furthermore, applicants proposing projects not contained in the Guide may still qualify for NWP 13 but they shall provide an alternative analysis to the district engineer with the PCN consisting of the bioengineered methods that were considered and rationale as to why these alternatives are not in the applicant's preferred alternative. Applicants subject to the PCN due to a design that is not included in the Guide are encouraged to include measures that minimize impacts to the aquatic environment including methods that improve fish habitat such as vegetated riprap.

3. Any activity proposing pile driving and/or blasting in marine waters, anadromous lakes or anadromous streams.
4. Proposed projects that qualify for NWPs 3, 12, 13, 14, and 18 within the Municipality of Anchorage.
5. Any NWP using treated wood in waters of the U.S., including wetlands.

¹ Where required by the terms of the NWP or Regional Condition A, a prospective permittee must notify the district engineer by submitting a preconstruction notification (PCN) as early as possible. See General Condition 31 of the NWPs for the contents of the PCN or visit www.poa.usace.army.mil/reg/NWPs.

REGIONAL CONDITION B - General Permit Agency Coordination

*This Regional Condition establishes geographic and habitat areas that will require agency coordination for projects that are less than 1/2 acre.*¹

For projects requiring a Pre-Construction Notification (PCN) **and** occurring within any of the following geographic/habitat areas, the Corps will conduct agency coordination with the appropriate agencies according to General Condition 31, regardless of the amount of loss of waters of the U.S.

- 1) The Municipality of Anchorage.
- 2) Areas designated as "A" or "B" wetlands in the Juneau Wetlands Management Plan.
- 3) Areas designated as "High" or "Moderate" value wetlands in the Homer Wetland Functional Assessment.
- 4) Anadromous lakes or anadromous streams including, but not limited to catalogued streams identified in the *Catalog of Waters Important for the Spawning, Rearing, or Migration of Anadromous Fishes* (available at <http://www.adfg.alaska.gov/sf/SARR/AWC/>)
- 5) Jurisdictional areas within 500 feet (measured from OHW or HTL) of anadromous lakes or anadromous streams as identified above.
- 6) Marine waters.

Agency coordination will also occur if the proposed activity:

- 1) is authorized by NWP 51
- 2) requires a written waiver by the District Engineer; and/or
- 3) involves stream relocation

Local, State or Federal applicants may choose to conduct agency coordination in accordance with this regional condition for projects in the above geographic areas having less than 1/2 acre loss of waters of the U.S. The documentation of agency coordination shall be supplied with the PCN and if the Corps determines the applicant's proposal adequately addresses agency concerns, the project will not be coordinated again.

The Corps (or local, State or Federal applicant, as described above) will coordinate such projects with the Environmental Protection Agency, U.S. Fish and Wildlife Service, National Marine Fisheries Service and State Historical Preservation Officer or Tribal Historical Preservation Officer. Additionally, project coordination will occur with the State of Alaska's Department of Environmental Conservation and the Department of Fish and Game.

¹ For activities requiring a PCN that result in the loss of greater than 1/2-acre of waters of the U.S., agency coordination will occur according to general condition 31(d) but also include the agencies as specified above.

REGIONAL CONDITION C - Regional Condition C has been withdrawn.

REGIONAL CONDITION D - Activities Involving Trenching

Trenches cannot be constructed or backfilled in such a manner as to drain waters of the U.S. (e.g., backfilling with extensive gravel layers, creating a French drain effect). Ditch plugs or other methods shall be used to prevent this situation.

Except for material placed as minor trench over-fill or surcharge necessary to offset subsidence or compaction, all excess materials shall be removed to a non-wetland location. The backfilled trench shall achieve the original surface condition, within a year of disturbance unless climatic conditions warrant additional time and is approved by the Corps.

Excavated material temporarily sidecast into wetlands shall be underlain with geotextile, ice pads, or similar material, to allow for removal of the temporary material to the maximum extent practicable.

Revegetation of the trench should follow the process outlined in Regional Condition E.

REGIONAL CONDITION E - Site Restoration for Projects with Ground Disturbing Activities

Disturbed areas shall be stabilized immediately after construction to prevent erosion. Revegetation of the site shall begin as soon as site conditions allow and in the same growing season as the disturbance unless climatic conditions warrant additional time and is approved by the Corps. Native vegetation and soils removed for project construction shall be stockpiled separately and used for site rehabilitation. If soil and/or organic materials are not available from the project site for rehabilitation, other locally-obtained native materials may be used. Other topsoil or organic materials (including seed) may be used only if identified in the PCN and approved in the NWP verification. Species to be used for seeding and planting shall follow this order of preference: 1) species native to the site; 2) species native to the area; 3) species native to the state. Revegetated areas eventually shall have enough cover to sufficiently control erosion without silt fences, hay bales, or other mechanical means.

REGIONAL CONDITION F - Equipment Standards

Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures (e.g. ice roads, compacted snow, low psi ground bearing weight, etc) must be taken to prevent soil disturbance.

REGIONAL CONDITION G - Delineation of Project Boundary

Project boundaries shall be staked, flagged, or otherwise clearly delineated prior to the commencement of the authorized activity for projects that involve the placement of fill.

REGIONAL CONDITION H - Maintenance of Hydrology Patterns

Site preparation, excavation, and fill placement shall be conducted in a manner that prevents adverse hydrologic effects. Natural drainage patterns shall be maintained using appropriate ditching, culverts, storm drain systems and other measures to prevent ponding or drying. Excessive ponding and/or dewatering of areas adjacent to fill areas shall indicate non-compliance with this condition. "Excessive" is defined as a measurable change in site hydrology or drainage from the pre-project condition.

REGIONAL CONDITION I - Relocation of Stream Beds

Relocated stream channels shall approximate the length, meander pattern, gradient, channel cross-section, substrate and flow velocity of the original stream channel. Relocated stream channels shall be designed and constructed to avoid excessive loss of flow through the bed and

dewatering of the stream channel. The relocation of stream channels shall include establishment of an associated floodplain. The floodplain shall be of similar dimension and form as the original, or sized to convey the 100-year flood while retaining the channel, substrate, and floodplain characteristics without significant down- or head-cutting.

REGIONAL CONDITION J - Culvert Installation

Culverts in fish bearing waters must be installed in accordance with a valid Alaska Department of Fish and Game, Fish Habitat Permit.

REGIONAL CONDITIONS K-N APPLY TO SPECIFIC NWPs

REGIONAL CONDITION K - Seasonal Docks Authorized by NWP 11, Temporary Recreational Structures

Small, seasonal docks shall not extend more than 50 feet waterward of the ordinary high water mark or mean high water mark, or exceed more than 25 percent of the width of the waterbody, whichever is less.

REGIONAL CONDITION L - NWP 40 Agricultural Activities

The following activities are not authorized by NWP 40: a. Drain tiles, ditches, or levees or; b. Mechanized land clearing and land leveling in wetlands within 500' of anadromous lakes or anadromous streams.

REGIONAL CONDITION M - NWP 44 Mining Activities

Placer mining activities are excluded from coverage by NWP 44 (Mining Activities). Placer mining may be authorized by Regional General Permit 2006-1944. In Alaska, NWP 44 will only authorize the following activities:

1. Hard rock mining, not including trenching, drilling, or access road construction. Applicable to Section 404 only.
2. Temporary stockpiling of sand and gravel in waters of the U.S., limited to seasonally dewatered unvegetated sand/gravel bars. Stockpiles shall be completely removed and the area restored to pre-project contours within one year, in advance of seasonal ordinary high water events, and/or prior to equipment being removed from site, whichever comes first.

REGIONAL CONDITION N - NWP 48 Existing Commercial Shellfish Aquaculture Activities

NWP 48 is revoked in Alaska. Applicants seeking authorization for this work can apply for Individual Permit review by the Department of the Army.

STATE OF ALASKA

**DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF WATER
WASTEWATER DISCHARGE AUTHORIZATION PROGRAM**

SEAN PARNELL, GOVERNOR

555 Cordova Street
Anchorage, Alaska 99501
Phone: (907) 269-6285
Fax: (907) 269-3487
www.dec.alaska.gov

March 13, 2012

Certified Mail 7009-2820-0001-7169-2769

Ms. Nicole Hayes
U.S. Army Engineer District, Alaska
Regulatory Division
P.O. Box 6898 CEPOA-RD
JBER, AK 99506-0898

Subject: Nationwide Permit Reissuance
Reference No. POA-2011-6

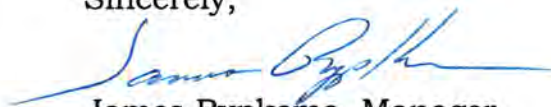
Dear Ms. Hayes:

In accordance with Section 401 of the Federal Clean Water Act of 1977 and provisions of the Alaska Water Quality Standards, the Alaska Department of Environmental Conservation (DEC) is issuing the enclosed Certificate of Reasonable Assurance for the reissuance of the U.S. Army Corps of Engineers nationwide permits.

DEC regulations provide that any person who disagrees with this decision may request an informal review by the Division Director in accordance with 18 AAC 15.185 or an adjudicatory hearing in accordance with 18 AAC 15.195 – 18 AAC 15.340. An informal review request must be delivered to the Director, Division of Water, 555 Cordova Street, Anchorage, AK 99501, within 15 days of the permit decision. Visit <http://www.dec.state.ak.us/commish/ReviewGuidance.htm> for information on Administrative Appeals of Department decisions.

An adjudicatory hearing request must be delivered to the Commissioner of the Department of Environmental Conservation, 410 Willoughby Avenue, Suite 303, PO Box 111800, Juneau, AK 99811-1800, within 30 days of the permit decision. If a hearing is not requested within 30 days, the right to appeal is waived.

Sincerely,



James Rypkema, Manager
Storm Water / Wetlands Section

Enclosure

cc: (with encl.)
Michael Daigneault, ADF&G/Habitat
Ann Rappoport, USF&WS, Anch
Matt LaCroix, EPA, AK Operations

William Ashton, DEC
Brenda Krauss, DEC
Wade Strickland, DEC
Shannon Morgan, CEPOA-RD

STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CERTIFICATE OF REASONABLE ASSURANCE

A Certificate of Reasonable Assurance, in accordance with Section 401 of the Federal Clean Water Act and the Alaska Water Quality Standards, is issued to the U.S. Army Corps of Engineers, Alaska District, Regulatory Branch, PO Box 6898, JBER, Alaska 99506, for the proposed new nationwide permits.

The nationwide permits are general permits that cover a class of activities subject to Corps of Engineers jurisdiction that have minimal individual and cumulative adverse effects on the aquatic environment. Nationwide permits are intended to streamline the process for applicants and agencies while reducing procedural and time requirements. The Department of Environmental Conservation supports a regulatory program that streamlines processes, is responsive to public needs, and protects water quality. The regional conditions address Alaska-specific modifications to the nationwide permits.

The proposed activities are located throughout Alaska.

Public notice of the application for this certification was given as required by 18 AAC 15.180.

Water Quality Certification is required under Section 401 because the proposed activity will be authorized by a Corps of Engineers nationwide permit, and a discharge may result from the proposed activity.

Having reviewed the application and comments received in response to the public notice, the Alaska Department of Environmental Conservation certifies that there is reasonable assurance that the proposed activity, as well as any discharge which may result, will comply with applicable provisions of Section 401 of the Clean Water Act and the Alaska Water Quality Standards, 18 AAC 70.

This certification shall become effective March 19, 2012 and expires at midnight March 18, 2017. If a project is not completed by the expiration date and work under Corps of Engineers Permit will continue, an application must be submitted for renewal of this certification no later than 30 days before the expiration date (18 AAC15.100).

Date

March 13, 2012



James Rypkema, Manager
Storm Water / Wetlands Section

3-8-16

3301R DCOM



HATTENBURG DILLEY & LINNELL
Engineering Consultants

March 3, 2016

Ms. Judith Bittner
State Historic Preservation Officer
Alaska Office of History and Archaeology
550 W. 7th Avenue, Suite 1310
Anchorage, Alaska 99501-3565

RECEIVED

MAK 04 2016

OHA

RE: Kake Bulk Fuel Upgrades &
Kake Rural Power Systems Upgrades
National Historic Preservation Act Section 106 Consultation

Dear Ms. Bittner:

The Alaska Energy Authority (AEA), in cooperation with the Denali Commission, is proposing two projects that would upgrade bulk fuel storage facilities and a power plant in Kake, Alaska. The proposed projects are located in Section 35 of T. 56S, R. 72E and Section 4 of T. 57S, R. 73E, of the Copper River Meridian, and on U.S. Geological Survey Quadrangle Map Petersburg D-6 (Figure 1).

For purposes of the National Historic Preservation Act, we are re-initiating consultation with you regarding changes to the project's design and Area of Potential Effect (APE). The Denali Commission has granted AEA and its representative, Hattenburg Dilley & Linnell, authority to conduct this review on their behalf through a grant assurance agreement. A copy of this agreement is available on request.

Background

In previous consultation for this project on September 1, 2015, AEA determined that no historic properties would be affected by the proposed project, with Alaska State Historic Preservation Officer (SHPO) concurrence on September 10, 2015. Consulting parties included SHPO, Sealaska Corporation, Kake Tribal Corporation, and the Organized Village of Kake. The Organized Village of Kake responded, stating that they would continue consultation with AEA on this project.

Project Description

The existing power plant and tank farm in the community of Kake, Alaska are outdated and in need of upgrades. The purpose of this project is to provide code compliant facilities with sufficient storage capacity to support Kake's retail fuel needs, increase generator efficiency, mitigate safety and environmental concerns, reduce operation and maintenance costs, and provide opportunities for future alternative energy and heat recovery system integration to the community.

Since previous consultation in 2015, the location of the proposed tank farm, power plant, and pipeline alignment has changed. The project would consist of the following (Figure 2):

- New bulk fuel tank farm facility (owned and operated by Kake Tribal Fuel Corporation [KTFC]), including access driveway, gravel pad, on-grade secondary containment structure with poured concrete dike walls, and fuel tanks.

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ADMINISTRATION

MATERIAL
TESTING

RIGHT-OF-WAY
SERVICES

2016-01463

- Vehicle dispensing equipment, including vehicle dispenser at the KTFC retail sales site, truck fill dispenser with canopy and containment sump, and marine dispenser piping at proposed dock location.
- Distribution piping, including marine header fill lines, truck fill and vehicle dispensing distribution piping, and marine dispensing distribution piping at new dock location.
- New power plant facility (owned and operated by Inside Passage Electric Cooperative), including gravel pad and generator module building.
- New bulk fuel storage tanks installed in the existing IPEC tank farm secondary containment dike.
- New main community step up transformer.

Area of Potential Effect

The proposed Area of Potential Effect (APE) for this project is shown on Figure 2 and includes the direct footprint of the project elements listed above and areas within the first tier of adjacent parcels/areas that may experience potential effects as a result of noise or visual changes.

Identification Efforts

Northern Land Use Research Alaska, LLC (NLURA) previously conducted an office-based cultural resources review titled, *Cultural Resources Overview, Kake Bulk Fuel and Rural Power System Upgrades, Kake, Alaska*, in August 2015. The report was submitted to SHPO in September 2015 under OHA file number 3130-IR / 2015-01463. NLURA indicates that there are no known sites located within the APE.

The NLURA report indicates there is low potential to encounter unidentified buried archaeological remains because the proposed project area has largely been disturbed, graded and, in some portions, paved. The report further indicated that the project would have no direct effect on currently identified National Register of Historic Places (NRHP)-eligible or listed cultural resources. Most of the NRHP-eligible or listed sites are found in dense groupings northwest of the project area.

Changes to the project's design have moved the location of the tank farm and distribution pipelines outside of the previous APE for this project. However, the new tank farm and pipeline alignment are now located entirely within developed areas, roadways, and a gravel pit that is currently used for equipment and materials storage by the City of Kake. For these reasons, no additional project-specific cultural resource surveys are planned for the proposed project.

Impact Mitigation Measures

Since there is a potential that cultural resources may be encountered during ground disturbing activities in the project area, AEA will implement an unanticipated discovery plan for the project that would establish methods for identifying, reporting, and processing subsurface materials during ground disturbing activities. This would include the condition that work would cease in the vicinity of identified archaeological materials until a qualified cultural resource specialist can access them, confer with the SHPO, and work out an appropriate course of action with AEA, SHPO, and the construction contractor.

Finding of Effect

Based on the research conducted by NLURA and the lack of new ground disturbance, AEA finds that no historic properties would be affected by the proposed project.

Consultation Efforts

Consulting parties that are being notified of this finding include SHPO, Sealaska Corporation, Kake Tribal Corporation, and the Organized Village of Kake.

We respectfully request your concurrence that no historic properties would be affected by the proposed project. If you have questions or comments related to this project, I can be reached at the address above, by telephone at 907-564-2143, or by email at omeans@hdlalaska.com.

Sincerely,

HATTENBURG DILLEY & LINNELL

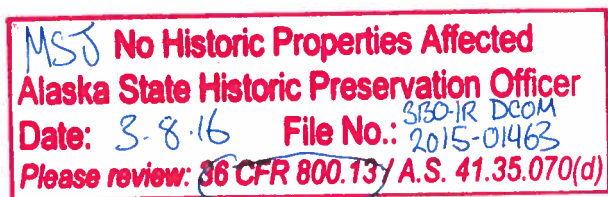
Owen Means
Environmental Specialist

Enclosures:

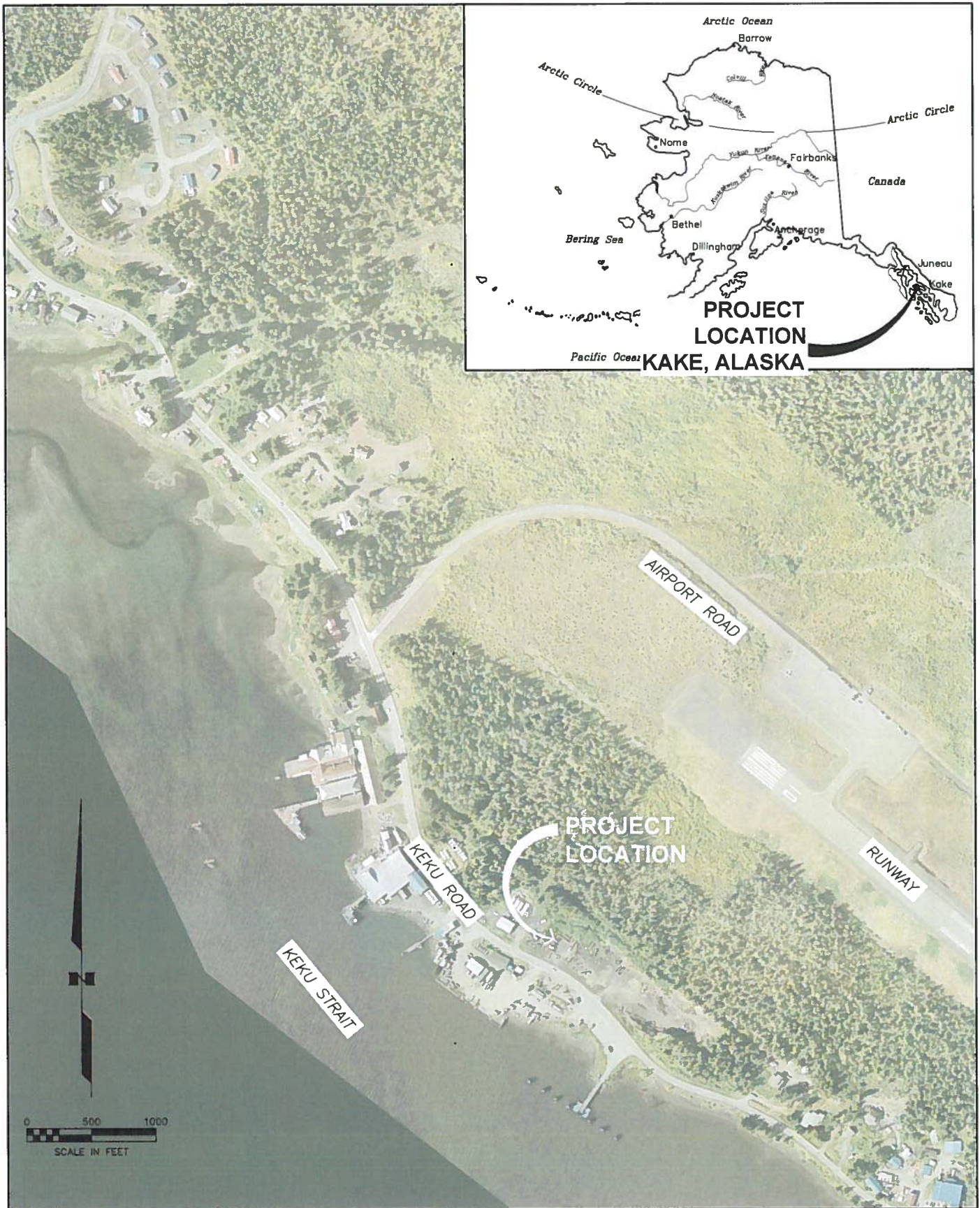
Figure 1: Location and Vicinity Map
Figure 2: Area of Potential Effect

Electronic cc w/ enclosures:

Karl Reiche, P.E., AEA, Project Manager



H:\jobs\13-040 Kake Bulk Fuel Upgrades (AIDEA AEA-Term)\06 - Environmental\CAD\DRAWINGS\404\fig 1. 1=1. 02-15-16 at 08:33 by WJB LAYOUT

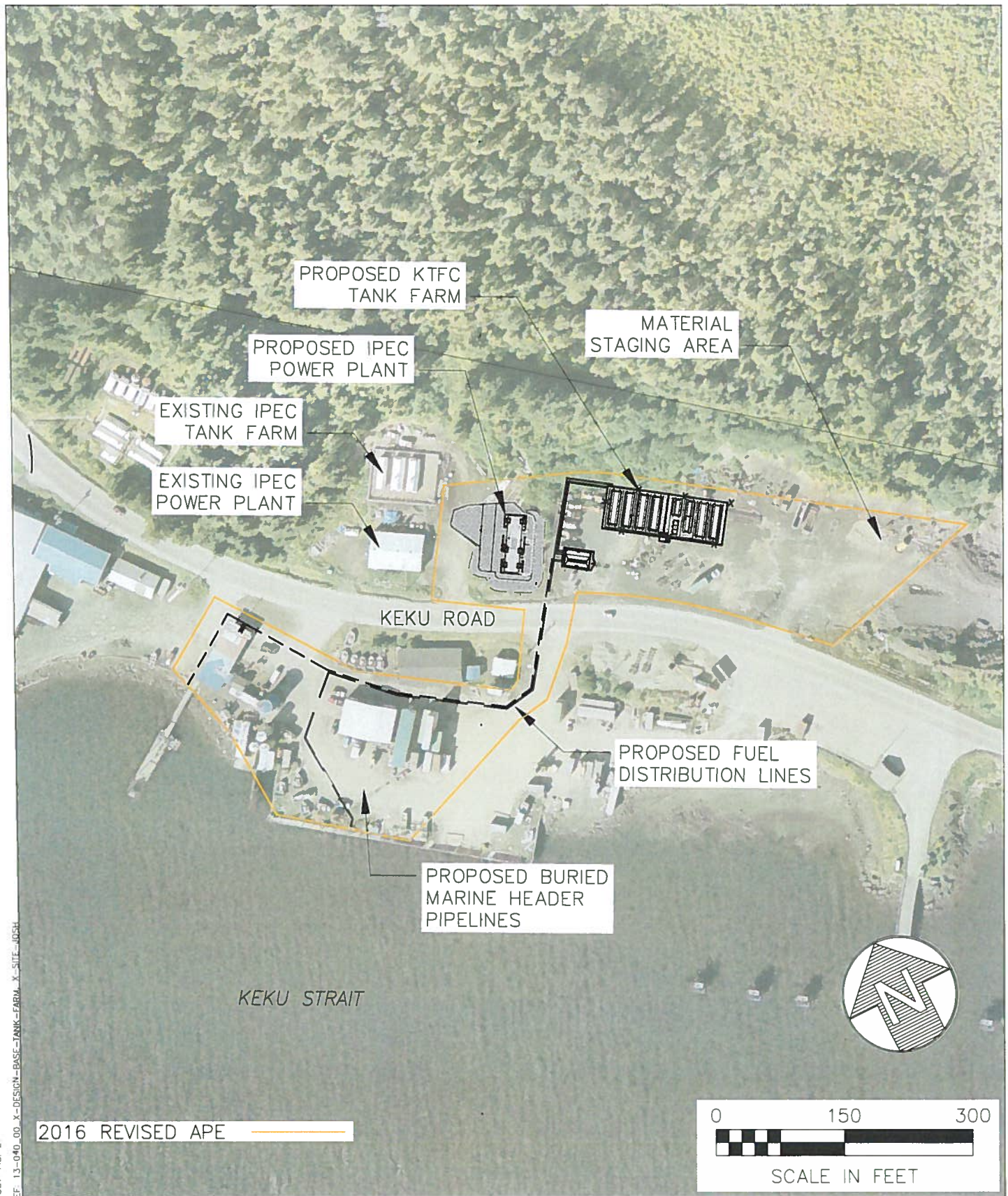


USGS: Petersburg D-6
Sec 4 of T. 57S, R. 73E, Copper River Meridian

Kake Bulk Fuel Upgrades
And Rural Power
System Upgrades

Figure 1
Location and Vicinity Map

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LAYOUT- FIG. 2
XREF: 13-040_00_X-DESIGN-BASE-TANK-FARM_X-SITE-J05H



USGS: Petersburg D-6
Sec 4 of T. 57S, R. 73E, Copper River Meridian

Kake Bulk Fuel Upgrades
And Rural Power
System Upgrades

Figure 2
Area of Potential Effect

9.10.15

3130-1R DCOM


HATTENBURG DILLEY & LINNELL
 Engineering Consultants

September 1, 2015

 Ms. Judith Bittner
 State Historic Preservation Officer
 Alaska Office of History and Archaeology
 550 W. 7th Avenue, Suite 1310
 Anchorage, Alaska 99501-3565

MSJ No Historic Properties Affected
 Alaska State Historic Preservation Officer
 Date: 9.10.15 File No.: 3130-1R DCOM
 Please review 36 CFR 800.13 / A.S. 41.35.070

 RE: Kake Bulk Fuel Upgrades &
 Kake Rural Power Systems Upgrades
 National Historic Preservation Act Section 106 Consultation

Dear Ms. Bittner:

The Alaska Energy Authority (AEA), in cooperation with the Denali Commission, is proposing two projects that would upgrade bulk fuel storage facilities and a power plant in Kake, Alaska. The proposed projects are located in Section 35 of T. 56S, R. 72E and Section 4 of T. 57S, R. 73E, of the Copper River Meridian, and on U.S. Geological Survey Quadrangle Map Petersburg D-6 (Figure 1).

For purposes of the National Historic Preservation Act, we are consulting with you to assist us in identifying historic properties that might be affected by the proposed project, determine its effects, and determine appropriate mitigation measures. The Denali Commission has granted AEA and its representative, Hattenburg Dilley & Linnell, authority to conduct this review on their behalf through a grant assurance agreement. A copy of this agreement is available on request.

Project Description

Kake Tribal Corporation (KTC) is the only fuel retailer in the City of Kake. Their existing fueling facilities are out dated and require upgrades for the tank farm to remain code compliant. The purpose of this project is to provide the City of Kake with a new tank farm, marine header, and dispensing equipment that will provide sufficient storage to support the city's retail fuel needs. The project would consist of the following work (Figure 2):

Bulk Fuel Tank Farm

- Tank Farm Facility Access Road and Gravel Pad
- On-grade Secondary Containment Structure with Poured Concrete Dike Walls
- (6) 27,000 Gallon Horizontal Fuel Tanks
- (1) 20,000 Gallon Dual Product Intermediate Dispensing Tank
- (1) 10,000 Gallon Single Product Intermediate Dispensing Tank

Dispensing Equipment (Dependent upon Available Funding)

- Dual Product Vehicle Dispenser and Single Product Dispenser with Canopy
- Dual Product Truck Fill Dispenser with Canopy and Containment Sump
- Dual Product Marine Dispenser Piping with Blind Flanges at Proposed New Dock Location

 CIVIL
 ENGINEERING
 GEOTECHNICAL
 ENGINEERING
 TRANSPORTATION
 ENGINEERING
 ENVIRONMENTAL
 SERVICES
 PLANNING
 SURVEYING
 & MAPPING
 CONSTRUCTION
 ADMINISTRATION
 MATERIAL
 TESTING
 RIGHT-OF-WAY
 SERVICES

Distribution Piping

- Marine Header Fill Lines
- Truck Fill and Vehicle Dispensing Distribution Piping
- Marine Dispensing Distribution Piping with Blind Flanges at new Dock Location

Preliminary Area of Potential Effect

The proposed Area of Potential Effect (APE) for this project is shown on Figure 2 and includes the direct footprint of the project elements listed above and areas within the first tier of adjacent parcels/areas that may experience potential effects as a result of noise or visual changes.

Identification Efforts

Northern Land Use Research Alaska, LLC (NLURA) conducted an office-based cultural resources review titled, *Cultural Resources Overview, Kake Bulk Fuel and Rural Power System Upgrades, Kake, Alaska*, in August 2015. NLURA indicates that there are no known sites located within the APE.

The NLURA report indicates there is low potential to encounter unidentified, buried archaeological remains because the proposed project area has largely been disturbed, graded and, in some portions, paved. The report further indicated that the project would have no direct effect on currently identified National Register of Historic Places (NRHP)-eligible or listed cultural resources. Most of the NRHP-eligible or listed sites are found in dense groupings northwest of the project area. For these reasons, no additional project-specific cultural resource surveys are planned for the proposed project.

Impact Mitigation Measures

Since there is a potential that cultural resources may be encountered during ground disturbing activities in the project area, AEA will implement an unanticipated discovery plan for the project that would establish methods for identifying, reporting, and processing subsurface materials during ground disturbing activities. This would include the condition that work would cease in the vicinity of identified archaeological materials until a qualified cultural resource specialist can access them, confer with the SHPO, and work out an appropriate course of action with AEA, SHPO, and the construction contractor.

Finding of Effect

Based on the research conducted by NLURA, AEA finds that the proposed project would have no direct effect on currently identified historic properties.

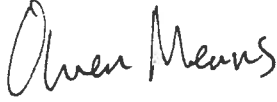
Consultation Efforts

The following parties are being contacted for this project: Sealaska Corporation, Kake Tribal Corporation, and the Organized Village of Kake.

We respectfully request your concurrence that no historic properties would be affected by the proposed project. If you have questions or comments related to this project, I can be reached at the address above, by telephone at 907-564-2143, or by email at omeans@hdlalaska.com.

Sincerely,

HATTENBURG DILLEY & LINNELL



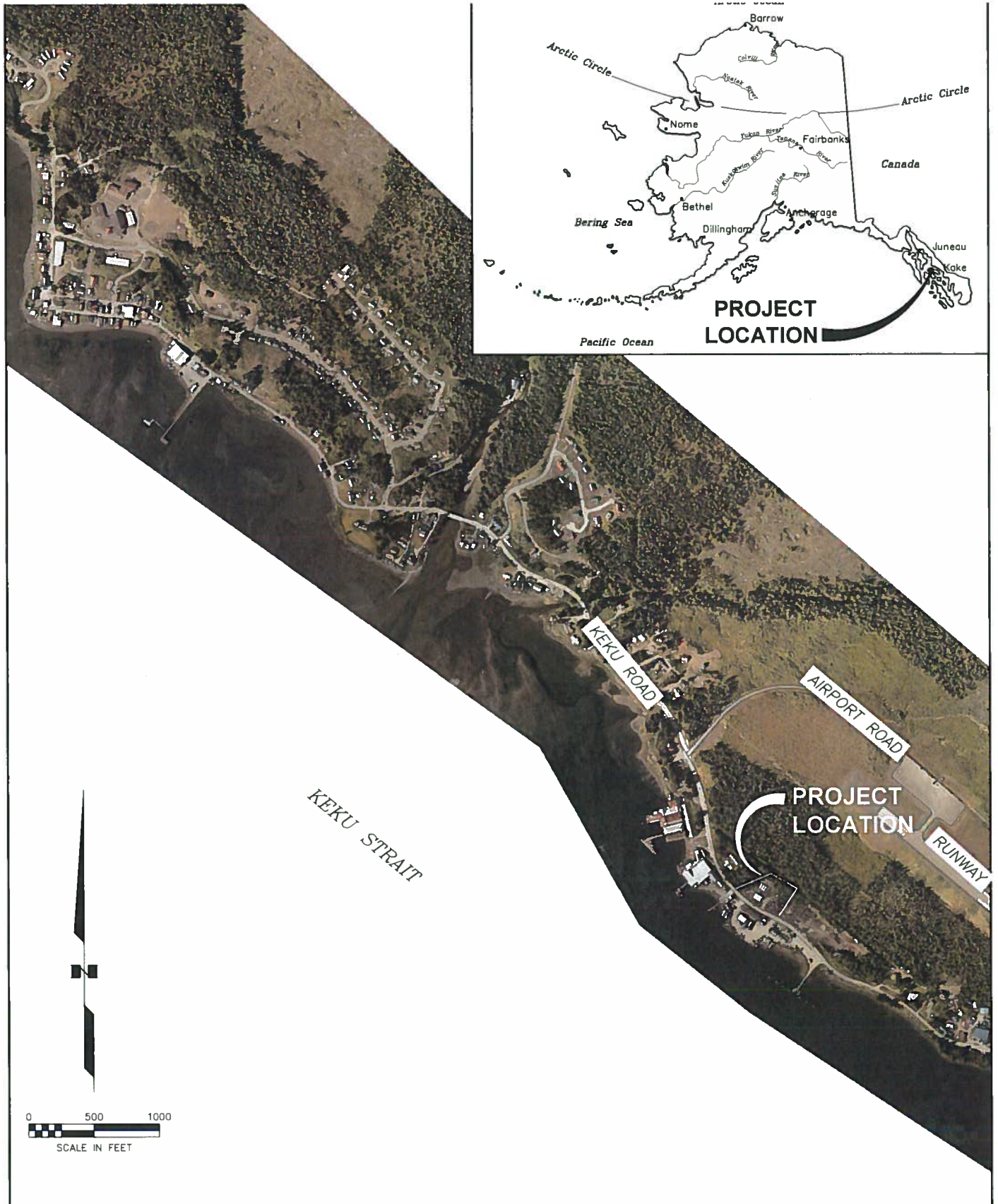
Owen Means
Environmental Specialist

Enclosures:

Figure 1: Location and Vicinity Map
Figure 2: Area of Potential Effect
Office of History and Archaeology: Cultural Resources Report Coversheet
Report: *Cultural Resources Overview, Kake Bulk Fuel and Rural Power System
Upgrades, Kake, Alaska (August 2015)*

Electronic cc w/ enclosures:
Karl Reiche, P.E., AEA, Project Manager

I:\j003\13-040_Kake Bulk Fuel Upgrades (ADEA AEA-Term)\06 - Environmental\CAO\DEVELOP\13-040-00_F01_recover, 1=1, 09/01/15 at 13:20 by WJB
 LAYOUT: FIG1VICH
 XREF: 13-039-00_B01, 13040_00_XBASE



APPENDIX C

Contaminated Materials Work Plan

CONTAMINATED MATERIALS WORK PLAN

KAKE BULK FUEL UPGRADES



Prepared For:



813 West Northern Lights Boulevard
Anchorage, Alaska 99503

Prepared By:



3335 Arctic Boulevard, Suite 100
Anchorage, AK 99503
Phone: 907.564.2120
Fax: 907.564.2122

June 2016

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APPENDICES

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Appendix B: Environmental Soils Assessment (BGES, Inc.)
Appendix C: Permit Applications
Appendix D: Liner Specifications
Appendix E: ADEC Technical Memorandum: *Managing Petroleum-Contaminated Soil, Water, or Free Product during Public Utility and Right-of-Way Construction and Maintenance Projects*

ABBREVIATIONS

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
AEA	Alaska Energy Authority
ANTHC.....	Alaska Native Tribal Health Consortium
ASTM	American Society for Testing and Materials
BGES	BGES, Inc.
BTEX	benzene, toluene, ethylbenzene, and total xylenes
CY.....	cubic yards
DRO.....	diesel range organics
IPEC.....	Inside Passage Electric Cooperative
KTC.....	Kake Tribal Corporation
mg/kg.....	milligrams per kilogram
mil.....	milliliters
PCE.....	perchloroethylene

1.0 INTRODUCTION

The Alaska Energy Authority (AEA) is proposing to construct new bulk fuel storage and power generation facilities in Kake, Alaska (Figure 1). The new facilities would be owned and operated by the Kake Tribal Corporation (KTC) and Inside Passage Electric Cooperative (IPEC), respectively. The project involves construction of a gravel pad for a new tank farm, a marine header, fuel pipelines crossing Keku Road, and replacement of existing dispensing equipment (Figure 2). Construction is anticipated to begin in summer 2016.

1.1 BACKGROUND AND PURPOSE

In December 2015, the Alaska Department of Environmental Conservation (ADEC) requested AEA prepare and implement an ADEC-approved work plan prior to construction of the project and conduct soil sampling due to suspected contamination at two locations: The proposed tank farm site where contaminated soil from a site listed in active status in the ADEC Contaminated Sites Database (Kake Power Plant; ADEC Hazard ID: 2711); and along the proposed pipeline route in the vicinity of known Tetrachloroethylene (also known as perchloroethylene [PCE]) contamination (Figure 3). An environmental soils assessment conducted for this project investigated soils throughout the project area, including both areas of known or suspected contamination. Results of the investigation indicated that the only areas of contaminated soil were found at the proposed tank farm site. The general area where contaminated soil has been identified in the project area is hereinafter referred to in this work plan as the *Contaminated Area* and its assumed boundaries are delineated on Figure 3. The results of the environmental soils assessment are described further in Section 2.1.

In February 2016, ADEC determined that capping the contaminated soil present at the proposed tank farm site would be appropriate for construction of the project. The purpose of this plan is to describe the measures to be taken during construction to contain and cap contaminated soil within the project area where excavation and grading work will occur. Correspondence with ADEC is included in Appendix A.

2.0 SITE DESCRIPTION

The project is located in the community of Kake, on the northwestern coast of Kupreanof Island in Southeast Alaska. The general topography of the Kake area consists of gentle to moderate mountain slopes rising from Keku Strait. The region has a maritime climate characterized by cool summers and mild winters, and receives 54 inches of precipitation annually. According to the March 2016 *Geotechnical Report for Kake Rural Power System and Bulk Fuel Upgrades*, soils in the project area generally consist of shot rock fill material west of Keku Road, granular fill material over bedrock east of Keku Road, and organics, clay, and bedrock in undeveloped areas.

The power plant and tank farm will be located in previously disturbed areas of leveled ground 250 feet inland from the coastline with an elevation of approximately 50 feet. Overall, the project area slopes

downward from northeast to southwest to Keku Strait. A ditch, located between the proposed power plant and tank farm sites, with a low volume but relatively permanent flow of water, conveys surface water from wetlands above the project area to Keku Road and then via roadside ditches and culverts into Keku Strait. The only paved surfaces are on Keku Road. A water main runs through the project area along the southwest side of Keku Road.

The proposed power plant site is currently used as a storage area for the existing IPEC-owned and operated power plant and tank farm. The proposed tank farm site is currently used by the City of Kake as a storage yard for vehicles, heavy equipment, and construction materials.

2.1 CONTAMINANTS OF CONCERN

BGES, Inc. (BGES) completed an environmental soils assessment consisting of field screening, sampling, and laboratory analysis of soils in the project area in January 2016 (Appendix B). Soil samples from thirteen test pits were analyzed for one or more of the following contaminants: gasoline range organics; benzene, toluene, ethylbenzene, and total xylenes (BTEX); volatile organic compounds; diesel range organics (DRO); and residual range organics. Analytical results indicate contaminant concentrations exceed ADEC cleanup levels for DRO at test pit TP1 and for benzene (BTEX) at test pit TP2 (Table 1, Figure 3).

2.2 TANK FARM SITE

Test pits TP1 and TP2 are located within the proposed tank farm site in the area surrounding the landspread¹ where petroleum-contaminated soil removed from the Kake Power Plant site was placed following a fuel release in 1997 (Figure 3). The most recent sampling within the landspread occurred in 2015, where DRO concentrations ranged from 240-2,000 milligrams per kilogram (mg/kg), which exceeds ADEC cleanup levels (230 mg/kg). Remediation efforts are continuing and the landspread is scheduled to be sampled on an annual basis until remediation is complete.

2.3 PROPOSED PIPELINE ROUTE

The proposed fuel distribution and marine header pipelines cross Keku Road before running west toward the proposed marine header. The ADEC determined there was potential for encountering chlorinated solvent contamination along the proposed pipeline alignment due to detection of PCEs in concentrations above ADEC cleanup levels (0.024 mg/kg) along a water line installed by the Alaska Native Tribal Health Consortium (ANTHC) in 2015. An environmental soils assessment performed by R&M Consultants, Inc. for ANTHC in September 2015 found samples from a test pit excavated approximately 130 feet down-gradient from the proposed pipeline crossing yielded PCE concentrations of 0.160 mg/kg (Figure 3).

¹ Landspreading consists of tilling contaminated soil into the surface layer of a field and letting natural biological action and aeration clean up the contamination. Periodic soil samples are tested to check on how breakdown of the contaminants is progressing. Source: Fact Sheet, *Environmental Cleanup Methods*, ADEC Department of Spill Prevention and Response.

Table 1: Laboratory Analytical Results for Test Pits Exceeding ADEC Cleanup Levels.

Soils Assessment	BGES 2016		R&M 2015
Test Pit	TP1	TP2	TP-14
Contaminant	DRO	Benzene	PCE
Concentration (mg/kg)	389	0.046	0.160
ADEC Cleanup Level (mg/kg)	230	0.025	0.024

Samples along the proposed pipeline alignment were taken by BGES in January 2016 to determine whether PCE contamination is present within proposed excavation areas. The January 2016 investigation by BGES did not detect PCEs or any other contaminants above ADEC cleanup levels along the pipeline alignment.

3.0 WORK PLAN

3.1 SCOPE OF WORK

The objective of construction activity at the *Contaminated Area* pertaining to hazardous materials is to cap and cover contaminated soil so that existing soils do not have to be removed and undergo remediation off-site. This work plan does not include additional site characterization activities such as field screening, sampling, or laboratory analysis of soils known or suspected to be contaminated with hazardous materials. In addition, this plan does not include soil or groundwater sampling or monitoring after construction is completed. It is understood that after construction of the tank farm project is completed in accordance with the specifications of this ADEC-approved work plan, ADEC will initiate the closure process for the Kake Power Plant site; however, AEA will not be assuming responsibility for any of the contamination present at the *Contaminated Area* or the Kake Power Plant site should ADEC determine site closure is inappropriate after construction is complete.

3.2 CONSTRUCTION METHODS

3.2.1 TANK FARM SITE

Soils will be re-graded as necessary to accommodate the proposed tank farm site design. Contaminated soil from within the *Contaminated Area* will be relocated under the contaminated soil liner and used to create the graded surface beneath the liner. An impermeable liner will be installed over the *Contaminated Area*, the gravel pad for the proposed tank farm, and will extend into the adjacent ditch between the *Contaminated Area* and proposed power plant site. The portion of the *Contaminated Area* beneath the tank farm's secondary containment dike will utilize the secondary containment dike's containment liner. The overlapping liners will create a contiguous lined area covering the *Contaminated Area*. The limits of the liners are shown on Figure 2.

Soils within the ditch will be excavated up to a depth of 1 foot below the original ground surface prior to installing the liner. Soil excavated from the ditch will be placed onto the tank farm gravel pad area and graded and compacted prior to liner installation. Organic material removed from the top layer of ditch

will be used as mulch for soil stabilization at the site. The liner will extend over the full width of the ditch and will be covered by approximately 6 inches of clean bedding material and 6 inches of clean riprap (Figures 2-3).

It is not anticipated that any soil from within the boundaries of the *Contaminated Area* will be moved off-site. Should removal of soil from the *Contaminated Area* become necessary during construction, the contractor will transport, store, and dispose of the soil in accordance Alaska Administrative Code (AAC) 18 AAC 75.370 and contact ADEC for approval. A copy of the *Transport, Treatment, & Disposal Approval Form for Contaminated Media* is included in Appendix C and will need to be submitted to ADEC prior to approval.

AEA and the contractor will ensure that the liner meets the minimum specifications listed below in Table 2. A 36-mililiters (mil) or greater liner will be used to cap the *Contaminated Area*. Specifications for an example liner material meeting these minimum requirements are included in Appendix D. A layer of woven geotextile fabric will be placed above and below the impermeable liner to protect the liner against damage and leakage. A minimum of 18 inches of structural fill material will be placed over the liners to serve as a drivable surface. A licensed professional engineer will be required to certify that the liner, bedding, and fill have been placed using proper techniques and in accordance with the project design specifications.

Table 2: Liner Material Minimum Specifications

Method	Material
Nominal thickness (ASTM D 1593)	36 mil
Hydrostatic Resistance (ASTM D 751)	≥ 750 psi
Dimensional Stability, Reinforced Sheet (ASTM D 1204)	≤ +/- 2 percent
Bursting Strength (ASTM D 751 [Ball Tip])	≥ 900 psi
Weathering Resistance (ASTM G 23 [Carbon Arc])	≥ 7,500 hours

3.2.2 PROPOSED PIPELINE ROUTE

The proposed pipeline alignment between Keku Road and the marine header and retail sales building will require excavation of a trench approximately 8 feet wide by 3 feet deep. Soil excavated from the trench will be temporarily stockpiled adjacent to the trench and returned to the excavation following installation of the pipeline. None of the soil samples from test pits along the pipeline alignment detected contaminants above ADEC cleanup levels. Should soils removed from the proposed pipeline trench be suspected of contamination, the contractor shall notify ADEC and follow the guidelines described in ADEC's March 2014 Technical Memorandum, *Managing Petroleum-Contaminated Soil, Water, or Free Product during Public Utility and Right-of-Way Construction and Maintenance Projects* (Appendix E) and 18 AAC 75.370. Contaminated soil removed from the trench and temporarily stockpiled on-site in accordance with 18 AAC 75.370 may be returned to the trench, except for the top 2 feet which shall contain only fill material free from contamination. The contractor shall notify ADEC prior to transporting, stockpiling, or disposing of any soil suspected to be contaminated and submit a copy of the *Transport,*

Treatment, & Disposal Approval Form for Contaminated Media form (Appendix C). A designated stockpile location for soils not returned to the trench is shown on Figure 2.

3.2.3 EXISTING PIPELINE ROUTE

The existing fuel distribution pipelines between the existing KTC tank farm and the dispensing and barge fill areas cross Keku Road in front of the existing KTC retail sales building. To meet Alaska Department of Transportation & Public Facilities utility road crossing requirements, existing fuel pipelines under Keku Road will be purged of remaining fuel, filled with cement, and abandoned in place. All other existing bulk fuel pipelines will be purged of remaining fuel, capped, and abandoned in place.

3.3 REPORTING

The contractor will keep detailed records of all soil excavation and grading within the *Contaminated Area* and along the proposed pipeline route. Copies of daily construction reports and field notes will be made available to ADEC, along with verbal report and photos of construction progress upon request. ADEC and AEA should be notified immediately if any previously unidentified soils suspected to be contaminated are found.

FIGURES

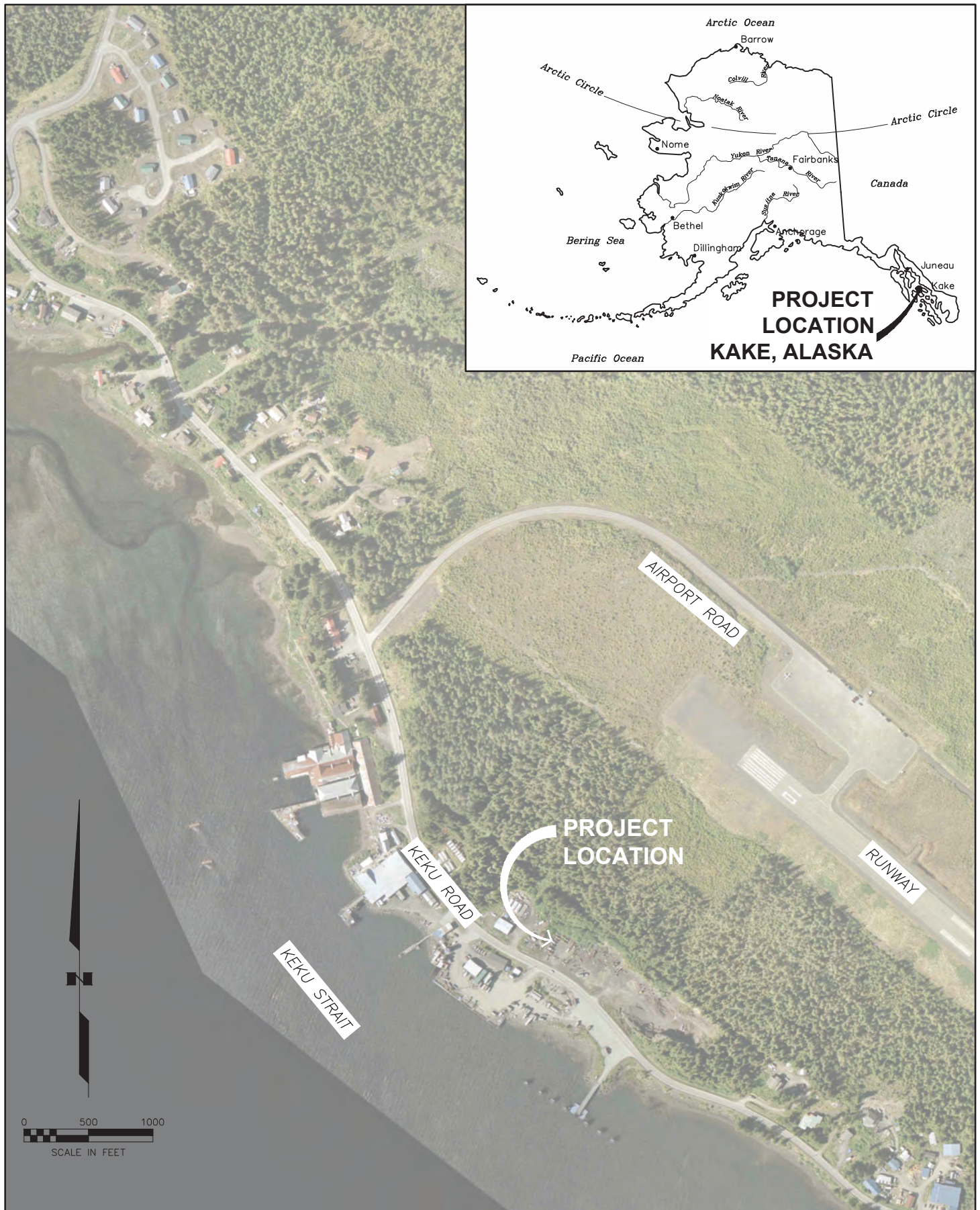
Contents

Figure 1: Location and Vicinity Map

Figure 2: Work Plan

Figure 3: Soil Contamination Overview

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LAYOUT: Layout1

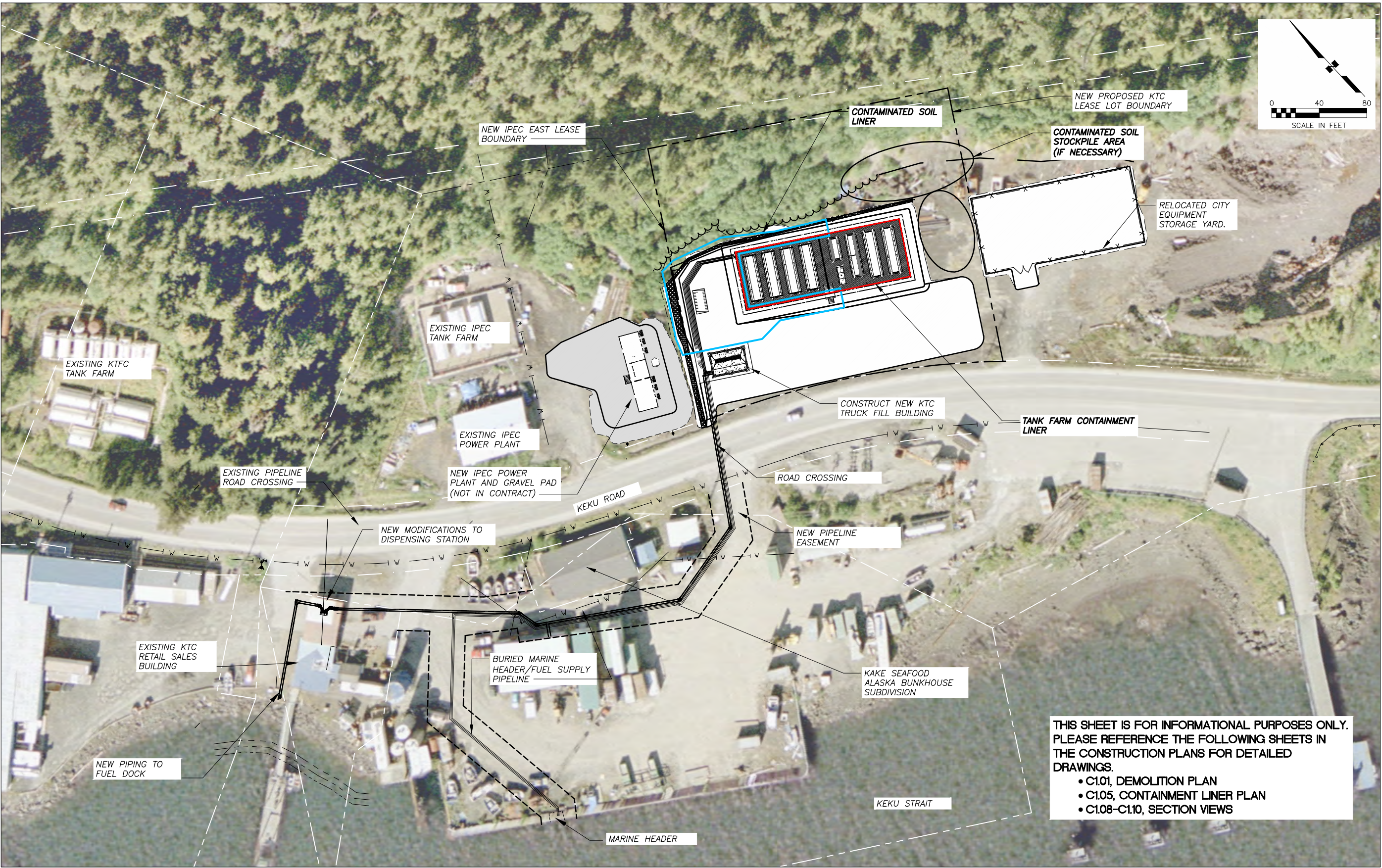


USGS: Petersburg D-6
Sec 4 of T. 57S, R. 73E, Copper River Meridian

Kake Bulk Fuel Upgrades
And Rural Power
System Upgrades

Figure 1
Location and Vicinity Map

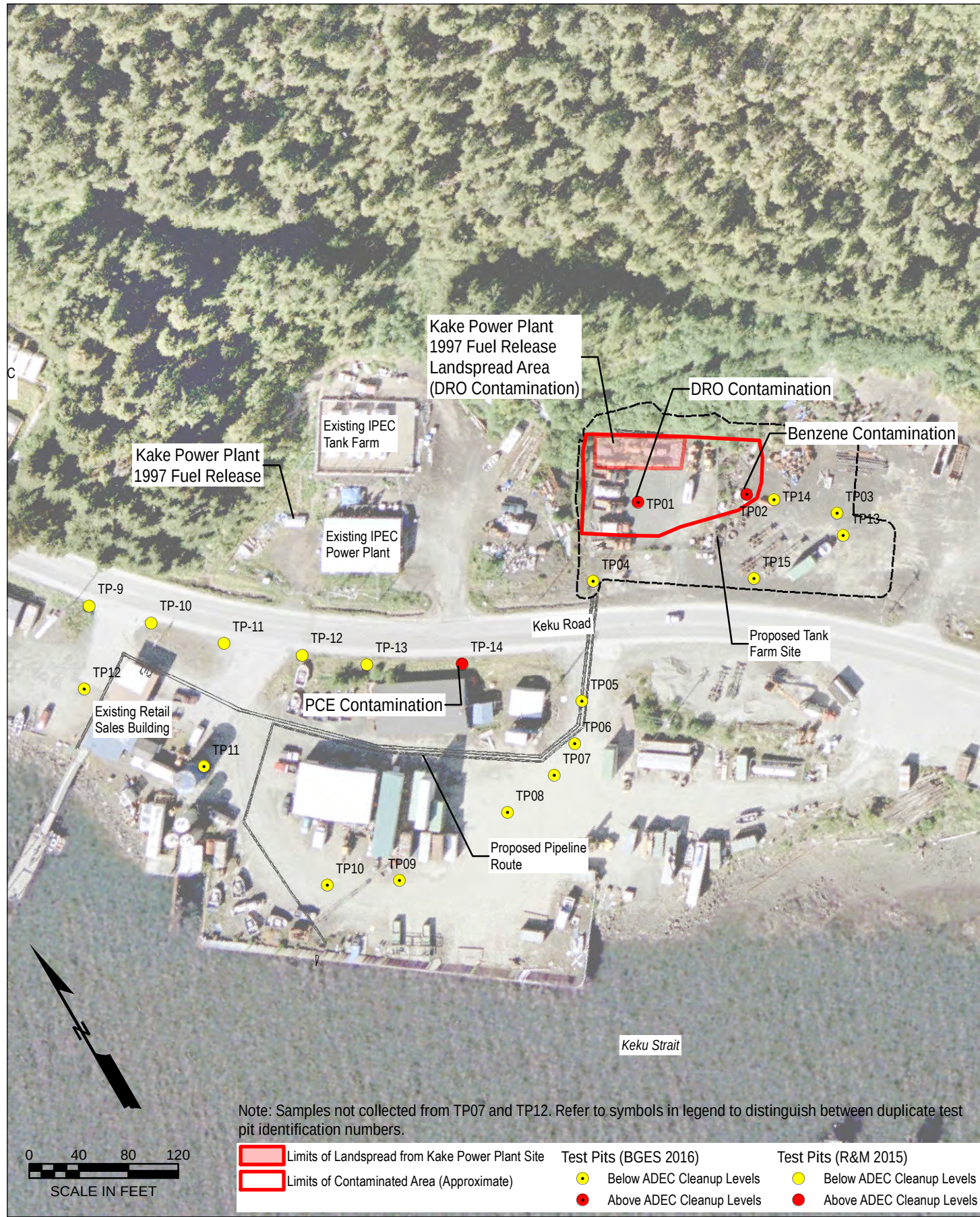
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LAYOUT: G1.04 PLP
XREF: 13-039_40_KAKE-SURVEY-BASE, 13040-00_B01-BK, X-SITE-JOSH



THIS SHEET IS FOR INFORMATIONAL PURPOSES ONLY.
PLEASE REFERENCE THE FOLLOWING SHEETS IN
THE CONSTRUCTION PLANS FOR DETAILED
DRAWINGS.

- C1.01, DEMOLITION PLAN
- C1.05, CONTAINMENT LINER PLAN
- C1.08-C1.10, SECTION VIEWS

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USGS: Petersburg D-6
Sec 4 of T. 57S, R. 73E, and
Sec 35 of T.56S, R.72E,
Copper River Meridian

Kake Bulk Fuel Upgrades &
Kake Rural Power System Upgrades

Figure 3
Soil Contamination Overview

APPENDIX A

ADEC Correspondence

Owen L. Means

From: Duncan, Danielle L (DEC) [danielle.duncan@alaska.gov]
Sent: Thursday, February 11, 2016 11:53 AM
To: Owen L. Means
Subject: Kake project
Attachments: Kake Power Company Biocell 7-16-15.pdf

Hi Owen, as discussed earlier the ADEC believes it will be acceptable to cap the area of contaminated soil in the anticipated location of the new tank farm. We would like to be a part of the conversation once a finalized plan is ready and the cap type is selected to make sure that it will be protective. Attached is the latest report for the biocell. Have a great day!

Danielle Duncan

Alaska Department of Environmental Conservation
Division of Spill Response Contaminated Sites Program
P.O. Box 111800, Juneau AK 99811-1800
Tel. 907.465.5207



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Environmental
Conservation

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

PO Box 111800
410 Willoughby Ave #303
Juneau, AK 99811-1800
Main: 907-465-5390
Fax: 907-465-5218
www.dec.alaska.gov

December 18, 2015

Owen Means
HDL Alaska
3335 Arctic Boulevard, Suite 100
Anchorage, AK 99503

Re: AEA tank farm in Kake

Owen, as we discussed during our meeting with the DOT and our subsequent phone conversations, the ADEC would like to review a work plan developed by a qualified environmental professional prior to the start of any excavation work on the new tank farm project in Kake pursuant to 18 AAC 75.335 and 75.355. Please use the ADEC Draft Field Sampling Guidance as a resource for your work plan drafting (link: http://dec.alaska.gov/spar/csp/guidance_forms/docs/Draft_Field_Sampling_Guidance.pdf). Due to the high probability of diesel range organics (DRO) and PCE contamination in the footprint of the new tank farm and historic fuel piping, the ADEC requests that soils be field screened using a PID and that contaminated soil be segregated from uncontaminated soil and that only uncontaminated soil be used as backfill. Contaminated soil can be stockpiled and must be sampled for DRO and PCE according to the Draft Field Sampling Guidance. Please notify the ADEC of the location of the stockpile and report all results as soon as possible to the ADEC. Please keep in mind that any proposal to transport soil or groundwater off-site requires ADEC approval in accordance with 18 AAC 75.325. A "site" [as defined by 18 AAC 75.990 (115)] means an area that is contaminated, including areas contaminated by the migration of hazardous substances from a source area, regardless of property ownership. In addition, movement or use of contaminated material in a manner that results in a violation of 18 AAC 70 water quality standards is prohibited. Also, please consider using a sleeve to run the new fuel piping through such that any leaks do not contaminate groundwater and it would also be a benefit to the community of Kake to build the new tank farm using the latest in secondary containment and spill prevention technologies. I would like the opportunity to review your tank farm design and oil spill sea plan.

December 18, 2015

If you have any questions regarding this letter or concerns please feel free to contact me by telephone at 907-465-5207 or email at Danielle.Duncan@alaska.gov.

I look forward to your reply.

Sincerely,

A handwritten signature in blue ink, appearing to read 'D. Duncan', followed by a horizontal line.

Danielle Duncan
Project Manager

cc: John Barnett, ADOT, via electronic mail
Chris Schelb, ADOT, via electronic mail
Anne Marie Palmieri, ADEC, via electronic mail
Rene Kadake, Kake Tribal Corporation, via electronic mail



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Environmental
Conservation

DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

PO Box 111800
410 Willoughby Ave #303
Juneau, AK 99811-1800
Main: 907-465-5390
Fax: 907-465-5218
www.dec.alaska.gov

File No: 1514.38.005

June 2, 2016

Brandon Shaw
Inside Passage Electric Co-op
12480 Mendenhall Loop Rd
Juneau, AK 99801

Re: Kake Power Plant
Hazard ID: 2711

Dear Mr. Shaw:

The Alaska Department of Environmental Conservation (ADEC) Juneau Office has reviewed and approved the work plan titled: Contaminated Materials Work Plan Kake Bulk Fuel Upgrades dated May 2016 submitted by HDL Engineering Consultants on behalf of Alaska Energy Authority. This plan was received in our office on May 20th 2016 by electronic mail. The plan outlines the construction of a new bulk fuel storage and power generation facility in Kake. The facility will overlay a remediating biocell owned by the Inside Passage Electric Cooperative due to a lack of a suitable alternative location. The biocell was set-up in 1997 and the most recent sampling event documented remaining diesel range organics (DRO) contamination up to 2,000 mg/kg. Previous studies in Kake have also found petroleum contamination in the footprint of the new tank farm. This letter serves as an approval for the biocell to be capped and for any new contaminated soil to be left in place according to the ADEC Technical Memorandum: Managing Petroleum-Contaminated Soil, Water, or Free Product during Public Utility and Right of-Way Construction and Maintenance Projects dated March 2014. However, if contaminated soil or water is encountered the ADEC will be notified immediately as stated in the work plan. This letter does not serve as an approval for the tank farm design itself as that is beyond the scope of the Contaminated Sites Program. The biocell will be placed beneath the new tank farm soil liner and an impermeable liner will be placed over top. There will also be a secondary containment dike containment liner and these liners will overlap one another. The liners will be a nominal thickness of no less than 36 mil and a minimum of 18 inches of structural fill will be placed over top to ensure that the liner is not damaged from trucks driving on top of it. No soils will be moved off site. Once the new tank farm is built, the Kake Power Plant Contaminated Site will be closed on the ADEC database.

If you have any questions regarding this letter or concerns please feel free to contact me by telephone at 907-465-5207 or email at Danielle.Duncan@alaska.gov.

June 2, 2016

Sincerely,



Danielle Duncan
Project Manager

cc: Anne Marie Palmieri, Environmental Program Specialist IV, ADEC, via electronic mail
Owen Means, Environmental Specialist, HDL Engineering Consultants, via electronic mail

APPENDIX B

Environmental Soils Assessment (BGES 2016)



BGES, INC.

ENVIRONMENTAL CONSULTANTS

**KAKE BULK FUEL UPGRADES
KAKE, ALASKA**

ENVIRONMENTAL SOILS ASSESSMENT REPORT

FEBRUARY 2016

Submitted to:

**Owen Means
Hattenburg Dilley & Linnell
3335 Arctic Boulevard, Suite 100
Anchorage, Alaska 99503**

Submitted by:

**BGES, INC.
1042 E. 6th Avenue
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ACRONYMS

AAC	-	Alaska Administrative Code
ADEC	-	Alaska Department of Environmental Conservation
AK	-	Alaska Method
bg	-	Below Grade
BGES	-	Braunstein Geological and Environmental Services
BTEX	-	Benzene, Toluene, Ethylbenzene, Total Xylenes
C	-	Degrees Celsius
CSM	-	Conceptual Site Model
DRO	-	Diesel Range Organics
EPA	-	Environmental Protection Agency
GPS	-	Global Positioning System
GRO	-	Gasoline Range Organics
HDL	-	Hattenburg Dilley & Linnell
J	-	Estimated Value
LOQ	-	Limit of Quantitation
mg/Kg	-	Milligrams per Kilogram
MS	-	Matrix Spike
MSD	-	Matrix Spike Duplicate
PCE	-	Tetrachloroethylene
PID	-	Photoionization Detector
ppm	-	Parts per Million
QC	-	Quality Control
QEP	-	Qualified Environmental Professional
R&M	-	R&M Consultants, Inc.
RPD	-	Relative Percent Differences
RRO	-	Residual Range Organics
SGS	-	SGS North America
VOCs	-	Volatile Organic Compounds

1.0 INTRODUCTION

BGES, Inc. (BGES), on behalf of Hattenburg Dilley & Linnell (HDL), is pleased to present this report for environmental soils assessment activities conducted at the property located at T56S, R72E, S35 and T57S, S4, Copper River Meridian, USGS Quadrangle; Petersburg, D-6, Kake, Alaska (Figure 1); hereafter referred to as the subject property. The following paragraphs discuss the assessment activities that occurred at the site during January of 2016.

2.0 BACKGROUND

The property that was the subject of this environmental soils assessment is located along the northeast and southwest sides of Keku Road in Kake, Alaska. The Alaska Energy Authority is planning to install a new tank farm and fuel pipelines which will extend from the northeast side of Keku Road, south to the marine header. A soils investigation was performed by R&M Consultants, Inc. (R&M) for an adjacent project in 2015. R&M assessed soils along a new section of a water main which was located along Keku Road, to the west of the subject property. Several contaminants, including diesel range organics (DRO), benzene, and tetrachloroethylene (PCE) were detected in various test pits along Keku Road at concentrations exceeding Alaska Department of Environmental Conservation (ADEC) cleanup criteria. Test Pit TP14, which was advanced by R&M approximately 100 feet west of where the proposed fuel pipeline is projected to cross Keku Road, exhibited a PCE concentration of 0.160 milligram per kilogram (mg/Kg), which exceeds the ADEC cleanup criterion of 0.024 mg/Kg. Test Pit TP14 (R&M) is not the same test pit location as Test Pit TP14 advanced as part of these investigation activities.

3.0 FIELD ACTIVITIES

All work was conducted by a Qualified Environmental Professional (QEP), as defined by the ADEC, and in general accordance with ADEC's Field Sampling Guidance (May 2010) and BGES' Work Plan that was approved by Danielle Duncan, ADEC Project Manager, on January 26, 2016. An overall site map showing the locations of test pits is attached as Figure 2. The ADEC – Approved Work Plan dated January 26, 2016 is included in Appendix A, and photographs of field activities are included in Appendix B.

BGES personnel mobilized to the site on January 27, 2016 to observe the excavation of 15 test pits and to perform field screening and laboratory sampling activities within the exposed sidewalls and

base of each test pit.

Test Pits 4 through 12 were excavated along the areas of the proposed underground pipeline. Test Pit 15 was excavated in an area where there is potential for a fuel line to be installed if the location of the tank farm is moved further to the east. Test Pits 1, 2, 3, 13, and 14 were excavated in the area of the proposed new tank farm. All test pits were advanced either until bedrock was encountered or to approximately 5 feet below grade (bg), whichever occurred first.

Upon retrieval, recovered soil samples were placed into individual sealable plastic bags using a clean, stainless-steel spoon, and the bags were labeled with a unique sample number and the time of collection. Soils in each plastic bag were screened with a photoionization detector (PID). The PID was calibrated prior to use with 100 parts per million (ppm) isobutylene calibration gas.

The field-screening samples were allowed to warm to at least 40 degrees Fahrenheit for at least 10 minutes (but not longer than 1 hour), and then the plastic bags were agitated for approximately 15 seconds, at which point the probe of the PID was inserted into the bag and the greatest reading was recorded.

In addition to screening with the PID, soils samples collected from Test Pits 1, 4, 5, 6, 7, and 15; which were closest to the vicinity of the PCE contamination as previously discovered, were also field-screened with Color Tec kits for total chlorinated solvents compounds in accordance with the Color Tec manufacturer's specification. Soils were collected by using stainless steel spoons and placed into the Color Tec sample jars. Distilled water was then placed into the jars in accordance with the manufacturer's specifications. The sample was then purged through the colorimetric tube, which is designed to produce a distinct color change when exposed to chlorinated compounds. None of the samples collected during field activities for Color Tec screening exhibited evidence of chlorinated compounds.

Once PID and Color Tec readings were obtained, soil samples were quickly collected in laboratory-supplied containers for laboratory analyses from the same locations as where the PID field screening samples were collected, but from freshly exposed soils. The selection process for determining which soil samples were retained for laboratory analyses was as follows. A minimum of one soil sample was collected from each soil horizon within each test pit and submitted for laboratory analysis. Soil

samples exhibiting the greatest PID or Color Tec readings and/or exhibiting signs of contamination were prioritized for selection for laboratory analysis.

In a similar fashion as described above, laboratory samples were collected using stainless steel spoons. Sample portions scheduled to be analyzed for volatile compounds were collected first and were preserved with methanol immediately after collection. The methanol provided by the laboratory was added to the sample in a manner that completely covered the sample. The samples were labeled, placed in ice-filled coolers, shipped to Anchorage by Alaska Air Cargo, picked up by BGES personnel at Alaska Air Cargo, and delivered by BGES personnel under chain of custody protocol to SGS North America, Inc. (SGS) of Anchorage, Alaska; an ADEC-approved laboratory. Visual and olfactory observations, soil descriptions, and PID readings for samples collected from each test pit are described and recorded in the field notes, included in Appendix C. The soil samples were analyzed by the methods described in Section 4, below. All soil sampling activities were conducted in general accordance with ADEC Draft Field Sampling Guidance (May 2010).

All test pits were located using global positioning system (GPS) measurements by professional land surveyors provided by HDL. Soils excavated from each test pit were placed back into the test pit of origination. The locations of the test pits are depicted on Figure 2. Analytical results are shown in Table 1; laboratory analytical data packages are included in Appendix D.

4.0 EVALUATION OF LABORATORY DATA

Based upon the analytical results for previous investigations for the subject property, the soil samples were analyzed for one or more of the following: gasoline range organics (GRO) by Alaska Method (AK) 101; benzene, toluene, ethylbenzene, and total xylenes (BTEX) by Environmental Protection Agency (EPA) Method 8021B; volatile organic compounds (VOCs) by EPA Method 8260B; DRO by AK 102; and residual range organics (RRO) by AK 103. In addition; samples collected from Test Pit 8, which was located directly down-gradient of exposed marine batteries, were analyzed for Lead by EPA 6020A.

The soil samples were compared to the ADEC Cleanup Criteria listed in 18 Alaska Administrative Code (AAC) 75.341 – Tables B1 and B2, Method 2, Over 40-Inch Zone, Migration to Groundwater values; except for chloroethane and Freon-113, whose cleanup criteria are based on the Outdoor Inhalation and Direct Contact pathways, respectively; and RRO, which is based on the Ingestion

Pathway, as revised on January 1, 2016. Results of the laboratory analyses are discussed below, and are listed in Table 1.

A total of 15 test pits were advanced on the subject property during the month of January 2016; in order to characterize soils for potential contamination in areas of the proposed new tank farm and fuel lines. Two test pits (TP1 and TP2) exhibited analyte concentrations that were greater than applicable ADEC cleanup criteria. DRO was detected at a concentration of 389 mg/Kg in Test Pit TP1, which exceeds the ADEC cleanup criterion of 230 mg/Kg for this analyte; and benzene was detected at a concentration of 0.0460 mg/Kg in Test Pit TP2, which exceeds the ADEC cleanup criterion of 0.025 mg/Kg for this analyte. No other analytes were detected in any of the test pits at concentrations exceeding the applicable ADEC cleanup criteria.

Analytical results for samples collected from each test pit are included in Table 1; test pit locations are shown on Figure 2; and the laboratory analytical data package is included in Appendix D.

5.0 LABORATORY DATA QUALITY REVIEW

Data quality was reviewed in accordance with ADEC guidance and standard industry practices. An ADEC laboratory data quality control (QC) review checklist was completed for the laboratory work order and is included in Appendix E. The checklist provides an overview of the quality of the laboratory data. The following is a discussion of our evaluation of sample conditions and laboratory procedures for the soil samples collected during field activities.

Upon arrival in Anchorage, the soil samples, which were stored for nearly 36 hours in Alaska Air Cargo's cooler, were found to have solid ice within the shipping cooler; but were repacked by BGES into another cooler, with additional ice, for delivery to the laboratory. The samples were in the new cooler for approximately 10 to 15 minutes, the time it takes to transport them to the laboratory. The new sample cooler arrived at the laboratory with a measured temperature of 7.3 degrees Celsius (C), which is 1.3 degrees greater than the prescribed optimal temperature range of 4 degrees C +/- 2 degrees. For this reason, there is an increased potential for contaminant concentration loss due to natural attenuation. However, DRO was detected in sample TP1-1-0127 at a concentration of 389 mg/Kg, which is above the ADEC cleanup criterion of 230 mg/Kg for this analyte, and benzene was detected at 0.0460 mg/Kg, which is above the ADEC cleanup criterion of 0.025 mg/Kg in sample TP2-1-0128. Because these two analytes were above their respective ADEC cleanup criteria in their

respective samples, it is our opinion that this QC failure does not affect the acceptability of these data for their intended use. Because the ice in the cooler was still solid upon receipt of the samples, and because the soil samples were transferred to a new cooler prior to delivery to the laboratory, it is likely that this slight temperature variance occurred for a short period of time, and it is therefore our opinion that this QC failure has not significantly promoted biological degradation of the samples. For these reasons, it is our opinion that this QC failure does not affect the acceptability of the data for their intended use.

The samples contained the proper preservatives for the requested analyses and no unusual sample conditions were noted by the laboratory. A trip blank sample accompanied the volatile samples through the entirety of the sampling process and delivery to the laboratory. The case narrative for Work Order Number 1160430 noted the following QC failures that were identified by SGS.

The recovery of the surrogate Toluene-d8 associated with the analyses of VOCs within Project Sample TP4-1; and within a Method Blank associated with Project Samples TP4-1, TP5-4, TP8-5, TP8-6, TP9-2, and the Trip Blank sample exceeded laboratory QC criteria. This indicates a potential for the reported concentrations of VOCs within these samples to be biased high. For this reason, and because the reported results with actual concentrations were below the laboratory's limits of quantitation (LOQs), the reported concentrations of VOCs within Project Samples TP4-1, TP5-4, TP8-5, TP8-6, and TP9-2 are qualified with a "J" in Table 1, and should be considered estimates. However, because the reported concentrations of VOCs in these samples are below the ADEC cleanup criteria; it is our opinion that this QC failure does not affect the acceptability of the data for their intended use.

The recovery of trans-1,2-dichloroethene within a Matrix Spike (MS) sample associated with Project Samples TP4-1, TP5-4, TP8-5, TP8-6, TP9-2, and the Trip Blank sample exceeded laboratory QC criteria. This indicates a potential for the reported concentrations of trans-1,2-dichloroethene within these samples to be biased high. However, because this analyte was not detected at concentrations exceeding the LOQs within these samples, and because the LOQs were less than the ADEC cleanup criterion; it is our opinion that this QC failure does not affect the acceptability of the data for their intended use.

The recoveries of 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, naphthalene, and trans-1,2-dichloroethene within a MS duplicate (MSD) sample associated with Project Samples TP4-1, TP5-4, TP8-5, TP8-6, TP9-2, and the Trip Blank sample exceeded laboratory QC criteria. This indicates a potential for the reported concentrations of these analytes to be biased low in the project samples listed above. However, because these analytes were either detected at concentrations less than the ADEC cleanup criteria; or were not detected at concentrations exceeding the LOQs, and the LOQs were less than the ADEC cleanup criteria; it is our opinion that this QC failure does not affect the interpretation of the data.

The LOQs for 1,2,3-trichloropropane, 1,2-dibromoethane, and methylene chloride exceeded the ADEC cleanup criteria in every soil sample that was analyzed for VOCs. As such, it cannot be determined if the actual concentrations of 1,2,3-trichloropropane, 1,2-dibromoethane, and methylene chloride within the associated samples exceed the ADEC cleanup criteria. However, because these analytes are not compounds of concern for this site; it is our opinion that this QC failure does not affect the interpretation of the data.

Sample TP8-6 was a duplicate of TP8-5; and Sample TP14-4 was a duplicate of TP14-3. These duplicate samples were collected to evaluate field sampling precision. The relative percent differences (RPDs) between the reported concentrations of all analytes which were detected in samples TP8-6 and TP8-5 were below the acceptable limit of 50 percent. This indicates relatively good field precision with respect to sampling procedures. The RPD between the reported concentrations of toluene and total xylenes within samples TP14-3 and TP14-4 were also below the acceptable limit of 50 percent. The RPDs of DRO and RRO, however, were 66 percent and 106 percent, respectively; which exceed the acceptable limit, indicating poor sampling precision. Therefore, the detectable results for DRO and RRO are qualified with a "J" in Table 1 and should be considered estimates. These nonconforming RPDs are likely attributable to heterogeneity of the soils. The RPDs between reported concentrations of several analytes could not be calculated, as the analytes were not detected at the laboratory's LOQs in one or both of these sample/duplicate pairs.

6.0 CONCEPTUAL SITE MODEL

A graphic conceptual site model (CSM) detailing the various potential exposure media, transport mechanisms, exposure pathways, and human receptors for identified contamination at this site was

prepared and is included in Appendix F. Even though there is known DRO contamination in the unlined land farmed soils approximately 30 feet north of Test Pit 1 and approximately 50 feet north of Test Pit 2, the source of contamination at the subject property is currently unknown. The media identified at the site in which the contamination is currently present is surface soils. The transport mechanisms through which contamination could have mobilized were identified to be migration to subsurface soils, migration to groundwater, runoff or erosion, uptake by biota, and volatilization to air.

Potential exposure pathways through which contamination at this site could impact potential current and/or future human receptors were identified to be incidental ingestion of soils, groundwater, and surface water; inhalation of volatile compounds in tap water; inhalation of outdoor air; inhalation of fugitive dust; and ingestion of wild or farmed foods.

Potential current and/or future human receptors for this site were identified to be commercial or industrial workers, site visitors or trespassers, construction workers; and subsistence farmers, harvesters, and consumers.

7.0 CONCLUSIONS

A total of 15 test pits were advanced on the subject property during the month of January 2016; in order to characterize soils in the proposed location of a new tank farm and associated fuel lines. Two test pits (TP1 and TP2) exhibited analyte concentrations that were greater than the applicable ADEC cleanup criteria. DRO was detected at a concentration of 389 mg/Kg in Test Pit TP1, which exceeds the ADEC cleanup criterion of 230 mg/Kg for this analyte; and benzene was detected at a concentration of 0.0460 mg/Kg in Test Pit TP2, which exceeds the ADEC cleanup criterion of 0.025 mg/Kg for this analyte. No other analytes were detected in any of the test pits at concentrations exceeding the applicable ADEC cleanup criteria.

8.0 EXCLUSIONS AND CONSIDERATIONS

This report presents facts, observations, and inferences based on conditions observed during the period of our project activities, and only those conditions that were evaluated as part of our scope of work. Our conclusions are based solely on our observations made and work conducted, and only apply to the immediate vicinities of the locations where soil samples were collected. In addition,

changes to site conditions may have occurred since the completion of our project activities. These changes may be from the actions of man or nature. Changes in regulations may also impact the interpretation of site conditions. BGES will not disclose our findings to any parties other than our client as listed above, except as directed by our client, or as required by law.

This report was prepared by William Schmaltz, Environmental Scientist of BGES. Mr. Schmaltz is a Qualified Environmental Professional, as defined by the ADEC, and has conducted numerous site characterization and remedial projects throughout Alaska. This report was reviewed by Robert N. Braunstein, C.P.G., a Certified Professional Geologist, who has more than 35 years of professional geologic and environmental consulting experience, and has performed or managed thousands of environmental site assessments in the lower 48-States and in Alaska. He has extensive knowledge of, and experience with contaminated sites and remediation.

Sincerely,

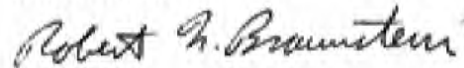
BGES, INC.

Prepared by:

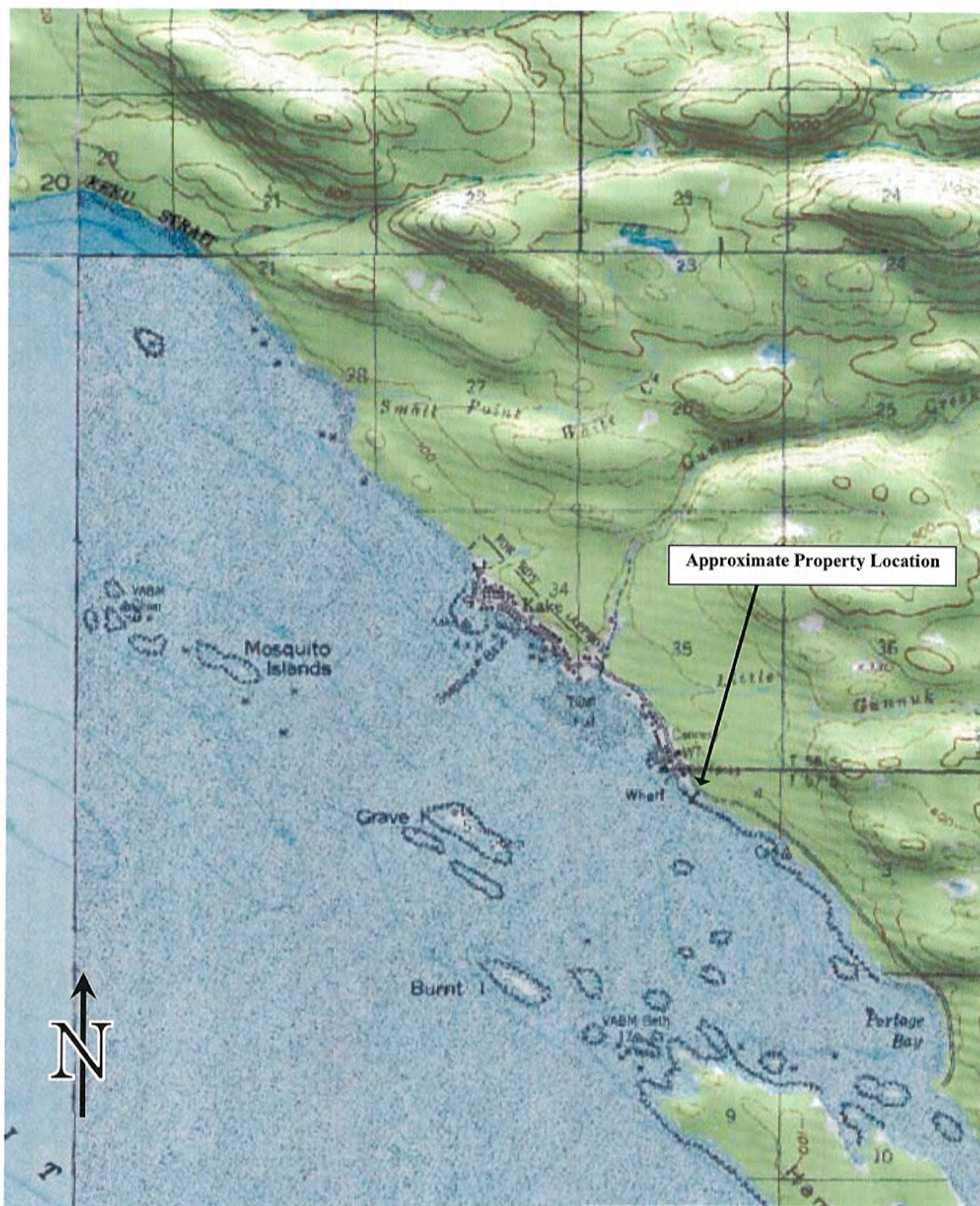


William Schmaltz
Environmental Scientist

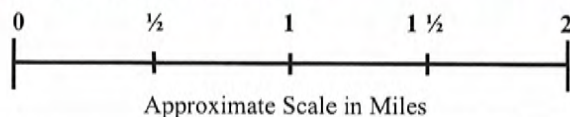
Reviewed By:



Robert N. Braunstein, C.P.G.
Principal Geologist



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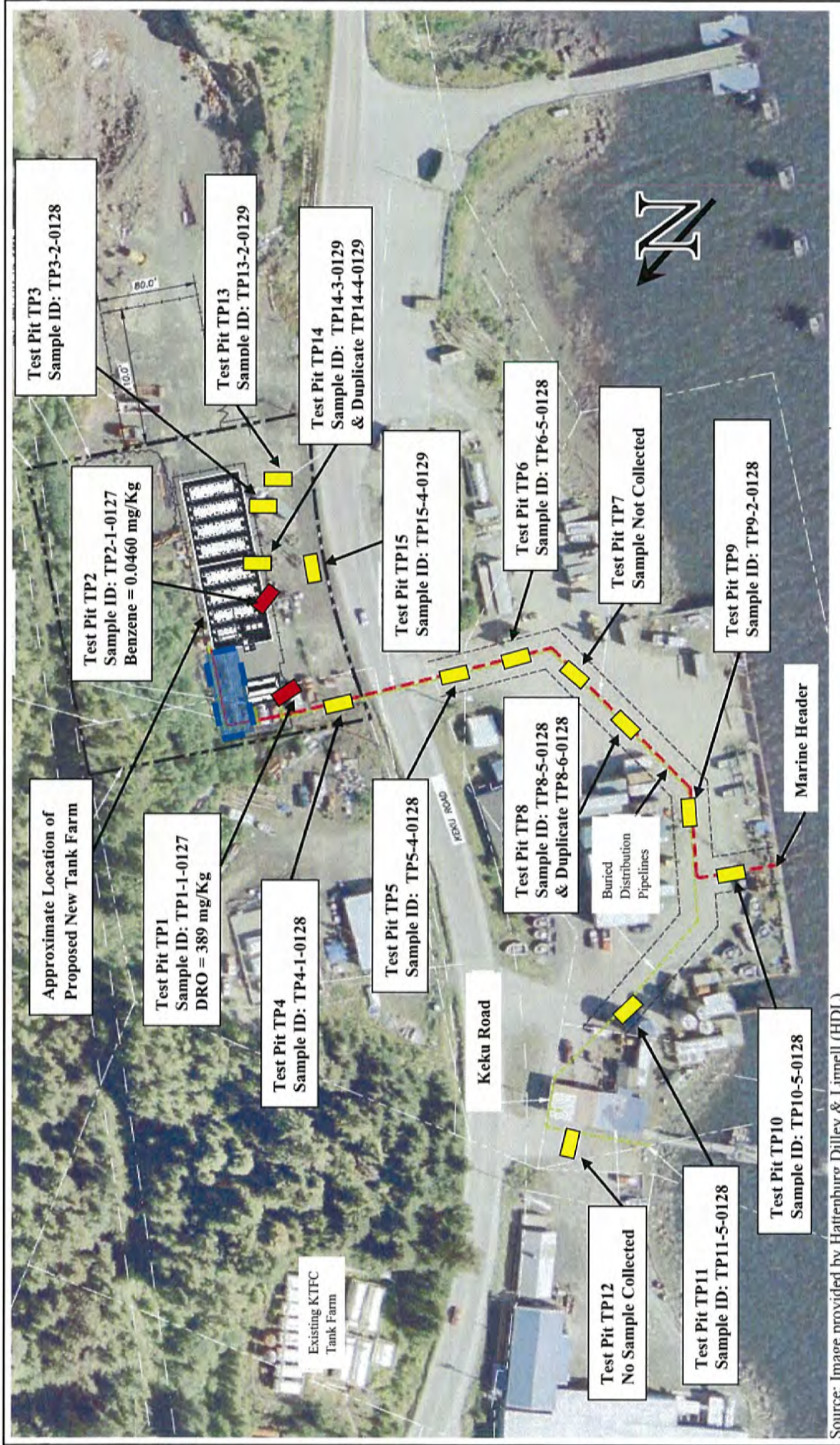


**New Tank Farm & Fuel Pipelines Site
Kake, Alaska
Property Vicinity Map**

BGES, INC.

February 2016

Figure 1



Source: Image provided by Hattenburg Dilley & Linnell (HDL)

Legend

■ Approximate Test Pit Location, no Exceedences of Alaska Department of Environmental Conservation (ADEC) Cleanup Criteria

■ Approximate Test Pit Location, With Exceedences of ADEC Cleanup Criteria

--- Location of Proposed Fuel Line Installation

--- Proposed Leased Lot Boundary for New Tank Farm

--- Location of Land-Spread Contaminated Soils on the Subject Property

New Tank Farm & Fuel Pipelines Site
Kake, Alaska

Test Pit Location Map

BGES, INC.

February 2016

Figure 2

TABLE 1
KAKE, ALASKA
SOIL SAMPLE ANALYTICAL RESULTS (JANUARY 2016)

Sample No.	Parameter	Results (mg/Kg)		LOQ (mg/Kg)	ADEC Cleanup Criteria* (mg/Kg)	Analytical Method
TP1-1-0127 PID = 2 ppm Depth = 18 inches	GRO	1.01	J	2.41	260	AK 101
	DRO	389		23.1	230	AK 102
	RRO	227		23.1	8,300	AK 103
	Benzene	ND		0.0121	0.025	SW 8021B
	Ethylbenzene	0.0164	J	0.0241	6.9	SW 8021B
	Toluene	0.0186	J	0.0241	6.5	SW 8021B
	Total Xylenes	0.0817		0.0723	63	SW 8021B
TP2-1-0128 PID = 15 ppm Depth = 18 inches	GRO	6.12		1.82	260	AK 101
	DRO	17.9	J	22.1	230	AK 102
	RRO	101		22.1	8,300	AK 103
	Benzene	0.0460		0.00908	0.025	SW 8021B
	Ethylbenzene	0.0723		0.0182	6.9	SW 8021B
	Toluene	0.0579		0.0182	6.5	SW 8021B
	Total Xylenes	0.658		0.0545	63	SW 8021B
TP3-2-0128 PID = 0 ppm Depth = 20 inches	GRO	1.63	J	1.94	260	AK 101
	DRO	ND		21.0	230	AK 102
	RRO	12.5	J	21.0	8,300	AK 103
	Benzene	0.0144		0.00972	0.025	SW 8021B
	Ethylbenzene	ND		0.0194	6.9	SW 8021B
	Toluene	0.0103	J	0.0194	6.5	SW 8021B
	Total Xylenes	0.02875	J	0.0583	63	SW 8021B
TP4-1-0128 PID = 0 ppm Depth = 10	GRO	0.695	J	2.19	260	AK 101
	DRO	16.0	J	22.3	230	AK 102
	RRO	40.3		22.3	8,300	AK 103
	<i>1,2,3-Trichloropropane</i>	ND		0.01095	0.00053	SW 8260B
	<i>1,2-Dibromoethane</i>	ND		0.004385	0.00016	SW 8260B
	Benzene	ND		0.0110	0.025	SW 8260B
	Ethylbenzene	ND		0.0219	6.9	SW 8260B
	<i>Methylene Chloride</i>	ND		0.04385	0.016	SW 8260B
	Naphthalene	0.0257	J	0.0439	20	SW 8260B
	Toluene	0.0125	J	0.0219	6.5	SW 8260B
	Total Xylenes	ND		0.0658	63	SW 8260B
	All Other VOCs	ND		Varies	varies	SW 8260B
TP5-4-0128 PID = 0 ppm Depth = 36 inches	GRO	1.62	J	3.31	260	AK 101
	DRO	13.3	J	21.9	230	AK 102
	RRO	55.8		21.9	8,300	AK 103
	<i>1,2,3-Trichloropropane</i>	ND		0.01655	0.00053	SW 8260B
	<i>1,2-Dibromoethane</i>	ND		0.0066	0.00016	SW 8260B
	1,3,5-Trimethylbenzene	0.0106	J	0.0331	23	SW 8260B
	4-Isopropyltoluene	0.0262	J	0.0331	n/a	SW 8260B
	Benzene	ND		0.0166	0.025	SW 8260B
	Ethylbenzene	ND		0.0331	6.9	SW 8260B
	<i>Methylene Chloride</i>	ND		0.066	0.016	SW 8260B
	Toluene	0.0179	J	0.0331	6.5	SW 8260B
	Total Xylenes	ND		0.0993	63	SW 8260B
	All Other VOCs	ND		Varies	varies	SW 8260B
TP6-5-0128 PID = 0 ppm Depth = 36 inches	GRO	ND		3.80	260	AK 101
	DRO	7.80	J	21.6	230	AK 102
	RRO	28.7		21.6	8,300	AK 103
	Benzene	ND		0.0190	0.025	SW 8021B
	Ethylbenzene	ND		0.0380	6.9	SW 8021B
	Toluene	0.0129	J	0.0380	6.5	SW 8021B
	Total Xylenes	ND		0.1139	63	SW 8021B

TABLE 1
KAKE, ALASKA
SOIL SAMPLE ANALYTICAL RESULTS (JANUARY 2016)

Sample No.	Parameter	Results (mg/Kg)		LOQ (mg/Kg)	ADEC Cleanup Criteria* (mg/Kg)	Analytical Method
TP8-5-0128	GRO	ND		1.94	260	AK 101
PID = 0 ppm	DRO	9.73	J	21.1	230	AK 102
Depth = 36 inches	RRO	43.9		21.1	8,300	AK 103
	<i>1,2,3-Trichloropropane</i>	ND		0.0097	0.00053	SW 8260B
	<i>1,2-Dibromoethane</i>	ND		0.003885	0.00016	SW 8260B
	Benzene	ND		0.00972	0.025	SW 8260B
	Ethylbenzene	ND		0.0194	6.9	SW 8260B
	<i>Methylene Chloride</i>	ND		0.03885	0.016	SW 8260B
	Toluene	0.0111	J	0.0194	6.5	SW 8260B
	Total Xylenes	ND		0.0583	63	SW 8260B
	All Other VOCs	ND		Varies	varies	SW 8260B
	Lead	4.83		1.04	400	SW 6020A
TP8-6-0128						
duplicate of TP8-5-0128	GRO	ND		1.96	260	AK 101
RPD = 8 %	DRO	9.02	J	21.1	230	AK 102
RPD = 8 %	RRO	40.7		21.1	8,300	AK 103
	<i>1,2,3-Trichloropropane</i>	ND		0.0098	0.00053	SW 8260B
	<i>1,2-Dibromoethane</i>	ND		0.00392	0.00016	SW 8260B
	1,3,5-Trimethylbenzene	0.00647	J	0.0196	23	SW 8260B
	Benzene	ND		0.00980	0.025	SW 8260B
	Ethylbenzene	ND		0.0196	6.9	SW 8260B
	<i>Methylene Chloride</i>	ND		0.0392	0.016	SW 8260B
RPD = 10 %	Toluene	0.0123	J	0.0196	6.5	SW 8260B
	Total Xylenes	ND		0.0588	63	SW 8260B
	All Other VOCs	ND		Varies	varies	SW 8260B
RPD = 40 %	Lead	3.21		1.00	400	SW 6020A
TP9-2-0128	GRO	0.796	J	2.50	260	AK 101
PID = 0 ppm	DRO	ND		21.7	230	AK 102
Depth = 24 inches	RRO	22.3		21.7	8,300	AK 103
	<i>1,2,3-Trichloropropane</i>	ND		0.0125	0.00053	SW 8260B
	<i>1,2-Dibromoethane</i>	ND		0.004995	0.00016	SW 8260B
	1,3,5-Trimethylbenzene	0.0102	J	0.0250	23	SW 8260B
	Benzene	ND		0.0125	0.025	SW 8260B
	Ethylbenzene	ND		0.0250	6.9	SW 8260B
	<i>Methylene Chloride</i>	ND		0.04995	0.016	SW 8260B
	Toluene	0.0137	J	0.0250	6.5	SW 8260B
	Total Xylenes	ND		0.0749	63	SW 8260B
	All Other VOCs	ND		Varies	varies	SW 8260B
TP10-5-0128	GRO	ND		2.22	260	AK 101
PID = 0 ppm	DRO	10.0	J	20.7	230	AK 102
Depth = 48 inches	RRO	68.7		20.7	8,300	AK 103
	Benzene	ND		0.0111	0.025	SW 8021B
	Ethylbenzene	ND		0.0222	6.9	SW 8021B
	Toluene	0.00845	J	0.0222	6.5	SW 8021B
	Total Xylenes	0.0167	J	0.0667	63	SW 8021B
TP11-5-0128	GRO	0.811	J	2.51	260	AK 101
PID = 0 ppm	DRO	ND		21.7	230	AK 102
Depth = 48 inches	RRO	8.47	J	21.7	8,300	AK 103
	Benzene	ND		0.0125	0.025	SW 8021B
	Ethylbenzene	ND		0.0251	6.9	SW 8021B
	Toluene	0.00802	J	0.0251	6.5	SW 8021B
	Total Xylenes	0.0168	J	0.0752	63	SW 8021B

TABLE 1
KAKE, ALASKA
SOIL SAMPLE ANALYTICAL RESULTS (JANUARY 2016)

Sample No.	Parameter	Results (mg/Kg)		LOQ (mg/Kg)	ADEC Cleanup Criteria* (mg/Kg)	Analytical Method
TP13-2-0129 PID = 0 ppm Depth = 12 inches	GRO	1.26	J	2.31	260	AK 101
	DRO	14.5	J	21.0	230	AK 102
	RRO	56.3		21.0	8,300	AK 103
	Benzene	0.00877	J	0.0115	0.025	SW 8021B
	Ethylbenzene	0.0335		0.0231	6.9	SW 8021B
	Toluene	0.0757		0.0231	6.5	SW 8021B
	Total Xylenes	0.1845		0.0692	63	SW 8021B
TP14-3-0129 PID = 0 ppm Depth = 12 inches	GRO	0.790	J	2.60	260	AK 101
	DRO	10.5	J	22.9	230	AK 102
	RRO	41.8		22.9	8,300	AK 103
	Benzene	ND		0.0130	0.025	SW 8021B
	Ethylbenzene	ND		0.0260	6.9	SW 8021B
	Toluene	0.0140	J	0.0260	6.5	SW 8021B
	Total Xylenes	0.0438	J	0.0519	63	SW 8021B
TP14-4-0129 duplicate of TP14-3-0129 RPD = 66 % RPD = 106 % RPD = 31 % RPD = 21 %	GRO	ND		2.54	260	AK 101
	DRO	20.9	J	22.4	230	AK 102
	RRO	136	J	22.4	8,300	AK 103
	Benzene	ND		0.0127	0.025	SW 8021B
	Ethylbenzene	ND		0.0254	6.9	SW 8021B
	Toluene	0.0102	J	0.0254	6.5	SW 8021B
	Total Xylenes	0.03537	J	0.0763	63	SW 8021B
TP15-4-0129 PID = 0 ppm Depth = 16 inches	GRO	ND		2.40	260	AK 101
	DRO	27.2	J	21.2	230	AK 102
	RRO	163	J	21.2	8,300	AK 103
	Benzene	ND		0.0120	0.025	SW 8021B
	Ethylbenzene	ND		0.0240	6.9	SW 8021B
	Toluene	0.0168	J	0.0240	6.5	SW 8021B
	Total Xylenes	0.0219	J	0.0720	63	SW 8021B
*Soil cleanup criteria obtained from ADEC 18 AAC 75.341, Table B1, Method 2, the most stringent of Over 40-Inch Zone Outdoor Inhalation, Direct Contact, or Migration to Groundwater January 1, 2016. The soil cleanup criteria for Lead is 400 mg/Kg and 800 mg/Kg, for residential and commercial properties, respectively. ADEC = Alaska Department of Environmental Conservation; PID = photoionization detector; ppm = parts per million mg/Kg = milligrams per kilogram; LOQ = limit of quantitation; ND = not detectable; J = estimated value GRO = gasoline range organics; DRO = diesel range organics; RRO = residual range organics; VOC = volatile organic compound; RPD = relative percent difference; n/a = not applicable Bold = The concentration exceeds the applicable ADEC cleanup criterion. <i>Italics</i> = The LOQ exceeds The applicable ADEC cleanup criterion.						

APPENDIX A
ADEC – APPROVED WORK PLAN
DATED JANUARY 26, 2016



BGES, INC.

ENVIRONMENTAL CONSULTANTS

KEKU ROAD
KAKE, ALASKA

ENVIRONMENTAL SOILS ASSESSMENT FOR BULK FUEL UPGRADES
WORK PLAN

JANUARY 2016

Prepared by:

BGES, INC.
1042 East 6th Avenue
Anchorage, Alaska 99501
Ph: (907) 644-2900
Fax: (907) 644-2901

On Behalf Of:

Owen Means
HDL Alaska
3335 Arctic Boulevard, Suite 100
Anchorage, Alaska 99503

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3.3	Laboratory Analysis	3
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4.0	PRELIMINARY PROJECT SCHEDULE.....	4

FIGURE

Figure 1 Proposed Test Pit Locations

1.0 INTRODUCTION

BGES, Inc. (BGES) is pleased to present this work plan to the Alaska Department of Environmental Conservation (ADEC) for conducting an environmental soils assessment for the property located at T56S, R72E, S35 and T57S, S4, Copper River Meridian, USGS Quadrangle; Petersburg, D-6, Kake, Alaska (Figure 1); hereafter referred to as the subject property. The assessment activities will include the excavation of several test pits and the performance of ~~confirmation~~ soil sampling.

2.0 BACKGROUND

Confirmation implies cleanup

The property that is to be the subject of this environmental soils assessment is located along the northeast and southwest sides of Keku Road in Kake, Alaska. The Alaska Energy Authority is planning to install a new tank farm and fuel pipelines which will extend from the northeast side of Keku Road, south to the marine header. A soils investigation was performed by R&M Consultants, Inc. (R&M) for a nearby project in 2015. R&M assessed soils along a new section of a water main which was located along Keku Road, to the west of the subject property. Several contaminants, including diesel range organics (DRO), benzene, and tetrachloroethylene (PCE) were detected in various test pits along Keku Road at concentrations exceeding ADEC cleanup criteria. Test Tip TP14, which was located approximately 100 feet west of where the proposed fuel line will cross Keku Road, exhibited a PCE concentration of 0.160 milligram per kilogram (mg/Kg), which exceeds the ADEC cleanup criterion of 0.024 mg/Kg.

Based on this information, we have prepared the following scope of work to evaluate the potential for elevated contaminant concentrations to exist in the vicinity of the proposed water main locations.

3.0 SCOPE OF WORK

All field work will be performed by a Qualified Environmental Professional (QEP) as defined by the ADEC; and will be completed in general accordance with ADEC's guidance and regulations. The scope of work for this project will include the following activities:

3.1 Conduct Utility Locates

The locating of utilities will be coordinated by Hattenburg Dilley & Linnell (HDL) prior to the commencement of excavation activities.

3.2 Mobilize to Site, Perform Excavation Activities

BGES personnel will mobilize to the site to coordinate soil investigation activities, which will consist of the excavation of approximately 10 test pits, generally evenly spaced along the location of the proposed water main addition; and approximately 2 test pits in the location of the proposed new tank farm (Figure 1). These locations may vary somewhat, based on the presence of impediments such as underground and aboveground utilities and vehicles.

The test pits will be advanced for the purpose of collecting subsurface soil samples for field-screening and laboratory analyses. We have assumed that 12 test pits will be advanced to maximum depths of 5 feet below grade (bg). We have also assumed that up to 14 soils samples (including two duplicates to measure field sampling precision) will be collected from the test pits for laboratory analyses. If the analysis of an additional sample(s) is warranted, we will recommend this activity based on field observations.

The test pits will be excavated using equipment and an operator provided by HDL. The test pits will be advanced to approximately 5 feet bg, as described above; unless groundwater is encountered at a shallower depth, in which case the excavation will cease at that depth. The actual depths of the test pits will be determined in the field, based on geologic conditions encountered, and the presence or absence of contamination. Due to the anticipated depth of the test pits, soil samples will be collected from the sidewalls and bases of each test pit with the excavator bucket. Soil samples will then be collected from the excavator bucket with a stainless steel spoon. In addition, soil samples will be collected from each soil interval observed.

Portions of each sample collected will be retained for field-screening purposes by placing the soils in sealable plastic bags, which will be labeled with a unique sample number and the time of collection. The screening samples will be allowed to warm to at least 45 degrees Fahrenheit in ambient air, a heated building, or vehicle for at least 10 minutes, and then will be screened within 1 hour of collection using a photoionization detector (PID) that will be calibrated prior to use with 100 parts per million (ppm) isobutylene calibration gas. The probe of the PID will be inserted into the bag after it has been agitated for at least 15 seconds, and the greatest reading will be recorded.

In addition to screening with the PID, soil samples collected from test pits closest to the vicinity of PCE contamination, as previously discovered, will also be field-screened with Color Tec kits for total chlorinated solvent compounds in accordance with the Color Tec manufacturer's specifications. Color Tec is a field-based analytical method which combines sample purging with colorimetric gas

detector tubes to detect total chlorinated volatile organic halocarbon compounds in solid samples at concentrations at and above approximately 3 micrograms per kilogram ($\mu\text{g/K}$), or parts per billion (ppb). After collection and preparation, soil samples will be analyzed within several minutes by purging the volatile compounds from the sample directly through the colorimetric tube, which is designed to produce a distinct color change when exposed to chlorinated compounds. Estimated sample concentrations are obtained by comparing the tube readings to a conversion table, which was developed based on comparison of the method values to gas chromatograph/mass spectrometer (GC/MS) analysis of split samples. It should be noted that the presence of toluene and xylene compounds can inhibit the Color Tec response.

If field-screening samples yield elevated PID readings and/or elevated Color Tec readings, the soil samples will be collected from the locations with the greatest field-screening readings from each test pit and submitted for laboratory analyses. If field-screening readings are zero during field screening activities, then soil samples will be collected from selected depths within the test pits. The soil samples will be collected using clean, stainless steel spoons, and the samples will be placed directly into laboratory-supplied containers. Portions of the samples that are scheduled for volatile contaminant constituent analyses will be collected first, and these sample portions will be preserved with methanol immediately following collection. The methanol will be added to the samples in a manner that completely covers the samples. The sample containers will be labeled, placed in an ice-filled cooler, and delivered under chain of custody protocol to an ADEC-approved laboratory for contaminant constituents analyses as described in Section 3.3, below. As an additional quality control procedure, a trip blank sample will accompany the samples scheduled for volatile analyses. The soil samples will be submitted for analysis on a standard 10 business day turnaround time.

Be sure
that the
containers
are weighed
prior to
methanol
addition
so the weight of the soil is known

Upon completion of sampling activities, the soil removed from the test pits will be placed back into the test pit of origination. Any contaminated soils which are identified during this phase of work can subsequently be re-excavated for disposal at a later time, prior to, or during the installation of the water main.

3.3 Laboratory Analysis

The soil samples collected for laboratory analyses will be submitted to SGS Environmental Services (SGS) in Anchorage, an ADEC-approved laboratory; and, in accordance with ADEC Field Sampling Guidance. The samples will be analyzed for gasoline range organics (GRO) by Alaska Method (AK) 101; DRO by AK 102; residual range organics (RRO) by AK 103; and benzene, toluene,

ethylbenzene, and total xylenes (BTEX) by Environmental Protection Agency (EPA) by 8021B. In addition, it is estimated that up to five samples, collected from test pits closest to the vicinity of PCE contamination, as previously discovered, and also from any areas exhibiting elevated Color Tec screening readings, will be analyzed for volatile organic compounds (VOCs), including PCE, by EPA method 8260.

3.4 Reporting

For this task, we will prepare a summary report of the results. The report will include a discussion of sampling procedures and results, a copy of the field notes, tabular analytical data, a site diagram showing the test pit locations, and photographs of pertinent site features. The completed laboratory data package will be appended to the report. * sent to ADEC

4.0 PRELIMINARY PROJECT SCHEDULE

The following preliminary schedule illustrates our expected progress on this project. It is presumed that because the ADEC has tentatively agreed with the investigatory approach outlined in our proposal, that review of this work plan can be expedited.

Submittal of Work Plan to the ADEC	January 25, 2016
Receive ADEC Approval of Work Plan	January 26, 2016
Mobilize to the Subject Property	January 27, 2016
Perform Assessment Field Activities	January 28 - 29, 2016
Laboratory Analyses	February 1 - February 15, 2016
Prepare Report	February 16 - 29, 2016
Submit Report to the ADEC	March 1, 2016

For the convenience of the ADEC Project Manager, we have included an authorization block below; in order to signify their approval of our work plan as outlined above.

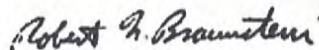
BGES, INC.

Prepared by:



William Schmaltz
Environmental Scientist

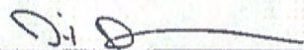
Reviewed By:



Robert N. Braunstein C.P.G.
Principal

ADEC Work Plan Approval:

I have reviewed this work plan, and hereby authorize the ^{test pitting}~~excavation and remediation~~ of contaminated soils with the following modifications/additional comments, if applicable:





Signature, ADEC Project Manager

Date



Source: Image provided by Hattenburg Dilley & Linnell (HDL)

0 100 200
Approximate Scale (in feet)



LEGEND



Proposed Test Pit Locations (subject to change based on results of utility locations)



Location of Proposed Water Main Installation

Tank Farm & Fuel Line Upgrade
Keku Road
Kake, Alaska
Proposed Test Pit Locations

BGES, INC.

January 2016

Figure 1

APPENDIX B
SITE PHOTOGRAPHS



Photo 1. Advancing Test Pits .



Photo 2. Advancing Test Pit TP13 (facing southwest)



Photo 3. Advancing Test Pit TP6 (facing southwest)



Photo 4. Advancing Test Pit TP9 (facing southwest)



Photo 5. Preparing Color Tec Samples



Photo 6. Purging Color Tec Sample Through Colorimetric Tube

New Tank Farm & Fuel Pipelines Site
 Kake, Alaska
Property Photographs

BGES, INC.

February 2016

Figure A-1

APPENDIX C
FIELD NOTES

2 1-27-15

45°F Rain

13:00 arrive on site, met with power plant ~~area~~ manager. HDL marking the area of tank farm and new fuel line.

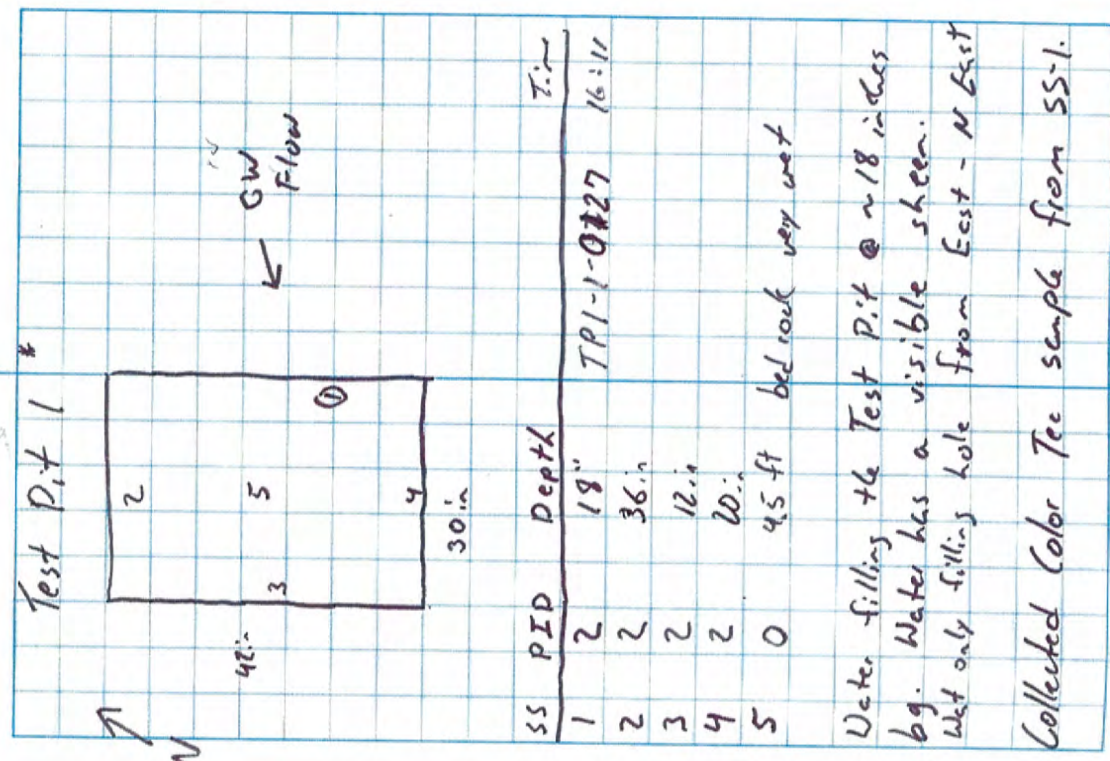
14:30 Power plant employee on site to move equipment out of new tank farm area where test pits will be advanced.

Schmetz taking photos.

Several transformers on ground near the new fuel line area. Also several batteries and unmarked drums on west side of road. ~50ft from R & M test pit 14.

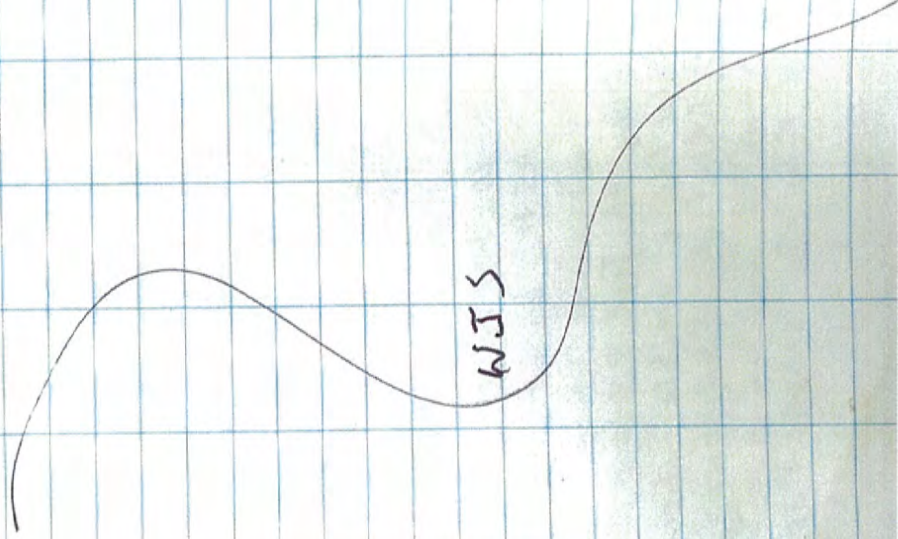
waiting on excavator operator to arrive.

15:20 began advancing Test Pit TPI1
 @ 1ft by no odor. Gnd ~~not~~ / cky
 @ 2ft petroleum odor.
 @ 3ft petroleum odor



no reading on color tec sample.

17:25 off site for day



1-28-15

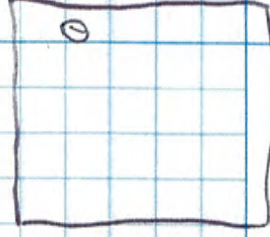
42°F Rain

07:40 Met w/ HDL go over daily work
08:10 arrive on project site. Waiting for equipment operator

08:45 began advancing Test Pit TP2
TP2 is filling with water immediately
advanced TP2 to ~2 ft bs.
Hit bedrock shown visible on water & petroleum odor. Collected SS from ~18 inches w/ excavator bucket. SS needs 15ppm on PID.

09:14 collected last sample from same area as the SS.
No Color Tec sample collected.

Test Pit 2



get

↑ N

TP2-1-0128

09:14

2...0

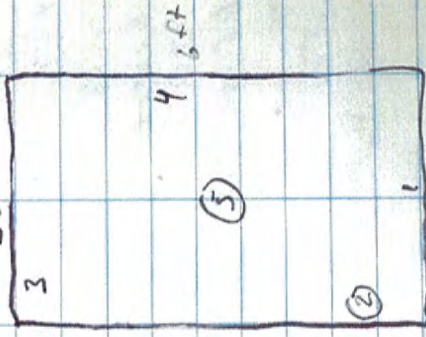
back filled test pit 2 and moved
excavator to test pit 3 location

09:45 Began advancing TP3

No Petroleum odors present.

No sheen visible on water
in TP3.

32"



SS	PID	Depth	sample #	Time
1	0	8 in		
2	0	20 in	TP3-2-0128	10:05
3	0	24 in		
4	0	3 ft		
5	0	4.5 ft (base)		

Backfilling TP3. Call office for
update.

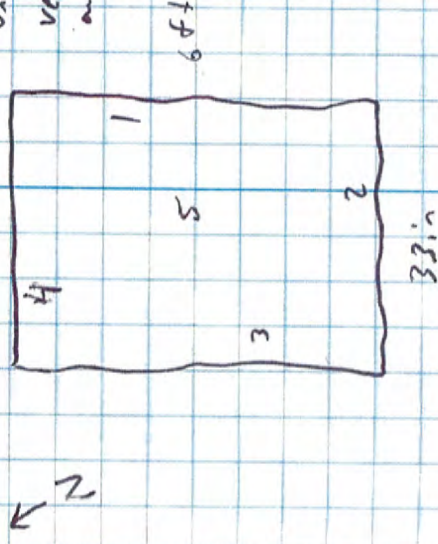
10:45 Began TP4 bedrock @ 10 in color and
TP4 collected base sample from truck

10:59 collected sample from TP4, PID
labeled TP4-1-0128

TP4 color Tec run, no change

11:13 started TP5. TP5 all fill material

uncovered a
vehicle mostly
and wood.



SS	PID	Depth	sample #	Time
1	0	12 in		
2	0	24 in		
3	0	18 in		
4	0	36 in		
5	0	4 ft		

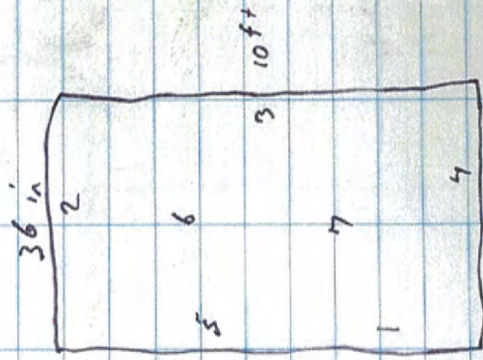
TP5-4-0128 11:38

color Tec run on TP5, no change
(5, 4, 3)

Run ... 0

11:40 Began Test Pit TP6

@ Gravel w/ sand until 3 ft
by Clay @ 3 ft advanced TP6
to 8.5 ft. Discovered what
appeared to be a car. Stopped
TP6 @ 8.5 ft by



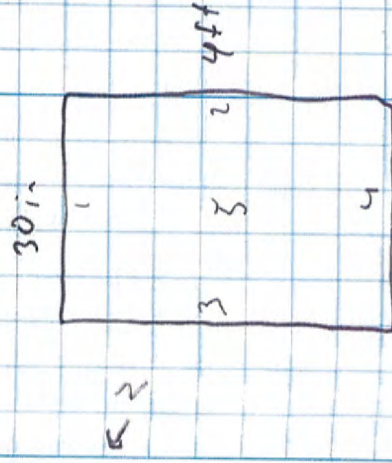
No odor, no sign of
contamination.

SS	PED	Depth	Sample #	Time
1	0	12 in		
2	0	18 in		
3	0	18 in		
4	0	24 in		
5	0	3 ft		
6	0	8 ft		
7	0	8 ft		

TP6 - 5.0128 1227

Color Test run on TP6. No change
(6, 2, 1, 3, 4)

12:47 Began Test Pit TP7



TP 7 fill Material Gravel
w/ sand

SS	PID	Depth	Sample ID	Time
1	0	18"		
2	0	24"		
3	0	30"		
4	0	18"		
5	0	4ft	TP8-5-0128	13:13

no odor or sign of contamination
 color Tee samples collected.
 no change (1,5,2)

~~TP8-5-0128 13:13~~

HDL possibly moving the location of the new tent farm. Survey the area and lots of fill material present.

Waiting on HDL to begin Test P-4 TP8

SS	PID	Depth	Sample ID	Time
1	0	12"		
2	0	18"		
3	0	26"		
4	0	24"		
5	0	3ft	TP8-5-0128	15:07
		Duplicate	TP8-6-0128	15:08

14:46 began Test P-4 TP8

30"

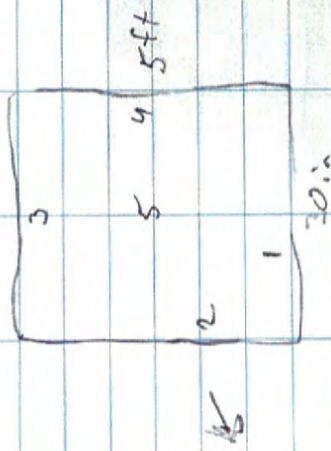
2

1 5 3 3ft

4

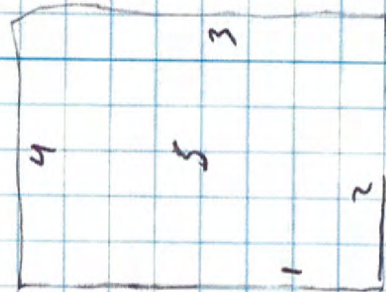
2

15:19 Regen Test Pit TP9
No odor or sign of contamination



SS	PID	Depth	Sample ID	Time
1	0	16 in	TP9-2-0128	15:33
2	0	24 in		
3	0	12 in		
4	0	36 in		
5	0	4 ft		

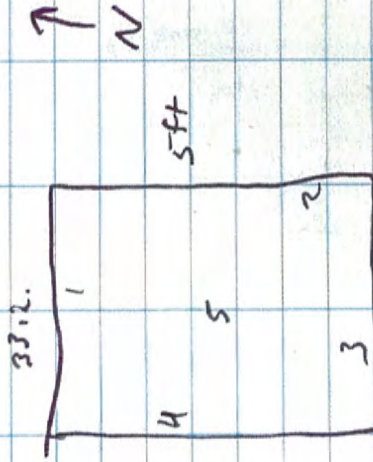
15:36 Regen Test Pit TP10
No odor or sign of contamination



SS	PID	Depth	Sample #	Time
1	0	12 in	TP10-5-0128	13:52
2	0	33 in		
3	0	18 in		
4	0	24 in		
5	0	4 ft		

15:57

Began Test Pit TP11

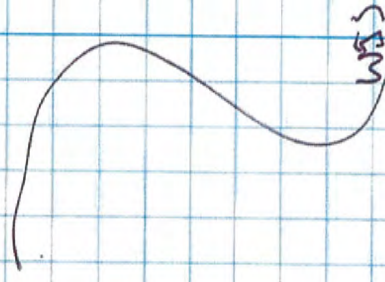


SS	PID	Depth	Sample ID	Time
1	0	14 in		
2	0	33 in		
3	0	19 in		
4	0	36 in		
5	0	4 ft		

TP11-S-0128 16:20

16:35 Began Test Pit TP12.
Collected PID screening sample
No readings on PID.
No sample collected.
(TP12 was not part of
project area for BGES)

17:50 BGES, HDL off site.



1-29-15

35°F Rain

07:25 BGES, HDL on site.
Moving equipment.

07:47 Began Test Pit TP13

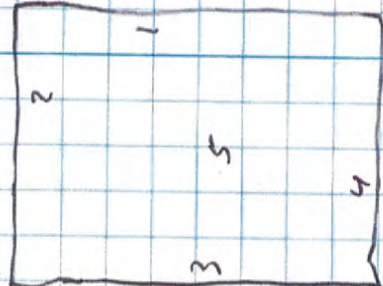


SS	PID	Depth	Sample #	Time
1	0	6"	TP13-2-0129	8:23
2	0	12"		
3	0	18"		
4	0	12"		
5	0	2 ft base		

No odor, No sign of contamination

Excavator Track broke.
Waiting on mechanic.

11:10 Began Test Pit TP14

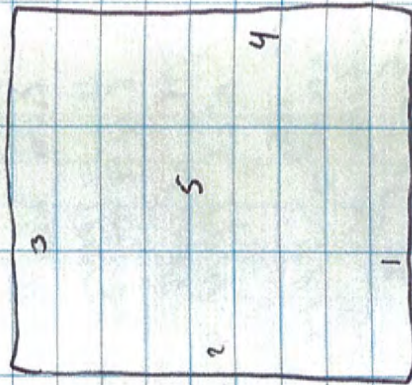


SS	PID	Depth	Sample ID	Time
1	0	6"	TP14-3-0129	11:39
2	0	6"		
3	0	12"		
4	0	8"		
5		18"	no sample	
			Duplicate TP14-4-0129	11:41

While excavating TP14, a ~~small~~ small sheen was visible on the surface of the water. ~~Water~~ ~~flowing~~ groundwater flowing into the test pit @ ~14:55 showed no sign of contamination.

GW was flowing from area of TP2. No petroleum odor. After ~10 minutes, water w/ sheen flowed out of TP14. No sheen visible in water flowing in. Original sheen likely from surface contamination left by equipment parked in the area.

11:46 Began Test D.it TP15



SS	PBD	Depth	Sample ID	Time
1	0	12"		
2	0	24"		
3	0	30"		
4	0	16"	TP15-4-0129	12:09
5	0	3ft		

Color: Test shows no color change.
(1, 2, 3, 5)

15:15 Meeting on site

Bob Mills → Kake Tribal

Gilbert → Kake Tribal Fuel

Board President

Talked about locations of tank farm and fuel line. They suggested to lay down a geo seal and place it in the original proposed location.

16:45 BGES off site.

WJS

APPENDIX D
LABORATORY ANALYTICAL DATA

Laboratory Report of Analysis

To: BGES Inc.
1042 E. 6th Ave.,
Anchorage, AK 99501
(907)644-2900

Report Number: **1160430**

Client Project: **Kake**

Dear Jayne Martin,

Enclosed are the results of the analytical services performed under the referenced project for the received samples and associated QC as applicable. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of ten years in the event they are required for future reference. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. Any samples submitted to our laboratory will be retained for a maximum of fourteen (14) days from the date of this report unless other archiving requirements were included in the quote.

If there are any questions about the report or services performed during this project, please call Victoria at (907) 562-2343. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS North America Inc. for your analytical services. We look forward to working with you again on any additional analytical needs.

Sincerely,

SGS North America Inc.



SGS North America Inc.
Environmental Services - Alaska Division
Project Manager

Victoria Pennick

2016.02.16

15:43:37 -09'00'

Victoria Pennick
Project Manager
Victoria.Pennick@sgs.com

Date

Case Narrative

SGS Client: **BGES Inc.**
SGS Project: **1160430**
Project Name/Site: **Kake**
Project Contact: **Jayne Martin**

Refer to sample receipt form for information on sample condition.

TP4-1-0128 (1160430004) PS

8260B – Toluene-d8 (surrogate) recovery (117%) does not meet QC criteria. The analytes associated with this surrogate were not detected above the LOQ.

MB for HBN 1727834 [VXX/28470] (1311822) MB

8260B – Toluene-d8 (surrogate) recovery (119%) does not meet QC criteria. The analytes associated with this surrogate were not detected above the LOQ.

1160430004MS (1312072) MS

8260B - MS recovery for trans-1,2-dichloroethene (127%) not meet QC criteria. Refer to LCS for accuracy.

1160430004MSD (1312073) MSD

8260B - MSD recoveries for several analytes do not meet QC criteria. Refer to LCS for accuracy.

*QC comments may be associated with the field samples found in this report. When applicable, comments will be applied to associated field samples.

Print Date: 02/16/2016 3:26:56PM

SGS North America Inc.

200 West Potter Drive, Anchorage, AK 99518
t 907.562.2343 f 907.561.5301 www.us.sgs.com

Member of SGS Group

Laboratory Qualifiers

Enclosed are the analytical results associated with the above work order. All results are intended to be used in their entirety and SGS is not responsible for use of less than the complete report. This document is issued by the Company under its General Conditions of Service accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein.

Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. Any unauthorized alteration, forgery or falsification of the context or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

SGS maintains a formal Quality Assurance/Quality Control (QA/QC) program. A copy of our Quality Assurance Plan (QAP), which outlines this program, is available at your request. The laboratory certification numbers are AK00971 (DW Chemistry & Microbiology) & UST-005 (CS) for ADEC and 2944.01 for DOD ELAP/ISO17025 (RCRA methods: 1020B, 1311, 3010A, 3050B, 3520C, 3550C, 5030B, 5035A, 6020A, 7470A, 7471B, 8021B, 8082A, 8260B, 8270D, 8270D-SIM, 9040C, 9045D, 9056A, 9060A, AK101 and AK102/103). Except as specifically noted, all statements and data in this report are in conformance to the provisions set forth by the SGS QAP and, when applicable, other regulatory authorities.

The following descriptors or qualifiers may be found in your report:

*	The analyte has exceeded allowable regulatory or control limits.
!	Surrogate out of control limits.
B	Indicates the analyte is found in a blank associated with the sample.
CCV/CVA/CVB	Continuing Calibration Verification
CCC/CVC/CVCA/CVCB	Closing Continuing Calibration Verification
CL	Control Limit
D	The analyte concentration is the result of a dilution.
DF	Dilution Factor
DL	Detection Limit (i.e., maximum method detection limit)
E	The analyte result is above the calibrated range.
F	Indicates value that is greater than or equal to the DL
GT	Greater Than
IB	Instrument Blank
ICV	Initial Calibration Verification
J	The quantitation is an estimation.
JL	The analyte was positively identified, but the quantitation is a low estimation.
LCS(D)	Laboratory Control Spike (Duplicate)
LOD	Limit of Detection (i.e., 1/2 of the LOQ)
LOQ	Limit of Quantitation (i.e., reporting or practical quantitation limit)
LT	Less Than
M	A matrix effect was present.
MB	Method Blank
MS(D)	Matrix Spike (Duplicate)
ND	Indicates the analyte is not detected.
Q	QC parameter out of acceptance range.
R	Rejected
RPD	Relative Percent Difference
U	Indicates the analyte was analyzed for but not detected.

Note: Sample summaries which include a result for "Total Solids" have already been adjusted for moisture content. All DRO/RRO analyses are integrated per SOP.

Print Date: 02/16/2016 3:26:58PM

SGS North America Inc.

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Sample Summary

<u>Client Sample ID</u>	<u>Lab Sample ID</u>	<u>Collected</u>	<u>Received</u>	<u>Matrix</u>
TP1-1-0127	1160430001	01/27/2016	02/01/2016	Soil/Solid (dry weight)
TP2-1-0128	1160430002	01/28/2016	02/01/2016	Soil/Solid (dry weight)
TP3-2-0128	1160430003	01/28/2016	02/01/2016	Soil/Solid (dry weight)
TP4-1-0128	1160430004	01/28/2016	02/01/2016	Soil/Solid (dry weight)
TP5-4-0128	1160430005	01/28/2016	02/01/2016	Soil/Solid (dry weight)
TP6-5-0128	1160430006	01/28/2016	02/01/2016	Soil/Solid (dry weight)
TP7-5-0128	1160430007	01/28/2016	02/01/2016	Soil/Solid (dry weight)
TP8-5-0128	1160430008	01/28/2016	02/01/2016	Soil/Solid (dry weight)
TP8-6-0128	1160430009	01/28/2016	02/01/2016	Soil/Solid (dry weight)
TP9-2-0128	1160430010	01/28/2016	02/01/2016	Soil/Solid (dry weight)
TP10-5-0128	1160430011	01/28/2016	02/01/2016	Soil/Solid (dry weight)
TP11-5-0128	1160430012	01/28/2016	02/01/2016	Soil/Solid (dry weight)
TP13-2-0129	1160430013	01/29/2016	02/01/2016	Soil/Solid (dry weight)
TP14-3-0129	1160430014	01/29/2016	02/01/2016	Soil/Solid (dry weight)
TP14-4-0129	1160430015	01/29/2016	02/01/2016	Soil/Solid (dry weight)
TP15-4-0129	1160430016	01/29/2016	02/01/2016	Soil/Solid (dry weight)
Trip Blank	1160430017	01/27/2016	02/01/2016	Soil/Solid (dry weight)

<u>Method</u>	<u>Method Description</u>
AK101	AK101/8021 Combo. (S)
SW8021B	AK101/8021 Combo. (S)
AK102	Diesel/Residual Range Organics
AK103	Diesel/Residual Range Organics
AK101	Gasoline Range Organics (S)
SW6020A	Metals by ICP-MS (S)
SM21 2540G	Percent Solids SM2540G
SW8260B	VOC 8260 (S) Field Extracted

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Detectable Results Summary

Client Sample ID: **TP1-1-0127**

Lab Sample ID: 1160430001

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	389	mg/Kg
Residual Range Organics	227	mg/Kg
Ethylbenzene	16.4J	ug/Kg
Gasoline Range Organics	1.01J	mg/Kg
o-Xylene	28.9	ug/Kg
P & M -Xylene	52.8	ug/Kg
Toluene	18.6J	ug/Kg

Client Sample ID: **TP2-1-0128**

Lab Sample ID: 1160430002

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	17.9J	mg/Kg
Residual Range Organics	101	mg/Kg
Benzene	46.0	ug/Kg
Ethylbenzene	72.3	ug/Kg
Gasoline Range Organics	6.12	mg/Kg
o-Xylene	113	ug/Kg
P & M -Xylene	545	ug/Kg
Toluene	57.9	ug/Kg

Client Sample ID: **TP3-2-0128**

Lab Sample ID: 1160430003

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Residual Range Organics	12.5J	mg/Kg
Benzene	14.4	ug/Kg
Gasoline Range Organics	1.63J	mg/Kg
o-Xylene	8.75J	ug/Kg
P & M -Xylene	20.0J	ug/Kg
Toluene	10.3J	ug/Kg

Client Sample ID: **TP4-1-0128**

Lab Sample ID: 1160430004

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	16.0J	mg/Kg
Residual Range Organics	40.3	mg/Kg
Gasoline Range Organics	0.695J	mg/Kg
Naphthalene	25.7J	ug/Kg
Toluene	12.5J	ug/Kg

Client Sample ID: **TP5-4-0128**

Lab Sample ID: 1160430005

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	13.3J	mg/Kg
Residual Range Organics	55.8	mg/Kg
Gasoline Range Organics	1.62J	mg/Kg
1,3,5-Trimethylbenzene	10.6J	ug/Kg
4-Isopropyltoluene	26.2J	ug/Kg
Toluene	17.9J	ug/Kg

Detectable Results Summary

Client Sample ID: **TP6-5-0128**

Lab Sample ID: 1160430006

Semivolatile Organic Fuels

Volatile Fuels

Client Sample ID: **TP8-5-0128**

Lab Sample ID: 1160430008

Metals by ICP/MS

Semivolatile Organic Fuels

Volatile GC/MS

Client Sample ID: **TP8-6-0128**

Lab Sample ID: 1160430009

Metals by ICP/MS

Semivolatile Organic Fuels

Volatile GC/MS

Client Sample ID: **TP9-2-0128**

Lab Sample ID: 1160430010

Semivolatile Organic Fuels

Volatile Fuels

Volatile GC/MS

Client Sample ID: **TP10-5-0128**

Lab Sample ID: 1160430011

Semivolatile Organic Fuels

Volatile Fuels

Client Sample ID: **TP11-5-0128**

Lab Sample ID: 1160430012

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	7.80J	mg/Kg
Residual Range Organics	28.7	mg/Kg
Toluene	12.9J	ug/Kg

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	4.83	mg/Kg
Diesel Range Organics	9.73J	mg/Kg
Residual Range Organics	43.9	mg/Kg
Toluene	11.1J	ug/Kg

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Lead	3.21	mg/Kg
Diesel Range Organics	9.02J	mg/Kg
Residual Range Organics	40.7	mg/Kg
1,3,5-Trimethylbenzene	6.47J	ug/Kg
Toluene	12.3J	ug/Kg

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Residual Range Organics	22.3	mg/Kg
Gasoline Range Organics	0.796J	mg/Kg
1,3,5-Trimethylbenzene	10.2J	ug/Kg
Toluene	13.7J	ug/Kg

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	10.0J	mg/Kg
Residual Range Organics	68.7	mg/Kg
P & M -Xylene	16.7J	ug/Kg
Toluene	8.45J	ug/Kg

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Residual Range Organics	8.47J	mg/Kg
Gasoline Range Organics	0.811J	mg/Kg
P & M -Xylene	16.8J	ug/Kg
Toluene	8.02J	ug/Kg

Detectable Results Summary

Client Sample ID: **TP13-2-0129**

Lab Sample ID: 1160430013

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	14.5J	mg/Kg
Residual Range Organics	56.3	mg/Kg
Benzene	8.77J	ug/Kg
Ethylbenzene	33.5	ug/Kg
Gasoline Range Organics	1.26J	mg/Kg
o-Xylene	47.5	ug/Kg
P & M -Xylene	137	ug/Kg
Toluene	75.7	ug/Kg

Client Sample ID: **TP14-3-0129**

Lab Sample ID: 1160430014

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	10.5J	mg/Kg
Residual Range Organics	41.8	mg/Kg
Gasoline Range Organics	0.790J	mg/Kg
o-Xylene	11.9J	ug/Kg
P & M -Xylene	31.9J	ug/Kg
Toluene	14.0J	ug/Kg

Client Sample ID: **TP14-4-0129**

Lab Sample ID: 1160430015

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	20.9J	mg/Kg
Residual Range Organics	136	mg/Kg
o-Xylene	9.67J	ug/Kg
P & M -Xylene	25.7J	ug/Kg
Toluene	10.2J	ug/Kg

Client Sample ID: **TP15-4-0129**

Lab Sample ID: 1160430016

Semivolatile Organic Fuels

Volatile Fuels

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Diesel Range Organics	27.2	mg/Kg
Residual Range Organics	163	mg/Kg
P & M -Xylene	21.9J	ug/Kg
Toluene	16.8J	ug/Kg

Client Sample ID: **Trip Blank**

Lab Sample ID: 1160430017

Volatile GC/MS

<u>Parameter</u>	<u>Result</u>	<u>Units</u>
Toluene	16.9J	ug/Kg

Results of TP1-1-0127

Client Sample ID: **TP1-1-0127**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430001
 Lab Project ID: 1160430

Collection Date: 01/27/16 16:11
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):85.6
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	389	23.1	7.17	mg/Kg	1		02/06/16 19:09
Surrogates							
5a Androstane (surr)	93.5	50-150		%	1		02/06/16 19:09

Batch Information

Analytical Batch: XFC12271
 Analytical Method: AK102
 Analyst: CJSW
 Analytical Date/Time: 02/06/16 19:09
 Container ID: 1160430001-A

Prep Batch: XXX34882
 Prep Method: SW3550C
 Prep Date/Time: 02/05/16 12:16
 Prep Initial Wt./Vol.: 30.307 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	227	23.1	7.17	mg/Kg	1		02/06/16 19:09
Surrogates							
n-Triacontane-d62 (surr)	94.3	50-150		%	1		02/06/16 19:09

Batch Information

Analytical Batch: XFC12271
 Analytical Method: AK103
 Analyst: CJSW
 Analytical Date/Time: 02/06/16 19:09
 Container ID: 1160430001-A

Prep Batch: XXX34882
 Prep Method: SW3550C
 Prep Date/Time: 02/05/16 12:16
 Prep Initial Wt./Vol.: 30.307 g
 Prep Extract Vol: 1 mL



Results of TP1-1-0127

Client Sample ID: **TP1-1-0127**
Client Project ID: **Kake**
Lab Sample ID: 1160430001
Lab Project ID: 1160430

Collection Date: 01/27/16 16:11
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):85.6
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.01 J	2.41	0.724	mg/Kg	1		02/02/16 17:01
Surrogates							
4-Bromofluorobenzene (surr)	76.2	50-150		%	1		02/02/16 17:01

Batch Information

Analytical Batch: VFC12892
Analytical Method: AK101
Analyst: S.P
Analytical Date/Time: 02/02/16 17:01
Container ID: 1160430001-B

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 01/27/16 16:11
Prep Initial Wt./Vol.: 92.728 g
Prep Extract Vol: 38.3088 mL

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Benzene	6.05 U	12.1	3.86	ug/Kg	1		02/02/16 17:01
Ethylbenzene	16.4 J	24.1	7.52	ug/Kg	1		02/02/16 17:01
o-Xylene	28.9	24.1	7.52	ug/Kg	1		02/02/16 17:01
P & M -Xylene	52.8	48.2	14.5	ug/Kg	1		02/02/16 17:01
Toluene	18.6 J	24.1	7.52	ug/Kg	1		02/02/16 17:01
Surrogates							
1,4-Difluorobenzene (surr)	82.3	72-119		%	1		02/02/16 17:01

Batch Information

Analytical Batch: VFC12892
Analytical Method: SW8021B
Analyst: S.P
Analytical Date/Time: 02/02/16 17:01
Container ID: 1160430001-B

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 01/27/16 16:11
Prep Initial Wt./Vol.: 92.728 g
Prep Extract Vol: 38.3088 mL

Results of TP2-1-0128

Client Sample ID: **TP2-1-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430002
 Lab Project ID: 1160430

Collection Date: 01/28/16 09:14
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):89.6
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	17.9 J	22.1	6.87	mg/Kg	1		02/06/16 19:30
Surrogates							
5a Androstane (surr)	90.8	50-150		%	1		02/06/16 19:30

Batch Information

Analytical Batch: XFC12271
 Analytical Method: AK102
 Analyst: CJSW
 Analytical Date/Time: 02/06/16 19:30
 Container ID: 1160430002-A

Prep Batch: XXX34882
 Prep Method: SW3550C
 Prep Date/Time: 02/05/16 12:16
 Prep Initial Wt./Vol.: 30.219 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	101	22.1	6.87	mg/Kg	1		02/06/16 19:30
Surrogates							
n-Triacontane-d62 (surr)	102	50-150		%	1		02/06/16 19:30

Batch Information

Analytical Batch: XFC12271
 Analytical Method: AK103
 Analyst: CJSW
 Analytical Date/Time: 02/06/16 19:30
 Container ID: 1160430002-A

Prep Batch: XXX34882
 Prep Method: SW3550C
 Prep Date/Time: 02/05/16 12:16
 Prep Initial Wt./Vol.: 30.219 g
 Prep Extract Vol: 1 mL

Results of TP2-1-0128

Client Sample ID: **TP2-1-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430002
 Lab Project ID: 1160430

Collection Date: 01/28/16 09:14
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):89.6
 Location:

Results by Volatile Fuels

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	6.12		1.82	0.545	mg/Kg	1		02/02/16 18:17

Surrogates

4-Bromofluorobenzene (surr)	104		50-150		%	1		02/02/16 18:17
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Batch Information

Analytical Batch: VFC12892
 Analytical Method: AK101
 Analyst: S.P
 Analytical Date/Time: 02/02/16 18:17
 Container ID: 1160430002-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/28/16 09:14
 Prep Initial Wt./Vol.: 112.517 g
 Prep Extract Vol: 36.6479 mL

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	46.0		9.08	2.91	ug/Kg	1		02/03/16 13:17
Ethylbenzene	72.3		18.2	5.67	ug/Kg	1		02/02/16 18:17
o-Xylene	113		18.2	5.67	ug/Kg	1		02/02/16 18:17
P & M -Xylene	545		36.3	10.9	ug/Kg	1		02/02/16 18:17
Toluene	57.9		18.2	5.67	ug/Kg	1		02/02/16 18:17

Surrogates

1,4-Difluorobenzene (surr)	74.9		72-119		%	1		02/02/16 18:17
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Batch Information

Analytical Batch: VFC12892
 Analytical Method: SW8021B
 Analyst: S.P
 Analytical Date/Time: 02/02/16 18:17
 Container ID: 1160430002-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/28/16 09:14
 Prep Initial Wt./Vol.: 112.517 g
 Prep Extract Vol: 36.6479 mL

Analytical Batch: VFC12895
 Analytical Method: SW8021B
 Analyst: S.P
 Analytical Date/Time: 02/03/16 13:17
 Container ID: 1160430002-B

Prep Batch: VXX28481
 Prep Method: SW5035A
 Prep Date/Time: 01/28/16 09:14
 Prep Initial Wt./Vol.: 112.517 g
 Prep Extract Vol: 36.6479 mL

Results of TP3-2-0128

Client Sample ID: **TP3-2-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430003
 Lab Project ID: 1160430

Collection Date: 01/28/16 10:05
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):94.6
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	10.5 U	21.0	6.51	mg/Kg	1		02/15/16 19:40
Surrogates							
5a Androstane (surr)	101	50-150		%	1		02/15/16 19:40

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK102
 Analyst: S.G
 Analytical Date/Time: 02/15/16 19:40
 Container ID: 1160430003-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.185 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	12.5 J	21.0	6.51	mg/Kg	1		02/15/16 19:40
Surrogates							
n-Triacontane-d62 (surr)	117	50-150		%	1		02/15/16 19:40

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK103
 Analyst: S.G
 Analytical Date/Time: 02/15/16 19:40
 Container ID: 1160430003-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.185 g
 Prep Extract Vol: 1 mL

Results of TP3-2-0128

Client Sample ID: **TP3-2-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430003
 Lab Project ID: 1160430

Collection Date: 01/28/16 10:05
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):94.6
 Location:

Results by Volatile Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.63 J	1.94	0.583	mg/Kg	1		02/02/16 18:36
Surrogates							
4-Bromofluorobenzene (surr)	84.5	50-150		%	1		02/02/16 18:36

Batch Information

Analytical Batch: VFC12892
 Analytical Method: AK101
 Analyst: S.P
 Analytical Date/Time: 02/02/16 18:36
 Container ID: 1160430003-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/28/16 10:05
 Prep Initial Wt./Vol.: 79.685 g
 Prep Extract Vol: 29.31 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	14.4	9.72	3.11	ug/Kg	1		02/03/16 13:36
Ethylbenzene	9.70 U	19.4	6.07	ug/Kg	1		02/02/16 18:36
o-Xylene	8.75 J	19.4	6.07	ug/Kg	1		02/02/16 18:36
P & M -Xylene	20.0 J	38.9	11.7	ug/Kg	1		02/02/16 18:36
Toluene	10.3 J	19.4	6.07	ug/Kg	1		02/02/16 18:36
Surrogates							
1,4-Difluorobenzene (surr)	81.1	72-119		%	1		02/02/16 18:36

Batch Information

Analytical Batch: VFC12892
 Analytical Method: SW8021B
 Analyst: S.P
 Analytical Date/Time: 02/02/16 18:36
 Container ID: 1160430003-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/28/16 10:05
 Prep Initial Wt./Vol.: 79.685 g
 Prep Extract Vol: 29.31 mL

Analytical Batch: VFC12895
 Analytical Method: SW8021B
 Analyst: S.P
 Analytical Date/Time: 02/03/16 13:36
 Container ID: 1160430003-B

Prep Batch: VXX28481
 Prep Method: SW5035A
 Prep Date/Time: 01/28/16 10:05
 Prep Initial Wt./Vol.: 79.685 g
 Prep Extract Vol: 29.31 mL

Results of TP4-1-0128

Client Sample ID: **TP4-1-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430004
 Lab Project ID: 1160430

Collection Date: 01/28/16 10:59
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):88.8
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	16.0 J	22.3	6.92	mg/Kg	1		02/15/16 20:01
Surrogates							
5a Androstane (surr)	101	50-150		%	1		02/15/16 20:01

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK102
 Analyst: S.G
 Analytical Date/Time: 02/15/16 20:01
 Container ID: 1160430004-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.275 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	40.3	22.3	6.92	mg/Kg	1		02/15/16 20:01
Surrogates							
n-Triacontane-d62 (surr)	115	50-150		%	1		02/15/16 20:01

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK103
 Analyst: S.G
 Analytical Date/Time: 02/15/16 20:01
 Container ID: 1160430004-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.275 g
 Prep Extract Vol: 1 mL

**Results of TP4-1-0128**

Client Sample ID: **TP4-1-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430004
Lab Project ID: 1160430

Collection Date: 01/28/16 10:59
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):88.8
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.695 J	2.19	0.658	mg/Kg	1		02/02/16 18:54
Surrogates							
4-Bromofluorobenzene (surr)	70.5	50-150		%	1		02/02/16 18:54

Batch Information

Analytical Batch: VFC12892
Analytical Method: AK101
Analyst: S.P
Analytical Date/Time: 02/02/16 18:54
Container ID: 1160430004-B

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 01/28/16 10:59
Prep Initial Wt./Vol.: 90.036 g
Prep Extract Vol: 35.0685 mL

Print Date: 02/16/2016 3:27:01PM

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**Results of TP4-1-0128**

Client Sample ID: **TP4-1-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430004
Lab Project ID: 1160430

Collection Date: 01/28/16 10:59
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):88.8
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
1,1,1-Trichloroethane	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
1,1,2,2-Tetrachloroethane	5.50 U	11.0	3.42	ug/Kg	1		02/02/16 19:42
1,1,2-Trichloroethane	4.38 U	8.77	2.72	ug/Kg	1		02/02/16 19:42
1,1-Dichloroethane	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
1,1-Dichloroethene	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
1,1-Dichloropropene	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
1,2,3-Trichlorobenzene	21.9 U	43.9	13.2	ug/Kg	1		02/02/16 19:42
1,2,3-Trichloropropane	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
1,2,4-Trichlorobenzene	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
1,2,4-Trimethylbenzene	21.9 U	43.9	13.2	ug/Kg	1		02/02/16 19:42
1,2-Dibromo-3-chloropropane	43.9 U	87.7	27.2	ug/Kg	1		02/02/16 19:42
1,2-Dibromoethane	4.38 U	8.77	2.72	ug/Kg	1		02/02/16 19:42
1,2-Dichlorobenzene	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
1,2-Dichloroethane	4.38 U	8.77	2.72	ug/Kg	1		02/02/16 19:42
1,2-Dichloropropane	4.38 U	8.77	2.72	ug/Kg	1		02/02/16 19:42
1,3,5-Trimethylbenzene	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
1,3-Dichlorobenzene	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
1,3-Dichloropropane	4.38 U	8.77	2.72	ug/Kg	1		02/02/16 19:42
1,4-Dichlorobenzene	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
2,2-Dichloropropane	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
2-Butanone (MEK)	110 U	219	68.4	ug/Kg	1		02/02/16 19:42
2-Chlorotoluene	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
2-Hexanone	110 U	219	68.4	ug/Kg	1		02/02/16 19:42
4-Chlorotoluene	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
4-Isopropyltoluene	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
4-Methyl-2-pentanone (MIBK)	110 U	219	68.4	ug/Kg	1		02/02/16 19:42
Benzene	5.50 U	11.0	3.42	ug/Kg	1		02/02/16 19:42
Bromobenzene	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Bromochloromethane	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Bromodichloromethane	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Bromoform	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Bromomethane	87.5 U	175	54.4	ug/Kg	1		02/02/16 19:42
Carbon disulfide	43.9 U	87.7	27.2	ug/Kg	1		02/02/16 19:42
Carbon tetrachloride	5.50 U	11.0	3.42	ug/Kg	1		02/02/16 19:42
Chlorobenzene	10.9 U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Chloroethane	87.5 U	175	54.4	ug/Kg	1		02/02/16 19:42

Print Date: 02/16/2016 3:27:01PM

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Results of TP4-1-0128

Client Sample ID: **TP4-1-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430004
 Lab Project ID: 1160430

Collection Date: 01/28/16 10:59
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):88.8
 Location:

Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Chloromethane	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
cis-1,2-Dichloroethene	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
cis-1,3-Dichloropropene	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Dibromochloromethane	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Dibromomethane	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Dichlorodifluoromethane	21.9	U	43.9	13.2	ug/Kg	1		02/02/16 19:42
Ethylbenzene	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Freon-113	43.9	U	87.7	27.2	ug/Kg	1		02/02/16 19:42
Hexachlorobutadiene	21.9	U	43.9	13.2	ug/Kg	1		02/02/16 19:42
Isopropylbenzene (Cumene)	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Methylene chloride	43.9	U	87.7	27.2	ug/Kg	1		02/02/16 19:42
Methyl-t-butyl ether	43.9	U	87.7	27.2	ug/Kg	1		02/02/16 19:42
Naphthalene	25.7	J	43.9	13.2	ug/Kg	1		02/02/16 19:42
n-Butylbenzene	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
n-Propylbenzene	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
o-Xylene	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
P & M -Xylene	21.9	U	43.9	13.2	ug/Kg	1		02/02/16 19:42
sec-Butylbenzene	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Styrene	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
tert-Butylbenzene	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Tetrachloroethene	5.50	U	11.0	3.42	ug/Kg	1		02/02/16 19:42
Toluene	12.5	J	21.9	6.84	ug/Kg	1		02/02/16 19:42
trans-1,2-Dichloroethene	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
trans-1,3-Dichloropropene	10.9	U	21.9	6.84	ug/Kg	1		02/02/16 19:42
Trichloroethene	5.50	U	11.0	3.42	ug/Kg	1		02/02/16 19:42
Trichlorofluoromethane	21.9	U	43.9	13.2	ug/Kg	1		02/02/16 19:42
Vinyl acetate	43.9	U	87.7	27.2	ug/Kg	1		02/02/16 19:42
Vinyl chloride	4.38	U	8.77	2.72	ug/Kg	1		02/02/16 19:42
Xylenes (total)	32.9	U	65.8	20.0	ug/Kg	1		02/02/16 19:42
Surrogates								
1,2-Dichloroethane-D4 (surr)	109		71-136		%	1		02/02/16 19:42
4-Bromofluorobenzene (surr)	93.8		55-151		%	1		02/02/16 19:42
Toluene-d8 (surr)	117	*	85-116		%	1		02/02/16 19:42

Results of TP4-1-0128

Client Sample ID: **TP4-1-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430004
Lab Project ID: 1160430

Collection Date: 01/28/16 10:59
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%): 88.8
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15561
Analytical Method: SW8260B
Analyst: KAS
Analytical Date/Time: 02/02/16 19:42
Container ID: 1160430004-B

Prep Batch: VXX28470
Prep Method: SW5035A
Prep Date/Time: 01/28/16 10:59
Prep Initial Wt./Vol.: 90.036 g
Prep Extract Vol: 35.0685 mL

Results of TP5-4-0128

Client Sample ID: **TP5-4-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430005
 Lab Project ID: 1160430

Collection Date: 01/28/16 11:38
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):90.1
 Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	13.3 J	21.9	6.79	mg/Kg	1		02/15/16 20:21
Surrogates							
5a Androstane (surr)	103	50-150		%	1		02/15/16 20:21

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK102
 Analyst: S.G
 Analytical Date/Time: 02/15/16 20:21
 Container ID: 1160430005-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.397 g
 Prep Extract Vol: 1 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	55.8	21.9	6.79	mg/Kg	1		02/15/16 20:21
Surrogates							
n-Triacontane-d62 (surr)	115	50-150		%	1		02/15/16 20:21

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK103
 Analyst: S.G
 Analytical Date/Time: 02/15/16 20:21
 Container ID: 1160430005-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.397 g
 Prep Extract Vol: 1 mL



Results of TP5-4-0128

Client Sample ID: **TP5-4-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430005
Lab Project ID: 1160430

Collection Date: 01/28/16 11:38
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):90.1
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.62 J	3.31	0.993	mg/Kg	1		02/02/16 19:13
Surrogates							
4-Bromofluorobenzene (surr)	81.9	50-150		%	1		02/02/16 19:13

Batch Information

Analytical Batch: VFC12892
Analytical Method: AK101
Analyst: S.P
Analytical Date/Time: 02/02/16 19:13
Container ID: 1160430005-B

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 01/28/16 11:38
Prep Initial Wt./Vol.: 50.286 g
Prep Extract Vol: 29.9946 mL

**Results of TP5-4-0128**

Client Sample ID: **TP5-4-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430005
Lab Project ID: 1160430

Collection Date: 01/28/16 11:38
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):90.1
Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
1,1,1-Trichloroethane	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
1,1,2,2-Tetrachloroethane	8.30 U	16.6	5.17	ug/Kg	1		02/02/16 19:58
1,1,2-Trichloroethane	6.60 U	13.2	4.11	ug/Kg	1		02/02/16 19:58
1,1-Dichloroethane	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
1,1-Dichloroethene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
1,1-Dichloropropene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
1,2,3-Trichlorobenzene	33.1 U	66.2	19.9	ug/Kg	1		02/02/16 19:58
1,2,3-Trichloropropane	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
1,2,4-Trichlorobenzene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
1,2,4-Trimethylbenzene	33.1 U	66.2	19.9	ug/Kg	1		02/02/16 19:58
1,2-Dibromo-3-chloropropane	66.0 U	132	41.1	ug/Kg	1		02/02/16 19:58
1,2-Dibromoethane	6.60 U	13.2	4.11	ug/Kg	1		02/02/16 19:58
1,2-Dichlorobenzene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
1,2-Dichloroethane	6.60 U	13.2	4.11	ug/Kg	1		02/02/16 19:58
1,2-Dichloropropane	6.60 U	13.2	4.11	ug/Kg	1		02/02/16 19:58
1,3,5-Trimethylbenzene	10.6 J	33.1	10.3	ug/Kg	1		02/02/16 19:58
1,3-Dichlorobenzene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
1,3-Dichloropropane	6.60 U	13.2	4.11	ug/Kg	1		02/02/16 19:58
1,4-Dichlorobenzene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
2,2-Dichloropropane	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
2-Butanone (MEK)	166 U	331	103	ug/Kg	1		02/02/16 19:58
2-Chlorotoluene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
2-Hexanone	166 U	331	103	ug/Kg	1		02/02/16 19:58
4-Chlorotoluene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
4-Isopropyltoluene	26.2 J	33.1	10.3	ug/Kg	1		02/02/16 19:58
4-Methyl-2-pentanone (MIBK)	166 U	331	103	ug/Kg	1		02/02/16 19:58
Benzene	8.30 U	16.6	5.17	ug/Kg	1		02/02/16 19:58
Bromobenzene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Bromochloromethane	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Bromodichloromethane	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Bromoform	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Bromomethane	133 U	265	82.1	ug/Kg	1		02/02/16 19:58
Carbon disulfide	66.0 U	132	41.1	ug/Kg	1		02/02/16 19:58
Carbon tetrachloride	8.30 U	16.6	5.17	ug/Kg	1		02/02/16 19:58
Chlorobenzene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Chloroethane	133 U	265	82.1	ug/Kg	1		02/02/16 19:58

Print Date: 02/16/2016 3:27:01PM

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Results of TP5-4-0128

Client Sample ID: **TP5-4-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430005
 Lab Project ID: 1160430

Collection Date: 01/28/16 11:38
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):90.1
 Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Chloromethane	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
cis-1,2-Dichloroethene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
cis-1,3-Dichloropropene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Dibromochloromethane	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Dibromomethane	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Dichlorodifluoromethane	33.1 U	66.2	19.9	ug/Kg	1		02/02/16 19:58
Ethylbenzene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Freon-113	66.0 U	132	41.1	ug/Kg	1		02/02/16 19:58
Hexachlorobutadiene	33.1 U	66.2	19.9	ug/Kg	1		02/02/16 19:58
Isopropylbenzene (Cumene)	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Methylene chloride	66.0 U	132	41.1	ug/Kg	1		02/02/16 19:58
Methyl-t-butyl ether	66.0 U	132	41.1	ug/Kg	1		02/02/16 19:58
Naphthalene	33.1 U	66.2	19.9	ug/Kg	1		02/02/16 19:58
n-Butylbenzene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
n-Propylbenzene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
o-Xylene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
P & M -Xylene	33.1 U	66.2	19.9	ug/Kg	1		02/02/16 19:58
sec-Butylbenzene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Styrene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
tert-Butylbenzene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Tetrachloroethene	8.30 U	16.6	5.17	ug/Kg	1		02/02/16 19:58
Toluene	17.9 J	33.1	10.3	ug/Kg	1		02/02/16 19:58
trans-1,2-Dichloroethene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
trans-1,3-Dichloropropene	16.6 U	33.1	10.3	ug/Kg	1		02/02/16 19:58
Trichloroethene	8.30 U	16.6	5.17	ug/Kg	1		02/02/16 19:58
Trichlorofluoromethane	33.1 U	66.2	19.9	ug/Kg	1		02/02/16 19:58
Vinyl acetate	66.0 U	132	41.1	ug/Kg	1		02/02/16 19:58
Vinyl chloride	6.60 U	13.2	4.11	ug/Kg	1		02/02/16 19:58
Xylenes (total)	49.6 U	99.3	30.2	ug/Kg	1		02/02/16 19:58
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	71-136		%	1		02/02/16 19:58
4-Bromofluorobenzene (surr)	91.8	55-151		%	1		02/02/16 19:58
Toluene-d8 (surr)	116	85-116		%	1		02/02/16 19:58



Results of TP5-4-0128

Client Sample ID: **TP5-4-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430005
Lab Project ID: 1160430

Collection Date: 01/28/16 11:38
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):90.1
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15561
Analytical Method: SW8260B
Analyst: KAS
Analytical Date/Time: 02/02/16 19:58
Container ID: 1160430005-B

Prep Batch: VXX28470
Prep Method: SW5035A
Prep Date/Time: 01/28/16 11:38
Prep Initial Wt./Vol.: 50.286 g
Prep Extract Vol: 29.9946 mL

Print Date: 02/16/2016 3:27:01PM

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Results of TP6-5-0128

Client Sample ID: **TP6-5-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430006
 Lab Project ID: 1160430

Collection Date: 01/28/16 12:27
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):91.8
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	7.80 J	21.6	6.70	mg/Kg	1		02/15/16 20:42
Surrogates							
5a Androstane (surr)	99.9	50-150		%	1		02/15/16 20:42

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK102
 Analyst: S.G
 Analytical Date/Time: 02/15/16 20:42
 Container ID: 1160430006-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.222 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	28.7	21.6	6.70	mg/Kg	1		02/15/16 20:42
Surrogates							
n-Triacontane-d62 (surr)	114	50-150		%	1		02/15/16 20:42

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK103
 Analyst: S.G
 Analytical Date/Time: 02/15/16 20:42
 Container ID: 1160430006-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.222 g
 Prep Extract Vol: 1 mL

Results of TP6-5-0128

Client Sample ID: **TP6-5-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430006
 Lab Project ID: 1160430

Collection Date: 01/28/16 12:27
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):91.8
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.90 U	3.80	1.14	mg/Kg	1		02/02/16 19:32
Surrogates							
4-Bromofluorobenzene (surr)	80	50-150		%	1		02/02/16 19:32

Batch Information

Analytical Batch: VFC12892
 Analytical Method: AK101
 Analyst: S.P
 Analytical Date/Time: 02/02/16 19:32
 Container ID: 1160430006-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/28/16 12:27
 Prep Initial Wt./Vol.: 40.642 g
 Prep Extract Vol: 28.3269 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	9.50 U	19.0	6.07	ug/Kg	1		02/02/16 19:32
Ethylbenzene	19.0 U	38.0	11.8	ug/Kg	1		02/02/16 19:32
o-Xylene	19.0 U	38.0	11.8	ug/Kg	1		02/02/16 19:32
P & M -Xylene	38.0 U	75.9	22.8	ug/Kg	1		02/02/16 19:32
Toluene	12.9 J	38.0	11.8	ug/Kg	1		02/02/16 19:32
Surrogates							
1,4-Difluorobenzene (surr)	80.1	72-119		%	1		02/02/16 19:32

Batch Information

Analytical Batch: VFC12892
 Analytical Method: SW8021B
 Analyst: S.P
 Analytical Date/Time: 02/02/16 19:32
 Container ID: 1160430006-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/28/16 12:27
 Prep Initial Wt./Vol.: 40.642 g
 Prep Extract Vol: 28.3269 mL

Results of TP8-5-0128

Client Sample ID: **TP8-5-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430008
 Lab Project ID: 1160430

Collection Date: 01/28/16 15:07
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):94.7
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Lead	4.83	1.04	0.322	mg/Kg	50		02/12/16 01:13

Batch Information

Analytical Batch: MMS9243
 Analytical Method: SW6020A
 Analyst: SCL
 Analytical Date/Time: 02/12/16 01:13
 Container ID: 1160430008-A

Prep Batch: MXX29494
 Prep Method: SW3050B
 Prep Date/Time: 02/03/16 10:04
 Prep Initial Wt./Vol.: 1.018 g
 Prep Extract Vol: 50 mL

Results of TP8-5-0128

Client Sample ID: **TP8-5-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430008
 Lab Project ID: 1160430

Collection Date: 01/28/16 15:07
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):94.7
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	9.73 J	21.1	6.53	mg/Kg	1		02/15/16 21:03
Surrogates							
5a Androstane (surr)	98.7	50-150		%	1		02/15/16 21:03

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK102
 Analyst: S.G
 Analytical Date/Time: 02/15/16 21:03
 Container ID: 1160430008-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.063 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	43.9	21.1	6.53	mg/Kg	1		02/15/16 21:03
Surrogates							
n-Triacontane-d62 (surr)	115	50-150		%	1		02/15/16 21:03

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK103
 Analyst: S.G
 Analytical Date/Time: 02/15/16 21:03
 Container ID: 1160430008-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.063 g
 Prep Extract Vol: 1 mL

**Results of TP8-5-0128**

Client Sample ID: **TP8-5-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430008
Lab Project ID: 1160430

Collection Date: 01/28/16 15:07
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):94.7
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.970 U	1.94	0.583	mg/Kg	1		02/02/16 19:51
Surrogates							
4-Bromofluorobenzene (surr)	88.6	50-150		%	1		02/02/16 19:51

Batch Information

Analytical Batch: VFC12892
Analytical Method: AK101
Analyst: S.P
Analytical Date/Time: 02/02/16 19:51
Container ID: 1160430008-B

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 01/28/16 15:07
Prep Initial Wt./Vol.: 79.412 g
Prep Extract Vol: 29.2213 mL

Print Date: 02/16/2016 3:27:01PM

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**Results of TP8-5-0128**

Client Sample ID: **TP8-5-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430008
Lab Project ID: 1160430

Collection Date: 01/28/16 15:07
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):94.7
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
1,1,1-Trichloroethane	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
1,1,2,2-Tetrachloroethane	4.86 U	9.72	3.03	ug/Kg	1		02/02/16 20:14
1,1,2-Trichloroethane	3.88 U	7.77	2.41	ug/Kg	1		02/02/16 20:14
1,1-Dichloroethane	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
1,1-Dichloroethene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
1,1-Dichloropropene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
1,2,3-Trichlorobenzene	19.4 U	38.9	11.7	ug/Kg	1		02/02/16 20:14
1,2,3-Trichloropropane	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
1,2,4-Trichlorobenzene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
1,2,4-Trimethylbenzene	19.4 U	38.9	11.7	ug/Kg	1		02/02/16 20:14
1,2-Dibromo-3-chloropropane	38.9 U	77.7	24.1	ug/Kg	1		02/02/16 20:14
1,2-Dibromoethane	3.88 U	7.77	2.41	ug/Kg	1		02/02/16 20:14
1,2-Dichlorobenzene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
1,2-Dichloroethane	3.88 U	7.77	2.41	ug/Kg	1		02/02/16 20:14
1,2-Dichloropropane	3.88 U	7.77	2.41	ug/Kg	1		02/02/16 20:14
1,3,5-Trimethylbenzene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
1,3-Dichlorobenzene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
1,3-Dichloropropane	3.88 U	7.77	2.41	ug/Kg	1		02/02/16 20:14
1,4-Dichlorobenzene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
2,2-Dichloropropane	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
2-Butanone (MEK)	97.0 U	194	60.6	ug/Kg	1		02/02/16 20:14
2-Chlorotoluene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
2-Hexanone	97.0 U	194	60.6	ug/Kg	1		02/02/16 20:14
4-Chlorotoluene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
4-Isopropyltoluene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
4-Methyl-2-pentanone (MIBK)	97.0 U	194	60.6	ug/Kg	1		02/02/16 20:14
Benzene	4.86 U	9.72	3.03	ug/Kg	1		02/02/16 20:14
Bromobenzene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Bromochloromethane	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Bromodichloromethane	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Bromoform	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Bromomethane	77.5 U	155	48.2	ug/Kg	1		02/02/16 20:14
Carbon disulfide	38.9 U	77.7	24.1	ug/Kg	1		02/02/16 20:14
Carbon tetrachloride	4.86 U	9.72	3.03	ug/Kg	1		02/02/16 20:14
Chlorobenzene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Chloroethane	77.5 U	155	48.2	ug/Kg	1		02/02/16 20:14

Print Date: 02/16/2016 3:27:01PM

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**Results of TP8-5-0128**

Client Sample ID: **TP8-5-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430008
 Lab Project ID: 1160430

Collection Date: 01/28/16 15:07
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%): 94.7
 Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Chloromethane	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
cis-1,2-Dichloroethene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
cis-1,3-Dichloropropene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Dibromochloromethane	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Dibromomethane	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Dichlorodifluoromethane	19.4 U	38.9	11.7	ug/Kg	1		02/02/16 20:14
Ethylbenzene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Freon-113	38.9 U	77.7	24.1	ug/Kg	1		02/02/16 20:14
Hexachlorobutadiene	19.4 U	38.9	11.7	ug/Kg	1		02/02/16 20:14
Isopropylbenzene (Cumene)	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Methylene chloride	38.9 U	77.7	24.1	ug/Kg	1		02/02/16 20:14
Methyl-t-butyl ether	38.9 U	77.7	24.1	ug/Kg	1		02/02/16 20:14
Naphthalene	19.4 U	38.9	11.7	ug/Kg	1		02/02/16 20:14
n-Butylbenzene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
n-Propylbenzene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
o-Xylene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
P & M -Xylene	19.4 U	38.9	11.7	ug/Kg	1		02/02/16 20:14
sec-Butylbenzene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Styrene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
tert-Butylbenzene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Tetrachloroethene	4.86 U	9.72	3.03	ug/Kg	1		02/02/16 20:14
Toluene	11.1 J	19.4	6.06	ug/Kg	1		02/02/16 20:14
trans-1,2-Dichloroethene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
trans-1,3-Dichloropropene	9.70 U	19.4	6.06	ug/Kg	1		02/02/16 20:14
Trichloroethene	4.86 U	9.72	3.03	ug/Kg	1		02/02/16 20:14
Trichlorofluoromethane	19.4 U	38.9	11.7	ug/Kg	1		02/02/16 20:14
Vinyl acetate	38.9 U	77.7	24.1	ug/Kg	1		02/02/16 20:14
Vinyl chloride	3.88 U	7.77	2.41	ug/Kg	1		02/02/16 20:14
Xylenes (total)	29.1 U	58.3	17.7	ug/Kg	1		02/02/16 20:14
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	71-136		%	1		02/02/16 20:14
4-Bromofluorobenzene (surr)	98.3	55-151		%	1		02/02/16 20:14
Toluene-d8 (surr)	115	85-116		%	1		02/02/16 20:14

Print Date: 02/16/2016 3:27:01PM

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Results of TP8-5-0128

Client Sample ID: **TP8-5-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430008
 Lab Project ID: 1160430

Collection Date: 01/28/16 15:07
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%): 94.7
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15561
 Analytical Method: SW8260B
 Analyst: KAS
 Analytical Date/Time: 02/02/16 20:14
 Container ID: 1160430008-B

Prep Batch: VXX28470
 Prep Method: SW5035A
 Prep Date/Time: 01/28/16 15:07
 Prep Initial Wt./Vol.: 79.412 g
 Prep Extract Vol: 29.2213 mL

Results of TP8-6-0128

Client Sample ID: **TP8-6-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430009
 Lab Project ID: 1160430

Collection Date: 01/28/16 15:08
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):94.6
 Location:

Results by Metals by ICP/MS

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Lead	3.21	1.00	0.310	mg/Kg	50		02/12/16 01:15

Batch Information

Analytical Batch: MMS9243
 Analytical Method: SW6020A
 Analyst: SCL
 Analytical Date/Time: 02/12/16 01:15
 Container ID: 1160430009-A

Prep Batch: MXX29494
 Prep Method: SW3050B
 Prep Date/Time: 02/03/16 10:04
 Prep Initial Wt./Vol.: 1.057 g
 Prep Extract Vol: 50 mL

Results of TP8-6-0128

Client Sample ID: **TP8-6-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430009
 Lab Project ID: 1160430

Collection Date: 01/28/16 15:08
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):94.6
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	9.02 J	21.1	6.54	mg/Kg	1		02/15/16 21:24
Surrogates							
5a Androstane (surr)	98.2	50-150		%	1		02/15/16 21:24

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK102
 Analyst: S.G
 Analytical Date/Time: 02/15/16 21:24
 Container ID: 1160430009-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.044 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	40.7	21.1	6.54	mg/Kg	1		02/15/16 21:24
Surrogates							
n-Triacontane-d62 (surr)	115	50-150		%	1		02/15/16 21:24

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK103
 Analyst: S.G
 Analytical Date/Time: 02/15/16 21:24
 Container ID: 1160430009-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.044 g
 Prep Extract Vol: 1 mL

Results of TP8-6-0128

Client Sample ID: **TP8-6-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430009
 Lab Project ID: 1160430

Collection Date: 01/28/16 15:08
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):94.6
 Location:

Results by Volatile Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.980 U	1.96	0.588	mg/Kg	1		02/02/16 20:10
Surrogates							
4-Bromofluorobenzene (surr)	85.6	50-150		%	1		02/02/16 20:10

Batch Information

Analytical Batch: VFC12892
 Analytical Method: AK101
 Analyst: S.P
 Analytical Date/Time: 02/02/16 20:10
 Container ID: 1160430009-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/28/16 15:08
 Prep Initial Wt./Vol.: 78.798 g
 Prep Extract Vol: 29.2211 mL



Results of TP8-6-0128

Client Sample ID: **TP8-6-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430009
Lab Project ID: 1160430

Collection Date: 01/28/16 15:08
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):94.6
Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
1,1,1-Trichloroethane	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
1,1,2,2-Tetrachloroethane	4.90 U	9.80	3.06	ug/Kg	1		02/02/16 20:30
1,1,2-Trichloroethane	3.92 U	7.84	2.43	ug/Kg	1		02/02/16 20:30
1,1-Dichloroethane	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
1,1-Dichloroethene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
1,1-Dichloropropene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
1,2,3-Trichlorobenzene	19.6 U	39.2	11.8	ug/Kg	1		02/02/16 20:30
1,2,3-Trichloropropane	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
1,2,4-Trichlorobenzene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
1,2,4-Trimethylbenzene	19.6 U	39.2	11.8	ug/Kg	1		02/02/16 20:30
1,2-Dibromo-3-chloropropane	39.2 U	78.4	24.3	ug/Kg	1		02/02/16 20:30
1,2-Dibromoethane	3.92 U	7.84	2.43	ug/Kg	1		02/02/16 20:30
1,2-Dichlorobenzene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
1,2-Dichloroethane	3.92 U	7.84	2.43	ug/Kg	1		02/02/16 20:30
1,2-Dichloropropane	3.92 U	7.84	2.43	ug/Kg	1		02/02/16 20:30
1,3,5-Trimethylbenzene	6.47 J	19.6	6.11	ug/Kg	1		02/02/16 20:30
1,3-Dichlorobenzene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
1,3-Dichloropropane	3.92 U	7.84	2.43	ug/Kg	1		02/02/16 20:30
1,4-Dichlorobenzene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
2,2-Dichloropropane	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
2-Butanone (MEK)	98.0 U	196	61.1	ug/Kg	1		02/02/16 20:30
2-Chlorotoluene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
2-Hexanone	98.0 U	196	61.1	ug/Kg	1		02/02/16 20:30
4-Chlorotoluene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
4-Isopropyltoluene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
4-Methyl-2-pentanone (MIBK)	98.0 U	196	61.1	ug/Kg	1		02/02/16 20:30
Benzene	4.90 U	9.80	3.06	ug/Kg	1		02/02/16 20:30
Bromobenzene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Bromochloromethane	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Bromodichloromethane	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Bromoform	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Bromomethane	78.5 U	157	48.6	ug/Kg	1		02/02/16 20:30
Carbon disulfide	39.2 U	78.4	24.3	ug/Kg	1		02/02/16 20:30
Carbon tetrachloride	4.90 U	9.80	3.06	ug/Kg	1		02/02/16 20:30
Chlorobenzene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Chloroethane	78.5 U	157	48.6	ug/Kg	1		02/02/16 20:30

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**Results of TP8-6-0128**

Client Sample ID: **TP8-6-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430009
Lab Project ID: 1160430

Collection Date: 01/28/16 15:08
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%): 94.6
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Chloroform	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Chloromethane	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
cis-1,2-Dichloroethene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
cis-1,3-Dichloropropene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Dibromochloromethane	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Dibromomethane	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Dichlorodifluoromethane	19.6 U	39.2	11.8	ug/Kg	1		02/02/16 20:30
Ethylbenzene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Freon-113	39.2 U	78.4	24.3	ug/Kg	1		02/02/16 20:30
Hexachlorobutadiene	19.6 U	39.2	11.8	ug/Kg	1		02/02/16 20:30
Isopropylbenzene (Cumene)	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Methylene chloride	39.2 U	78.4	24.3	ug/Kg	1		02/02/16 20:30
Methyl-t-butyl ether	39.2 U	78.4	24.3	ug/Kg	1		02/02/16 20:30
Naphthalene	19.6 U	39.2	11.8	ug/Kg	1		02/02/16 20:30
n-Butylbenzene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
n-Propylbenzene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
o-Xylene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
P & M -Xylene	19.6 U	39.2	11.8	ug/Kg	1		02/02/16 20:30
sec-Butylbenzene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Styrene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
tert-Butylbenzene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Tetrachloroethene	4.90 U	9.80	3.06	ug/Kg	1		02/02/16 20:30
Toluene	12.3 J	19.6	6.11	ug/Kg	1		02/02/16 20:30
trans-1,2-Dichloroethene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
trans-1,3-Dichloropropene	9.80 U	19.6	6.11	ug/Kg	1		02/02/16 20:30
Trichloroethene	4.90 U	9.80	3.06	ug/Kg	1		02/02/16 20:30
Trichlorofluoromethane	19.6 U	39.2	11.8	ug/Kg	1		02/02/16 20:30
Vinyl acetate	39.2 U	78.4	24.3	ug/Kg	1		02/02/16 20:30
Vinyl chloride	3.92 U	7.84	2.43	ug/Kg	1		02/02/16 20:30
Xylenes (total)	29.4 U	58.8	17.9	ug/Kg	1		02/02/16 20:30
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	71-136		%	1		02/02/16 20:30
4-Bromofluorobenzene (surr)	101	55-151		%	1		02/02/16 20:30
Toluene-d8 (surr)	115	85-116		%	1		02/02/16 20:30

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Results of TP8-6-0128

Client Sample ID: **TP8-6-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430009
Lab Project ID: 1160430

Collection Date: 01/28/16 15:08
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%): 94.6
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15561
Analytical Method: SW8260B
Analyst: KAS
Analytical Date/Time: 02/02/16 20:30
Container ID: 1160430009-B

Prep Batch: VXX28470
Prep Method: SW5035A
Prep Date/Time: 01/28/16 15:08
Prep Initial Wt./Vol.: 78.798 g
Prep Extract Vol: 29.2211 mL

Print Date: 02/16/2016 3:27:01PM

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Results of TP9-2-0128

Client Sample ID: **TP9-2-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430010
 Lab Project ID: 1160430

Collection Date: 01/28/16 15:33
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):91.5
 Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	10.9 U	21.7	6.74	mg/Kg	1		02/15/16 21:45
Surrogates							
5a Androstane (surr)	97.8	50-150		%	1		02/15/16 21:45

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK102
 Analyst: S.G
 Analytical Date/Time: 02/15/16 21:45
 Container ID: 1160430010-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.179 g
 Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	22.3	21.7	6.74	mg/Kg	1		02/15/16 21:45
Surrogates							
n-Triacontane-d62 (surr)	111	50-150		%	1		02/15/16 21:45

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK103
 Analyst: S.G
 Analytical Date/Time: 02/15/16 21:45
 Container ID: 1160430010-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.179 g
 Prep Extract Vol: 1 mL

Results of TP9-2-0128

Client Sample ID: **TP9-2-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430010
 Lab Project ID: 1160430

Collection Date: 01/28/16 15:33
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):91.5
 Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	0.796 J	2.50	0.749	mg/Kg	1		02/02/16 21:07
Surrogates							
4-Bromofluorobenzene (surr)	66.7	50-150		%	1		02/02/16 21:07

Batch Information

Analytical Batch: VFC12892
 Analytical Method: AK101
 Analyst: S.P
 Analytical Date/Time: 02/02/16 21:07
 Container ID: 1160430010-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/28/16 15:33
 Prep Initial Wt./Vol.: 67.204 g
 Prep Extract Vol: 30.7138 mL

**Results of TP9-2-0128**

Client Sample ID: **TP9-2-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430010
Lab Project ID: 1160430

Collection Date: 01/28/16 15:33
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):91.5
Location:

Results by Volatile GC/MS

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
1,1,1,2-Tetrachloroethane	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
1,1,1-Trichloroethane	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
1,1,2,2-Tetrachloroethane	6.25 U	12.5	3.90	ug/Kg	1		02/02/16 20:46
1,1,2-Trichloroethane	5.00 U	9.99	3.10	ug/Kg	1		02/02/16 20:46
1,1-Dichloroethane	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
1,1-Dichloroethene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
1,1-Dichloropropene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
1,2,3-Trichlorobenzene	24.9 U	49.9	15.0	ug/Kg	1		02/02/16 20:46
1,2,3-Trichloropropane	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
1,2,4-Trichlorobenzene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
1,2,4-Trimethylbenzene	24.9 U	49.9	15.0	ug/Kg	1		02/02/16 20:46
1,2-Dibromo-3-chloropropane	50.0 U	99.9	31.0	ug/Kg	1		02/02/16 20:46
1,2-Dibromoethane	5.00 U	9.99	3.10	ug/Kg	1		02/02/16 20:46
1,2-Dichlorobenzene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
1,2-Dichloroethane	5.00 U	9.99	3.10	ug/Kg	1		02/02/16 20:46
1,2-Dichloropropane	5.00 U	9.99	3.10	ug/Kg	1		02/02/16 20:46
1,3,5-Trimethylbenzene	10.2 J	25.0	7.79	ug/Kg	1		02/02/16 20:46
1,3-Dichlorobenzene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
1,3-Dichloropropane	5.00 U	9.99	3.10	ug/Kg	1		02/02/16 20:46
1,4-Dichlorobenzene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
2,2-Dichloropropane	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
2-Butanone (MEK)	125 U	250	77.9	ug/Kg	1		02/02/16 20:46
2-Chlorotoluene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
2-Hexanone	125 U	250	77.9	ug/Kg	1		02/02/16 20:46
4-Chlorotoluene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
4-Isopropyltoluene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
4-Methyl-2-pentanone (MIBK)	125 U	250	77.9	ug/Kg	1		02/02/16 20:46
Benzene	6.25 U	12.5	3.90	ug/Kg	1		02/02/16 20:46
Bromobenzene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Bromochloromethane	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Bromodichloromethane	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Bromoform	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Bromomethane	100 U	200	61.9	ug/Kg	1		02/02/16 20:46
Carbon disulfide	50.0 U	99.9	31.0	ug/Kg	1		02/02/16 20:46
Carbon tetrachloride	6.25 U	12.5	3.90	ug/Kg	1		02/02/16 20:46
Chlorobenzene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Chloroethane	100 U	200	61.9	ug/Kg	1		02/02/16 20:46

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**Results of TP9-2-0128**

Client Sample ID: **TP9-2-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430010
Lab Project ID: 1160430

Collection Date: 01/28/16 15:33
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):91.5
Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Chloromethane	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
cis-1,2-Dichloroethene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
cis-1,3-Dichloropropene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Dibromochloromethane	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Dibromomethane	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Dichlorodifluoromethane	24.9 U	49.9	15.0	ug/Kg	1		02/02/16 20:46
Ethylbenzene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Freon-113	50.0 U	99.9	31.0	ug/Kg	1		02/02/16 20:46
Hexachlorobutadiene	24.9 U	49.9	15.0	ug/Kg	1		02/02/16 20:46
Isopropylbenzene (Cumene)	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Methylene chloride	50.0 U	99.9	31.0	ug/Kg	1		02/02/16 20:46
Methyl-t-butyl ether	50.0 U	99.9	31.0	ug/Kg	1		02/02/16 20:46
Naphthalene	24.9 U	49.9	15.0	ug/Kg	1		02/02/16 20:46
n-Butylbenzene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
n-Propylbenzene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
o-Xylene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
P & M -Xylene	24.9 U	49.9	15.0	ug/Kg	1		02/02/16 20:46
sec-Butylbenzene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Styrene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
tert-Butylbenzene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Tetrachloroethene	6.25 U	12.5	3.90	ug/Kg	1		02/02/16 20:46
Toluene	13.7 J	25.0	7.79	ug/Kg	1		02/02/16 20:46
trans-1,2-Dichloroethene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
trans-1,3-Dichloropropene	12.5 U	25.0	7.79	ug/Kg	1		02/02/16 20:46
Trichloroethene	6.25 U	12.5	3.90	ug/Kg	1		02/02/16 20:46
Trichlorofluoromethane	24.9 U	49.9	15.0	ug/Kg	1		02/02/16 20:46
Vinyl acetate	50.0 U	99.9	31.0	ug/Kg	1		02/02/16 20:46
Vinyl chloride	5.00 U	9.99	3.10	ug/Kg	1		02/02/16 20:46
Xylenes (total)	37.5 U	74.9	22.8	ug/Kg	1		02/02/16 20:46
Surrogates							
1,2-Dichloroethane-D4 (surr)	108	71-136		%	1		02/02/16 20:46
4-Bromofluorobenzene (surr)	83.4	55-151		%	1		02/02/16 20:46
Toluene-d8 (surr)	115	85-116		%	1		02/02/16 20:46

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Results of TP9-2-0128

Client Sample ID: **TP9-2-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430010
Lab Project ID: 1160430

Collection Date: 01/28/16 15:33
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):91.5
Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15561
Analytical Method: SW8260B
Analyst: KAS
Analytical Date/Time: 02/02/16 20:46
Container ID: 1160430010-B

Prep Batch: VXX28470
Prep Method: SW5035A
Prep Date/Time: 01/28/16 15:33
Prep Initial Wt./Vol.: 67.204 g
Prep Extract Vol: 30.7138 mL

Print Date: 02/16/2016 3:27:01PM

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Results of TP10-5-0128

Client Sample ID: **TP10-5-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430011
 Lab Project ID: 1160430

Collection Date: 01/28/16 15:52
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):95.4
 Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	10.0 J	20.7	6.41	mg/Kg	1		02/15/16 22:05
Surrogates							
5a Androstane (surr)	96.9	50-150		%	1		02/15/16 22:05

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK102
 Analyst: S.G
 Analytical Date/Time: 02/15/16 22:05
 Container ID: 1160430011-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.432 g
 Prep Extract Vol: 1 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	68.7	20.7	6.41	mg/Kg	1		02/15/16 22:05
Surrogates							
n-Triacontane-d62 (surr)	113	50-150		%	1		02/15/16 22:05

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK103
 Analyst: S.G
 Analytical Date/Time: 02/15/16 22:05
 Container ID: 1160430011-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.432 g
 Prep Extract Vol: 1 mL

**Results of TP10-5-0128**

Client Sample ID: **TP10-5-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430011
Lab Project ID: 1160430

Collection Date: 01/28/16 15:52
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):95.4
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.11 U	2.22	0.667	mg/Kg	1		02/02/16 21:26
Surrogates							
4-Bromofluorobenzene (surr)	86.3	50-150		%	1		02/02/16 21:26

Batch Information

Analytical Batch: VFC12892
Analytical Method: AK101
Analyst: S.P
Analytical Date/Time: 02/02/16 21:26
Container ID: 1160430011-B

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 01/28/16 15:52
Prep Initial Wt./Vol.: 66.121 g
Prep Extract Vol: 28.0578 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	5.55 U	11.1	3.56	ug/Kg	1		02/02/16 21:26
Ethylbenzene	11.1 U	22.2	6.94	ug/Kg	1		02/02/16 21:26
o-Xylene	11.1 U	22.2	6.94	ug/Kg	1		02/02/16 21:26
P & M -Xylene	16.7 J	44.5	13.3	ug/Kg	1		02/02/16 21:26
Toluene	8.45 J	22.2	6.94	ug/Kg	1		02/02/16 21:26
Surrogates							
1,4-Difluorobenzene (surr)	81.4	72-119		%	1		02/02/16 21:26

Batch Information

Analytical Batch: VFC12892
Analytical Method: SW8021B
Analyst: S.P
Analytical Date/Time: 02/02/16 21:26
Container ID: 1160430011-B

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 01/28/16 15:52
Prep Initial Wt./Vol.: 66.121 g
Prep Extract Vol: 28.0578 mL

Print Date: 02/16/2016 3:27:01PM

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**Results of TP11-5-0128**

Client Sample ID: **TP11-5-0128**
Client Project ID: **Kake**
Lab Sample ID: 1160430012
Lab Project ID: 1160430

Collection Date: 01/28/16 16:20
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):91.5
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	10.9 U	21.7	6.73	mg/Kg	1		02/15/16 22:26
Surrogates							
5a Androstane (surr)	96.2	50-150		%	1		02/15/16 22:26

Batch Information

Analytical Batch: XFC12277
Analytical Method: AK102
Analyst: S.G
Analytical Date/Time: 02/15/16 22:26
Container ID: 1160430012-A

Prep Batch: XXX34889
Prep Method: SW3550C
Prep Date/Time: 02/09/16 09:35
Prep Initial Wt./Vol.: 30.202 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	8.47 J	21.7	6.73	mg/Kg	1		02/15/16 22:26
Surrogates							
n-Triacontane-d62 (surr)	111	50-150		%	1		02/15/16 22:26

Batch Information

Analytical Batch: XFC12277
Analytical Method: AK103
Analyst: S.G
Analytical Date/Time: 02/15/16 22:26
Container ID: 1160430012-A

Prep Batch: XXX34889
Prep Method: SW3550C
Prep Date/Time: 02/09/16 09:35
Prep Initial Wt./Vol.: 30.202 g
Prep Extract Vol: 1 mL

Print Date: 02/16/2016 3:27:01PM

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Results of TP11-5-0128

Client Sample ID: **TP11-5-0128**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430012
 Lab Project ID: 1160430

Collection Date: 01/28/16 16:20
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):91.5
 Location:

Results by Volatile Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.811 J	2.51	0.752	mg/Kg	1		02/02/16 21:45
Surrogates							
4-Bromofluorobenzene (surr)	70.3	50-150		%	1		02/02/16 21:45

Batch Information

Analytical Batch: VFC12892
 Analytical Method: AK101
 Analyst: S.P
 Analytical Date/Time: 02/02/16 21:45
 Container ID: 1160430012-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/28/16 16:20
 Prep Initial Wt./Vol.: 66.839 g
 Prep Extract Vol: 30.6573 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	6.25 U	12.5	4.01	ug/Kg	1		02/02/16 21:45
Ethylbenzene	12.6 U	25.1	7.82	ug/Kg	1		02/02/16 21:45
o-Xylene	12.6 U	25.1	7.82	ug/Kg	1		02/02/16 21:45
P & M -Xylene	16.8 J	50.1	15.0	ug/Kg	1		02/02/16 21:45
Toluene	8.02 J	25.1	7.82	ug/Kg	1		02/02/16 21:45
Surrogates							
1,4-Difluorobenzene (surr)	81.9	72-119		%	1		02/02/16 21:45

Batch Information

Analytical Batch: VFC12892
 Analytical Method: SW8021B
 Analyst: S.P
 Analytical Date/Time: 02/02/16 21:45
 Container ID: 1160430012-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/28/16 16:20
 Prep Initial Wt./Vol.: 66.839 g
 Prep Extract Vol: 30.6573 mL

Results of TP13-2-0129

Client Sample ID: **TP13-2-0129**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430013
 Lab Project ID: 1160430

Collection Date: 01/29/16 08:23
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):93.9
 Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	14.5 J	21.0	6.52	mg/Kg	1		02/15/16 22:47
Surrogates							
5a Androstane (surr)	96.1	50-150		%	1		02/15/16 22:47

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK102
 Analyst: S.G
 Analytical Date/Time: 02/15/16 22:47
 Container ID: 1160430013-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.396 g
 Prep Extract Vol: 1 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	56.3	21.0	6.52	mg/Kg	1		02/15/16 22:47
Surrogates							
n-Triacontane-d62 (surr)	110	50-150		%	1		02/15/16 22:47

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK103
 Analyst: S.G
 Analytical Date/Time: 02/15/16 22:47
 Container ID: 1160430013-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.396 g
 Prep Extract Vol: 1 mL

Results of TP13-2-0129

Client Sample ID: **TP13-2-0129**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430013
 Lab Project ID: 1160430

Collection Date: 01/29/16 08:23
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):93.9
 Location:

Results by Volatile Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	1.26 J	2.31	0.692	mg/Kg	1		02/02/16 22:03
Surrogates							
4-Bromofluorobenzene (surr)	95.3	50-150		%	1		02/02/16 22:03

Batch Information

Analytical Batch: VFC12892
 Analytical Method: AK101
 Analyst: S.P
 Analytical Date/Time: 02/02/16 22:03
 Container ID: 1160430013-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/29/16 08:23
 Prep Initial Wt./Vol.: 67.27 g
 Prep Extract Vol: 29.1329 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	8.77 J	11.5	3.69	ug/Kg	1		02/03/16 13:55
Ethylbenzene	33.5	23.1	7.20	ug/Kg	1		02/02/16 22:03
o-Xylene	47.5	23.1	7.20	ug/Kg	1		02/02/16 22:03
P & M -Xylene	137	46.1	13.8	ug/Kg	1		02/02/16 22:03
Toluene	75.7	23.1	7.20	ug/Kg	1		02/02/16 22:03
Surrogates							
1,4-Difluorobenzene (surr)	82.5	72-119		%	1		02/03/16 13:55
1,4-Difluorobenzene (surr)	81.9	72-119		%	1		02/02/16 22:03

Batch Information

Analytical Batch: VFC12892
 Analytical Method: SW8021B
 Analyst: S.P
 Analytical Date/Time: 02/02/16 22:03
 Container ID: 1160430013-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/29/16 08:23
 Prep Initial Wt./Vol.: 67.27 g
 Prep Extract Vol: 29.1329 mL

Analytical Batch: VFC12895
 Analytical Method: SW8021B
 Analyst: S.P
 Analytical Date/Time: 02/03/16 13:55
 Container ID:

Prep Batch: VXX28481
 Prep Method: SW5035A
 Prep Date/Time: 01/29/16 08:23
 Prep Initial Wt./Vol.: 67.27 g
 Prep Extract Vol: 29.1329 mL

**Results of TP14-3-0129**

Client Sample ID: **TP14-3-0129**
Client Project ID: **Kake**
Lab Sample ID: 1160430014
Lab Project ID: 1160430

Collection Date: 01/29/16 11:39
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):87.0
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	10.5 J	22.9	7.09	mg/Kg	1		02/15/16 23:07
Surrogates							
5a Androstane (surr)	94	50-150		%	1		02/15/16 23:07

Batch Information

Analytical Batch: XFC12277
Analytical Method: AK102
Analyst: S.G
Analytical Date/Time: 02/15/16 23:07
Container ID: 1160430014-A

Prep Batch: XXX34889
Prep Method: SW3550C
Prep Date/Time: 02/09/16 09:35
Prep Initial Wt./Vol.: 30.154 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	41.8	22.9	7.09	mg/Kg	1		02/15/16 23:07
Surrogates							
n-Triacontane-d62 (surr)	108	50-150		%	1		02/15/16 23:07

Batch Information

Analytical Batch: XFC12277
Analytical Method: AK103
Analyst: S.G
Analytical Date/Time: 02/15/16 23:07
Container ID: 1160430014-A

Prep Batch: XXX34889
Prep Method: SW3550C
Prep Date/Time: 02/09/16 09:35
Prep Initial Wt./Vol.: 30.154 g
Prep Extract Vol: 1 mL

Results of TP14-3-0129

Client Sample ID: **TP14-3-0129**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430014
 Lab Project ID: 1160430

Collection Date: 01/29/16 11:39
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%): 87.0
 Location:

Results by Volatile Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Gasoline Range Organics	0.790 J	2.60	0.779	mg/Kg	1		02/02/16 22:22
Surrogates							
4-Bromofluorobenzene (surr)	95.4	50-150		%	1		02/02/16 22:22

Batch Information

Analytical Batch: VFC12892
 Analytical Method: AK101
 Analyst: S.P
 Analytical Date/Time: 02/02/16 22:22
 Container ID: 1160430014-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/29/16 11:39
 Prep Initial Wt./Vol.: 77.634 g
 Prep Extract Vol: 35.0841 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Benzene	6.50 U	13.0	4.16	ug/Kg	1		02/02/16 22:22
Ethylbenzene	13.0 U	26.0	8.10	ug/Kg	1		02/02/16 22:22
o-Xylene	11.9 J	26.0	8.10	ug/Kg	1		02/02/16 22:22
P & M -Xylene	31.9 J	51.9	15.6	ug/Kg	1		02/02/16 22:22
Toluene	14.0 J	26.0	8.10	ug/Kg	1		02/02/16 22:22
Surrogates							
1,4-Difluorobenzene (surr)	82.4	72-119		%	1		02/02/16 22:22

Batch Information

Analytical Batch: VFC12892
 Analytical Method: SW8021B
 Analyst: S.P
 Analytical Date/Time: 02/02/16 22:22
 Container ID: 1160430014-B

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 01/29/16 11:39
 Prep Initial Wt./Vol.: 77.634 g
 Prep Extract Vol: 35.0841 mL

Results of TP14-4-0129

Client Sample ID: **TP14-4-0129**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430015
 Lab Project ID: 1160430

Collection Date: 01/29/16 11:41
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):88.1
 Location:

Results by Semivolatile Organic Fuels

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Diesel Range Organics	20.9 J	22.4	6.94	mg/Kg	1		02/15/16 23:28
Surrogates							
5a Androstane (surr)	100	50-150		%	1		02/15/16 23:28

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK102
 Analyst: S.G
 Analytical Date/Time: 02/15/16 23:28
 Container ID: 1160430015-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.431 g
 Prep Extract Vol: 1 mL

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Residual Range Organics	136	22.4	6.94	mg/Kg	1		02/15/16 23:28
Surrogates							
n-Triacontane-d62 (surr)	115	50-150		%	1		02/15/16 23:28

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK103
 Analyst: S.G
 Analytical Date/Time: 02/15/16 23:28
 Container ID: 1160430015-A

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/16 09:35
 Prep Initial Wt./Vol.: 30.431 g
 Prep Extract Vol: 1 mL

**Results of TP14-4-0129**

Client Sample ID: **TP14-4-0129**
Client Project ID: **Kake**
Lab Sample ID: 1160430015
Lab Project ID: 1160430

Collection Date: 01/29/16 11:41
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):88.1
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.27 U	2.54	0.763	mg/Kg	1		02/02/16 22:41
Surrogates							
4-Bromofluorobenzene (surr)	95.6	50-150		%	1		02/02/16 22:41

Batch Information

Analytical Batch: VFC12892
Analytical Method: AK101
Analyst: S.P
Analytical Date/Time: 02/02/16 22:41
Container ID: 1160430015-B

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 01/29/16 11:41
Prep Initial Wt./Vol.: 75.79 g
Prep Extract Vol: 33.9946 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	6.35 U	12.7	4.07	ug/Kg	1		02/02/16 22:41
Ethylbenzene	12.7 U	25.4	7.94	ug/Kg	1		02/02/16 22:41
o-Xylene	9.67 J	25.4	7.94	ug/Kg	1		02/02/16 22:41
P & M -Xylene	25.7 J	50.9	15.3	ug/Kg	1		02/02/16 22:41
Toluene	10.2 J	25.4	7.94	ug/Kg	1		02/02/16 22:41
Surrogates							
1,4-Difluorobenzene (surr)	81.1	72-119		%	1		02/02/16 22:41

Batch Information

Analytical Batch: VFC12892
Analytical Method: SW8021B
Analyst: S.P
Analytical Date/Time: 02/02/16 22:41
Container ID: 1160430015-B

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 01/29/16 11:41
Prep Initial Wt./Vol.: 75.79 g
Prep Extract Vol: 33.9946 mL

Print Date: 02/16/2016 3:27:01PM

J flagging is activated

**Results of TP15-4-0129**

Client Sample ID: **TP15-4-0129**
Client Project ID: **Kake**
Lab Sample ID: 1160430016
Lab Project ID: 1160430

Collection Date: 01/29/16 12:09
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):94.3
Location:

Results by Semivolatile Organic Fuels

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Diesel Range Organics	27.2	21.2	6.57	mg/Kg	1		02/15/16 23:49
Surrogates							
5a Androstane (surr)	100	50-150		%	1		02/15/16 23:49

Batch Information

Analytical Batch: XFC12277
Analytical Method: AK102
Analyst: S.G
Analytical Date/Time: 02/15/16 23:49
Container ID: 1160430016-A

Prep Batch: XXX34889
Prep Method: SW3550C
Prep Date/Time: 02/09/16 09:35
Prep Initial Wt./Vol.: 30.037 g
Prep Extract Vol: 1 mL

<u>Parameter</u>	<u>Result</u> <u>Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable</u> <u>Limits</u>	<u>Date Analyzed</u>
Residual Range Organics	163	21.2	6.57	mg/Kg	1		02/15/16 23:49
Surrogates							
n-Triacontane-d62 (surr)	114	50-150		%	1		02/15/16 23:49

Batch Information

Analytical Batch: XFC12277
Analytical Method: AK103
Analyst: S.G
Analytical Date/Time: 02/15/16 23:49
Container ID: 1160430016-A

Prep Batch: XXX34889
Prep Method: SW3550C
Prep Date/Time: 02/09/16 09:35
Prep Initial Wt./Vol.: 30.037 g
Prep Extract Vol: 1 mL

**Results of TP15-4-0129**

Client Sample ID: **TP15-4-0129**
Client Project ID: **Kake**
Lab Sample ID: 1160430016
Lab Project ID: 1160430

Collection Date: 01/29/16 12:09
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):94.3
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	1.20 U	2.40	0.721	mg/Kg	1		02/02/16 23:00
Surrogates							
4-Bromofluorobenzene (surr)	93.3	50-150		%	1		02/02/16 23:00

Batch Information

Analytical Batch: VFC12892
Analytical Method: AK101
Analyst: S.P
Analytical Date/Time: 02/02/16 23:00
Container ID: 1160430016-B

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 01/29/16 12:09
Prep Initial Wt./Vol.: 63.163 g
Prep Extract Vol: 28.6134 mL

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Benzene	6.00 U	12.0	3.84	ug/Kg	1		02/02/16 23:00
Ethylbenzene	12.0 U	24.0	7.50	ug/Kg	1		02/02/16 23:00
o-Xylene	12.0 U	24.0	7.50	ug/Kg	1		02/02/16 23:00
P & M -Xylene	21.9 J	48.0	14.4	ug/Kg	1		02/02/16 23:00
Toluene	16.8 J	24.0	7.50	ug/Kg	1		02/02/16 23:00
Surrogates							
1,4-Difluorobenzene (surr)	82.3	72-119		%	1		02/02/16 23:00

Batch Information

Analytical Batch: VFC12892
Analytical Method: SW8021B
Analyst: S.P
Analytical Date/Time: 02/02/16 23:00
Container ID: 1160430016-B

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 01/29/16 12:09
Prep Initial Wt./Vol.: 63.163 g
Prep Extract Vol: 28.6134 mL



Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **Kake**
Lab Sample ID: 1160430017
Lab Project ID: 1160430

Collection Date: 01/27/16 16:11
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile Fuels

<u>Parameter</u>	<u>Result Qual</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>	<u>DF</u>	<u>Allowable Limits</u>	<u>Date Analyzed</u>
Gasoline Range Organics	2.56 U	5.12	1.54	mg/Kg	1		02/02/16 16:42
Surrogates							
4-Bromofluorobenzene (surr)	97.5	50-150		%	1		02/02/16 16:42

Batch Information

Analytical Batch: VFC12892
Analytical Method: AK101
Analyst: S.P
Analytical Date/Time: 02/02/16 16:42
Container ID: 1160430017-A

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 01/27/16 16:11
Prep Initial Wt./Vol.: 24.428 g
Prep Extract Vol: 25 mL

Print Date: 02/16/2016 3:27:01PM

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Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **Kake**
Lab Sample ID: 1160430017
Lab Project ID: 1160430

Collection Date: 01/27/16 16:11
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Parameter	Result	Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
1,1,1,2-Tetrachloroethane	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
1,1,1-Trichloroethane	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
1,1,2,2-Tetrachloroethane	12.8	U	25.6	7.98	ug/Kg	1		02/02/16 19:10
1,1,2-Trichloroethane	10.3	U	20.5	6.35	ug/Kg	1		02/02/16 19:10
1,1-Dichloroethane	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
1,1-Dichloroethene	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
1,1-Dichloropropene	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
1,2,3-Trichlorobenzene	51.0	U	102	30.7	ug/Kg	1		02/02/16 19:10
1,2,3-Trichloropropane	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
1,2,4-Trichlorobenzene	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
1,2,4-Trimethylbenzene	51.0	U	102	30.7	ug/Kg	1		02/02/16 19:10
1,2-Dibromo-3-chloropropane	103	U	205	63.5	ug/Kg	1		02/02/16 19:10
1,2-Dibromoethane	10.3	U	20.5	6.35	ug/Kg	1		02/02/16 19:10
1,2-Dichlorobenzene	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
1,2-Dichloroethane	10.3	U	20.5	6.35	ug/Kg	1		02/02/16 19:10
1,2-Dichloropropane	10.3	U	20.5	6.35	ug/Kg	1		02/02/16 19:10
1,3,5-Trimethylbenzene	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
1,3-Dichlorobenzene	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
1,3-Dichloropropane	10.3	U	20.5	6.35	ug/Kg	1		02/02/16 19:10
1,4-Dichlorobenzene	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
2,2-Dichloropropane	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
2-Butanone (MEK)	256	U	512	160	ug/Kg	1		02/02/16 19:10
2-Chlorotoluene	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
2-Hexanone	256	U	512	160	ug/Kg	1		02/02/16 19:10
4-Chlorotoluene	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
4-Isopropyltoluene	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
4-Methyl-2-pentanone (MIBK)	256	U	512	160	ug/Kg	1		02/02/16 19:10
Benzene	12.8	U	25.6	7.98	ug/Kg	1		02/02/16 19:10
Bromobenzene	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Bromochloromethane	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Bromodichloromethane	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Bromoform	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Bromomethane	205	U	409	127	ug/Kg	1		02/02/16 19:10
Carbon disulfide	103	U	205	63.5	ug/Kg	1		02/02/16 19:10
Carbon tetrachloride	12.8	U	25.6	7.98	ug/Kg	1		02/02/16 19:10
Chlorobenzene	25.6	U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Chloroethane	205	U	409	127	ug/Kg	1		02/02/16 19:10

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Results of Trip Blank

Client Sample ID: **Trip Blank**
Client Project ID: **Kake**
Lab Sample ID: 1160430017
Lab Project ID: 1160430

Collection Date: 01/27/16 16:11
Received Date: 02/01/16 16:30
Matrix: Soil/Solid (dry weight)
Solids (%):
Location:

Results by Volatile GC/MS

Parameter	Result Qual	LOQ/CL	DL	Units	DF	Allowable Limits	Date Analyzed
Chloroform	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Chloromethane	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
cis-1,2-Dichloroethene	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
cis-1,3-Dichloropropene	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Dibromochloromethane	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Dibromomethane	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Dichlorodifluoromethane	51.0 U	102	30.7	ug/Kg	1		02/02/16 19:10
Ethylbenzene	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Freon-113	103 U	205	63.5	ug/Kg	1		02/02/16 19:10
Hexachlorobutadiene	51.0 U	102	30.7	ug/Kg	1		02/02/16 19:10
Isopropylbenzene (Cumene)	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Methylene chloride	103 U	205	63.5	ug/Kg	1		02/02/16 19:10
Methyl-t-butyl ether	103 U	205	63.5	ug/Kg	1		02/02/16 19:10
Naphthalene	51.0 U	102	30.7	ug/Kg	1		02/02/16 19:10
n-Butylbenzene	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
n-Propylbenzene	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
o-Xylene	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
P & M -Xylene	51.0 U	102	30.7	ug/Kg	1		02/02/16 19:10
sec-Butylbenzene	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Styrene	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
tert-Butylbenzene	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Tetrachloroethene	12.8 U	25.6	7.98	ug/Kg	1		02/02/16 19:10
Toluene	16.9 J	51.2	16.0	ug/Kg	1		02/02/16 19:10
trans-1,2-Dichloroethene	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
trans-1,3-Dichloropropene	25.6 U	51.2	16.0	ug/Kg	1		02/02/16 19:10
Trichloroethene	12.8 U	25.6	7.98	ug/Kg	1		02/02/16 19:10
Trichlorofluoromethane	51.0 U	102	30.7	ug/Kg	1		02/02/16 19:10
Vinyl acetate	103 U	205	63.5	ug/Kg	1		02/02/16 19:10
Vinyl chloride	10.3 U	20.5	6.35	ug/Kg	1		02/02/16 19:10
Xylenes (total)	77.0 U	154	46.7	ug/Kg	1		02/02/16 19:10
Surrogates							
1,2-Dichloroethane-D4 (surr)	106	71-136		%	1		02/02/16 19:10
4-Bromofluorobenzene (surr)	99.5	55-151		%	1		02/02/16 19:10
Toluene-d8 (surr)	114	85-116		%	1		02/02/16 19:10

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Results of Trip Blank

Client Sample ID: **Trip Blank**
 Client Project ID: **Kake**
 Lab Sample ID: 1160430017
 Lab Project ID: 1160430

Collection Date: 01/27/16 16:11
 Received Date: 02/01/16 16:30
 Matrix: Soil/Solid (dry weight)
 Solids (%):
 Location:

Results by Volatile GC/MS

Batch Information

Analytical Batch: VMS15561
 Analytical Method: SW8260B
 Analyst: KAS
 Analytical Date/Time: 02/02/16 19:10
 Container ID: 1160430017-A

Prep Batch: VXX28470
 Prep Method: SW5035A
 Prep Date/Time: 01/27/16 16:11
 Prep Initial Wt./Vol.: 24.428 g
 Prep Extract Vol: 25 mL



Method Blank

Blank ID: MB for HBN 1727725 [MXX/29494]

Blank Lab ID: 1311693

QC for Samples:

1160430008, 1160430009

Matrix: Soil/Solid (dry weight)

Results by SW6020A

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Lead	0.100U	0.200	0.0620	mg/Kg

Batch Information

Analytical Batch: MMS9243

Analytical Method: SW6020A

Instrument: Perkin Elmer Sciex ICP-MS P3

Analyst: SCL

Analytical Date/Time: 2/12/2016 12:38:44AM

Prep Batch: MXX29494

Prep Method: SW3050B

Prep Date/Time: 2/3/2016 10:04:34AM

Prep Initial Wt./Vol.: 1 g

Prep Extract Vol: 50 mL

Print Date: 02/16/2016 3:27:07PM

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Duplicate Sample Summary

Original Sample ID: 1311695
Duplicate Sample ID: 1311699
QC for Samples:
1160430008, 1160430009

Analysis Date: 02/12/2016 00:49
Matrix: Solid/Soil (Wet Weight)

Results by SW6020A

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Lead	2.62	2.55	mg/Kg	2.74	(< 20)

Batch Information

Analytical Batch: MMS9243
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: SCL

Prep Batch: MXX29494
Prep Method: SW3050B
Prep Date/Time: 2/3/2016 10:04:34AM

Print Date: 02/16/2016 3:27:09PM

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1160430 [MXX29494]

Blank Spike Lab ID: 1311694

Date Analyzed: 02/12/2016 00:40

Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430008, 1160430009

Results by SW6020A

Parameter	Blank Spike (mg/Kg)			CL
	Spike	Result	Rec (%)	
Lead	50	53.6	107	(84-118)

Batch Information

Analytical Batch: MMS9243

Analytical Method: SW6020A

Instrument: Perkin Elmer Sciex ICP-MS P3

Analyst: SCL

Prep Batch: MXX29494

Prep Method: SW3050B

Prep Date/Time: 02/03/2016 10:04

Spike Init Wt./Vol.: 50 mg/Kg Extract Vol: 50 mL

Dupe Init Wt./Vol.: Extract Vol:

Print Date: 02/16/2016 3:27:10PM

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Matrix Spike Summary

Original Sample ID: 1311695
MS Sample ID: 1311696 MS
MSD Sample ID: 1311697 MSD

Analysis Date: 02/12/2016 0:43
Analysis Date: 02/12/2016 0:45
Analysis Date: 02/12/2016 0:47
Matrix: Solid/Soil (Wet Weight)

QC for Samples: 1160430008, 1160430009

Results by SW6020A

Parameter	Sample	Matrix Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Lead	2.62	49.2	54.2	105	48.7	54.6	107	84-118	0.78	(< 20)

Batch Information

Analytical Batch: MMS9243
Analytical Method: SW6020A
Instrument: Perkin Elmer Sciex ICP-MS P3
Analyst: SCL
Analytical Date/Time: 2/12/2016 12:45:12AM

Prep Batch: MXX29494
Prep Method: Soils/Solids Digest for Metals by ICP-MS
Prep Date/Time: 2/3/2016 10:04:34AM
Prep Initial Wt./Vol.: 1.02g
Prep Extract Vol: 50.00mL

Print Date: 02/16/2016 3:27:11PM



Method Blank

Blank ID: MB for HBN 1727820 [SPT/9829]

Blank Lab ID: 1311791

QC for Samples:

1160430008, 1160430009

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT9829

Analytical Method: SM21 2540G

Instrument:

Analyst: MEV

Analytical Date/Time: 2/3/2016 4:55:00PM

Print Date: 02/16/2016 3:27:12PM

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Duplicate Sample Summary

Original Sample ID: 1160407001

Duplicate Sample ID: 1311792

QC for Samples:

1160430008, 1160430009

Analysis Date: 02/03/2016 16:55

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	62.8	64.5	%	2.60	(< 15)

Batch Information

Analytical Batch: SPT9829

Analytical Method: SM21 2540G

Instrument:

Analyst: MEV

Print Date: 02/16/2016 3:27:13PM

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Duplicate Sample Summary

Original Sample ID: 1160430009

Duplicate Sample ID: 1311793

QC for Samples:

1160430008, 1160430009

Analysis Date: 02/03/2016 16:55

Matrix: Soil/Solid (dry weight)

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	94.6	94.5	%	0.20	(< 15)

Batch Information

Analytical Batch: SPT9829

Analytical Method: SM21 2540G

Instrument:

Analyst: MEV

Print Date: 02/16/2016 3:27:13PM

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Method Blank

Blank ID: MB for HBN 1727917 [SPT/9831]
Blank Lab ID: 1311862

Matrix: Soil/Solid (dry weight)

QC for Samples:

1160430001, 1160430002, 1160430003, 1160430004, 1160430005, 1160430006, 1160430010, 1160430011, 1160430012,
1160430013, 1160430014, 1160430015, 1160430016

Results by SM21 2540G

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Total Solids	100			%

Batch Information

Analytical Batch: SPT9831
Analytical Method: SM21 2540G
Instrument:
Analyst: MEV
Analytical Date/Time: 2/4/2016 4:36:00PM

Print Date: 02/16/2016 3:27:16PM

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Duplicate Sample Summary

Original Sample ID: 1160430005

Duplicate Sample ID: 1311863

Analysis Date: 02/04/2016 16:36

Matrix: Soil/Solid (dry weight)

QC for Samples:

1160430001, 1160430002, 1160430003, 1160430004, 1160430005, 1160430006, 1160430010, 1160430011, 1160430012, 1160430013, 1160430014, 1160430015, 1160430016

Results by SM21 2540G

<u>NAME</u>	<u>Original</u>	<u>Duplicate</u>	<u>Units</u>	<u>RPD (%)</u>	<u>RPD CL</u>
Total Solids	90.1	90.2	%	0.20	(< 15)

Batch Information

Analytical Batch: SPT9831

Analytical Method: SM21 2540G

Instrument:

Analyst: MEV

Print Date: 02/16/2016 3:27:17PM

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Method Blank

Blank ID: MB for HBN 1727735 [VXX/28465]
Blank Lab ID: 1311726

Matrix: Soil/Solid (dry weight)

QC for Samples:

1160430001, 1160430002, 1160430003, 1160430004, 1160430005, 1160430006, 1160430008, 1160430009, 1160430010, 1160430011, 1160430012, 1160430013, 1160430014, 1160430015, 1160430016, 1160430017

Results by AK101

Parameter	Results	LOQ/CL	DL	Units
Benzene	0.00625U	0.0125	0.00400	mg/Kg
Ethylbenzene	0.0125U	0.0250	0.00780	mg/Kg
Gasoline Range Organics	0.809J	2.50	0.750	mg/Kg
o-Xylene	0.0125U	0.0250	0.00780	mg/Kg
P & M -Xylene	0.0250U	0.0500	0.0150	mg/Kg
Toluene	0.0125U	0.0250	0.00780	mg/Kg
Surrogates				
1,4-Difluorobenzene (surr)	85.5	72-119		%
4-Bromofluorobenzene (surr)	110	50-150		%

Batch Information

Analytical Batch: VFC12892
Analytical Method: AK101
Instrument: Agilent 7890 PID/FID
Analyst: S.P
Analytical Date/Time: 2/2/2016 1:59:00PM

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 2/2/2016 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 02/16/2016 3:27:18PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1160430 [VXX28465]

Blank Spike Lab ID: 1311727

Date Analyzed: 02/02/2016 14:18

Spike Duplicate ID: LCSD for HBN 1160430 [VXX28465]

Spike Duplicate Lab ID: 1311728

Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430001, 1160430002, 1160430003, 1160430004, 1160430005, 1160430006, 1160430008, 1160430009, 1160430010, 1160430011, 1160430012, 1160430013, 1160430014, 1160430015, 1160430016, 1160430017

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Gasoline Range Organics	12.5	11.6	93	12.5	11.0	88	(60-120)	5.60	(< 20)
Surrogates									
4-Bromofluorobenzene (surr)	1.25	109	109	1.25	110	110	(50-150)	0.70	

Batch Information

Analytical Batch: VFC12892

Analytical Method: AK101

Instrument: Agilent 7890 PID/FID

Analyst: S.P

Prep Batch: VXX28465

Prep Method: SW5035A

Prep Date/Time: 02/02/2016 08:00

Spike Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: 12.5 mg/Kg Extract Vol: 25 mL

Blank Spike Summary

Blank Spike ID: LCS for HBN 1160430 [VXX28465]

Blank Spike Lab ID: 1311729

Date Analyzed: 02/02/2016 14:55

Spike Duplicate ID: LCSD for HBN 1160430 [VXX28465]

Spike Duplicate Lab ID: 1311730

Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430001, 1160430002, 1160430003, 1160430004, 1160430005, 1160430006, 1160430008, 1160430009, 1160430010, 1160430011, 1160430012, 1160430013, 1160430014, 1160430015, 1160430016, 1160430017

Results by AK101

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)					
	Spike	Result	Rec (%)	Spike	Result	Rec (%)	CL	RPD (%)	RPD CL
Benzene	1.25	1.50	120	1.25	1.57	125	(75-125)	4.10	(< 20)
Ethylbenzene	1.25	1.44	115	1.25	1.50	120	(75-125)	4.60	(< 20)
o-Xylene	1.25	1.41	113	1.25	1.47	117	(75-125)	4.30	(< 20)
P & M -Xylene	2.50	2.88	115	2.50	3.02	121	(80-125)	4.90	(< 20)
Toluene	1.25	1.37	110	1.25	1.46	117	(70-125)	6.40	(< 20)

Surrogates

1,4-Difluorobenzene (surr)	1.25	93.6	94	1.25	92.1	92	(72-119)	1.60
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Batch Information

Analytical Batch: VFC12892

Analytical Method: AK101

Instrument: Agilent 7890 PID/FID

Analyst: S.P

Prep Batch: VXX28465

Prep Method: SW5035A

Prep Date/Time: 02/02/2016 08:00

Spike Init Wt./Vol.: 1.25 mg/Kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: 1.25 mg/Kg Extract Vol: 25 mL



Method Blank

Blank ID: MB for HBN 1727735 [VXX/28465]
Blank Lab ID: 1311726

Matrix: Soil/Solid (dry weight)

QC for Samples:

1160430001, 1160430002, 1160430003, 1160430004, 1160430005, 1160430006, 1160430008, 1160430009, 1160430010,
1160430011, 1160430012, 1160430013, 1160430014, 1160430015, 1160430016, 1160430017

Results by SW8021B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Benzene	6.25U	12.5	4.00	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
Toluene	12.5U	25.0	7.80	ug/Kg
Surrogates				
1,4-Difluorobenzene (surr)	85.5	72-119		%

Batch Information

Analytical Batch: VFC12892
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: S.P
Analytical Date/Time: 2/2/2016 1:59:00PM

Prep Batch: VXX28465
Prep Method: SW5035A
Prep Date/Time: 2/2/2016 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 02/16/2016 3:27:22PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1160430 [VXX28465]
 Blank Spike Lab ID: 1311729
 Date Analyzed: 02/02/2016 14:55

Spike Duplicate ID: LCSD for HBN 1160430 [VXX28465]
 Spike Duplicate Lab ID: 1311730
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430001, 1160430002, 1160430003, 1160430004, 1160430005, 1160430006, 1160430008, 1160430009, 1160430010, 1160430011, 1160430012, 1160430013, 1160430014, 1160430015, 1160430016, 1160430017

Results by SW8021B

Parameter	Blank Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	1250	1500	120	1250	1570	125	(75-125)	4.10	(< 20)
Ethylbenzene	1250	1440	115	1250	1500	120	(75-125)	4.60	(< 20)
o-Xylene	1250	1410	113	1250	1470	117	(75-125)	4.30	(< 20)
P & M -Xylene	2500	2880	115	2500	3020	121	(80-125)	4.90	(< 20)
Toluene	1250	1370	110	1250	1460	117	(70-125)	6.40	(< 20)

Surrogates

1,4-Difluorobenzene (surr)	1250	93.6	94	1250	92.1	92	(72-119)	1.60
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Batch Information

Analytical Batch: VFC12892
 Analytical Method: SW8021B
 Instrument: Agilent 7890 PID/FID
 Analyst: S.P

Prep Batch: VXX28465
 Prep Method: SW5035A
 Prep Date/Time: 02/02/2016 08:00
 Spike Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL
 Dupe Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL



Matrix Spike Summary

Original Sample ID: 1160430001
MS Sample ID: 1311731 MS
MSD Sample ID: 1311732 MSD

Analysis Date: 02/02/2016 17:01
Analysis Date: 02/02/2016 17:20
Analysis Date: 02/02/2016 17:39
Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430001, 1160430002, 1160430003, 1160430004, 1160430005, 1160430006, 1160430008,
1160430009, 1160430010, 1160430011, 1160430012, 1160430013, 1160430014, 1160430015,
1160430016, 1160430017

Results by SW8021B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	6.05U	787	936	119	787	951	121	75-125	1.60	(< 20)
Ethylbenzene	16.4J	787	894	111	787	909	113	75-125	1.70	(< 20)
o-Xylene	28.9	787	875	107	787	891	110	75-125	1.80	(< 20)
P & M -Xylene	52.8	1577	1799	111	1577	1834	113	80-125	1.90	(< 20)
Toluene	18.6J	787	867	108	787	881	110	70-125	1.70	(< 20)
Surrogates										
1,4-Difluorobenzene (surr)		787	697	89	787	692	88	72-119	0.86	

Batch Information

Analytical Batch: VFC12892
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: S.P
Analytical Date/Time: 2/2/2016 5:20:00PM

Prep Batch: VXX28465
Prep Method: AK101 Extraction (S)
Prep Date/Time: 2/2/2016 8:00:00AM
Prep Initial Wt./Vol.: 92.73g
Prep Extract Vol: 25.00mL

Print Date: 02/16/2016 3:27:26PM

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Method Blank

Blank ID: MB for HBN 1727834 [VXX/28470]
Blank Lab ID: 1311822

Matrix: Soil/Solid (dry weight)

QC for Samples:

1160430004, 1160430005, 1160430008, 1160430009, 1160430010, 1160430017

Results by SW8260B

Parameter	Results	LOQ/CL	DL	Units
1,1,1,2-Tetrachloroethane	12.5U	25.0	7.80	ug/Kg
1,1,1-Trichloroethane	12.5U	25.0	7.80	ug/Kg
1,1,2,2-Tetrachloroethane	6.25U	12.5	3.90	ug/Kg
1,1,2-Trichloroethane	5.00U	10.0	3.10	ug/Kg
1,1-Dichloroethane	12.5U	25.0	7.80	ug/Kg
1,1-Dichloroethene	12.5U	25.0	7.80	ug/Kg
1,1-Dichloropropene	12.5U	25.0	7.80	ug/Kg
1,2,3-Trichlorobenzene	25.0U	50.0	15.0	ug/Kg
1,2,3-Trichloropropane	12.5U	25.0	7.80	ug/Kg
1,2,4-Trichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2,4-Trimethylbenzene	25.0U	50.0	15.0	ug/Kg
1,2-Dibromo-3-chloropropane	50.0U	100	31.0	ug/Kg
1,2-Dibromoethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,2-Dichloroethane	5.00U	10.0	3.10	ug/Kg
1,2-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,3,5-Trimethylbenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
1,3-Dichloropropane	5.00U	10.0	3.10	ug/Kg
1,4-Dichlorobenzene	12.5U	25.0	7.80	ug/Kg
2,2-Dichloropropane	12.5U	25.0	7.80	ug/Kg
2-Butanone (MEK)	125U	250	78.0	ug/Kg
2-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
2-Hexanone	125U	250	78.0	ug/Kg
4-Chlorotoluene	12.5U	25.0	7.80	ug/Kg
4-Isopropyltoluene	12.5U	25.0	7.80	ug/Kg
4-Methyl-2-pentanone (MIBK)	125U	250	78.0	ug/Kg
Benzene	6.25U	12.5	3.90	ug/Kg
Bromobenzene	12.5U	25.0	7.80	ug/Kg
Bromochloromethane	12.5U	25.0	7.80	ug/Kg
Bromodichloromethane	12.5U	25.0	7.80	ug/Kg
Bromoform	12.5U	25.0	7.80	ug/Kg
Bromomethane	100U	200	62.0	ug/Kg
Carbon disulfide	50.0U	100	31.0	ug/Kg
Carbon tetrachloride	6.25U	12.5	3.90	ug/Kg
Chlorobenzene	12.5U	25.0	7.80	ug/Kg
Chloroethane	100U	200	62.0	ug/Kg
Chloroform	12.5U	25.0	7.80	ug/Kg

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Method Blank

Blank ID: MB for HBN 1727834 [VXX/28470]
Blank Lab ID: 1311822

Matrix: Soil/Solid (dry weight)

QC for Samples:

1160430004, 1160430005, 1160430008, 1160430009, 1160430010, 1160430017

Results by SW8260B

Parameter	Results	LOQ/CL	DL	Units
Chloromethane	12.5U	25.0	7.80	ug/Kg
cis-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
cis-1,3-Dichloropropene	12.5U	25.0	7.80	ug/Kg
Dibromochloromethane	12.5U	25.0	7.80	ug/Kg
Dibromomethane	12.5U	25.0	7.80	ug/Kg
Dichlorodifluoromethane	25.0U	50.0	15.0	ug/Kg
Ethylbenzene	12.5U	25.0	7.80	ug/Kg
Freon-113	50.0U	100	31.0	ug/Kg
Hexachlorobutadiene	25.0U	50.0	15.0	ug/Kg
Isopropylbenzene (Cumene)	12.5U	25.0	7.80	ug/Kg
Methylene chloride	50.0U	100	31.0	ug/Kg
Methyl-t-butyl ether	50.0U	100	31.0	ug/Kg
Naphthalene	25.0U	50.0	15.0	ug/Kg
n-Butylbenzene	12.5U	25.0	7.80	ug/Kg
n-Propylbenzene	12.5U	25.0	7.80	ug/Kg
o-Xylene	12.5U	25.0	7.80	ug/Kg
P & M -Xylene	25.0U	50.0	15.0	ug/Kg
sec-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Styrene	12.5U	25.0	7.80	ug/Kg
tert-Butylbenzene	12.5U	25.0	7.80	ug/Kg
Tetrachloroethene	6.25U	12.5	3.90	ug/Kg
Toluene	8.25J	25.0	7.80	ug/Kg
trans-1,2-Dichloroethene	12.5U	25.0	7.80	ug/Kg
trans-1,3-Dichloropropene	12.5U	25.0	7.80	ug/Kg
Trichloroethene	6.25U	12.5	3.90	ug/Kg
Trichlorofluoromethane	25.0U	50.0	15.0	ug/Kg
Vinyl acetate	50.0U	100	31.0	ug/Kg
Vinyl chloride	5.00U	10.0	3.10	ug/Kg
Xylenes (total)	37.5U	75.0	22.8	ug/Kg
Surrogates				
1,2-Dichloroethane-D4 (surr)	108	71-136		%
4-Bromofluorobenzene (surr)	106	55-151		%
Toluene-d8 (surr)	119*	85-116		%

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Method Blank

Blank ID: MB for HBN 1727834 [VXX/28470]
Blank Lab ID: 1311822

Matrix: Soil/Solid (dry weight)

QC for Samples:

1160430004, 1160430005, 1160430008, 1160430009, 1160430010, 1160430017

Results by SW8260B

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
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Batch Information

Analytical Batch: VMS15561
Analytical Method: SW8260B
Instrument: VQA 7890/5975 GC/MS
Analyst: KAS

Analytical Date/Time: 2/2/2016 10:41:00AM

Prep Batch: VXX28470
Prep Method: SW5035A
Prep Date/Time: 2/2/2016 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 02/16/2016 3:27:27PM

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1160430 [VXX28470]

Blank Spike Lab ID: 1311823

Date Analyzed: 02/02/2016 13:10

Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430004, 1160430005, 1160430008, 1160430009, 1160430010, 1160430017

Results by SW8260B

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
1,1,1,2-Tetrachloroethane	750	746	99	(78-125)
1,1,1-Trichloroethane	750	818	109	(73-130)
1,1,2,2-Tetrachloroethane	750	719	96	(70-124)
1,1,2-Trichloroethane	750	801	107	(78-121)
1,1-Dichloroethane	750	802	107	(76-125)
1,1-Dichloroethene	750	809	108	(70-131)
1,1-Dichloropropene	750	770	103	(76-125)
1,2,3-Trichlorobenzene	750	814	109	(66-130)
1,2,3-Trichloropropane	750	718	96	(73-125)
1,2,4-Trichlorobenzene	750	876	117	(67-129)
1,2,4-Trimethylbenzene	750	723	96	(75-123)
1,2-Dibromo-3-chloropropane	750	645	86	(61-132)
1,2-Dibromoethane	750	745	99	(78-122)
1,2-Dichlorobenzene	750	805	107	(78-121)
1,2-Dichloroethane	750	817	109	(73-128)
1,2-Dichloropropane	750	751	100	(76-123)
1,3,5-Trimethylbenzene	750	722	96	(73-124)
1,3-Dichlorobenzene	750	833	111	(77-121)
1,3-Dichloropropane	750	792	106	(77-121)
1,4-Dichlorobenzene	750	841	112	(75-120)
2,2-Dichloropropane	750	824	110	(67-133)
2-Butanone (MEK)	2250	1860	83	(51-148)
2-Chlorotoluene	750	684	91	(75-122)
2-Hexanone	2250	2250	100	(53-145)
4-Chlorotoluene	750	762	102	(72-124)
4-Isopropyltoluene	750	774	103	(73-127)
4-Methyl-2-pentanone (MIBK)	2250	2120	94	(65-135)
Benzene	750	756	101	(77-121)
Bromobenzene	750	814	109	(78-121)
Bromochloromethane	750	870	116	(78-125)
Bromodichloromethane	750	858	114	(75-127)
Bromoform	750	755	101	(67-132)
Bromomethane	750	665	89	(53-143)
Carbon disulfide	1130	1250	111	(63-132)

Print Date: 02/16/2016 3:27:28PM



Blank Spike Summary

Blank Spike ID: LCS for HBN 1160430 [VXX28470]

Blank Spike Lab ID: 1311823

Date Analyzed: 02/02/2016 13:10

Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430004, 1160430005, 1160430008, 1160430009, 1160430010, 1160430017

Results by SW8260B

Parameter	Blank Spike (ug/Kg)			CL
	Spike	Result	Rec (%)	
Carbon tetrachloride	750	839	112	(70-135)
Chlorobenzene	750	851	113	(79-120)
Chloroethane	750	817	109	(59-139)
Chloroform	750	783	104	(78-123)
Chloromethane	750	941	125	(50-136)
cis-1,2-Dichloroethene	750	859	115	(77-123)
cis-1,3-Dichloropropene	750	739	99	(74-126)
Dibromochloromethane	750	761	101	(74-126)
Dibromomethane	750	770	103	(78-125)
Dichlorodifluoromethane	750	954	127	(29-149)
Ethylbenzene	750	744	99	(76-122)
Freon-113	1130	1220	108	(66-136)
Hexachlorobutadiene	750	883	118	(61-135)
Isopropylbenzene (Cumene)	750	785	105	(68-134)
Methylene chloride	750	822	110	(70-128)
Methyl-t-butyl ether	1130	1250	111	(73-125)
Naphthalene	750	776	103	(62-129)
n-Butylbenzene	750	755	101	(70-128)
n-Propylbenzene	750	703	94	(73-125)
o-Xylene	750	847	113	(77-123)
P & M -Xylene	1500	1490	99	(77-124)
sec-Butylbenzene	750	759	101	(73-126)
Styrene	750	789	105	(76-124)
tert-Butylbenzene	750	748	100	(73-125)
Tetrachloroethene	750	804	107	(73-128)
Toluene	750	830	111	(77-121)
trans-1,2-Dichloroethene	750	931	124	(74-125)
trans-1,3-Dichloropropene	750	684	91	(71-130)
Trichloroethene	750	787	105	(77-123)
Trichlorofluoromethane	750	712	95	(62-140)
Vinyl acetate	750	772	103	(50-151)
Vinyl chloride	750	914	122	(56-135)
Xylenes (total)	2250	2330	104	(78-124)

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Blank Spike Summary

Blank Spike ID: LCS for HBN 1160430 [VXX28470]

Blank Spike Lab ID: 1311823

Date Analyzed: 02/02/2016 13:10

Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430004, 1160430005, 1160430008, 1160430009, 1160430010, 1160430017

Results by SW8260B

<u>Parameter</u>	Blank Spike (%)			<u>CL</u>
	<u>Spike</u>	<u>Result</u>	<u>Rec (%)</u>	
Surrogates				
1,2-Dichloroethane-D4 (surr)	750	102	102	(71-136)
4-Bromofluorobenzene (surr)	750	97.7	98	(55-151)
Toluene-d8 (surr)	750	111	111	(85-116)

Batch Information

Analytical Batch: VMS15561

Analytical Method: SW8260B

Instrument: VQA 7890/5975 GC/MS

Analyst: KAS

Prep Batch: VXX28470

Prep Method: SW5035A

Prep Date/Time: 02/02/2016 08:00

Spike Init Wt./Vol.: 750 ug/Kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: Extract Vol:



Matrix Spike Summary

Original Sample ID: 1160430004
MS Sample ID: 1312072 MS
MSD Sample ID: 1312073 MSD

Analysis Date: 02/02/2016 19:42
Analysis Date: 02/02/2016 18:06
Analysis Date: 02/02/2016 18:22
Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430004, 1160430005, 1160430008, 1160430009, 1160430010, 1160430017

Results by SW8260B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
1,1,1,2-Tetrachloroethane	10.9U	470	488	104	470	498	106	78-125	2.10	(< 20)
1,1,1-Trichloroethane	10.9U	470	525	112	470	529	113	73-130	0.83	(< 20)
1,1,2,2-Tetrachloroethane	5.50U	470	467	100	470	499	106	70-124	6.50	(< 20)
1,1,2-Trichloroethane	4.38U	470	511	109	470	521	111	78-121	1.90	(< 20)
1,1-Dichloroethane	10.9U	470	510	109	470	512	109	76-125	0.40	(< 20)
1,1-Dichloroethene	10.9U	470	506	108	470	512	109	70-131	1.30	(< 20)
1,1-Dichloropropene	10.9U	470	485	103	470	495	106	76-125	2.10	(< 20)
1,2,3-Trichlorobenzene	21.9U	470	580	124	470	686	146 *	66-130	16.70	(< 20)
1,2,3-Trichloropropane	10.9U	470	473	101	470	515	110	73-125	8.30	(< 20)
1,2,4-Trichlorobenzene	10.9U	470	596	127	470	643	137 *	67-129	7.70	(< 20)
1,2,4-Trimethylbenzene	21.9U	470	465	99	470	470	100	75-123	0.97	(< 20)
1,2-Dibromo-3-chloropropane	43.9U	470	431	92	470	502	107	61-132	15.20	(< 20)
1,2-Dibromoethane	4.38U	470	485	104	470	485	104	78-122	0.03	(< 20)
1,2-Dichlorobenzene	10.9U	470	526	112	470	543	116	78-121	3.20	(< 20)
1,2-Dichloroethane	4.38U	470	521	111	470	518	110	73-128	0.81	(< 20)
1,2-Dichloropropane	4.38U	470	480	102	470	481	103	76-123	0.39	(< 20)
1,3,5-Trimethylbenzene	10.9U	470	470	100	470	462	98	73-124	1.60	(< 20)
1,3-Dichlorobenzene	10.9U	470	542	116	470	553	118	77-121	2.00	(< 20)
1,3-Dichloropropane	4.38U	470	506	108	470	511	109	77-121	1.00	(< 20)
1,4-Dichlorobenzene	10.9U	470	544	116	470	552	118	75-120	1.30	(< 20)
2,2-Dichloropropane	10.9U	470	528	113	470	530	113	67-133	0.44	(< 20)
2-Butanone (MEK)	110U	1408	1194	85	1408	1363	97	51-148	13.10	(< 20)
2-Chlorotoluene	10.9U	470	445	95	470	450	96	75-122	1.30	(< 20)
2-Hexanone	110U	1408	1453	103	1408	1565	111	53-145	7.50	(< 20)
4-Chlorotoluene	10.9U	470	485	104	470	510	109	72-124	4.80	(< 20)
4-Isopropyltoluene	10.9U	470	500	107	470	480	102	73-127	4.30	(< 20)
4-Methyl-2-pentanone (MIBK)	110U	1408	1385	99	1408	1498	106	65-135	7.30	(< 20)
Benzene	5.50U	470	483	103	470	492	105	77-121	1.80	(< 20)
Bromobenzene	10.9U	470	521	111	470	551	117	78-121	5.50	(< 20)
Bromochloromethane	10.9U	470	578	123	470	555	118	78-125	3.90	(< 20)
Bromodichloromethane	10.9U	470	552	118	470	547	117	75-127	0.83	(< 20)
Bromoform	10.9U	470	500	107	470	489	104	67-132	2.30	(< 20)
Bromomethane	87.5U	470	405	86	470	401	85	53-143	1.10	(< 20)
Carbon disulfide	43.9U	704	775	110	704	780	111	63-132	0.74	(< 20)
Carbon tetrachloride	5.50U	470	543	116	470	541	115	70-135	0.49	(< 20)
Chlorobenzene	10.9U	470	553	118	470	563	120	79-120	1.90	(< 20)
Chloroethane	87.5U	470	499	106	470	489	104	59-139	2.10	(< 20)

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**Matrix Spike Summary**

Original Sample ID: 1160430004
 MS Sample ID: 1312072 MS
 MSD Sample ID: 1312073 MSD

Analysis Date: 02/02/2016 19:42
 Analysis Date: 02/02/2016 18:06
 Analysis Date: 02/02/2016 18:22
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430004, 1160430005, 1160430008, 1160430009, 1160430010, 1160430017

Results by SW8260B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Chloroform	10.9U	470	507	108	470	503	107	78-123	0.65	(< 20)
Chloromethane	10.9U	470	575	123	470	546	116	50-136	5.30	(< 20)
cis-1,2-Dichloroethene	10.9U	470	556	119	470	557	119	77-123	0.14	(< 20)
cis-1,3-Dichloropropene	10.9U	470	477	102	470	471	100	74-126	1.30	(< 20)
Dibromochloromethane	10.9U	470	494	105	470	489	104	74-126	1.10	(< 20)
Dibromomethane	10.9U	470	495	106	470	498	106	78-125	0.41	(< 20)
Dichlorodifluoromethane	21.9U	470	552	118	470	539	115	29-149	2.20	(< 20)
Ethylbenzene	10.9U	470	492	105	470	489	104	76-122	0.64	(< 20)
Freon-113	43.9U	704	743	106	704	773	110	66-136	3.90	(< 20)
Hexachlorobutadiene	21.9U	470	586	125	470	529	113	61-135	10.20	(< 20)
Isopropylbenzene (Cumene)	10.9U	470	509	108	470	491	105	68-134	3.50	(< 20)
Methylene chloride	43.9U	470	528	113	470	530	113	70-128	0.35	(< 20)
Methyl-t-butyl ether	43.9U	704	798	113	704	818	116	73-125	2.30	(< 20)
Naphthalene	25.7J	470	575	117	470	685	141 *	62-129	17.30	(< 20)
n-Butylbenzene	10.9U	470	498	106	470	456	97	70-128	8.80	(< 20)
n-Propylbenzene	10.9U	470	458	98	470	457	97	73-125	0.34	(< 20)
o-Xylene	10.9U	470	538	115	470	544	116	77-123	1.00	(< 20)
P & M -Xylene	21.9U	938	976	104	938	956	102	77-124	2.10	(< 20)
sec-Butylbenzene	10.9U	470	489	104	470	475	101	73-126	2.90	(< 20)
Styrene	10.9U	470	511	109	470	503	107	76-124	1.60	(< 20)
tert-Butylbenzene	10.9U	470	488	104	470	482	103	73-125	1.20	(< 20)
Tetrachloroethene	5.50U	470	515	110	470	518	110	73-128	0.48	(< 20)
Toluene	12.5J	470	529	110	470	544	113	77-121	2.70	(< 20)
trans-1,2-Dichloroethene	10.9U	470	597	127 *	470	609	130 *	74-125	2.10	(< 20)
trans-1,3-Dichloropropene	10.9U	470	439	94	470	456	97	71-130	4.00	(< 20)
Trichloroethene	5.50U	470	502	107	470	508	108	77-123	1.10	(< 20)
Trichlorofluoromethane	21.9U	470	422	90	470	459	98	62-140	8.70	(< 20)
Vinyl acetate	43.9U	470	490	104	470	495	106	50-151	1.10	(< 20)
Vinyl chloride	4.38U	470	547	117	470	538	115	56-135	1.70	(< 20)
Xylenes (total)	32.9U	1408	1520	108	1408	1498	107	78-124	1.00	(< 20)
Surrogates										
1,2-Dichloroethane-D4 (surr)		470	476	102	470	475	101	71-136	0.30	
4-Bromofluorobenzene (surr)		1250	843	67	1250	895	72	55-151	6.00	
Toluene-d8 (surr)		470	520	111	470	536	114	85-116	2.90	

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Matrix Spike Summary

Original Sample ID: 1160430004
MS Sample ID: 1312072 MS
MSD Sample ID: 1312073 MSD

Analysis Date:
Analysis Date: 02/02/2016 18:06
Analysis Date: 02/02/2016 18:22
Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430004, 1160430005, 1160430008, 1160430009, 1160430010, 1160430017

Results by SW8260B

Parameter	Matrix Spike (%)				Spike Duplicate (%)				CL	RPD (%)	RPD CL
	Sample	Spike	Result	Rec (%)	Spike	Result	Rec (%)				

Batch Information

Analytical Batch: VMS15561
Analytical Method: SW8260B
Instrument: VQA 7890/5975 GC/MS
Analyst: KAS
Analytical Date/Time: 2/2/2016 6:06:00PM

Prep Batch: VXX28470
Prep Method: Vol. Extraction SW8260 Field Extracted L
Prep Date/Time: 2/2/2016 8:00:00AM
Prep Initial Wt./Vol.: 90.04g
Prep Extract Vol: 25.00mL

Print Date: 02/16/2016 3:27:30PM

Method Blank

Blank ID: MB for HBN 1728319 [VXX/28481]
Blank Lab ID: 1312224

Matrix: Soil/Solid (dry weight)

QC for Samples:
1160430002, 1160430003, 1160430013

Results by SW8021B

Parameter	Results	LOQ/CL	DL	Units
Benzene	6.25U	12.5	4.00	ug/Kg
Surrogates				
1,4-Difluorobenzene (surr)	81.7	72:119		%

Batch Information

Analytical Batch: VFC12895
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: S.P
Analytical Date/Time: 2/3/2016 11:42:00AM

Prep Batch: VXX28481
Prep Method: SW5035A
Prep Date/Time: 2/3/2016 8:00:00AM
Prep Initial Wt./Vol.: 50 g
Prep Extract Vol: 25 mL

Print Date: 02/16/2016 3:27:30PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1160430 [VXX28481]

Blank Spike Lab ID: 1312227

Date Analyzed: 02/03/2016 14:33

Spike Duplicate ID: LCSD for HBN 1160430

[VXX28481]

Spike Duplicate Lab ID: 1312228

Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430002, 1160430003, 1160430013

Results by SW8021B

Parameter	Blank Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	1250	1550	124	1250	1470	117	(75-125)	5.40	(< 20)
Surrogates									
1,4-Difluorobenzene (surr)	1250	93.2	93	1250	92.4	92	(72-119)	0.78	

Batch Information

Analytical Batch: VFC12895

Analytical Method: SW8021B

Instrument: Agilent 7890 PID/FID

Analyst: S.P

Prep Batch: VXX28481

Prep Method: SW5035A

Prep Date/Time: 02/03/2016 08:00

Spike Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL

Dupe Init Wt./Vol.: 1250 ug/Kg Extract Vol: 25 mL

Print Date: 02/16/2016 3:27:32PM



Matrix Spike Summary

Original Sample ID: 1312335
MS Sample ID: 1312229 MS
MSD Sample ID: 1312230 MSD

Analysis Date: 02/03/2016 15:25
Analysis Date: 02/03/2016 15:44
Analysis Date: 02/03/2016 16:03
Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430002, 1160430003, 1160430013

Results by SW8021B

Parameter	Sample	Matrix Spike (ug/Kg)			Spike Duplicate (ug/Kg)			CL	RPD (%)	RPD CL
		Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Benzene	9.35U	1870	2300	123	1870	2290	122	75-125	0.42	(< 20)
Surrogates										
1,4-Difluorobenzene (surr)		1870	1760	94	1870	1760	94	72-119	0.15	

Batch Information

Analytical Batch: VFC12895
Analytical Method: SW8021B
Instrument: Agilent 7890 PID/FID
Analyst: S.P
Analytical Date/Time: 2/3/2016 3:44:00PM

Prep Batch: VXX28481
Prep Method: AK101 Extraction (S)
Prep Date/Time: 2/3/2016 8:00:00AM
Prep Initial Wt./Vol.: 33.42g
Prep Extract Vol: 25.00mL

Print Date: 02/16/2016 3:27:33PM

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Method Blank

Blank ID: MB for HBN 1727922 [XXX/34882]
Blank Lab ID: 1311870

Matrix: Soil/Solid (dry weight)

QC for Samples:
1160430001, 1160430002

Results by AK102

<u>Parameter</u>	<u>Results</u>	<u>LOQ/CL</u>	<u>DL</u>	<u>Units</u>
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	85.9	60-120		%

Batch Information

Analytical Batch: XFC12271
Analytical Method: AK102
Instrument: HP 7890A FID SV E F
Analyst: CJSW
Analytical Date/Time: 2/6/2016 3:00:00PM

Prep Batch: XXX34882
Prep Method: SW3550C
Prep Date/Time: 2/5/2016 12:16:55PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 02/16/2016 3:27:34PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1160430 [XXX34882]

Blank Spike Lab ID: 1311871

Date Analyzed: 02/06/2016 15:21

Spike Duplicate ID: LCSD for HBN 1160430

[XXX34882]

Spike Duplicate Lab ID: 1311872

Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430001, 1160430002

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	167	151	91	167	152	91	(75-125)	0.64	(< 20)
Surrogates									
5a Androstane (surr)	3.33	95.2	95	3.33	96.7	97	(60-120)	1.60	

Batch Information

Analytical Batch: XFC12271

Analytical Method: AK102

Instrument: HP 7890A FID SV E F

Analyst: CJSW

Prep Batch: XXX34882

Prep Method: SW3550C

Prep Date/Time: 02/05/2016 12:16

Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Print Date: 02/16/2016 3:27:36PM

Method Blank

Blank ID: MB for HBN 1727922 [XXX/34882]
Blank Lab ID: 1311870

Matrix: Soil/Solid (dry weight)

QC for Samples:
1160430001, 1160430002

Results by AK103

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
n-Triacontane-d62 (surr)	101	60-120		%

Batch Information

Analytical Batch: XFC12271
Analytical Method: AK103
Instrument: HP 7890A FID SV E F
Analyst: CJSW
Analytical Date/Time: 2/6/2016 3:00:00PM

Prep Batch: XXX34882
Prep Method: SW3550C
Prep Date/Time: 2/5/2016 12:16:55PM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 02/16/2016 3:27:38PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1160430 [XXX34882]
 Blank Spike Lab ID: 1311871
 Date Analyzed: 02/06/2016 15:21

Spike Duplicate ID: LCSD for HBN 1160430
 [XXX34882]
 Spike Duplicate Lab ID: 1311872
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430001, 1160430002

Results by AK103

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	167	167	100	167	168	101	(60-120)	0.69	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	3.33	101	101	3.33	103	103	(60-120)	1.20	

Batch Information

Analytical Batch: XFC12271
 Analytical Method: AK103
 Instrument: HP 7890A FID SV E F
 Analyst: CJSW

Prep Batch: XXX34882
 Prep Method: SW3550C
 Prep Date/Time: 02/05/2016 12:16
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Print Date: 02/16/2016 3:27:39PM

Method Blank

Blank ID: MB for HBN 1728318 [XXX/34889]
Blank Lab ID: 1312221

Matrix: Soil/Solid (dry weight)

QC for Samples:

1160430003, 1160430004, 1160430005, 1160430006, 1160430008, 1160430009, 1160430010, 1160430011, 1160430012, 1160430013, 1160430014, 1160430015, 1160430016

Results by AK102

Parameter	Results	LOQ/CL	DL	Units
Diesel Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
5a Androstane (surr)	95.3	60-120		%

Batch Information

Analytical Batch: XFC12277
Analytical Method: AK102
Instrument: HP 7890A FID SV E F
Analyst: S.G
Analytical Date/Time: 2/15/2016 6:38:00PM

Prep Batch: XXX34889
Prep Method: SW3550C
Prep Date/Time: 2/9/2016 9:35:04AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 02/16/2016 3:27:41PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1160430 [XXX34889]
 Blank Spike Lab ID: 1312222
 Date Analyzed: 02/15/2016 18:59

Spike Duplicate ID: LCSD for HBN 1160430
 [XXX34889]
 Spike Duplicate Lab ID: 1312223
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430003, 1160430004, 1160430005, 1160430006, 1160430008, 1160430009, 1160430010,
 1160430011, 1160430012, 1160430013, 1160430014, 1160430015, 1160430016

Results by AK102

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Diesel Range Organics	167	165	99	167	171	103	(75-125)	3.70	(< 20)
Surrogates									
5a Androstane (surr)	3.33	98.3	98	3.33	101	101	(60-120)	2.60	

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK102
 Instrument: HP 7890A FID SV E F
 Analyst: S.G

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/2016 09:35
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Print Date: 02/16/2016 3:27:43PM

Method Blank

Blank ID: MB for HBN 1728318 [XXX/34889]
Blank Lab ID: 1312221

Matrix: Soil/Solid (dry weight)

QC for Samples:

1160430003, 1160430004, 1160430005, 1160430006, 1160430008, 1160430009, 1160430010, 1160430011, 1160430012, 1160430013, 1160430014, 1160430015, 1160430016

Results by AK103

Parameter	Results	LOQ/CL	DL	Units
Residual Range Organics	10.0U	20.0	6.20	mg/Kg
Surrogates				
n-Triacontane-d62 (surr)	113	60-120		%

Batch Information

Analytical Batch: XFC12277
Analytical Method: AK103
Instrument: HP 7890A FID SV E F
Analyst: S.G
Analytical Date/Time: 2/15/2016 6:38:00PM

Prep Batch: XXX34889
Prep Method: SW3550C
Prep Date/Time: 2/9/2016 9:35:04AM
Prep Initial Wt./Vol.: 30 g
Prep Extract Vol: 1 mL

Print Date: 02/16/2016 3:27:45PM

Blank Spike Summary

Blank Spike ID: LCS for HBN 1160430 [XXX34889]
 Blank Spike Lab ID: 1312222
 Date Analyzed: 02/15/2016 18:59

Spike Duplicate ID: LCSD for HBN 1160430
 [XXX34889]
 Spike Duplicate Lab ID: 1312223
 Matrix: Soil/Solid (dry weight)

QC for Samples: 1160430003, 1160430004, 1160430005, 1160430006, 1160430008, 1160430009, 1160430010,
 1160430011, 1160430012, 1160430013, 1160430014, 1160430015, 1160430016

Results by AK103

Parameter	Blank Spike (mg/Kg)			Spike Duplicate (mg/Kg)			CL	RPD (%)	RPD CL
	Spike	Result	Rec (%)	Spike	Result	Rec (%)			
Residual Range Organics	167	178	107	167	185	111	(60-120)	3.80	(< 20)
Surrogates									
n-Triacontane-d62 (surr)	3.33	112	112	3.33	118	118	(60-120)	5.40	

Batch Information

Analytical Batch: XFC12277
 Analytical Method: AK103
 Instrument: HP 7890A FID SV E F
 Analyst: S.G

Prep Batch: XXX34889
 Prep Method: SW3550C
 Prep Date/Time: 02/09/2016 09:35
 Spike Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL
 Dupe Init Wt./Vol.: 167 mg/Kg Extract Vol: 1 mL

Print Date: 02/16/2016 3:27:46PM

Pennick, Victoria (Anchorage)

From: Jayne Martin [jayne@bgesinc.com]
Sent: Tuesday, February 02, 2016 8:58 AM
To: Pennick, Victoria (Anchorage)
Cc: 'William Schmaltz'
Subject: RE: Kake metals...

Good Morning Tori,

For the two samples identified for metals analysis, please analyze these two samples for total lead by Method 6020.

Please contact us if you have any additional questions.

Thanks,

Jayne Martin
Senior Environmental Scientist

BGES, Inc.
1042 E. 6th Avenue
Anchorage, Alaska 99501
(907) 644-2900 (office)
(907) 644-2901 (fax)
(907) 952-8381 (cell)

From: Pennick, Victoria (Anchorage) [<mailto:Victoria.Pennick@sgs.com>]
Sent: Tuesday, February 02, 2016 8:44 AM
To: Jayne Martin
Subject: Kake metals...

Hi there,

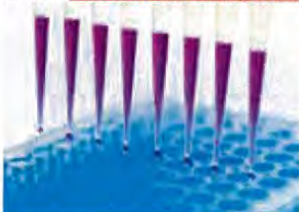
I sent a message to William, but meant to CC you just in case he's out of the office today.

We received the Kake samples yesterday, but the COC just has "metals" listed. Are we doing RCRA 8? Or a custom list? We have everything logged in but the metals.

Kindest regards,
Tori

Tori (Victoria) Pennick
Environment, Health & Safety
Project Management

Direct: +1 907 550 3208
Office: +1 907 562 2343
E-mail: victoria.pennick@sgs.com



SGS ACQUIRES THE ASSETS OF ACCUTEST LABORATORIES

JANUARY 04, 2016

SGS is pleased to announce the acquisition of the assets of Accutest Laboratories. This combination will operate under the trade name SGS Accutest and create one of the leading environmental testing laboratory businesses in the USA. [Read more](#)





1160430





1160430



1 1 6 0 4 3 0

SAMPLE RECEIPT FORM

Review Criteria:	Yes	N/A	No	Comments/Action Taken:
Were custody seals intact? Note # & location, if applicable. COC accompanied samples?	☐	☒	☐	<i>Exemption permitted if sampler hand carries/delivers. Custody seals broken, but client delivered cooler</i>
Temperature blank compliant* (i.e., 0-6°C after CF)? If >6°C, were samples collected <8 hours ago? If <0°C, were all sample containers ice free?	☐	☐	☒	<i>Exemption permitted if chilled & collected <8 hrs ago. Proceed per client</i>
Cooler ID: 1 @ 7.3 w/ Therm.ID: D7 Cooler ID: @ w/ Therm.ID: Cooler ID: @ w/ Therm.ID: Cooler ID: @ w/ Therm.ID: Cooler ID: @ w/ Therm.ID: If samples are received <u>without</u> a temperature blank, the "cooler temperature" will be documented in lieu of the temperature blank & "COOLER TEMP" will be noted to the right. In cases where neither a temp blank nor cooler temp can be obtained, note "ambient" or "chilled."				<i>Note: Identify containers received at non-compliant temperature. Use form FS-0029 if more space is needed.</i>
Delivery method (specify all that apply): ☒ Client (hand carried) ☐ USPS ☐ Lynden ☐ AK Air ☐ Alert Courier ☐ UPS ☐ FedEx ☐ RAVN ☐ C&D Delivery ☐ Carlie ☐ Pen Air ☐ Warp Speed ☐ Other: → For WO# with airbills, was the WO# & airbill info recorded in the Front Counter eLog?	☐	☒	☐	
	Yes	N/A	No	
Were samples received within hold time?	☒	☐	☐	<i>Note: Refer to form F-083 "Sample Guide" for hold times. Note: If times differ <1hr, record details and login per COC.</i>
Do samples match COC * (i.e., sample IDs, dates/times collected)?	☒	☐	☐	
Were analyses requested unambiguous?	☒	☐	☐	
Were samples in good condition (no leaks/cracks/breakage)? Packing material used (specify all that apply): ☒ Bubble Wrap ☐ Separate plastic bags ☐ Vermiculite ☐ Other:	☒	☐	☐	
Were proper containers (type/mass/volume/preservative*) used? Were Trip Blanks (i.e., VOAs, LL-Hg) in cooler with samples? Were all VOA vials free of headspace (i.e., bubbles ≤6 mm)? Were all soil VOAs field extracted with MeOH+BFB?	☒	☐	☐	☐ <i>Exemption permitted for metals (e.g., 200.8/6020A).</i>
For preserved waters (other than VOA vials, LL-Mercury or microbiological analyses), was pH verified and compliant ? If pH was adjusted, were bottles flagged (i.e., stickers)?	☐	☒	☐	
For special handling (e.g., "MI" soils, foreign soils, lab filter for dissolved..., lab extract for volatiles, Ref Lab, limited volume), were bottles/paperwork flagged (e.g., sticker)?	☐	☒	☐	
For RUSH/SHORT Hold Time , were COC/Bottles flagged accordingly? Was Rush/Short HT email sent, if applicable?	☐	☒	☐	
For SITE-SPECIFIC QC , e.g. BMS/BMSD/BDUP, were containers / paperwork flagged accordingly?	☐	☒	☐	
For any question answered "No," has the PM been notified and the problem resolved (or paperwork put in their bin)?	☐	☒	☐	SRF Completed by: CRD PM notified:
Was PEER REVIEW of <i>sample numbering/labeling completed</i> ?	☐	☒	☐	Peer Reviewed by:
Additional notes (if applicable):				
<i>Note to Client: Any "no" answer above indicates non-compliance with standard procedures and may impact data quality.</i>				



Sample Containers and Preservatives

<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>	<u>Container Id</u>	<u>Preservative</u>	<u>Container Condition</u>
1160430001-A	No Preservative Required	OK			
1160430001-B	Methanol field pres. 4 C	OK			
1160430002-A	No Preservative Required	OK			
1160430002-B	Methanol field pres. 4 C	OK			
1160430003-A	No Preservative Required	OK			
1160430003-B	Methanol field pres. 4 C	OK			
1160430004-A	No Preservative Required	OK			
1160430004-B	Methanol field pres. 4 C	OK			
1160430005-A	No Preservative Required	OK			
1160430005-B	Methanol field pres. 4 C	OK			
1160430006-A	No Preservative Required	OK			
1160430006-B	Methanol field pres. 4 C	OK			
1160430007-A	No Preservative Required	OK			
1160430007-B	Methanol field pres. 4 C	OK			
1160430008-A	No Preservative Required	OK			
1160430008-B	Methanol field pres. 4 C	OK			
1160430009-A	No Preservative Required	OK			
1160430009-B	Methanol field pres. 4 C	OK			
1160430010-A	No Preservative Required	OK			
1160430010-B	Methanol field pres. 4 C	OK			
1160430011-A	No Preservative Required	OK			
1160430011-B	Methanol field pres. 4 C	OK			
1160430012-A	No Preservative Required	OK			
1160430012-B	Methanol field pres. 4 C	OK			
1160430013-A	No Preservative Required	OK			
1160430013-B	Methanol field pres. 4 C	OK			
1160430014-A	No Preservative Required	OK			
1160430014-B	Methanol field pres. 4 C	OK			
1160430015-A	No Preservative Required	OK			
1160430015-B	Methanol field pres. 4 C	OK			
1160430016-A	No Preservative Required	OK			
1160430016-B	Methanol field pres. 4 C	OK			
1160430017-A	Methanol field pres. 4 C	OK			

Container Id

Preservative

Container
Condition

Container Id

Preservative

Container
Condition

Container Condition Glossary

Containers for bacteriological, low level mercury and VOA vials are not opened prior to analysis and will be assigned condition code OK unless evidence indicates than an inappropriate container was submitted.

OK - The container was received at an acceptable pH for the analysis requested.

BU - The container was received with headspace greater than 6mm.

DM- The container was received damaged.

PA - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt and the container is now at the correct pH. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

PH - The container was received outside of the acceptable pH for the analysis requested. Preservative was added upon receipt, but was insufficient to bring the container to the correct pH for the analysis requested. See the Sample Receipt Form for details on the amount and lot # of the preservative added.

APPENDIX E
LABORATORY DATA QUALITY CONTROL CHECKLIST

Laboratory Data Review Checklist

Completed by:	William Schmaltz		
Title:	Environmental Scientist	Date:	2/25/2016
CS Report Name:	Environmental Soils Assessment Report	Report Date:	February 2016
Consultant Firm:	BGES, Inc.		
Laboratory Name:	SGS, North America	Laboratory Report Number:	1160430
ADEC File Number:	N/A	ADEC Hazard ID:	N/A

1. Laboratory

a. Did an ADEC CS approved laboratory receive and perform all of the submitted sample analyses?

☒ Yes ☐ No ☐ NA (Please explain.) Comments:

b. If the samples were transferred to another "network" laboratory or sub-contracted to an alternate laboratory, was the laboratory performing the analyses ADEC CS approved?

☐ Yes ☐ No ☒ NA (Please explain) Comments:

Samples were not transferred to a network laboratory.

2. Chain of Custody (COC)

a. COC information completed, signed, and dated (including released/received by)?

☒ Yes ☐ No ☐ NA (Please explain) Comments:

b. Correct analyses requested?

☒ Yes ☐ No ☐ NA (Please explain) Comments:

3. Laboratory Sample Receipt Documentation

a. Sample/cooler temperature documented and within range at receipt ($4^{\circ} \pm 2^{\circ} \text{C}$)?

☐ Yes

☒ No

☐ NA (Please explain)

Comments:

Upon arrival in Anchorage, the soil samples, which were stored for nearly 36 hours in Alaska Air Cargo's cooler, were found to have solid ice within the shipping cooler; but were repacked by BGES into another cooler, with additional ice, for delivery to the laboratory. The samples were in the new cooler for approximately 10 to 15 minutes, the time it takes to transport them to the laboratory. The new sample cooler arrived at the laboratory with a measured temperature of 7.3 degrees Celsius (C), which is 1.3 degrees greater than the prescribed optimal temperature range of 4 degrees C +/- 2 degrees. For this reason, there is an increased potential for contaminant concentration loss due to natural attenuation. However, DRO was detected in sample TP1-1-0127 at a concentration of 389 mg/Kg, which is above the ADEC cleanup criterion of 230 mg/Kg for this analyte, and benzene was detected at 0.0460 mg/Kg, which is above the ADEC cleanup criterion of 0.025 mg/Kg in sample TP2-1-0128. Because these two analytes were above their respective ADEC cleanup criteria in their respective samples, it is our opinion that this QC failure does not affect the acceptability of these data for their intended use. Because the ice in the cooler was still solid upon receipt of the samples, and because the soil samples were transferred to a new cooler prior to delivery to the laboratory, it is likely that this slight temperature variance occurred for a short period of time, and it is therefore our opinion that this QC failure has not significantly promoted biological degradation of the samples. For these reasons, it is our opinion that this QC failure does not affect the acceptability of the data for their intended use.

b. Sample preservation acceptable - acidified waters, Methanol preserved VOC soil (GRO, BTEX, Volatile Chlorinated Solvents, etc.)?

☒ Yes

☐ No

☐ NA (Please explain)

Comments:

c. Sample condition documented - broken, leaking (Methanol), zero headspace (VOC vials)?

☒ Yes

☐ No

☐ NA (Please explain)

Comments:

No irregularities or abnormalities with respect to sample containers were reported.

d. If there were any discrepancies, were they documented? - For example, incorrect sample containers/preservation, sample temperature outside of acceptance range, insufficient or missing samples, etc.?

☒ Yes

☐ No

☐ NA (Please explain)

Comments:

The sample temperature was outside of the acceptable range, as described above, in Section 3a.

e. Data quality or usability affected? (Please explain)

Comments:

No. See 3a, above.

4. Case Narrative

a. Present and understandable?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

b. Discrepancies, errors or QC failures identified by the lab?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

The recovery of the surrogate Toluene-d8 associated with the analyses of VOCs within Project Sample TP4-1; and within a Method Blank associated with Project Samples TP4-1, TP5-4, TP8-5, TP8-6, TP9-2, and the Trip Blank sample exceeded laboratory QC criteria. This indicates a potential for the reported concentrations of VOCs within these samples to be biased high. For this reason, and because the reported results with actual concentrations were below the laboratory's limits of quantitation (LOQs), the reported concentrations of VOCs within Project Samples TP4-1, TP5-4, TP8-5, TP8-6, and TP9-2 are qualified with a "J" in Table 1, and should be considered estimates. However, because the reported concentrations of VOCs in these samples are below the ADEC cleanup criteria; it is our opinion that this QC failure does not affect the acceptability of the data for their intended use.

The recovery of trans-1,2-dichloroethene within a Matrix Spike (MS) sample associated with Project Samples TP4-1, TP5-4, TP8-5, TP8-6, TP9-2, and the Trip Blank sample exceeded laboratory QC criteria. This indicates a potential for the reported concentrations of trans-1,2-dichloroethene within these samples to be biased high. However, because this analyte was not detected at concentrations exceeding the LOQs within these samples, and because the LOQs were less than the ADEC cleanup criterion; it is our opinion that this QC failure does not affect the acceptability of the data for their intended use.

The recoveries of 1,2,3-trichlorobenzene, 1,2,4-trichlorobenzene, naphthalene, and trans-1,2-dichloroethene within a MS duplicate (MSD) sample associated with Project Samples TP4-1, TP5-4, TP8-5, TP8-6, TP9-2, and the Trip Blank sample exceeded laboratory QC criteria. This indicates a potential for the reported concentrations of these analytes to be biased low in the project samples listed above. However, because these analytes were either detected at concentrations less than the ADEC cleanup criteria; or were not detected at concentrations exceeding the LOQs, and the LOQs were less than the ADEC cleanup criteria; it is our opinion that this QC failure does not affect the interpretation of the data.

c. Were all corrective actions documented?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

See 4b, above.

d. What is the effect on data quality/usability according to the case narrative?

Comments:

See 4b, above.

5. Samples Results

a. Correct analyses performed/reported as requested on COC?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

b. All applicable holding times met?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

c. All soils reported on a dry weight basis?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

d. Are the reported PQLs less than the Cleanup Level or the minimum required detection level for the project?

☐ Yes ☒ No ☐ NA (Please explain)

Comments:

The LOQs for 1,2,3-trichloropropane, 1,2-dibromoethane, and methylene chloride exceeded the ADEC cleanup criteria in every soil sample that was analyzed for VOCs. As such, it cannot be determined if the actual concentrations of 1,2,3-trichloropropane, 1,2-dibromoethane, and methylene chloride within the associated samples exceed the ADEC cleanup criteria. However, because these analytes are not compounds of concern for this site; it is our opinion that this QC failure does not affect the interpretation of the data.

e. Data quality or usability affected? (Please explain)

Comments:

See 5d, above.

6. QC Samples

a. Method Blank

i. One method blank reported per matrix, analysis and 20 samples?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

ii. All method blank results less than PQL?

☐ Yes ☒ No ☐ NA (Please explain)

Comments:

See 4b, above.

iii. If above PQL, what samples are affected?

Comments:

See 4b, above.

iv. Do the affected sample(s) have data flags? If so, are the data flags clearly defined?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

See 4b, above.

v. Data quality or usability affected? (Please explain)

Comments:

See 4b, above.

b. Laboratory Control Sample/Duplicate (LCS/LCSD)

i. Organics - One LCS/LCSD reported per matrix, analysis and 20 samples?. (LCS/LCSD required per AK methods, LCS required per SW846)

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

ii. Metals/Inorganics - One LCS and one sample duplicate reported per matrix, analysis and 20 samples?

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

iii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods: AK101 60%-120%, AK102 75%-125%, AK103 60%-120%; all other analyses see the laboratory QC pages)

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

iv. Precision - All relative percent differences (RPD) reported and less than method or laboratory limits? And project specified DQOs, if applicable. RPD reported from LCS/LCSD, MS/DMSD, and or sample/sample duplicate. (AK Petroleum methods 20%; all other analyses see the laboratory QC pages)

☒ Yes ☐ No ☐ NA (Please explain)

Comments:

v. If %R or RPD is outside of acceptable limits, what samples are affected?

Comments:

N/A

vi. Do the affected samples(s) have data flags? If so, are the data flags clearly defined?

☐ Yes ☐ No ☒ NA (Please explain) Comments:

vii. Data quality or usability affected? (Please explain)

Comments:

N/A

c. Surrogates - Organics Only

i. Are surrogate recoveries reported for organic analyses - field, QC and laboratory samples?

☒ Yes ☐ No ☐ NA (Please explain) Comments:

ii. Accuracy - All percent recoveries (%R) reported and within method or laboratory limits? And project specified DQOs, if applicable. (AK Petroleum methods 50-150 %R; all other analyses see the laboratory report pages)

☒ Yes ☐ No ☐ NA (Please explain) Comments:

iii. Do the sample results with failed surrogate recoveries have data flags? If so, are the data flags clearly defined?

☐ Yes ☐ No ☒ NA (Please explain) Comments:

iv. Data quality or usability affected? (Use the comment box to explain.).

Comments:

N/A

d. Trip Blank - Volatile analyses only (GRO, BTEX, Volatile Chlorinated Solvents, etc.): Water and Soil

i. One trip blank reported per matrix, analysis and for each cooler containing volatile samples? (If not, enter explanation below.)

☒ Yes ☐ No ☐ NA (Please explain.) Comments:

ii. Is the cooler used to transport the trip blank and VOA samples clearly indicated on the COC? (If not, a comment explaining why must be entered below)

☒ Yes ☐ No ☐ NA (Please explain.) Comments:

iii. All results less than PQL?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

iv. If above PQL, what samples are affected?

Comments:

N/A

v. Data quality or usability affected? (Please explain.)

Comments:

N/A

e. Field Duplicate

i. One field duplicate submitted per matrix, analysis and 10 project samples?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

ii. Submitted blind to lab?

☒ Yes ☐ No ☐ NA (Please explain.)

Comments:

- iii. Precision - All relative percent differences (RPD) less than specified DQOs?
(Recommended: 30% water, 50% soil)

$$\text{RPD (\%)} = \text{Absolute Value of: } \frac{(R_1 - R_2)}{((R_1 + R_2)/2)} \times 100$$

Where R_1 = Sample Concentration

R_2 = Field Duplicate Concentration

☐ Yes ☒ No ☐ NA (Please explain) Comments:

Sample TP8-6 was a duplicate of TP8-5; and Sample TP14-4 was a duplicate of TP14-3. These duplicate samples were collected to evaluate field sampling precision. The relative percent differences (RPDs) between the reported concentrations of all analytes which were detected in samples TP8-6 and TP8-5 were below the acceptable limit of 50 percent. This indicates relatively good field precision with respect to sampling procedures. The RPD between the reported concentrations of toluene and total xylenes within samples TP14-3 and TP14-4 were also below the acceptable limit of 50 percent. The RPDs of DRO and RRO, however, were 66 percent and 106 percent, respectively; which exceed the acceptable limit, indicating poor sampling precision. Therefore, the detectable results for DRO and RRO are qualified with a "J" in Table 1 and should be considered estimates. These nonconforming RPDs are likely attributable to heterogeneity of the soils. The RPDs between reported concentrations of several analytes could not be calculated, as the analytes were not detected at the laboratory's LOQs in one or both of these sample/duplicate pairs.

- iv. Data quality or usability affected? (Use the comment box to explain why or why not.)

☐ Yes ☒ No ☐ NA (Please explain) Comments:

See 6e, iii above.

- f. Decontamination or Equipment Blank (if applicable)

☐ Yes ☐ No ☒ NA (Please explain) Comments:

Not applicable. A decontamination or equipment blank was not collected because it was not part of the approved scope of work.

- i. All results less than PQL?

☐ Yes ☐ No ☒ NA (Please explain) Comments:

- ii. If above PQL, what samples are affected?

Comments:

N/A

- iii. Data quality or usability affected? (Please explain.)

Comments:

N/A

7. Other Data Flags/Qualifiers (ACOE, AFCEE, Lab Specific, etc.)

a. Defined and appropriate?

☐ Yes

☐ No

☒ NA (Please explain)

Comments:

Not applicable for this project.

Reset Form

APPENDIX F
CONCEPTUAL SITE MODEL

HUMAN HEALTH CONCEPTUAL SITE MODEL GRAPHIC FORM

Site: Keku Road
Kake, Alaska

Completed By: William Schmaltz
 Date Completed: 2/25/2016

Instructions: Follow the numbered directions below. Do not consider contaminant concentrations or engineering/land use controls when describing pathways.

(1) Check the media that could be directly affected by the release.		(2) For each medium identified in (1), follow the top arrow and check possible transport mechanisms. Check additional media under (1) if the media acts as a secondary source.		(3) Check all exposure media identified in (2).		(4) Check all pathways that could be complete. The pathways identified in this column <u>must</u> agree with Sections 2 and 3 of the Human Health CSM Scoping Form.		(5) Identify the receptors potentially affected by each exposure pathway: Enter "C" for current receptors, "F" for future receptors, "C/F" for both current and future receptors, or "I" for insignificant exposure.	
Media	Transport Mechanisms	Exposure Media	Exposure Pathway/Route	Current	Future	Receptors	Current	Future	
☒ Surface Soil (0-2 ft bgs)	☒ Direct release to surface soil ☒ Migration to subsurface ☒ Migration to groundwater ☒ Volatilization ☒ Runoff or erosion ☒ Uptake by plants or animals ☐ Other (list):	☒ soil	☒ Incidental Soil Ingestion ☐ Dermal Absorption of Contaminants from Soil ☒ Inhalation of Fugitive Dust	C/F	C/F	Residents (adults or children)	C/F	C/F	
☐ Subsurface Soil (2-15 ft bgs)	☐ Direct release to subsurface soil ☐ Migration to groundwater ☐ Volatilization ☐ Uptake by plants or animals ☐ Other (list):	☒ groundwater	☒ Ingestion of Groundwater ☐ Dermal Absorption of Contaminants in Groundwater ☒ Inhalation of Volatile Compounds in Tap Water	C/F	C/F	Commercial or industrial workers	C/F	C/F	
☐ Groundwater	☐ Direct release to groundwater ☐ Volatilization ☐ Flow to surface water body ☐ Flow to sediment ☐ Uptake by plants or animals ☐ Other (list):	☒ air	☒ Inhalation of Outdoor Air ☐ Inhalation of Indoor Air ☒ Inhalation of Fugitive Dust	C/F	C/F	Site visitors, trespassers, or recreational users	C/F	C/F	
☐ Surface Water	☐ Direct release to surface water ☐ Volatilization ☐ Sedimentation ☐ Uptake by plants or animals ☐ Other (list):	☒ surface water	☒ Ingestion of Surface Water ☐ Dermal Absorption of Contaminants in Surface Water ☐ Inhalation of Volatile Compounds in Tap Water	C/F	C/F	Farmers or subsistence harvesters	C/F	C/F	
☐ Sediment	☐ Direct release to sediment ☐ Resuspension, runoff, or erosion ☐ Uptake by plants or animals ☐ Other (list):	☐ sediment	☐ Direct Contact with Sediment			Subsistence consumers			
		☒ biota	☐ Ingestion of Wild or Farmed Foods			Other	C/F	C/F	

APPENDIX C

Permit Applications



ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE

Contaminated Sites and Prevention and Emergency Response Programs

Transport, Treatment, & Disposal Approval Form for Contaminated Media

DEC HAZARD/SPILL ID #		NAME OF SPILL OR CONTAMINATED SITE	
SITE OR SPILL LOCATION			
CURRENT LOCATION AND TYPE OF CONTAMINATED MEDIA		SOURCE OF THE CONTAMINATION	
COMPOUNDS OF CONCERN	ESTIMATED VOLUME	DATE(S) GENERATED	
POST TREATMENT ANALYSIS REQUIRED <i>(such as GRO, DRO, RRO, BTEX, and/or Chlorinated Solvents)</i>			
COMMENTS			

Facility Accepting the Contaminated Media

NAME OF THE FACILITY	PHYSICAL ADDRESS/PHONE NUMBER

Responsible Party and Contractor Information

BUSINESS/NAME	ADDRESS/PHONE NUMBER

Name of the Person Requesting Approval (printed)

Title/Association

Signature

Date

Phone Number

-----**DEC USE ONLY**-----

Based on the information provided, ADEC approves transport of the above-described media for treatment in accordance with the approved facility operations plan. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight/volume receipts of the loads transported to the facility and a post treatment analytical report. If the media is contaminated soil, it shall be transported as a covered load in compliance with 18 AAC 60.015.

DEC Project Manager Name (printed)

Project Manager Title

Signature

Date

Phone Number

APPENDIX D

Liner Material Specifications



9832 XR-5® G Specifications

	Standard	SI Units
Base Fabric Type	Polyester	Polyester
Base Fabric Weight (nominal)	7.5 oz./yd ²	254 g/m ²
Coating Type	Co-polymer alloy	Co-polymer alloy
Thickness		
ASTM D751	36 ± 2 mil	0.90 ± 0.05 mm
Weight		
ASTM D751	32 oz./yd ² ± 2 oz./yd ²	1085 g/m ² ± 70 g/m ²
Grab Tensile		
ASTM D751	650/650 lb.	2893/2893 N
Strip Tensile		
ASTM D751 Procedure B	485/485 lb./in	425/425 daN/5 cm
Low Temperature		
ASTM D2136	1/8 in mandrel, 4 hr. Pass @ -30° F	3 mm mandrel, 4 hr. Pass @ -34° C
Adhesion		
ASTM D751 Dielectric Weld	15 lb./in	13 daN/5 cm
Dead Load		
ASTM D751	2 in. seam, 4 hr., 1 in strip 266 lb. @ 70° F 133 lb. @ 160° F	50 mm seam, 4 hr., 25 mm strip 1184 N @ 21° C 592 N @ 71° C
Bursting Strength		
ASTM D751 (Ball Tip)	950 lb.	4228 N
Hydrostatic Resistance		
ASTM D751 Procedure A	800 psi	5.52 MPa
Blocking Resistance		
ASTM D751 180°F/82°C	# 2 rating (max.)	#2 rating (max.)
Weathering Resistance		
ASTM G23 (Carbon-Arc)	8000 hrs. (minimum) - No appreciable changes or stiffening or cracking of coating	

Unless stated otherwise, values presented above represent the minimum expected measurements at the time of manufacture. We believe this information is the best currently available on the subject. We offer it as a suggestion in any appropriate experimentation you may care to undertake. It is subject to revision as additional knowledge and experience are gained. We make no guarantee of results and assume no obligation or liability whatsoever in connection with this information.

XR-5® is a registered trademark of Seaman Corporation

Innovative Customer Solutions through Fiber and Polymer Technology

1000 VENTURE BLVD. • WOOSTER, OHIO 44691
PHONE: (330) 262-1111 • FAX: (330) 263-6950 • www.seamancorp.com

APPENDIX E

ADEC Technical Memorandum: Managing Petroleum-Contaminated Soil, Water, or Free Product during Public Utility and Right-of-Way Construction and Maintenance Projects

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE

**Managing Petroleum-Contaminated Soil, Water, or Free Product during
Public Utility and Right-of-Way Construction and Maintenance Projects**

Technical Memorandum

Date: March 2014

Purpose

This Technical Memorandum outlines procedures for managing petroleum-contaminated soil or water¹, or free-phase petroleum product related to either documented or unknown sources, as it may be encountered during the course of construction projects in utility corridors and rights-of way. The objectives are to prevent delays in the construction activities but also to prevent the migration and improper management of contaminated media which could exacerbate environmental problems. Further, while it is ideal to remove accessible contaminated soil, water, or free-product when it is encountered in a utility right-of-way, the Department of Environmental Conservation (DEC) recognizes that there are circumstances where this may not be practical. Under the conditions described in this Technical Memorandum, Contaminated Sites Program (CSP) or Prevention and Emergency Response Program (PERP) staff may approve petroleum-contaminated soil to be returned to an excavation from where it originated.

Applicability

This Technical Memorandum applies only to petroleum-contaminated soil and water and free-phase petroleum product. It does not apply to non-petroleum contamination, nor the transport, treatment, or disposal of soil regulated as hazardous waste under the Resource Conservation and Recovery Act (RCRA) or other federal environmental and hazardous waste requirements. Additionally this guidance does not apply to landowners or operators of contaminated sites who conduct or direct excavation activities on their own property; such activities are subject to the regulatory requirements of 18 AAC 75 and 18 AAC 78.

Project Planning and DEC Coordination

1. Prior to the start of any construction or excavation project, identify all contaminated sites and active spills in the area by querying the Contaminated Sites Database (http://dec.alaska.gov/spar/csp/db_search.htm) and the Spills Database (<http://dec.alaska.gov/spar/perp/data.htm>).
2. During construction, if contaminated soil, groundwater, or free phase petroleum product is encountered and determined to be associated with a known contaminated site, the construction contractor or other project representative shall contact the appropriate DEC staff to ensure that contamination in the corridor is managed and documented as deemed necessary.
3. For planned construction or maintenance activities in an area or depth where contaminated media may be encountered, the utility company or their contractors must develop a contaminated soil /groundwater management plan in advance for review and approval by CSP under 18 AAC 75.325(i) so that the appropriate procedures and materials are in place prior to the beginning of the

¹ "Contaminated soil or groundwater" means concentrations of petroleum exceed applicable cleanup levels as determined under the site cleanup rules at 18 AAC 75.325.

project. In some cases the contaminated area may be addressed with a current or future remediation or product recovery system.

4. If contaminated soil, groundwater, or free-product are encountered and the source is unknown, the construction contractor or other project representative shall immediately contact PERP staff in accordance with spill reporting requirements under 18 AAC 75.300, and coordinate management of all contaminated media with emergency response personnel.

Project Implementation

Management of Contaminated Water and Free Product

Construction activities must not increase the potential for contamination to migrate, or otherwise adversely affect human health or the environment. Engineering controls may be required in the utility excavation to prevent the creation of a preferential pathway for the migration of contaminated water and free product.

If contaminated water is encountered and must be removed as part of the construction activities, the PERP or CSP project manager must be notified immediately to determine what actions are required to containerize or manage, properly treat and/or dispose of the contaminated water to prevent contaminant migration.

If free-phase petroleum product is encountered in soil or groundwater, the CSP or PERP staff must be notified immediately to determine necessary response actions for collecting and containerizing the product to prevent contaminant migration.

Leaving or Returning Contaminated Material to the Excavation

PERP or CSP staff may grant approval for petroleum-contaminated soil to be returned to a public utility or right-of-way excavation subject to the following conditions:

1. The owner/responsible party of the property identified as the source of the contamination should be consulted and afforded an opportunity to collect samples and/or concur with the plan to return the contaminated soil to the excavation because installation of utilities may limit future remedial options. However, the owner/responsible party may not delay or stop the utility or construction work.
2. As appropriate and feasible, the PERP or CSP may request sampling to document concentrations of in-situ contamination.
3. The CSP may determine that Institutional Controls under 18 AAC 75.375 are necessary to protect other parties from future exposure to contamination left in place following the project.
4. Any contaminated soil must be returned to approximately the same depth and location from which it was excavated, **provided the top two feet of fill is clean material.** Mixing of contaminated excavated soil with uncontaminated material is not approved.
5. When previously unknown areas of contamination are discovered, the location of the contamination must be documented with GPS coordinates in decimal degrees with six decimal places of precision using either WGS 1984 or NAD 1983 horizontal datum (be sure to specify which are used).

6. Any contaminated soil removed from a construction excavation may be stockpiled temporarily on a week-by-week basis as needed to facilitate construction objectives such as installing equipment, piping, or necessary structures. Stockpiled soil must remain in the immediate area (on site) and be on a liner, asphalt or concrete, and securely covered with 6-mil HDPE minimum, pursuant to 18 AAC 75.370, to prevent contaminant migration into storm water runoff.

Soil not returned to the Excavation

Any contaminated soil that is not returned to the excavation must be stored, transported and disposed of in accordance with 18 AAC 75.370 following DEC approval (see attached form).

This technical memorandum is not intended to allow avoidance of the duties of responsible persons to investigate, contain, and clean up a discharge or release of a hazardous substance, or to interfere with, hinder, or obstruct the containment or cleanup of a hazardous substance conducted under 18 AAC 75 and/or 18 AAC 78. DEC reserves all rights to require responsible persons to take further action.

DEC Contaminated Sites Program (CSP) Offices:

Juneau

Phone: (907) 465-5390/Fax: (907) 465-5218

Anchorage

Phone: (907) 269-7503/Fax: (907) 269-7649

Fairbanks

Phone: (907) 451-2143/ Fax: (907) 451-5105

Soldotna/Kenai Office

Phone: (907) 262-5210/Fax: (907) 262-2294

DEC Prevention and Emergency Response (PERP) Offices (Report a Spill):

Southeast (Juneau)

Phone: (907) 465-5340/Fax (907) 465-2237

Central (Anchorage/Kenai/Soldotna) Phone: (907) 269-3063/Fax (907) 269-7648

Northern (Fairbanks)

Phone: (907) 451-2121/Fax (907) 451-2362



ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION
DIVISION OF SPILL PREVENTION AND RESPONSE
Contaminated Sites Program

Contaminated Soil Transport and Treatment Approval Form

DEC HAZARD ID #		NAME OF CONTAMINATED SITE	
SPILL LOCATION			
CONTAMINATED SOIL'S CURRENT LOCATION		SOURCE OF THE CONTAMINATION	
TYPE OF CONTAMINATION	ESTIMATED VOLUME	DATE(S) STOCKPILE GENERATED	
POST TREATMENT ANALYSIS REQUIRED <i>(such as GRO, DRO, RRO, BTEX, and/or Chlorinated Solvents)</i>			
COMMENTS			

Facility Accepting the Contaminated Soil

NAME OF THE FACILITY	ADDRESS/PHONE NUMBER

Responsible Party and Contractor Information

BUSINESS/NAME	ADDRESS/PHONE NUMBER

Name of the Person Requesting Approval (printed)

Title/Association

Signature

Date

Phone Number

-----**DEC USE ONLY**-----

Based on the information provided, ADEC approves transport of the above mentioned material for treatment in accordance with the approved facility operations plan. The Responsible Party or their consultant must submit to the DEC Project Manager a copy of weight receipts of the loads transported to the facility and a post treatment analytical report. The contaminated soil shall be transported as a covered load in compliance with 18 AAC 60.015.

DEC Project Manager Name (printed)

Project Manager Title

Signature

Date

Phone Number

APPENDIX D

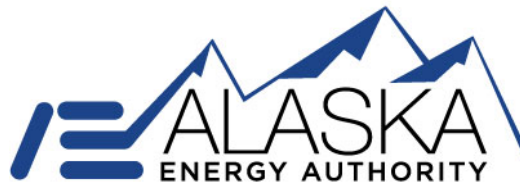
Erosion and Sediment Control Plan

Erosion and Sediment Control Plan

For

Kake Bulk Fuel and Rural Power System Upgrades

Kake, Alaska



**Alaska Energy Authority
813 W. Northern Lights Blvd.
Anchorage, Alaska 99503**

Prepared By: Owen Means



**3335 Arctic Boulevard
Anchorage, Alaska 99503
Phone: 907.564.2120**

ESCP Preparation Date: April 2015

The following Erosion and Sediment Control Plan (ESCP) has been prepared by the Alaska Energy Authority (AEA) to assist bidders in successfully planning their construction means and methods to comply with the 2016 Alaska Construction General Permit (ACGP) and other permits associated with this project. This document is not intended to be all inclusive of the best management practices (BMPs) that will be required to reduce the potential for sediment discharge during construction and comply with permit conditions or construction specifications. This ESCP is intended to guide contractors during the bidding process and assist in the preparation of the contractor's Storm Water Pollution Prevention Plan (SWPPP) that must be approved prior to commencing construction after award. The contractor is responsible for the risk assessment analysis, planning, preparation and implementation of the SWPPP.

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APPENDICES

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Appendix A	Site Maps and Drawings (ESCP)
Appendix B	BMP Details (ESCP)
Appendix C	Project Schedule
Appendix D	Supporting Documentation: (ESCP) • TMDLs • Endangered Species • Historic Properties • ADEC Non-Domestic Wastewater Plan Review Non-Objection Letter (if required) • ADEC Dewatering Permit (if required) • Environmental Permits and Commitments • Other Permits or Requirements
Appendix E	Delegation of Authority, Subcontractor Certifications, Project Staff Tracking and Personnel Qualifications
Appendix F	Permit Conditions: • Copy of Signed Notice of Intent • Confirmation of Delivery of NOIs to ADEC • Copy of Letters from ADEC Authorizing Coverage, with ADEC NOI Tracking Number • Copy of 2016 Alaska Construction General Permit
Appendix G	Grading and Stabilization Records
Appendix H	Monitoring Plan (If Applicable) and Reports
Appendix I	Training Records
Appendix J	Corrective Action Log
Appendix K	Inspection Records
Appendix L	Spill Prevention, Control, and Countermeasure Plan
Appendix M	Treatment Chemical/Active Treatment Systems (if applicable)
Appendix N	Other • Anti-Degradation Analysis (if applicable) • Correspondence with Regulatory Agencies • Notices of Termination

1.0 PERMITTEE (5.3.1)

The Alaska Energy Authority (AEA) will be a permittee for the project. Upon the approval of the contractor's Storm Water Pollution Prevention Plan (SWPPP) by AEA, the contractor will be required to submit a Notice of Intent (NOI) and obtain permit coverage as an operator. The contractor's contact information as well as contact information for all subcontractors must be included in the contractor's SWPPP.

1.1 Operator(s)/Contractor(s)

Operator Information			
Organization: To be determined		Name:	Title:
Phone:		Fax (optional):	Email:
Mailing Address:	Street (PO Box):		
	City:	State:	Zip:
Area of Control	Day-to-day operational control of those activities at a site which are necessary to ensure compliance with a SWPPP or other permit conditions.		

The contractor has day-to-day operational control over activities in the field, including subcontractors, installing, maintaining, and inspecting all erosion and sediment controls and implementation of the SWPPP.

Repeat as necessary.

Owner Information			
Organization: State of Alaska, Alaska Energy Authority		Name: Enter Text	Title: Enter Text
Phone: Enter Text		Fax (optional): Enter Text	Email: Enter Text
Mailing Address:	Street (PO Box): 813 W. Northern Lights Blvd.		
	City: Anchorage	State: Alaska	Zip: 99503
Area of Control	Operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications.		

1.2 Subcontractors

Subcontractor Information			
Organization: To be determined		Name:	Title:
Phone:		Fax (optional):	Email:
Mailing Address:	Street (PO Box):		
	City:		State: Zip:
Area Control	of	Insert Area of Control (if more than one operator at site)	

Repeat as necessary to include all subcontractors.

2.0 STORM WATER CONTACTS (5.3.2)

Identify the qualified persons responsible for the following required positions (note: a small project may have all these responsibilities carried out by one person):

Superintendent; AEA's Project Engineer; Storm Water Lead (5.3.2); SWPPP Preparer (5.3.2.2); Person(s) Conducting Inspections-Contractor's SWPPP Manager; Person(s) Conducting Monitoring (if applicable, 5.3.2.4), and Person(s) Operating Active Treatment System (if applicable, 5.3.2.5).

Document that the named individuals are Qualified Persons as described in ACGP Appendix C. Include documentation of qualifications in Appendix E of the SWPPP.

<u>Qualified Personnel</u>	<u>Responsibility</u>
Contractor's Superintendent Company Name Address City, State, Zip Code Telephone # Fax/Email	The Contractor's duly authorized representative in responsible charge of the work. Authority for the overall operation of the Project and for Contractor furnished sites and facilities directly related to the Project.
AEA's Project Engineer Company Name Address City, State, Zip Code Telephone # Fax/Email	
Storm Water Lead (SWPPP Manager) Company Name Address City, State, Zip Code Telephone # Fax/Email	Authority to stop and/or modify construction activities as necessary to comply with the SWPPP and the terms and conditions of the permit.
SWPPP Preparer Company Name Address City, State, Zip Code Telephone # Fax/Email	Possess the skills to assess conditions at the construction site that could impact storm water quality. Familiar with Part 5 as a means to implement the permit.
Contractor's Storm Water Inspector Company Name Address City, State, Zip Code Telephone # Fax/Email	Assess conditions at the construction site that could impact storm water quality. Assess the effectiveness of any erosion and sediment control measures selected to control the quality of storm water discharge, and familiar with Part 6 as a means to ensure compliance with the permit.

Monitoring Person (If Applicable) Company Name Address City, State, Zip Code Telephone # Fax/Email	Knowledgeable in the principles and practices of water quality monitoring who is familiar with Part 7 and the monitoring plan for the site and how to conduct water quality sampling, testing, and reporting.
Active Treatment System Operator (If Applicable) Company Name Address City, State, Zip Code Telephone # Fax/Email	Knowledgeable in the principles and practices of treatment systems that employs chemical coagulation, chemical flocculation or electrocoagulation to aid in the treatment of storm water runoff. Familiar with Part 4.5 as a means to implement and comply with the permit.

A SWPPP Project Staff Tracking log shall be included in Appendix E of the SWPPP to document any changes in personnel for the positions of Superintendent, Project Engineer, SWPPP Manager, and Inspectors.

Delete the information below prior to submittal of SWPPP. This information is provided for the SWPPP Preparer and is not part of the SWPPP template.

2.1 Contact Information for SWPPP Preparation

The following people may be contacted for questions when writing the SWPPP:

<u>Name</u>	<u>Phone</u>	<u>Email</u>
Dave Cooper, P.E.	(907) 564-2161	dcooper@hdlalaska.com
Owen Means	(907) 564-2143	omeans@hdlalaska.com

3.0 PROJECT INFORMATION (5.3.3)

3.1 Project Information

Project Name: Kake Bulk Fuel and Rural Power System Upgrades				
Location Address:	Street/Location: Keku Road		Borough or similar government subdivision: None	
	City: Kake		State: Alaska	Zip: 99830
	Latitude (decimal degree, 5 places): 56.96315°N		Longitude (decimal degree, 5 places): 133.92201°W	
	Determined By: ☐ GPS ☐ Web Map: ☐ USGS Topo Map, Scale: ☒ Other: Google Earth			

3.2 Project Site-Specific Conditions (5.3.3)

Mean annual precipitation based on nearest weather stations: 54.04 inches (station name & number: KAKE 504155-1). Source: <<http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ak4155>>

Size of the 2-yr, 24-hr storm event: 2.37 inches (station name & number: KAKE 50-4155). Source: <http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_ak.html>

Soils in the project area generally consist of shot rock fill material west of Keku Road, granular fill material over bedrock east of Keku Road, and organics, clay, and bedrock in undeveloped areas (source: *Geotechnical Report for Kake Rural Power System And Bulk Fuel Upgrades*).

Landscape Topography: Topography in the project area is relatively flat. The project area is located at the base of moderate slope where building pads and developed areas have been cut into the hillside and leveled.

Drainage patterns: The project area is downslope of a large forested wetland area that drains from the northeast to southwest toward Keku Strait. Shallow subsurface water discharges at the base of the wetland area and is conveyed in a drainage ditch running from the northeast edge of the project area to Keku Road, then northwest along Keku Road before leaving the project area. The drainage ditch crosses Keku Road and discharges into Keku Strait north of the project area.

Type of Existing Vegetation: The project area is predominantly composed of gravel surfaces. Small areas of alder-dominated areas may be disturbed during construction.

Approximate growing season: April 29th – September 28th.

Seeding Dates: Seeding dates for this project are May 15 to August 15, or obtain written approval from the Engineer to seed at a different date.

Clearing Window (Time Period to Avoid Vegetation Clearing): April 15th – July 15th (source: http://alaska.fws.gov/fisheries/fieldoffice/anchorage/pdf/vegetation_clearing.pdf)

Fish Window: The fish window is not applicable to this project because there is no work proposed in fish-bearing waters.

Historic site contamination evident from existing site features and known past usage of the site: Recognized environmental conditions associated with the Kake Power Plant site (ADEC Hazard ID: 2711) are present within the project area. Refer to the Contaminated Materials Work Plan developed for this project for protocols for treatment of known contaminated materials.

Additional information about these sites is available on the ADEC Division of Spill Prevention and Response website: http://dec.alaska.gov/spar/csp/db_search.htm. Include only those sites listed as 'Active' or 'Cleanup Complete – Institutional Controls'

3.3 Reference Documents Available

Listed below are the reference documents available for this project. Please contact the Project Engineer for assistance in obtaining these documents.

- Project Specific Permits – located in an Appendix and in the Special Provisions Package.
- Geotechnical Report – located in an Appendix and in the Special Provisions Package.
 - *Geotechnical Report For Kake Rural Power System and Bulk Fuel Upgrade, Kake, Alaska* (HDL 2016).
- Contaminated Materials Work Plan – located in an Appendix and in the Special Provisions Package.
 - *Contaminated Materials Work Plan, Kake Bulk Fuel Upgrades* (HDL 2016).
- Environmental Document - located in an Appendix and in the Special Provisions Package.
 - *Kake Bulk Fuel Upgrades and Kake Rural Power System Upgrades, Environmental Review Checklist and Finding of No Significant Impact* (HDL 2016).

4.0 NATURE OF CONSTRUCTION ACTIVITY (5.3.4)

4.1 Scope of Work

The project includes the following elements:

- New bulk fuel tank farm facility (owned and operated by Kake Tribal Fuel Corporation [KTC]), including gravel pad, on-grade secondary containment structure with poured concrete dike walls, and fuel tanks.
- Vehicle dispensing equipment, including vehicle dispenser at the KTC retail sales site, truck fill dispenser with canopy and containment sump, and marine dispenser piping to existing dock location.
- Distribution piping, including marine header fill lines, truck fill and vehicle dispensing distribution piping, and marine dispensing distribution piping at new dock location.
- New power plant facility (owned and operated by Inside Passage Electric Cooperative [IPEC]), including gravel pad and generator module building.
- New bulk fuel storage tanks installed in the existing IPEC tank farm secondary containment dike.
- New main community step up transformer.

The project includes the following construction and erosion and sediment control activities:

1. Delineate project areas that will be disturbed, and areas that should be left undisturbed.
2. Install temporary erosion and sediment control measures, as needed.
3. Clearing and grubbing, as needed.
4. Excavate and backfill digout areas.
5. Install permanent storm water management controls & best management practices (BMPs).
6. Construct gravel pad finished slopes through top of Selected Material.
7. Construct embankment and finished slopes.
8. Obtain final stabilization of site.
9. Remove temporary erosion and sediment control measures.

4.2 Project Function (5.3.4.1)

The existing power plant and tank farm in the community of Kake, Alaska are outdated and in need of upgrades. The purpose of this project is to provide code compliant facilities with sufficient storage capacity to support Kake's retail fuel needs, increase generator efficiency, mitigate safety and environmental concerns, reduce operation and maintenance costs, and provide opportunities for future alternative energy and heat recovery system integration to the community.

4.3 Support Activities (As Applicable)

Modify support activities table, as necessary.

Support activities for this project are:

<u>Support Activity</u>	<u>Location</u>	<u>Dedicated</u>	
		<u>Yes</u>	<u>No</u>
Concrete Batch Plant		☒	☐
Asphalt Batch Plant		☐	☒
Equipment Staging Yards		☒	☐
Material Storage Areas		☒	☐
Excavated Material Disposal Areas		☐	☒
Borrow Areas		☒	☐

4.4 Sequence and Timing of Soil-disturbing Activities (5.3.4.2)

The contractor will be required to finish, either temporary or final stabilized, individual areas prior to moving on to the next area. The contractor will be required to prepare a detailed schedule for review and approval prior to commencement of construction activities and is to be included in the SWPPP. The schedule will detail the sequence of activities and describe the stabilization schedule. The contractor must adapt this section with their specific plans in the project SWPPP.

4.5 Size of Property and Total Area expected to be Disturbed (5.3.4.3)

The following are estimates of the construction site:

Description	Number	Remarks
Total project area:	5 acres	Area of proposed KTC lease lot, that portion of the IPEC lease lot where work is occurring, pipeline alignments, and retail sales area.
Construction-site area to be disturbed:	2 acres	Area of proposed construction activity, including tank farm and power plant gravel pads, pipeline alignments, and retail sales area.
Percentage impervious area BEFORE construction:	1 %	
Runoff Coefficient BEFORE construction:	.65	
Percentage impervious area AFTER construction:	2 %	
Runoff coefficient AFTER construction:	.75	

The values shown in the table above were calculated with the information available at the time of the final design. The contractor's values will be different due to staging areas, batch plants, material stockpiles, etc. **An average of the dominant land cover types** was used to calculate the Runoff Coefficient. If a discrepancy is found, contact the Project Engineer to request further information.

4.6 Identification of All Potential Pollutant Sources (5.3.4.5)

Identify and list all potential sources of sediment from construction materials and activities which may affect the quality of storm water discharges from the construction site.

Identify and list all potential sources of pollution, other than sediment, from construction materials and activities which may affect the quality of storm water discharges from the construction site.

Potential sources of sediment to storm water runoff:

Soils could be eroded and transported off-site via ditches during and immediately after grubbing activities, during pavement milling, and during grading activities. Haul routes and access points for material delivery could become sources of sediment from track out. Structural gravel soils exposed by removal of existing asphalt Topsoil applied to landscaping areas that need to be stabilized is also a source of sediment.

Potential pollutants and sources, other than sediment, to storm water runoff:

- Vehicle and equipment fluids, including oil, grease, fuel, solvents, and coolants.
- Concrete washout water.
- Demolition materials.
- Best Management Practices (BMP) materials.
- General site litter and waste.
- Raw landscaping materials and waste.

SITE MAPS (5.3.5)

Site map(s) and drawings are located in Appendix A.

The SWPPP must include a legible site map (or set of maps for large projects) showing the entire site and identifying the following site-specific information:

1. North Arrow **(ESCP)**
2. Property boundaries **(ESCP)**
3. Locations where earth-disturbing activities will occur, noting any phasing dictated by design **(ESCP)**
4. Location of areas that will not be disturbed and natural features to be preserved **(ESCP)**
5. Locations of all storm water conveyances including ditches, pipes, and swales **(ESCP)**
6. Locations of storm water inlets and outfalls, with a unique identification code for each outfall **(ESCP)**
7. Location where storm water and/or authorized non-storm water discharges to waters of the U.S. (including wetlands) or a Municipal Separate Storm Sewer Systems (MS4), if present **(ESCP)**
8. Direction of storm water flow and approximate slopes anticipated after grading activities **(ESCP)**
9. Locations where control measures will be installed **(ESCP)**
10. Locations where exposed soils will be or have been stabilized
11. Locations where post-construction storm water controls will be installed (i.e. seeding areas, matting, riprap, sedimentation basins, etc.) **(ESCP)**
12. Locations of support activities, if known
13. Locations where authorized non-storm water will be used
14. Locations and sources of run-on to the site from adjacent property that may contain quantities of pollutants (e.g., sediment, fertilizers and/or pesticides, paints, solvents, fuels) which could be exposed to rainfall, or snowmelt, and could be discharged from your construction site, if applicable **(ESCP)**
15. Locations of all waters of the U.S. (including significant wetland areas 10,000 square feet or greater) on the site within 2,500 feet of the site boundary (~1/2 mile on each side of road) that may be affected by storm water discharges from the site (see Section 7.1) **(ESCP)**
 - a. This can be shown on a general location map (USGS quad map, a portion of a city or county map, or other map) with enough detail to identify the location of the construction site and waters of the U.S. within the one mile distance.
16. Location of existing public water system (PWS) drinking water protection areas (DWPA) for PWS sources (e.g. springs, wells, or surface water intakes) that intersect the boundary of the proposed project/permit area. The DWPAs can be found using the interactive web map application, "Alaska DEC Drinking Water Protection Areas", located at http://dec.alaska.gov/eh/dw/dwp/protection_areas_map.html **(ESCP)**
17. Sampling point(s), if applicable
18. Areas where final stabilization has been accomplished
19. Location of staging and material storage areas (construction materials, hazardous materials, fuels, etc.) **(ESCP, if known)**
20. Dumpsters
21. Porta-potties
22. Concrete, paint, or stucco washout areas
23. Stabilized construction exits **(ESCP, if known)**

5.0 DISCHARGES

Subject to compliance with the terms and conditions of the ACGP, the permittee is authorized to discharge pollutants in storm water discharges from the site. If the permittee is eligible for coverage under ACGP and does not comply with the requirements of the ACGP, the permittee may be in violation of this general permit for otherwise eligible discharges.

Instructions:

Describe and identify the location of any storm water discharge associated with support activities, including discharges from dedicated asphalt and concrete plants covered by the ACGP (5.3.8).

5.1 Locations of Other Industrial Storm Water Discharges (5.3.8)

The contractor is required to identify discharges from related support activities.

5.2 Allowable Non-Storm Water Discharges (1.4.3; 4.3.7; 5.3.9)

The contractor must list all allowable non-storm water discharges and describe how the discharges will be minimized and managed to reduce pollution to storm water in the contractor's SWPPP.

Allowable Non-Storm Water Discharges:

- Discharges from fire-fighting activities (1.4.3.1)
- Fire hydrant flushing (1.4.3.2)
- Waters used to wash vehicles where detergent are not used (1.4.3.3)
- Water used to control dust (1.4.3.4)
- Potable water including uncontaminated water line flushings (1.4.3.5)
- Routine external building wash down that does not use detergents (1.4.3.6)
- Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spilled material has been removed) and where detergents are not used (1.4.3.7)
- Uncontaminated air conditioning or compressor condensate (1.4.3.8)
- Uncontaminated, non-turbid discharges of ground water or spring water (1.4.3.9)
- Foundation or footing drains where flows are not contaminated with process materials such as solvents or contaminated groundwater (1.4.3.10)
- Construction dewatering waters that are treated by an appropriate control measure in compliance with Part 4.4.2 or have been treated with treatment chemicals in compliance with Part 4.6 (1.4.3.11)
- Landscape irrigation (1.4.3.12)

6.0 DOCUMENTATION OF PERMIT ELIGIBILITY RELATED TO TOTAL MAXIMUM DAILY LOADS (3.2, 5.6)

A search of the "Alaska's Final **2012** Integrated Water Quality Monitoring and Assessment Report" found no listings or impairments for the **Keku Strait**.

6.1 Identify Receiving Waters (5.3.3.3)

Description of receiving waters:

Receiving waters for the project are an unnamed stream that discharges into Keku Strait.

Outstanding Natural Resource Waters (2.1.6):

The Alaska Department of Environmental Conservation (ADEC) must be consulted, at least 30 days prior to construction activities, when determining requirements for water quality analysis on all projects that meet the following:

- Will or may discharge storm water to a Tier 3 water body, also known as Outstanding Natural Resource Waters (ONRW).

No ONRW are designated in Alaska as of the date of this document.

Description of storm sewer and/or drainage systems: None.

Other: Storm water is collected in roadside ditches.

6.2 Identify TMDLs (5.6.1)

Is an EPA-established or approved TMDL published for the receiving water(s) listed in Section 7.1?

☐ Yes ☒ No

TMDL: None.

Summary of consultation with state or federal TMDL authorities (5.6.2): AEA has not conducted consultation regarding TMDLs.

Measures taken to ensure compliance with TMDL (5.6.3): None.

Are there impaired receiving waters listed in Section 7.1 without an approved TMDL? ☐ Yes ☒ No

7.0 DOCUMENTATION OF PERMIT ELIGIBILITY RELATED TO ENDANGERED SPECIES (3.3, 5.7)

7.1 Information on Endangered or Threatened Species or Critical Habitat (5.7.1)

Are endangered or threatened species and critical habitats on or near the project area?

☐ Yes ☒ No

Describe how this determination was made:

An official species list obtained on June 22, 2015, using the U.S. Fish and Wildlife Service's (USFWS) Information, Planning, and Conservation System (IPaC), indicates there are no species under USFWS jurisdiction listed as threatened or endangered, no designated critical habitats, and no candidate species in the vicinity of the proposed project area. Under Code of Federal Regulations (CFR) 50 CFR 402.12(d)(1), no further consultation is required because there are no threatened or endangered species or critical habitat present. An official species list from USFWS is included in Appendix D.

A review of the National Marine Fisheries Service (NMFS) Endangered Species Act Interactive Mapper indicates there are two species listed as endangered under NMFS jurisdiction that are present in the vicinity of the project, the Eastern and Western Distinct Population Segments of the Stellar Sea Lion (*Eumetopias jubatus*) and the humpback whale (*Megaptera novaeangliae*). Because the project does not involve work below the high tide line, the project would have no effect on listed species or their critical habitat. There are no candidate species present in the vicinity of the project area.

Will species or habitat be adversely affected by storm water discharge?

☐ Yes ☒ No

Provide summary of necessary measures (5.7.5):

The following measures have been incorporated into the project plan to reduce or avoid the risk that events related to the project could result in harm to listed species and critical habitat:

1. The power plant tank farm will be constructed in a secondary containment structure to contain any spills.
2. A chain link fence and locked sliding gate will be installed to protect the fuel facility from vandalism.
3. A Spill Prevention Control and Countermeasure Plan, Facilities Response Plan, and an approved Marine Transfer Operations Plan will be implemented. Spill prevention measures will include:
 - a. Installation of a "spill box" at the marine header to prevent spills during barge transfers.
 - b. Incorporation of ball and check valves at the marine header. The ball valve will allow manual shutoff of the marine header pipe and the check valve will prevent reverse fuel flow.
 - c. Installation of high level alarms to warn operators when tanks are reaching maximum capacity during filling operations.
 - d. Monitoring of all fuel transfers by a KTC or IPEC employee at the tank farm or Power Plant and by the barge operator at the marine header.
 - e. Construction of all buried piping with corrosion-resistant material or cathodic protection.
4. Sediment and contaminants in storm water runoff will be reduced by implementing a SWPPP with BMPs such as:
 - a. Minimizing soil disturbance during pad construction.
 - b. Installing geotextile fabric and crushed rock to stabilize soil on pads and access roads.
 - c. Applying compaction requirements for fill materials to reduce sediment transport.
 - d. Installation of appropriate erosion control BMPs along site borders and at the toe of embankments.
 - e. Seeding and fertilizing exposed areas and slopes.

8.0 APPLICABLE FEDERAL, STATE, TRIBAL, OR LOCAL REQUIREMENTS (4.15)

The project will comply with all applicable Federal, State, Local, and Tribal requirements for soil erosion control and storm water management.

The contractor will be responsible for obtaining all necessary permits and clearances for material and disposal sites, and/or equipment storage areas in accordance with the ACGP for Storm Water Discharges from Construction Activities.

Historic Properties

SHPO consultation was completed on: March 8, 2016.

Are there any historic sites on or near the construction site?

☐ Yes ☒ No

Describe how this determination was made:

Northern Land Use Research Alaska, LLC (NLURA) conducted a desktop cultural resources survey for the proposed project in August 2015, which consisted of a review of previous reports and literature for the project area and recommendations of effect. The report indicated there are no National Register of Historic Places (NRHP)-eligible or listed sites within the project area. NLURA indicated it is unlikely that previously undiscovered cultural resources will be disturbed, and no additional archaeological investigations are recommended.

The AEA, acting as a federal agency for the Denali Commission, determined the project would have no adverse effect on historic properties. The State Historic Preservation Officer (SHPO) concurred with this finding.

If cultural or paleontological resources are discovered after the initial commencement of construction activities, work that would disturb such resources is to be stopped, and the Office of History and Archaeology, a Division of Parks and Outdoor Recreation of the Alaska Department of Natural Resources (<http://dnr.alaska.gov/parks/oha/index.htm>), is to be notified immediately at (907) 269-8721.

It is the Contractor's responsibility, thru the Project Engineer, to get clearance for material and disposal sites that have not been assessed during the Design phase of the project.

General Principles for Erosion and Sediment Controls.

You must design, install, and maintain effective erosion and sediment controls to minimize the discharge of pollutants. At a minimum, such controls must be designed, installed, and maintained to:

- Control storm water volume and velocity to minimize soil erosion and pollutant discharges;
- Control storm water discharges, including both peak flowrates and total storm water volume, to minimize channel and streambank erosion and scour in the immediate vicinity of discharge points;
- Minimize the amount of soil exposed during construction activity;
- Minimize the disturbance of steep slopes;
- Minimize sediment discharges from the site. The design, installation, and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity, duration of precipitation; the nature of resulting storm water runoff; and soil characteristics, including the range of soil particle sizes expected to be present on the site;
- Provide and maintain natural buffers around waters of the U.S., direct storm water to vegetated areas and maximize storm water infiltration to reduce pollutant discharges, unless infeasible;
- Minimize soil compaction. Minimizing soil compaction is not required where the intended function of a specific area of the site dictates it be compacted.
- Unless infeasible, preserve topsoil. Preserving topsoil is not required where the intended function of a specific area of the site dictates that the topsoil be disturbed or removed.

Additional Erosion and Sediment Controls Selection and Design Considerations:

- Preventing storm water from coming into contact with polluting materials is generally more effective, and less costly, than removing pollutants from storm water;
- Using a combination of control measures is more effective than using control measures in isolation for minimizing pollutants in the storm water discharge;
- Using technologically available, economically practicable, and achievable methods in light of best industry practices;
- Assessing the type and quantity of pollutants, including their potential to impact receiving water quality, is critical to designing effective control measures that will achieve the limits in this permit;
- Minimizing impervious areas at the permittees facility and infiltrating runoff onsite (including bioretention cells, green roofs, and pervious pavement, among other approaches) can reduce runoff and improve groundwater recharge and stream base flows in local streams, although care must be taken to avoid ground water contamination;
- Dissipate storm water runoff into open vegetated swales and natural depressions to reduce in stream impacts of erosive flows;
- Conserving and/or restoring of riparian buffers will help protect streams from storm water runoff and improve water quality; and
- Using treatment interceptors (e.g., sand filters) may be appropriate in some instances to minimize the discharge of pollutants.

Describe the Best Management Practices (BMPs) to be implemented to control pollutants in storm water discharges. For each major activity identified:

- Clearly describe appropriate control measures.
- Describe general sequence during the construction process in which the measures will be implemented.
- Describe maintenance and inspection procedures to be undertaken for that specific BMP.
- Include protocols, thresholds, and schedules for cleaning, repairing, and/or replacing damaged or failing BMPs.
- Identify staff responsible for maintaining BMPs. (If your SWPPP is shared by multiple operators, indicate the operator responsible for each BMP.)

Categorize each BMP under one of the following areas of BMP activity as described below:

1. *Minimize the Amount of Soil Exposed during Construction Activity (4.2.2) & Site Delineation (4.2.1)*
2. *Maintain Natural Buffer Areas (4.2.3) & Clearing Vegetation (4.2.4)*
3. *Control Storm Water Discharges and Flow Rates (4.2.5)*
4. *Protect Steep Slopes (4.2.6)*
5. *Storm Water Inlet Protection (4.3.1)*
6. *Water Body Protection (4.3.2)*
7. *Down-Slope Sediment Controls (4.3.3)*
8. *Stabilized Construction Vehicle Access and Exit Points (4.3.4)*
9. *Dust Generation and Track-Out from vehicles (4.3.5)*
10. *Soil Stockpiles (4.3.6)*
11. *Sediment Basins (4.3.8)*
12. *Dewatering (4.4)*
13. *Soil Stabilization (4.5)*
14. *Treatment Chemicals / Active Treatment Systems (4.6)*
15. *Good Housekeeping Measures (4.8)*
16. *Spill Notification (4.9)*
17. *Construction and Waste Materials (5.3.7)*
18. *Permanent/Post-Construction BMPs (4.11)*
19. *Projects near a Public Water System (PWS) (4.10)*

- Note the location of each BMP on your site map(s).
- Any structural BMPs should have design specifications and details referred to in Section 11 or included in Appendix B.

For more information or ideas on BMPs, see the ADEC Alaska Storm Water Guide:

<http://dec.alaska.gov/water/wnpspc/stormwater/Guidance.html> & for a list of Alaska specific BMPs look at the DOT&PF Alaska SWPPP Guide's Appendix B - BMP Guide for Erosion & Sediment Control at http://www.dot.state.ak.us/stwddes/desenviron/assets/pdf/bmp/bmp_all.pdf

9.0 CONTROL MEASURES/BEST MANAGEMENT PRACTICES (4.0; 5.3.6)

Much of the guidance in this section is for both the ESCP & SWPPP preparers. Carefully read through the requirements listed below when filling out Section 11. When developing this section, think about how they are going to construct the project. Look at means and measures but do not direct the contractor...merely suggest. Consider 'prior to/upon construction' methods (i.e. upon placing culvert install a fiber roll and outlet protection). The following sections describe BMPs that will or may be used as necessary to prevent erosion and control sediment.

The selection, design, installation, maintenance, and removal of control measures must be in accordance with good engineering practices, manufacturer specifications, and address site-specific conditions such as precipitation, site topography, soil characteristics, and growing season.

The plan preparer will use this section to describe the types and locations of control measures and BMPs to be installed and maintained in accordance with ACGP Part 4.0.

Describe each control measure and BMP, including installation schedule and maintenance, inspection, and removal requirements. You may include a brief description of each BMP in this section and refer to detailed installation, maintenance, inspection, removal requirements, and manufacturer's specifications that **MUST** be included in the Appendix B.

If a control measure or BMP will be used to comply with more than one element of this section, you do not need to repeat the detailed installation, maintenance, inspection, removal requirements, and manufacturer's information. For each repeated element, identify the control measure or BMP to be used, and refer to the section or Appendix B where the detailed information is presented.

The person(s) identified in Section 2.0 of this SWPPP will be responsible for ensuring compliance with the installation, maintenance, inspection, and removal of these control measures.

The format to be used to describe is:

BMP Description:

Describe purpose, applicability, limitations and design. If using a BMP manual or publication, this information may be found there.

BMP Manual/Publication:

Provide the citation information as described below. If referencing Appendix B, where the BMP details are provided, ensure the attached sheets clearly identify this information.

Installation Schedule:

Identify the activity or phase prior to which the BMP will be installed or the activity that requires this BMP to be installed before it can begin.

Maintenance and Inspection:

Describe the thresholds and/or indicators for maintenance and protocols for inspecting the BMP. Describe the maintenance procedures. If using a BMP manual or publication, this information may be found there.

Responsible Staff:

Name the position and company who is responsible for installation and maintenance.

Minimize Amount of Soil Exposed during Construction Activity (4.2.2)

Describe how the land disturbed area will be delineated, including clearing and grading and how those areas that are to be left undisturbed such as trees, boundaries of sensitive areas, or buffers established by ACGP Part 4.2.3 will be delineated.

Describe the areas that will be disturbed with each phase of construction and methods (signs, fences, etc.) you will use to protect those areas that should not be disturbed. Construction activities must be phased to minimize the extent and duration of exposed soil.

Describe natural features identified and how each will be protected during construction activity.

Describe how topsoil will be preserved.

The majority of the project area consists of previously disturbed or developed grounds. Vegetation removal is anticipated to be minimal and will be limited to areas necessary to conduct work.

BMP Description: Vegetation Buffer BMP - 38.00

BMP Manual/Publication: Alaska DOT&PF BMP Guide, December 2015

☒ Permanent

☐ Temporary

<i>Installation Schedule:</i>	Before clearing operations begin.
<i>Maintenance and Inspection:</i>	<u>Inspection:</u> Inspect natural existing vegetation buffer areas to ensure that the site delineation to mark the non-disturbance area is in place. Check for damage by equipment and vehicles. Inspect new vegetation buffer areas for the progress of germination and plant growth. Ensure storm water flowing through the area is not forming ponds, rills, or gullies. Inspect for sediment deposition throughout the buffer. <u>Maintenance:</u> Replace or repair site delineation (such as fencing, staking, or flagging) as necessary to delineate the vegetation buffer areas. Repair any damage by equipment or vehicles. Provide additional seed, fertilizer, and water to repair seeded areas damaged by erosion or ponding of water. If sediment is depositing in the buffer install improved erosion control measures upslope of the buffer.
<i>Responsible Staff:</i>	SWPPP Manager & Superintendent, Contractor

9.1.1 Site Delineation (4.2.1)

The contractor will stake or delineate the boundary of the area designated to be disturbed by construction where the project is adjacent to wetlands and waterbodies.

9.2 Maintain Natural Buffer Areas (4.2.3)

Are stream crossings or waters of the U.S. located within or immediately adjacent to the property?

☒ Yes

☐ No

If YES, describe the control measures to be implemented to comply with the ACGP Part 4.2.3 (e.g., buffer areas, perimeter controls, etc.).

You must maintain natural buffer areas at stream crossings and around the edge of any waters of the U.S. that are located within or immediately adjacent to the construction activity in accordance with the following:

- The buffer must be a minimum of 25 feet wide, or the width as required by local ordinance, unless infeasible based on site dimensions;

- Exceptions are allowed for water dependent activities, specific water access activities, or necessary water crossings;
- A permittee should, to the extent practicable, use perimeter controls adjacent to buffers and direct storm water sheet flow to buffer areas to increase sediment removal and maximize storm water infiltration.

The project will require in-water work in waters in the project area; therefore, natural buffer areas will not be maintained.

9.2.1 Clearing Vegetation (4.2.4)

Clearing of vegetation that disturbs the vegetative mat and exposes soil is **prohibited** prior to obtaining authorization under the ACGP.

Cutting of trees and brush while the ground is frozen without disturbing the vegetative mat for the purpose of clearing in accordance with the U.S. Fish & Wildlife Service "Recommended Time Periods for Avoiding Vegetation Clearing" is allowed prior to the submittal of a project NOI. If vegetation clearing that disturbs the vegetative mat and occurs after the onset of spring thaw (as defined in Appendix C) or conditions that consist of above freezing temperatures that cause melting of snow, the permittee must develop a SWPPP and file an NOI. Operators must receive authorization under this permit and otherwise comply with the terms of this permit prior to such clearing.

9.3 Control Storm Water Discharges and Flow Rates (4.2.5)

Describe control measures to comply with the ACGP (e.g., divert storm water around the site, slow down or contain storm water, use of velocity dissipation devices, installing permanent storm water management controls prior to construction of site improvements to the extent practicable, etc.). Storm water that may concentrate must be slowed down or contained.

BMP Description: Slope Drain (Rock Flume) BMP-21.00

BMP Manual/Publication: Alaska DOT&PF BMP Guide, December 2015

☒ Permanent

☐ Temporary

<i>Installation Schedule:</i>	Installed following ditch excavation and prior to grading tank farm and power plant gravel pads.
<i>Maintenance and Inspection:</i>	<u>Inspection:</u> Ensure storm water flowing through the area is not forming ponds, rills, or gullies. Inspect for sediment deposition throughout the channel. <u>Maintenance:</u> Repair or reshape as necessary when conditions listed above exist.
<i>Responsible Staff:</i>	SWPPP Manager & Superintendent, Contractor

BMP Description: Temporary Check Dam (Fiber Roll) BMP-31.00

BMP Manual/Publication: Alaska DOT&PF BMP Guide, December 2015

☒ Permanent ☐ Temporary

<i>Installation Schedule:</i>	Installed in downstream ditchline prior to ground disturbing work.
<i>Maintenance and Inspection:</i>	<u>Inspection:</u> Compare upstream and downstream flows to determine relative turbidity levels and effectiveness of check dams. Inspect channel banks for undermining and erosion. Inspect for dam deterioration and migration of structural components downstream. Ensure center of dam is lower than edges and water is not running around edges. <u>Maintenance:</u> Repair bank undercuts. Remove accumulated sediment before it reaches half the height of the dam or one-third of the available storage if protecting a water body. Repair undercutting and flow around edges or, if necessary, reposition the check dam. Install additional dams or other control measures as needed.
<i>Responsible Staff:</i>	SWPPP Manager & Superintendent, Contractor

9.3.1 Protect Steep Slopes (4.2.6)

Will steep slopes be present at the site during construction? ☐ Yes ☒ No

9.4 Storm Drain Inlet Protection Measures (4.3.1)

Describe control measures (e.g., filter berms, perimeter controls, temporary diversion dikes, etc.) to be implemented to protect all inlets receiving storm water from the project during the duration of the project.

There are no storm drains present in or down gradient of the project area.

9.5 Water Body Protection Measures (4.3.2)

Describe control measures selected to minimize discharge of sediment prior to entry into water bodies located on or immediately downstream of the site.

BMP Description: Slope Drain (Rock Flume) BMP-21.00

BMP Manual/Publication: Alaska DOT&PF BMP Guide, December 2015

☒ Permanent ☐ Temporary

<i>Installation Schedule:</i>	Installed following ditch excavation and prior to grading tank farm and power plant gravel pads.
<i>Maintenance and Inspection:</i>	<u>Inspection:</u> Ensure storm water flowing through the area is not forming ponds, rills, or gullies. Inspect for sediment deposition throughout the channel. <u>Maintenance:</u> Repair or reshape as necessary when conditions listed above exist.
<i>Responsible Staff:</i>	SWPPP Manager & Superintendent, Contractor

BMP Description: Culvert Inlet Protection BMP-08.00

BMP Manual/Publication: Alaska DOT&PF BMP Guide, December 2015

☐ Permanent ☒ Temporary

<i>Installation Schedule:</i>	Immediately when culvert is installed, bedded, and backfilled. All culvert inlet protection will be installed within 24 hours of culvert placement.
<i>Maintenance and Inspection:</i>	<u>Inspection:</u> Look for roll ends to remain abutted tightly. Ensure that the rolls are in

	contact with the soil and are entrenched. Look for scouring underneath the rolls. Confirm that barriers are in full contact with the soil and that bypass Routes are not present. Inspect for sediment accumulation, displacement, and structural damage. <u>Maintenance:</u> Remove accumulated sediment before it reaches one-third of the design depth of spillway. Restore structure to its original dimensions and full contact with soil around the inlet as soon as practicable. Repair any structural damage, including replacing damaged sandbags, as soon as practicable.
<i>Responsible Staff:</i>	SWPPP Manager & Superintendent, Contractor

9.6 Down-Slope Sediment Controls (4.3.3)

Describe sediment controls (e.g., silt fence or temporary diversion dike) for any portion of the down-slope and side-slope perimeter where storm water will be discharged from disturbed areas of the site.

BMP Description: Fiber Rolls for Erosion and Sediment Control BMP – 10.00

BMP Manual/Publication: Alaska DOT&PF BMP Guide, December 2015

☐ Permanent	☒ Temporary
<i>Installation Schedule:</i>	Installed prior to soil disturbance in the contributing drainage area.
<i>Maintenance and Inspection:</i>	<u>Inspection:</u> Ensure that the rolls are in contact with the soil and thoroughly entrenched. Look for scouring underneath the rolls. Look for split, torn, unraveling, or slumping fiber rolls. Ensure equipment has not driven over the installed fiber rolls. <u>Maintenance:</u> Replace damaged sections of fiber roll. Remove accumulated sediment upslope of the roll before it reaches one-half the distance between the top of the fiber roll and the ground surface. When protecting a water body or storm drain inlet, remove accumulated sediment upslope of the roll when it reaches one-third of the distance between the top of the fiber roll and the ground surface.
<i>Responsible Staff:</i>	SWPPP Manager & Superintendent, Contractor

9.7 Stabilized Construction Vehicle Access and Exit Points (4.3.4)

Vehicle access points must be limited as much as possible and must be stabilized.

Describe location(s) of vehicle entrance(s) and exit(s), procedures to remove accumulated sediment off-site (i.e., vehicle tracking), and stabilization practices (i.e., stone pads and/or wash racks) to minimize off-site vehicle tracking of sediments and discharges to storm water.

Any rubber tire operating on bare soils will require a stabilized entrance / exit prior to driving on paved surfaces. Tracked equipment must be cleaned prior to operating on paved surfaces. The existing gravel surfaces will be used for the stabilized access and exit points.

BMP Description: Stabilized Construction Exit BMP – 23.00

BMP Manual/Publication: Alaska DOT&PF BMP Guide, December 2015

☐ Permanent

☒ Temporary

<i>Installation Schedule:</i>	Installed prior to soil disturbance in the proposed power plant and tank farm gravel pad areas.
<i>Maintenance and Inspection:</i>	<u>Inspection:</u> Inspect stabilized construction exit for sediment accumulation and material displacement. Inspect roadway for sediment track-out. Inspect ditches to ensure no sediment accumulation. <u>Maintenance:</u> Maintain each exit in a condition that will prevent tracking of mud or sediment onto public right-of-way. Repair and/or clean out any structures used to trap sediment. Remove all mud and sediment deposited on paved roadways. Add more signs, fencing or barricades when vehicles are exiting the project without using the stabilized construction exit. Install additional stabilized construction exits if needed, yet use signs and barricades to minimize the number of stabilized construction exits. Prevent track-out by using additional BMPs, such as a tire wash.
<i>Responsible Staff:</i>	SWPPP Manager & Superintendent, Contractor

9.8 Dust Generation and Track-Out from Vehicles (4.3.5)

Describe control measures to minimize the generation of dust and off-site vehicle tracking of sediment. Dust must be minimized prior to the vehicle exist by application of water or other dust suppression techniques.

The contractor will be required to remove any debris including soil and rock from the roadway. Any material tracked will be swept up daily.

BMP Description: Dust Control IDEQ BMP 7

BMP Manual/Publication: IDEQ Storm Water BMP Catalog, September 2005

☐ Permanent

☒ Temporary

<i>Installation Schedule:</i>	Implemented as needed. Stabilize roadway to minimize dust generation. Apply protective material. Install barriers to prevent dust from blowing off-site. Establish vegetation as soon as practicable. Sprinkle haul roads with water as needed. Perform street sweeping as needed.
<i>Maintenance and Inspection:</i>	<u>Inspection:</u> Daily. <u>Maintenance:</u> Dust control sprinkling may be required several times per day. Inspect other dust control measures regularly according to schedule set in SWPPP. Repair/replace damaged components and remove sediment build up.
<i>Responsible Staff:</i>	SWPPP Manager & Superintendent, Contractor

9.9 Soil Stockpiles (4.3.6)

Will soil stockpiles be at the site during construction? ☒ Yes ☐ No

If YES, describe control measures intended to control sediment loss from the stockpiles (e.g., tarps or perimeter straw wattles). Show location(s) of stockpile(s) on site maps, if known. Stockpiles must be stabilized or covered, protected with sediment controls and located away from storm water inlets, conveyance channels or water bodies, if possible.

BMP Description: Plastic Covering BMP-12.00

BMP Manual/Publication: DOT&PF, Alaska SWPPP Guide, February 2011

☐ Permanent

☒ Temporary

Installation Schedule:

Plastic covering will be installed when the stockpile will not be actively worked on more than 14 days or when there are windy conditions. Plastic covering will be secured either by weighted or trenched method.

Maintenance and Inspection:

Inspection: Inspect sheeting after installation and according to established schedules. Check for erosion, undermining, anchorage (keying and embedding) failure, torn sheets, and deterioration.

Maintenance: Repair failures as soon as practicable. If washout or breakages occur, repair damage to the slope and reinstall the material as soon as practicable.

Responsible Staff:

SWPPP Manager & Superintendent, Contractor

9.10 Sediment Basins (4.3.8)

Refer to ACGP Part 4.3.8 to determine if a sediment basin is required for your site.

Will a sediment basin be required during construction? ☐ Yes ☒ No

9.11 Dewatering (4.4)

Describe dewatering practices to be implemented if water must be removed from an area so construction activity can continue.

Will dewatering be conducted during construction? ☐ Yes ☒ No

9.12 Permanent/Post-Construction BMPs (4.11)

Describe any permanent/post-construction control measures that will be installed during the construction process AND have not been discussed elsewhere in this document.

Examples of these measures are:

Biofilters

Detention/Retention Devices

Earth Dikes, Drainage Swales, and Lined Ditches

Infiltration Basins

Vegetated Strips and/or Swales

A rock-lined ditch will be installed between the power plant site and the tank farm site (see Section 9.5).

9.12.1 Soil Stabilization (4.5, 5.3.6.3)

The project must stabilize all disturbed areas of the site to minimize on-site erosion and sedimentation and the resulting discharge of pollutants.

Soil stabilization requirements vary depending on the mean annual precipitation for the site. Refer to ACGP Part 4.5 for specific requirements.

Refer to the Alaska Plant Materials Center's Alaska Coastal Revegetation & Erosion Control Guide and Interior Alaska Revegetation & Erosion Control Guide at <http://plants.alaska.gov> for help in selecting appropriate seed mixes and information on methods for revegetation.

Describe permanent & temporary stabilization control measures and sequence of installation.

Describe how the site will be stabilized prior to seasonal freeze-up.

BMP Description: Seeding IDEQ BMP 21

Source: IDEQ Storm Water BMP Catalog, September 2005

☒ Permanent

☐ Temporary

<i>Installation Schedule:</i>	Permanent seeding should be considered for any disturbed area where all construction or maintenance activities have ceased or been finalized and is now ready for permanent vegetative cover.
<i>Maintenance and Inspection:</i>	<u>Inspection:</u> Inspect all seeded areas on a regular basis and after each major storm event to check for areas where corrective measures may have to be made. Indicate which areas need to be reseeded or where other remedial actions are necessary to assure establishment of permanent seeding. <u>Maintenance:</u> Continue monitoring of the site/area until permanent vegetation is established.
<i>Responsible Staff:</i>	SWPPP Manager & Superintendent

BMP Description: Mulching AK-9

BMP Manual/Publication: DOT&PF, Alaska SWPPP Guide, February 2011

☒ Permanent

☐ Temporary

<i>Installation Schedule:</i>	Mulch will be applied to all seeded areas. Hydro mulching can be installed with the seed at specified rates. Bonded Fiber Matrix (BFM) will be used in all hydro seeding operations. Contractor to ensure that the product is allowed to "cure" or dry to prevent mulch from washing away.
<i>Maintenance and Inspection:</i>	<u>Inspection:</u> Look for mulch being too dry causing it to blow or wash away. Depth of material to prevent low seed germination rates. <u>Maintenance:</u> Replace mulch that has been loosened or dislodged. Water mulch areas periodically to ensure that moisture content will be maintained and seed germination and grass growth will continue.
<i>Responsible Staff:</i>	SWPPP Manager & Superintendent, Contractor

9.13 Treatment Chemicals (4.6; 5.3.6.4)

The use of treatment chemicals to reduce erosion from the land or sediment in a storm water discharge is allowed provided all the requirements of ACGP Part 4.6 are met.

Will treatment chemicals be used to control erosion and/or sediment during construction?

☐ Yes

☒ No

9.14 Active Treatment System information (4.6.3.3)

A permittee who uses an Active Treatment System (ATS) as a control measure must submit information required by the ADEC for review at least 14 days prior to start of operation of the ATS at the project. Specific submittal requirements can be found at 4.6.3.

Will an ATS be used as a control measure at the site? ☐ Yes ☒ No

9.15 Good Housekeeping Measures (4.8)

The project must design, install, implement, and maintain effective good housekeeping measures to prevent and/or minimize the discharge of pollutants. The project must include appropriate measures for any of the following activities at the site.

Consult the ADEC Storm Water Guide or other resources for more information or ideas on BMPs. See also the EPA's National Menu of BMPs at <http://www.epa.gov/npdes/national-menu-best-management-practices-bmps-stormwater-documents> & for a list of Alaska specific BMPs look at the Alaska SWPPP Guide's Appendix B - BMP Guide for Erosion & Sediment Control at http://www.dot.state.ak.us/stwddes/desenviron/assets/pdf/bmp/bmp_all.pdf

9.15.1 Washing of Equipment and Vehicles (4.8.1)

Will equipment and vehicle washing and/or wheel wash-down be conducted at the site?

☒ Yes ☐ No

Vehicles should not be washed in the roadway. If washing will occur in the Contractor's staging area, the following BMPs should be adopted for washing activities and incorporated into the SWPPP:

- Designate areas to be used for washing equipment and vehicles and/or wheel wash-down and conduct such activities only in these areas.
- Locate such activities, to the extent practicable, away from storm water conveyance channels and waters of the U.S.
- Treat all wash water in a sediment basin or use alternative control measures that provide equivalent or better treatment prior to discharge.
- The discharge of soaps and solvents used in equipment and vehicle washing and/or wheel wash-down is strictly prohibited.

9.15.2 Fueling and Maintenance Areas (4.8.2)

Describe equipment/vehicle fueling and maintenance practices to be implemented to control pollutants to storm water (e.g., secondary containment, drip pans, spill kits, etc.).

Describe spill prevention and control measures to be implemented, including ways to reduce the chance of spills, stop the source of spills, contain and clean up spills, dispose of materials contaminated by spills, and train personnel responsible for spill prevention and control.

Will equipment and vehicle fueling or maintenance be conducted at the site?

☒ Yes ☐ No

The contractor's lay down yards, fueling, and maintenance areas must be delineated on the contractor's SWPPP site map. Spill kits appropriate to respond to the hazards on site will be required. Inspections will include the contractor's fueling, maintenance, and laydown areas. Equipment will be maintained to prevent oils and grease from discharging with storm water. Prior to use each day, equipment operators are required to do a visual inspection for leaks, drips, and excess grease. If leaks cannot be repaired and stopped, the equipment will be placed out of service over drip pans and/or pads to collect any fluids or grease and prevent pollution discharge. Topping off fluids will not be allowed in lieu of maintenance. Equipment operators will look for

excess grease accumulations, especially when the weather warms up, removing and properly disposing of excess grease to prevent discharge.

HMCP or SPCC: For the specific sections in the Good Housekeeping BMPs that deal with fueling and oiling, equipment care and maintenance, waste materials, etc., it should be mention, by referencing the specific page and section, this requirement for BMP reference and citation is met. Also, it will/can create less conflict within the SWPPP due to the HMCP being project specific and the BMP citations more generic.

9.15.3 Washout of Applicators/Containers Used for Paint, Concrete, and Other Materials (4.8.4)

Describe location(s) and controls to minimize the potential for storm water pollution from washout areas for concrete mixers, paint, stucco, etc.

Will washout areas for trucks, applicators, or containers of concrete, paint, or other materials be used at the site? ☒ Yes ☐ No

If YES, describe control measures to be implemented to comply with ACGP Part 4.8.4. If NO, delete the following paragraph.

The contractor will provide a designated concrete washout area. The washout area may be moved during the construction process but the location must be kept current on the site map. Concrete wash water may not be discharged with storm water. The washout must have sufficient capacity for the scheduled activities.

BMP Description: Concrete Washout AK-24

BMP Manual/Publication: DOT&PF, Alaska SWPPP Guide, February 2011

<i>Installation Schedule:</i>	Prior to concrete work.
<i>Maintenance and Inspection:</i>	<u>Inspection:</u> Check all concrete washout facilities frequently to determine if they have been filled to 70 percent capacity, which is when the materials need to be removed. Inspect the plastic liner and sidewalls to ensure it's securely anchored and intact and there are no leaks or damage from construction activities. Check to ensure that each facility sign is still secure and visible. Note whether facilities are being used regularly and whether operators have washed their chutes or hoppers in other locations. <u>Maintenance:</u> Existing facilities must be cleaned once the washout is two-thirds full. Concrete washouts are designed to promote evaporation where feasible. However, if stored liquids are not evaporating and are reaching capacity, vacuum and dispose of liquids in an approved manner (check with the local sanitary sewer authority to determine if there are special disposal requirements for concrete wash water). Remove hardened solids whole or break them up first depending on the type of equipment available. Then re-use the solids on-site or haul them away for recycling or disposal. When removing materials from a self-installed washout, either construct another facility for use during cleaning or, if the existing structure is still intact, it can be re-used. Before relining the structure, inspect it for signs of weakening or damage and make any necessary repairs. Then line the structure with new plastic sheeting, checking that it is free of holes, tears and other damage. It is important that new plastic be used after every cleaning as equipment can damage the existing liner. Any damaged facilities should be repaired promptly. If necessary, a new facility may be required until the existing facility is operational. Contain any spill or discharge of concrete waste materials. Replace or display new signage as needed.
<i>Responsible Staff:</i>	SWPPP Manager & Superintendent, Contractor

9.15.4 Fertilizer or Pesticide Use (4.8.5)

Describe fertilizers and/or pesticides expected to be used and/or stored on-site and procedures for storage of materials to minimize exposure of the materials to storm water.

Will fertilizers or pesticides be used at the site? ☒ Yes ☐ No

If YES, describe control measures to be implemented to comply with ACGP Part 4.8.5.

Fertilizers and pesticides will be applied in a manner and at application rates that will minimize the loss of chemical to storm water runoff. Manufacturers' label requirements for application rates and disposal requirements must be followed. Use pesticides in compliance with federal, state, and local requirements.

9.16 Spill Notification (4.9)

The contractor shall describe spill-notification procedures, including relevant federal, state, tribal, and local agency contact information, to be implemented in the event of a leak, spill, or release of hazardous substances or oil that occur at the construction site. Refer to ACGP Part 4.9 for permit requirements.

Contractor may use DOT&PF's Hazardous Material Control Plan template at http://www.dot.state.ak.us/stwddes/dcsconst/assets/docs/constforms/hmcp_template.doc to create project specific plan. Include plan in Appendix O.

9.17 Construction and Waste Materials (4.8.6, 5.3.7)

Describe in general terms the type of construction and waste materials expected to be stored at the site, with updates as appropriate, and describe the measures for handling and disposal all wastes generated at the site, including clearing and demolition debris or other waste soils removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste. Refer also to ACGP Parts 4.8.3 Staging and Material Storage Areas, and 4.8.6 Storage, Handling, and Disposal of Construction Waste.

Building materials and other construction site wastes must be properly managed and disposed of to reduce the risk of pollution from materials such as surplus or refuse building materials or hazardous wastes. Practices such as trash disposal, recycling, proper material handling, and spill prevention and cleanup measures can reduce the potential for storm water runoff to mobilize construction site wastes and contaminate surface or groundwater.

The contractor must establish proper building and material storage areas to avoid pollutants coming in contact with rainfall or flowing storm water. Any materials that have the potential to pollute storm water will be covered to prevent rainfall from coming into contact with them. Garbage containers will be covered to prevent debris from blowing away as well. Any contractor supplied staging area must be included in inspections and the SWPPP. No materials will be staged or stored, even temporarily in flowing water.

The contractor should designate a waste collection area on site that does not receive substantial amount of runoff from upland areas and does not drain directly to a water body.

Construction Materials

<i>BMP Description: Material Delivery, Storage and Containment BMP C153</i>	
<i>Source: Washington State Department of Ecology Storm water Management, Manual for Western Washington Volume II – Construction Storm water Pollution Prevention, February 2005</i>	
Installation Schedule:	Continuously during construction activities.
Maintenance and Inspection:	<u>Inspection:</u> Weekly minimum, semi-weekly during relatively continuous precipitation.
Responsible Staff:	SWPPP Manager & Superintendent

Waste Materials

<i>BMP Description: General Construction Site Waste Management</i>	
<i>BMP Manual/Publication: ADEC Alaska Storm Water Guide, December 2011</i>	
Installation Schedule:	Continuously during construction activities
Maintenance and Inspection:	<u>Inspection:</u> Inspect storage and use areas and identify containers or equipment that could malfunction and cause leaks or spills. Check equipment and containers for leaks, corrosion, support or foundation failure, or other signs of deterioration, and test them for soundness. <u>Maintenance:</u> Immediately repair or replace any that are found to be defective.
Responsible Staff:	SWPPP Manager & Superintendent, Contractor

10.0 INSPECTIONS (5.4; 6.0)

Minimum requirements for the locations and scope of site inspections are described in the ACGP Part 6.4.

Inspection requirements for linear projects are described in the ACGP Part 6.5.

Describe the frequency inspections will occur at your site, including any correlations to storm frequency and intensity.

Note that inspection details for particular BMPs should be included in Section 11 or Appendix B.

10.1 Inspection Schedules (5.4.1.2; 6.1; 6.2)

Refer to ACGP Part 6.1 for inspection frequency requirements.

Required inspection frequency is based on mean annual precipitation for the site. Refer to Section 3.2 for annual precipitation data and can be found in the project specifications.

A permittee must allow an authorized representative of ADEC, EPA or the MS4 operator to conduct a site inspection in accordance with the ACGP Part 6.6.

Inspection frequency: **Once every seven calendar days**

As defined by the ACGP, winter shutdown means the cessation of soil disturbing or soil stabilizing construction activity for winter. Typically this period is from October/November to April/May and is approximately from Fall Freeze-up to Spring Thaw.

ACGP Definition of Fall Freeze-up: For the purposes of this permit, means for planning purposes in the development of the SWPPP and initial planning of control measure maintenance the date in the fall that air temperatures will be predominately below freezing. It is the date in the fall that has an 80% probability that a minimum temperature below a threshold of 32.5 degrees Fahrenheit will occur on or after the given date.

ACGP Definition of Spring Thaw: For the purposes of this permit, means for planning purposes in the development of the SWPPP and initial planning of control measure maintenance the date in the spring that air temperatures will be predominately above freezing. It is the date in the spring that has a 20% probability that a minimum temperature below a threshold of 32.5 degrees Fahrenheit will occur on or after the given date.

These dates can be found by looking up the "Fall 'Freeze' Probabilities" & "Spring 'Freeze' Probability" for the weather station closest to the site on the website: www.wrcc.dri.edu/summary/Climsmak.html. NOTE: this estimation of "Fall Freeze-up" & "Spring 'Freeze'" is for planning purposes only. During construction the permittee will need to maintain control measures based on actual conditions.

Estimated date of winter shutdown. **October 6.**

The inspections may be conducted jointly with AEA personnel as directed by the Project Engineer. The schedule for site inspections will be established and updated as necessary to meet the requirements of the ACGP and provide AEA with notice and opportunity to participate in the site inspection.

10.2 Inspection Form or Checklist (5.4.1.3; 6.7)

Contractor is required to attach inspection records in Appendix K. An Inspection Report will be completed after each inspection, identifying BMPs installed at the time of inspection, noting corrective actions required, and documenting complete-by-date for any actions discovered during the inspection. Each report will be certified by the Contractor's storm water lead or Superintendent.

10.3 Corrective Action Procedures (5.4.1.4; 8.0)

Identify how conditions found that require corrective action will be addressed:

The following guidelines apply for setting corrective action complete-by dates as required by the ACGP:

For conditions that are easily remedied (i.e., removal of tracked sediment, maintenance of control measures, or spill clean-up), the permittee must initiate appropriate steps to correct the problem within twenty-four hours from the time of discovery and correct the problem as soon as possible; or

If installation of a new control measure is needed or an existing control measure requires significant redesign and reconstruction or replacement, the permittee must install the new or modified measure and make it operational within seven calendar days from the time of discovery of the need for the corrective action, unless infeasible.

If a discharge occurs during a local 2-year, 24-hour storm event, a corrective action must be initiated the day after the storm event ends as described in ACGP Part 8.1.1.

For corrective actions that could affect a subcontractor, notify the subcontractor within three calendar days of taking the corrective action.

Additionally, deadlines for completion of corrective actions shall be selected to protect water quality and prior to the next storm event unless impracticable.

Corrective Action Log

The corrective action log will document the following within 24 hours of discovery of any conditions listed in ACGP Part 8.1:

- Date the problem was identified
- Summary of corrective action taken or to be taken
- Notice of whether SWPPP modifications were required as a result of this discovery or corrective action
- Date corrective action completed and name of person completing the action

In the event there is a reason (outside of the project staff's control) that a corrective action cannot practicably be completed by the set complete-by date, the contractor shall notify the Project Engineer.

10.4 Inspection Recordkeeping (5.4.2)

Records (including inspection reports, corrective action logs, delayed action item reports, grading and stabilization logs, amendment logs, staff tracking logs, rainfall logs, and training logs) will be maintained for a minimum period of at least three (3) years after the permit is terminated. A hard copy and electronic copy of the final SWPPP, including all appendices, will be transmitted to the Project Engineer and AEA when the project's NOTs are filed.

11.0 MONITORING PLAN (IF APPLICABLE) (5.5; 7.0)

11.1 Determination of Need for Monitoring Plan

Is there an EPA-established or approved TMDL for **Keku Strait**? ☐ Yes ☒ No

12.0 POST-AUTHORIZATION RECORDS (5.8)

Copy of Permit Requirements (5.8.1)

The contractor's SWPPP must contain the following documents:

- copy of ACGP (5.8.1.1)
- copy of the signed and certified NOI form submitted to ADEC (5.8.1.2)
- upon receipt, a copy of letter from ADEC authorizing permit coverage, providing tracking number (5.8.1.3)

These documents must be included in Appendix F.

12.1 Additional Documentation Requirements (5.8.2)

A Grading and Stabilization Log will be filled out to satisfy the following ACGP requirements:

- Dates when grading activities occur (5.8.2.1.1)
- Description of grading activities and location (5.8.2.1.2)
- Dates when construction activities temporarily or permanently cease (5.8.2.1.3)
- Dates when stabilization measures are initiated (5.8.2.1.4)
- Description of Stabilization Measure (5.8.2.1.5)
- Date of beginning and ending period for winter shutdown (5.8.2.2)

Other documents will be included as shown below:

- Copies of inspection reports (5.4.2; 5.8.2.3).
- Copies of monitoring reports, if applicable (5.8.2.4; 5.5.2; 9.1).
- Documentation of maintenance and repairs of control measures (5.8.2.8; 8.1; 8.2).
- Copy of ADEC Letter of Non-Objection (insert in Appendix D).

12.1.1 Records of Employee Training (4.14; 5.8.2.7)

Training staff and subcontractors is an effective BMP. Document all training conducted for your staff, those with specific storm water responsibilities (e.g. installing, inspecting, and maintaining BMPs), and subcontractors. Use the Training Log (Form 25D-125) in Appendix I.

Describe Training Conducted: **Insert Text**

General storm water and BMP awareness training for staff and subcontractors:

During safety meetings and schedule briefings, corrective actions from the previous period will be reviewed. The contractor is encouraged to discuss timing of activities and stabilization requirements. Records of the training topics, attendees, and length must be maintained in the contractor's SWPPP.

Detailed training for staff and subcontractors with specific storm water responsibilities:

Insert Text

Individual(s) Responsible for Training:

Insert Names, Titles, and Contact Numbers here

Documentation of training conducted shall be record on Form 25D-125 and included in Appendix I.

13.0 MAINTAINING AN UPDATED SWPPP (5.9)

This section does not need to be filled out but is a list of reminders for the applicant.

The permittee must modify the SWPPP, including site map(s), in response to any of the following:

- Whenever changes are made to construction plans, control measures, good housekeeping measures, monitoring plan (if applicable), or other activities at the site that are no longer accurately reflected in SWPPP (5.9.1.1);

- If inspections of site investigations by staff or by local, state, tribal, or federal officials determine SWPPP modifications are necessary for permit compliance (5.9.1.2); and
- To reflect any revisions to applicable federal, state, tribal, or local laws that affect control measures implemented at the construction site (5.9.1.3).

13.1 Log of SWPPP Modifications (5.9.2)

A permittee must keep a log showing dates, name of person authorizing the change, and a brief summary of changes for all significant SWPPP modifications (e.g., adding new control measures, changes in project design, or significant storm events that cause replacement of control measures).

13.2 Deadlines for SWPPP Modifications (5.9.3)

Revisions to the SWPPP must be completed within seven days of the inspection that identified the need for a SWPPP modification or within seven days of substantial modifications to the construction plans or changes in site conditions.

14.0 ADDITIONAL SWPPP REQUIREMENTS (5.10)

14.1 Retention of SWPPP (5.10.1)

A copy of the SWPPP (including a copy of the permit), NOI, and acknowledgement letter from ADEC must be retained at the construction site.

14.2 Main Entrance Signage (5.10.2)

A sign or other notice must be posted conspicuously near the main entrance of the site. The sign or notice must include a copy of the completed NOI for both AEA and the contractor.

14.3 Availability of SWPPP (5.10.3)

The permittee must keep a current copy of the SWPPP at the site. The SWPPP must be made available to subcontractors, government, and tribal agencies, upon request.

14.4 Signature and Certification (5.10.4)

As co-permittees, the SWPPP is signed and certified by both the contractor and by AEA. Either the contractor's corporate officer or their duly authorized representative can certify the SWPPP. If a duly authorized representative certifies, the Delegation of Signature Authority form must be included in Appendix E..

APPENDIX A

SITE MAPS AND DRAWINGS

KAKE BULK FUEL UPGRADES

EROSION AND SEDIMENT CONTROL PLAN

KAKE, ALASKA



VICINITY MAP

Wetlands and Waterbodies within 1/2 Mile of the Project Area



LOCATION MAP

 Wetlands/Waterbodies (National Wetlands Inventory)

REVISIONS	DATE	DESCRIPTION

NOT FOR
CONSTRUCTION

**HDL** ENGINEERING
Consultants

- ENGINEERING
- EARTH SCIENCE
- PROJECT MANAGEMENT
- PLANNING

KAKE BULK FUEL UPGRADES

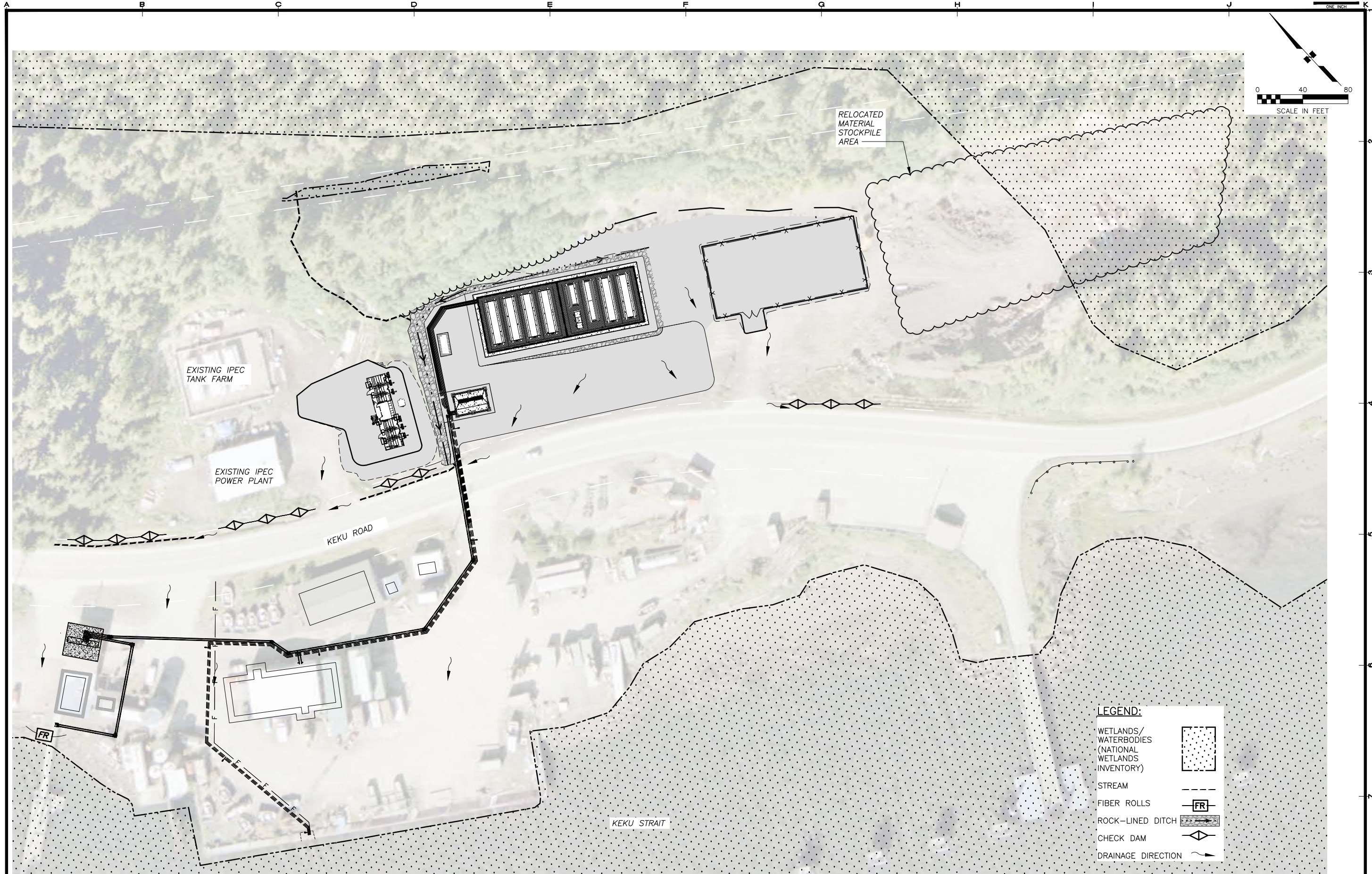
**ALASKA**
ENERGY AUTHORITY
KAKE, ALASKA

SHEET TITLE	
EROSION AND SEDIMENT CONTROL PLAN COVER SHEET AND LOCATION MAP	
SHEET	
1 OF 2	
DRAWN BY	CHECKED BY
HDL	MRS
DATE	SCALE
03/29/18	NONE
JOB NUMBER	
13-040	

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VIEW: G101-KTC-IF_1=1_03-29-16 at 13:58 by WJB
XREF: 13-040-00-B01-BK

Service Layer Credits: Data courtesy of Digital Globe, SPOT/Airbus, USDA, Alaska DNR, DCCED, and

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1
G1.04 **PROJECT LAYOUT PLAN**
SCALE: 1" = 40.0'

REVISIONS		DATE	DESCRIPTION



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KAKE BULK FUEL UPGRADES

ALASKA ENERGY AUTHORITY

KAKE, ALASKA

SHEET TITLE

EROSION AND SEDIMENT CONTROL PLAN SITE MAP

SHEET

2 OF 2

DRAWN BY: WJB

CHECKED BY: MRS

DATE: 04/21/16

SCALE: AS SHOWN

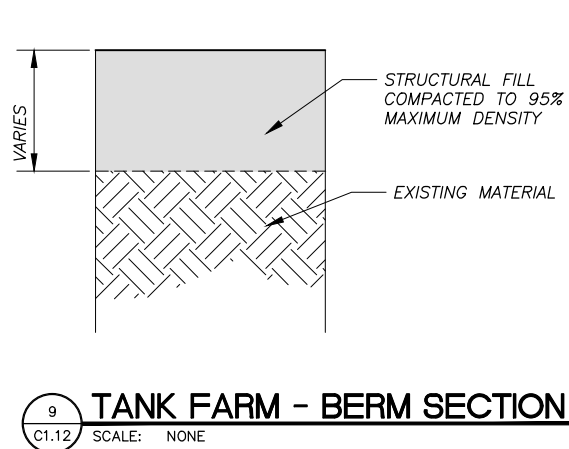
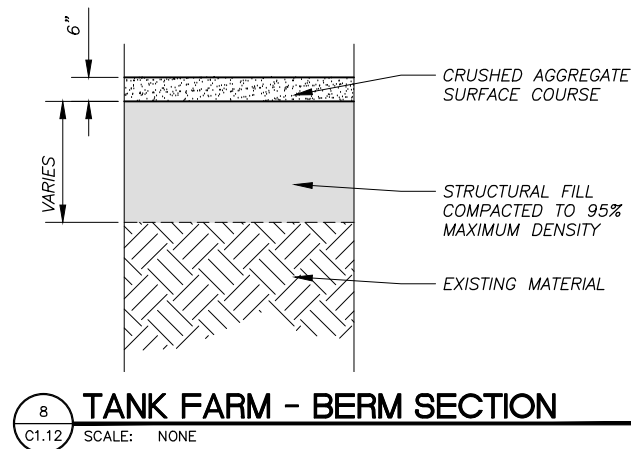
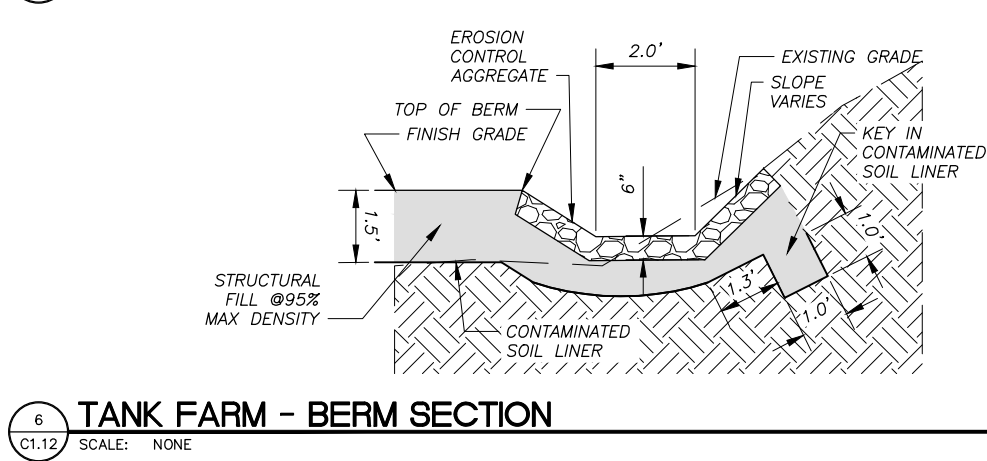
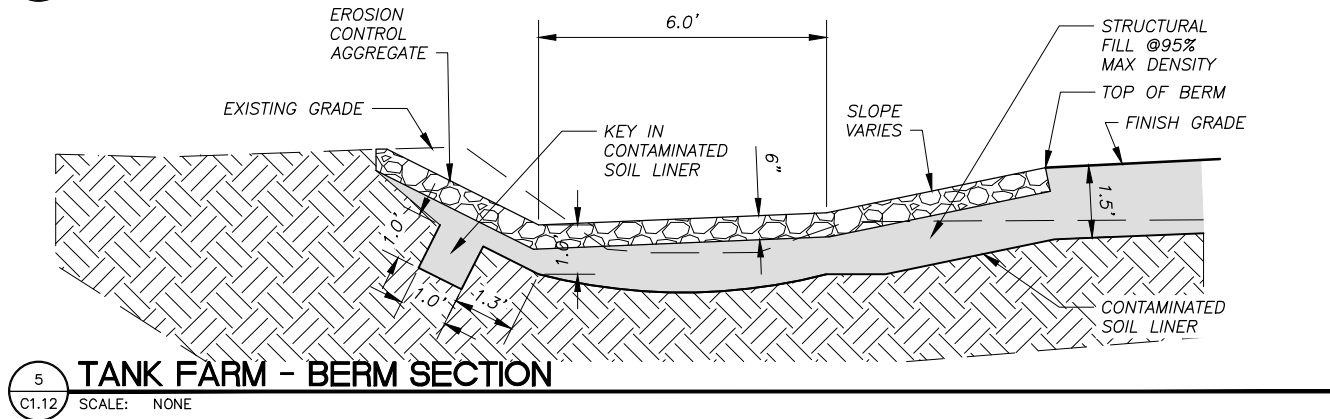
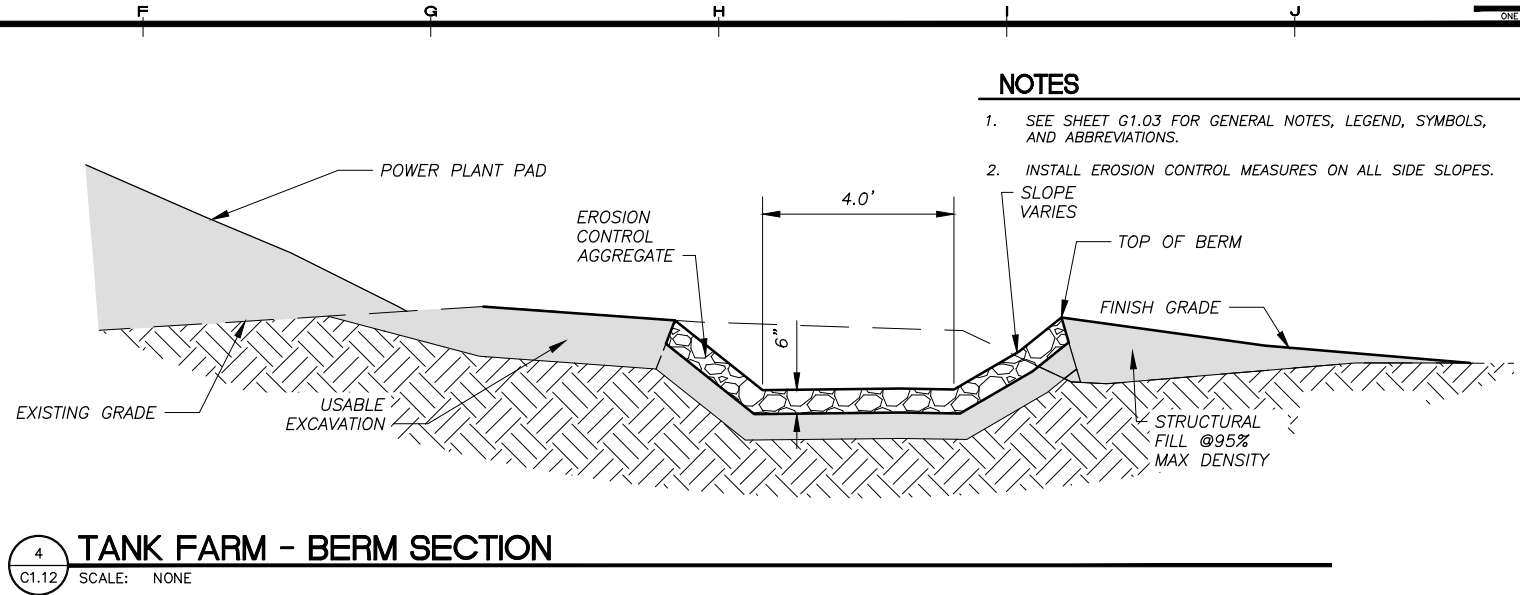
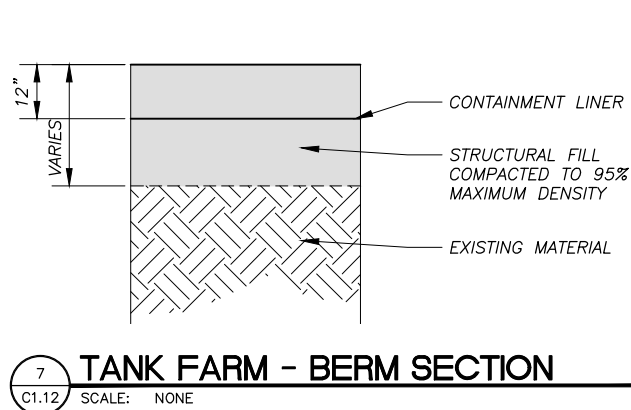
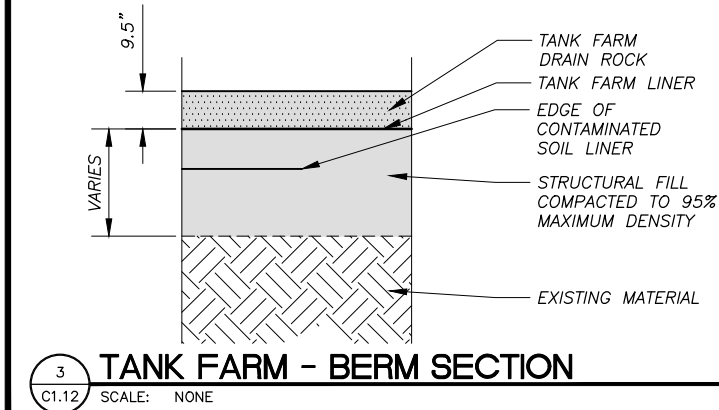
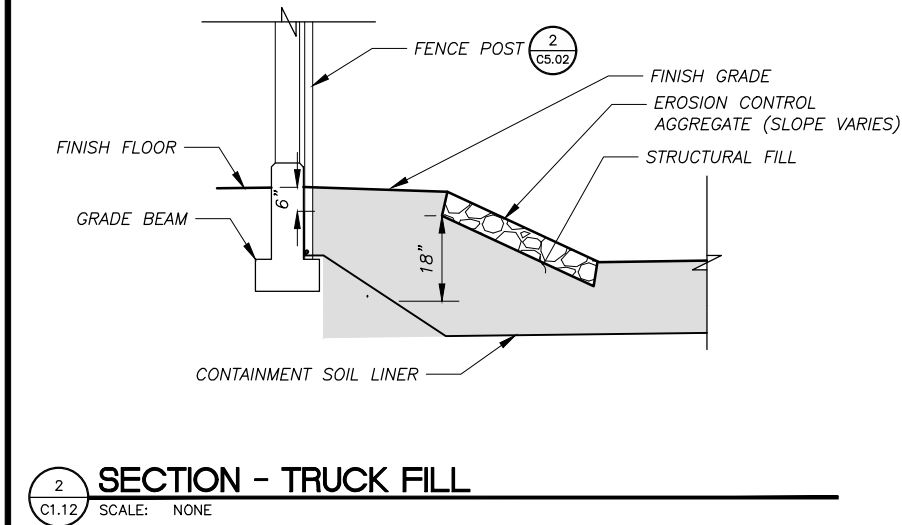
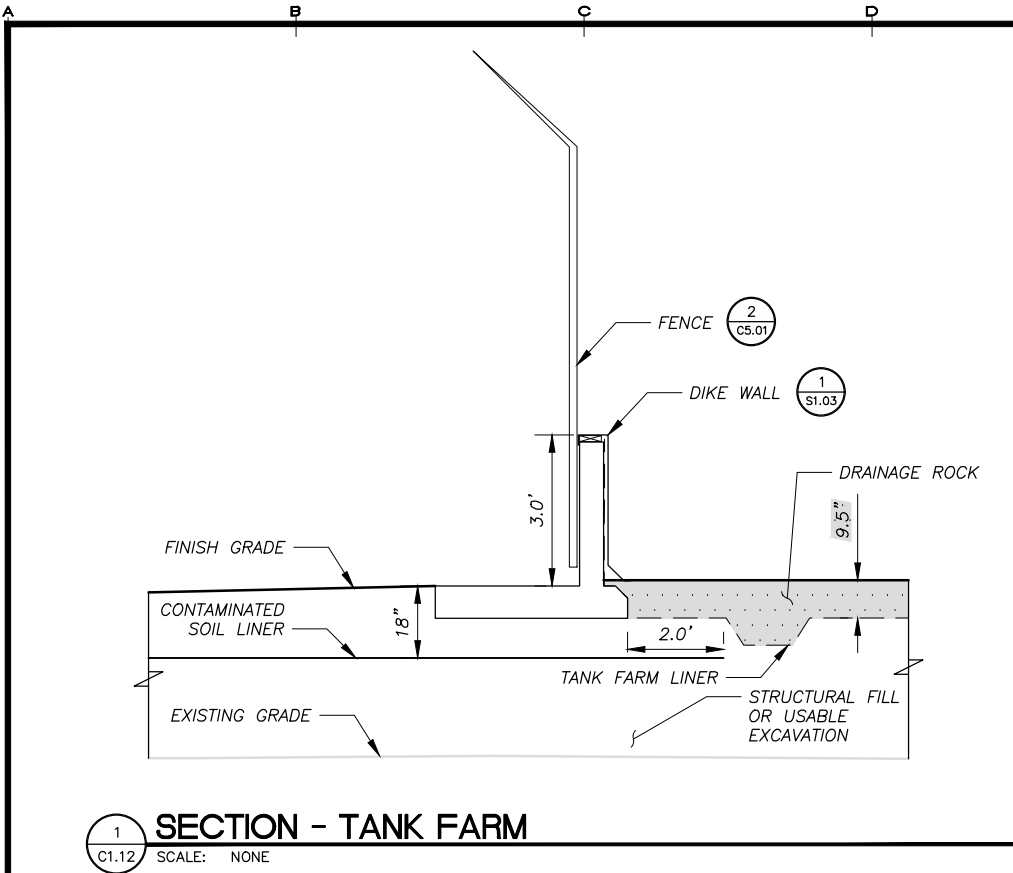
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APPENDIX B

BMP DETAILS

This appendix contains examples of BMPs that may be used for erosion and sediment control. It is the contractor's responsibility to select BMPs that conform to the project design specifications where necessary.

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NOTES

- SEE SHEET G1.03 FOR GENERAL NOTES, LEGEND, SYMBOLS, AND ABBREVIATIONS.
- INSTALL EROSION CONTROL MEASURES ON ALL SIDE SLOPES.

REVISIONS	DATE	DESCRIPTION

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KAKE, ALASKA

SHEET TITLE
SECTIONS

SHEET
C1.12

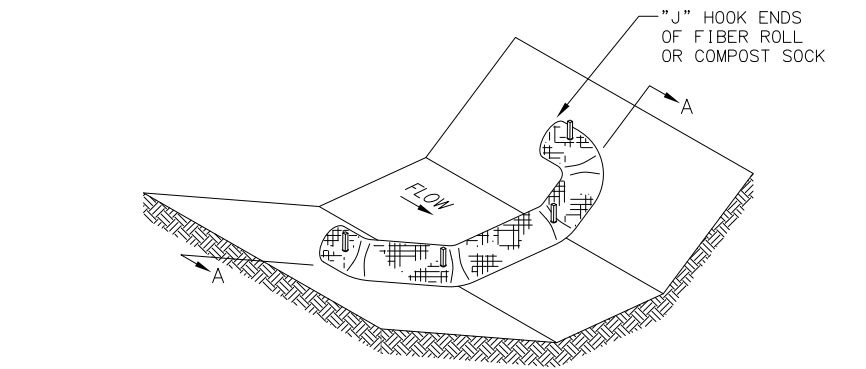
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KK

CHECKED BY:
MRS

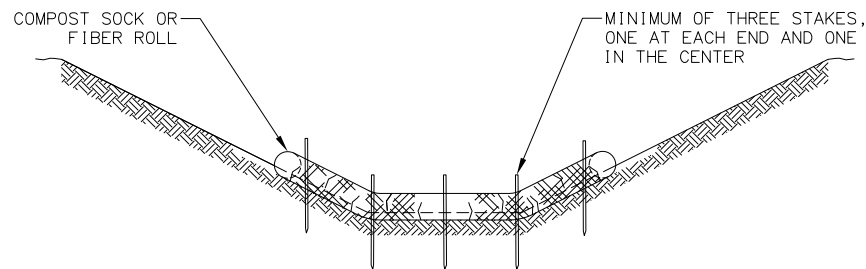
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04/20/16

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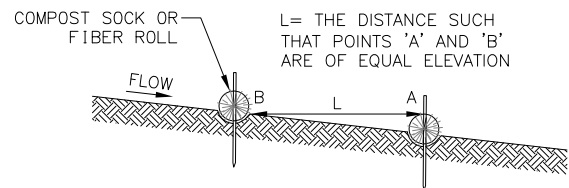
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13-040



PERSPECTIVE



SECTION A-A



PROFILE

FIBER ROLL OR COMPOST SOCK

NOT TO SCALE

- FIBER ROLL OR COMPOST SOCK NOTES:
- FOR USE OF FIBER ROLLS SEE BMP-10.00 FIBER ROLLS FOR EROSION AND SEDIMENT CONTROL.
 - FOR USE OF COMPOST SOCKS SEE BMP-05.00 COMPOST BERM & SOCK.

- INSTALLATION, INSPECTION, MAINTENANCE, AND REMOVAL
- SEE TEMPORARY CHECK DAM NOTES, THIS SHEET.

TEMPORARY CHECK DAM GENERAL NOTES:

MATERIALS

TEMPORARY CHECK DAM: USE ONLY CLEAN MATERIALS.

INSTALLATION

- INSTALL CHECK DAMS AS SOON AS DRAINAGE ROUTES ARE ESTABLISHED.
- PLACE CHECK DAMS PERPENDICULAR TO THE FLOW OF WATER.
- IF NECESSARY, IMPOUND OR BYPASS UPSTREAM WATER FLOW PRIOR TO INSTALLING CHECK DAMS.
- EXTEND CHECK DAMS ONTO THE CHANNEL BANKS TO A HEIGHT ABOVE ANTICIPATED HIGH WATER LEVEL TO PREVENT LOCALIZED UNDERMINING AND EROSION.

INSPECTION

- VISUALLY COMPARE UPSTREAM AND DOWNSTREAM FLOWS TO DETERMINE RELATIVE TURBIDITY LEVELS AND EFFECTIVENESS OF CHECK DAMS.
- INSPECT CHANNEL BANKS FOR EVIDENCE OF UNDERMINING AND EROSION.
- INSPECT FOR DAM DETERIORATION AND FOR MIGRATION OF STRUCTURAL COMPONENTS DOWNSTREAM.
- ENSURE THE CENTER OF THE DAM IS LOWER THAN THE EDGES AND THAT WATER IS NOT RUNNING AROUND THE ENDS.

MAINTENANCE

- REPAIR BANK UNDERCUTS.
- REMOVE ACCUMULATED SEDIMENT BEFORE IT REACHES HALF THE HEIGHT OF THE DAM OR ONE-THIRD OF THE AVAILABLE STORAGE IF PROTECTING A WATER BODY OR STORM DRAIN INLET.
- REPAIR UNDERCUTTING AND FLOW AROUND THE EDGES OR, IF NECESSARY, REPOSITION THE CHECK DAM.
- INSTALL ADDITIONAL DAMS OR OTHER EROSION AND SEDIMENT CONTROL MEASURES AS NEEDED.

REMOVAL

- AFTER THE DISTURBED AREA IS PERMANENTLY STABILIZED OR WHEN THE GRASS IN THE CHANNEL HAS MATURED SUFFICIENTLY TO PROTECT THE DITCH OR SWALE, REMOVE TEMPORARY CHECK DAMS.
- TAKE CARE DURING CHECK DAM REMOVAL, SINCE THE WATERWAY SURFACE IS SUSCEPTIBLE TO DAMAGE.
- IMMEDIATELY SEED OR PROVIDE OTHER FORMS OF PROTECTION FOR DAMAGED OR UNPROTECTED AREAS.

REVISIONS		
Date	Description	By

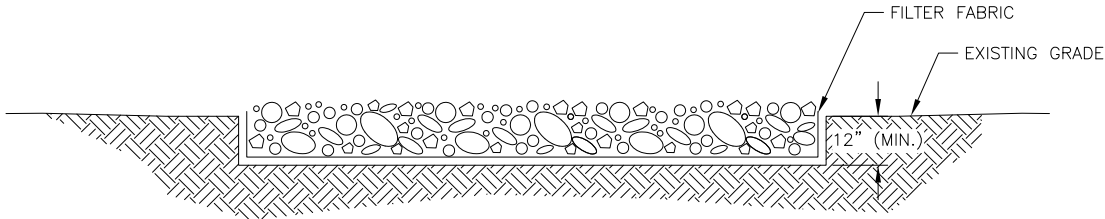
State of Alaska DOT&PF

TEMPORARY CHECK DAM

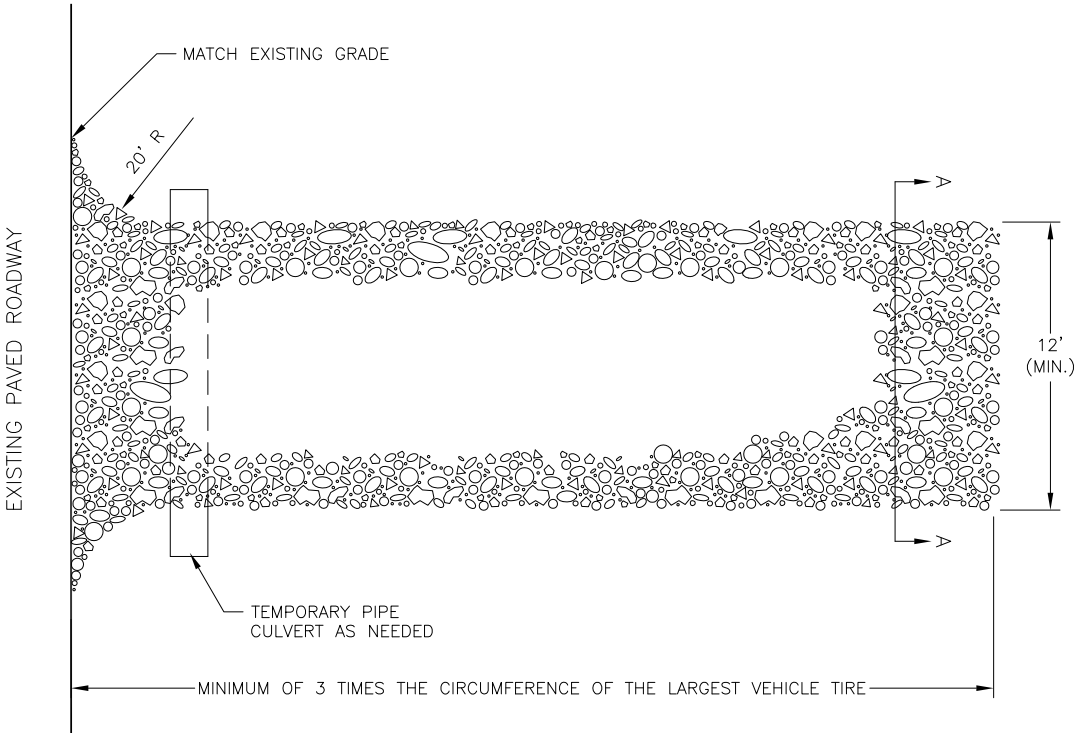
(NOTES & FIBER ROLL OR COMPOST SOCK)

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Date X/XX/XX



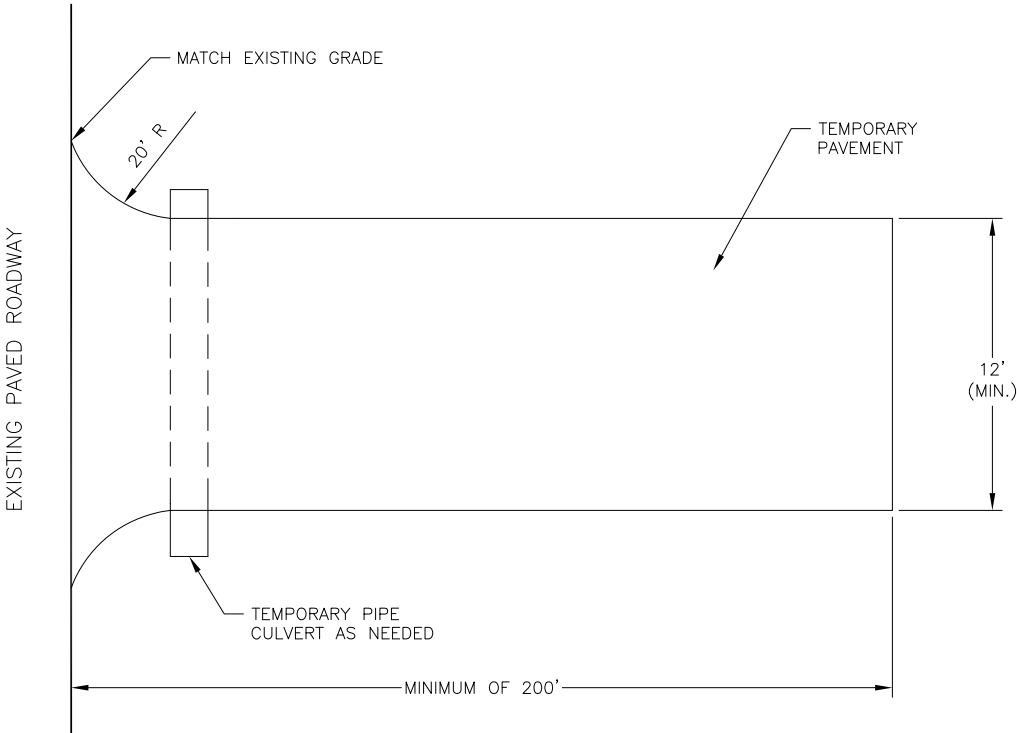
SECTION A-A



PLAN

ROCK CONSTRUCTION EXIT
NOT TO SCALE

- ROCK CONSTRUCTION EXIT NOTES:
- MATERIALS
- ROCK: 2- TO 3-INCH COARSE AGGREGATE OR 3- TO 6-INCH QUARRY SPALL OR ANGULAR ROCK, WHICHEVER IS APPROPRIATE TO THE PROJECT FLEET.
- INSTALLATION
- PLACE THE FILTER FABRIC AND ROCK TO THE SPECIFIC GRADE SHOWN ON THE PLANS.
- MAINTENANCE
- REMOVE ACCUMULATED SEDIMENT OR MUD.
 - REPLACE ROCK MATERIAL WHEN SURFACE VOIDS ARE FILLED WITH SEDIMENT. REPLACE FABRIC AS NEEDED.
 - TOP DRESS WITH 2 TO 3 INCHES OF COARSE AGGREGATE OR 3- TO 6-INCH COARSE ROCK WHEN THE PAD BECOMES LADEN WITH SEDIMENT.
- INSPECTION
- INSPECT FOR ROCK THAT HAS BEEN DISPLACED FROM THE PAD.



PLAN

TEMPORARY PAVEMENT CONSTRUCTION EXIT
NOT TO SCALE

- TEMPORARY PAVEMENT CONSTRUCTION EXIT NOTES:
- INSPECTION
- INSPECT TEMPORARY PAVEMENT FOR DAMAGE.
- MAINTENANCE
- SWEEP DESIGNATED PAVED EXIT TO PREVENT SEDIMENT TRACK-OUT.
 - REPAIR DAMAGED TEMPORARY PAVEMENT.

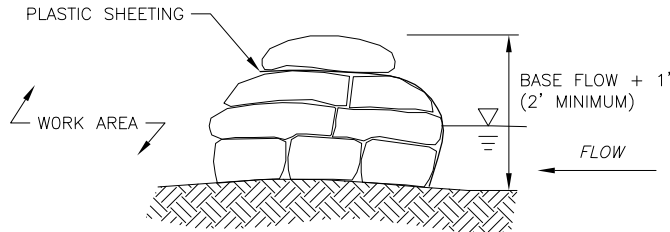
- STABILIZED CONSTRUCTION EXIT GENERAL NOTES:
- INSTALLATION
- INSTALL STABILIZED CONSTRUCTION EXIT PRIOR TO EARTH WORK.
 - CLEAR THE EXIT AREA OF ALL VEGETATION, ROOTS, AND OTHER MATERIAL.
 - PROVIDE DRAINAGE TO CARRY WATER TO A SEDIMENT TRAP, VEGETATIVE SEDIMENT FILTER OR OTHER PROTECTED OUTLET.
 - EXCAVATE AND GRADE THE AREA FOR ROCK PLACEMENT.
 - INSTALL SIGNS, FENCING OR BARRICADES TO CHANNEL OUTGOING TRAFFIC TO THE STABILIZED CONSTRUCTION EXIT.

- INSPECTION
- INSPECT STABILIZED CONSTRUCTION EXIT FOR SEDIMENT ACCUMULATION AND MATERIAL DISPLACEMENT.
 - INSPECT ROADWAY FOR SEDIMENT TRACK-OUT.
 - INSPECT DITCHES TO ENSURE NO SEDIMENT ACCUMULATION.

- MAINTENANCE
- MAINTAIN EACH EXIT IN A CONDITION THAT WILL PREVENT TRACKING OF MUD OR SEDIMENT ONTO PUBLIC RIGHT-OF-WAY.
 - REPAIR AND/OR CLEAN OUT ANY STRUCTURES USED TO TRAP SEDIMENT.
 - REMOVE ALL MUD AND SEDIMENT DEPOSITED ON PAVED ROADWAYS.
 - ADD MORE SIGNS, FENCING OR BARRICADES WHEN VEHICLES ARE EXITING THE PROJECT WITHOUT USING THE STABILIZED CONSTRUCTION EXIT. INSTALL ADDITIONAL STABILIZED CONSTRUCTION EXITS IF NEEDED, YET USE SIGNS AND BARRICADES TO MINIMIZE THE NUMBER OF STABILIZED CONSTRUCTION EXITS.
 - PREVENT TRACK-OUT BY USING ADDITIONAL BMPs, SUCH AS A TIRE WASH.

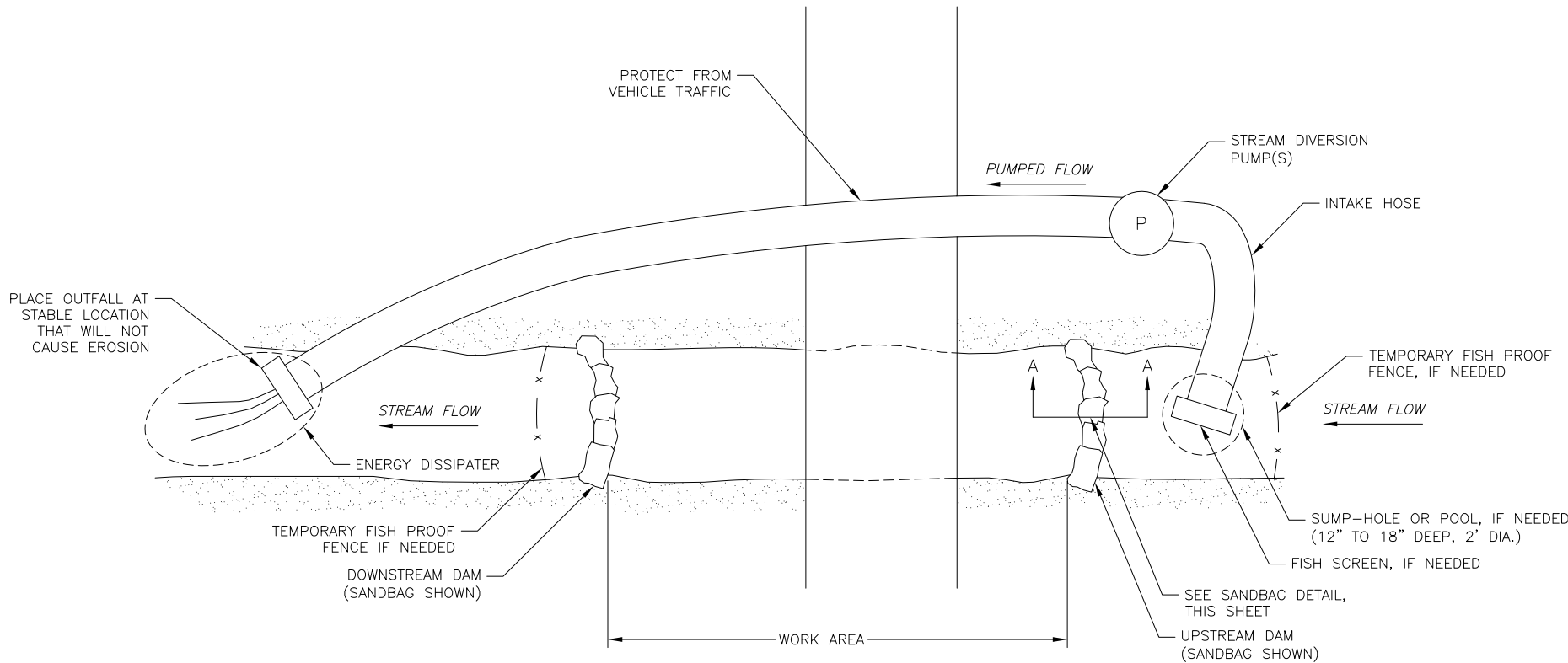
- REMOVAL
- REMOVE THE STABILIZED CONSTRUCTION EXIT AND ANY SEDIMENT TRAPPING STRUCTURES AFTER THEY ARE NO LONGER NEEDED, OR WITH FINAL SITE STABILIZATION.
 - REGRADE AND PERMANENTLY STABILIZE THE REMAINING DISTURBED AREAS ACCORDING TO THE PLANS.

REVISIONS		
Date	Description	By
State of Alaska DOT&PF		
STABILIZED		
CONSTRUCTION EXIT		
(NOTES, ROCK &		
TEMPORARY PAVEMENT)		
APPROVED		
Date	X/XX/XX	



SECTION A-A

SANDBAG DAM
NOT TO SCALE



PLAN

PUMPED STREAM DIVERSION
NOT TO SCALE

PUMPED STREAM DIVERSION NOTES:

MATERIALS

DAM MATERIAL: SANDBAGS COVERED WITH PLASTIC SHEETING (30 MIL OR 2 OR MORE LAYERS OF 10 MIL), RIPRAP, STEEL PIPE PLATE, SHEETPILE, INFLATABLE BLADDERS, OR EQUIVALENT.

PUMP: SIZED FOR DESIGN FLOW IN CONTRACT, WITH INTAKE LINE, FITTINGS, AND NOZZLES.

ENERGY DISSIPATER: RIPRAP, SANDBAGS, T-BAR SPREADER, OR EQUIVALENT.

FISH BARRIER: FENCE OR SCREEN, IF NEEDED.

SPILL PREVENTION BMPS.

INSTALLATION

1. COORDINATE WITH DEPARTMENT FOR INSTALLATION OF FISH FENCE, IF NEEDED.
2. INSTALL A CONVEYANCE, SUMP (IF NEEDED), AND INTAKE HOSE.
3. INSTALL THE UPSTREAM AND DOWNSTREAM DAM.
4. PLACE THE PUMP IN AN AREA DESIGNED FOR ITS USE AND OPERATION WITH SPILL PREVENTION MEASURES.
5. INSTALL THE ENERGY DISSIPATER.

INSPECTION

1. WHEN PUMPING, MONITOR PUMPS, INTAKE AND DISCHARGE POINTS. ENSURE THAT PUMPS ARE ADEQUATELY SIZED.
2. INSPECT UPSTREAM AND DOWNSTREAM DAMS FOR OVERTOPPING, BYPASS, UNDERCUTTING, OR OTHER DEFECTS.
3. INSPECT THE CONVEYANCE STRUCTURE FOR LEAKS, EROSION, OR OTHER DEFECTS.
4. INSPECT DISCHARGE POINT FOR EROSION OR FAILURE OF THE ENERGY DISSIPATION MATERIAL.
5. INSPECT THE EQUIPMENT AREA FOR PROPERLY STORED FUEL AND OTHER POTENTIALLY HAZARDOUS SUBSTANCES.

MAINTENANCE

1. REINFORCE OR RESTORE ANY PORTION OF THE DAMS, CONVEYANCE STRUCTURE, OR ENERGY DISSIPATER.

REMOVAL

1. ENSURE STREAM BANKS AND SUMP ARE STABLE BEFORE REMOVAL
2. REMOVE THE DOWNSTREAM DAM FIRST, THEN THE UPSTREAM DAM.
3. REMOVE THE ENERGY DISSIPATER.
4. REMOVE THE INTAKE HOSE.
5. REMOVE THE TEMPORARY CONVEYANCE STRUCTURE. BACKFILL OR REGRADE AND RESTORE TO ORIGINAL CONTOURS.
6. REGRADE AND SEED OR PERMANENTLY STABILIZE ALL DISTURBED AREAS.

REVISIONS		
Date	Description	By

State of Alaska DOT&PF

PUMPED STREAM
DIVERSION

A
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D

Date X/XX/XX

Description	This BMP describes products or measures used for reducing or preventing wind erosion by protecting the soil surface, roughening the surface, and reducing the surface wind velocity. Several dust control treatments are described below. Other methods are also available. Vegetative Cover: For disturbed areas not subject to traffic, vegetation provides the most practical method of dust control (see BMP 21-Seeding and BMP 22-Sodding). Mulch (including gravel mulch): When properly applied, mulch offers a fast, effective means of controlling dust (see BMP 15-Mulching). Spray-On Adhesive: Asphalt emulsions, latex emulsions, or resin in water can be sprayed onto mineral soil to control dust (see BMP 16-Hydromulching). Sprinkling: The site may be sprinkled with water until the surface is wet. Sprinkling is especially effective for dust control on haul roads and other traffic routes. Stone: Stone or gravel used to stabilize construction roads and disturbed soils can also be effective for dust control and reduce soil losses from those areas by up to 80% . Surface Roughening: Tilling or discing the surface of disturbed soils to produce a rough surface or ridges which when perpendicular to prevailing winds can reduce soil losses due to wind by 80% (see BMP 25-Slope Roughening). Barriers: A board fence, wind fence, sediment fence, or similar barrier can control air currents and blowing soil. All of these fences are normally constructed of wood. Perennial grass and stands of existing trees may also serve as wind barriers. Barriers prevent erosion by obstructing the wind near the ground and preventing the soil from blowing off site.
Applications	The above measures for dust control should be used when open, dry areas of soil are anticipated on the site. Clearing and grading activities create the opportunity for large amounts of dust to become airborne. Therefore, one or several dust control measures should be considered prior to clearing and grading. In many cases, water erosion control measures incorporated into the project will indirectly prevent wind erosion. As a standard practice, any exposed area should be stabilized using vegetation to prevent both wind and water erosion. When rainfall is insufficient to establish vegetative cover, mulching is an effective way of conserving moisture, preventing surface crusting, reducing

runoff and erosion, and helping to establish vegetation. It is a critical treatment on sites with erosive slopes.

Limitations	Drainage area – N/A Minimum bedrock depth – N/A NRCS soil type – N/A Drainage/flood control – no Maximum slope – 5% Minimum water table - N/A Freeze/thaw – N/A
Targeted Pollutants	Sediment Trace Metals Hydrocarbons
Design Parameters	Dust Prevention: The best method of controlling dust is to prevent dust production. This can best be accomplished by limiting the amount of bare soil exposed at one time. In project design, identify all areas where ground disturbance will not be allowed. Design and locate haul roads, detours, and staging areas to avoid unnecessary exposure of bare ground and avoid using areas that are the most susceptible to wind erosion. In the stormwater site plan, specify staging or work sequencing techniques that minimize the risk of wind erosion from bare soil. In most cases, this will require a change from traditional construction techniques that allow large areas to be disturbed at the outset of construction and to remain exposed for long periods of time. Vegetative Cover: Follow recommended seeding and planting specifications. If site conditions are favorable, use an extended seeding season to ensure that seeding becomes established over as much of the project as possible before winter shutdown or substantial completion. Specify the use of establishment water to accelerate vegetative stabilization if other means of long-term slope protection are not feasible. Mulch: Apply according to the design parameter for BMP 16-Hydromulching. Sprinkling: Apply at a rate of 3 gallons per acre so that the soil is wet but not saturated or muddy and so that no dust is being generated. Stone: At ingress/egress to public highways, apply as indicated in BMP 5-Stabilization of Construction Entrance. For detours, haul roads, or temporary traffic routes through the construction site, provide a layer of fractured stone 2

to 4 in. thick and 1 to 2 in. in diameter.

Surface Roughening: Tilling or discing should leave 6 in. (minimum) furrows, preferably perpendicular to the prevailing wind direction, to gain the greatest reduction in wind erosion. If the surface cannot be furrowed perpendicular to the prevailing wind direction, roughening the surface by using a ripper/scarifier (grader) or a ripper (cat) will produce the desired result of a 6 in. irregular surface.

Barriers: A wind barrier generally protects soil downwind for a distance of 10 times the height of the barrier. If additional protection is needed, use other methods in conjunction with the barrier.

Construction Guidelines

Site Assessment: Assess the potential problem of wind erosion and dust generation at the project site. Consider the soil type, prevailing wind direction, and the effect of other prescribed erosion control measures.

Use Preventive Strategies Wherever Possible:

- Minimize amount of bare ground exposed at one time.
- Minimize amount of ground disturbance occurring when wind erosion is highest.

Implement Dust Control Measures as Needed:

- Provide stabilized roadway to minimize amount of dust generated by construction vehicles and highway traffic (gravel, pave, or moisten the bare areas of the highway or detour route).
- Apply protective materials to exposed areas (e.g., stone, mulch, adhesive/emulsions).
- Install barriers to prevent dust from blowing off site.
- Establish vegetation at the earliest possible opportunity (using establishment water if necessary to ensure viability).
- Keep haul roads, detours, and other bare areas moist by sprinkling them with water.
- Perform street sweeping, as needed.

Maintenance

- Dust control requires constant attention: it is not a one-time or once-in-awhile activity. Dust control sprinkling may have to be done several times a day during hot, dry weather.
- Areas protected by mulch, adhesive emulsions, or barriers need to be checked at regular intervals according to the inspection schedule set forth in the stormwater plan. Remove sediments that accumulate behind any sediment fence or barrier when the accumulation reaches one half the height of the barrier. Dispose of the sediments only in an approved location (not in wetlands or where they will contribute to pollution at the disposal site).

Apply chemical controls (emulsions and resins) at the manufacturer's specified rates and in accordance with all federal, state, and local regulations governing their use. Chemical products should be stored, handled, and disposed of in accordance with all applicable regulations and department policies.

BMP AK-24

Concrete Washout

Objectives and Applications

The purpose of a concrete washout facility is to contain concrete and fluids from the chutes of concrete mixers and hoppers of concrete pumps when they are rinsed out after delivery. Washout facilities allow for easier disposal of consolidated solids and prevent pollution from run-off. Washout facility can consist of a pre-fabricated container or self-installed containment area, which can be above or below ground. Concrete washout facilities can be used on projects where concrete, stucco, mortar, grout, and cement are used as a construction material.

Common Failures - Generally due to faulty installation or maintenance.

- Overflow and discharge of waste when the facility is not covered prior to anticipated rainfall and/or when accumulated liquid wastes have not been removed.
- Leaking resulting from torn or damaged liners going unnoticed or not being replaced.
- Compromised structural integrity due to miscalculated capacity and installation, particularly for self-installed above-ground facilities.

Other Considerations

Operator education: Use of concrete washout areas as a BMP is only successful if concrete truck operators utilize them. Operators need to be made aware of the presence of these facilities. All concrete truck operators, including those of subcontractors, should be educated on the importance of managing concrete waste and washout procedures.

Spill response: Even with washout facilities present, there is still potential for accidental release of concrete materials including wash water and waste. It is important to have items in the spill kit that are capable of capturing,

containing, or treating accidental discharge of concrete materials.

Pre-fabricated washout containers: A growing number of companies offer prefabricated containers specifically for concrete washout. However, prefabricated facilities can be any water tight unit that can contain all liquids and solid waste generated by washout operations. When available, prefabricated containers are delivered to the site and minimize installation efforts. They are also resistant to damage and protect against spills and leaks. Some companies will also offer complete service with their product that could include providing maintenance and regular disposal of waste materials. Such full-service options could relieve the superintendent of these responsibilities. However, when selecting a company that provides such an option, ensure that they are properly disposing of materials and give preference to companies that recycle collected materials.

Below-ground facilities: Use of below-ground containment area helps prevent breaches and reduces the likelihood of run-off. This option is recommended for projects expecting extensive concrete work. However, this option is not recommended for areas with high water tables or shallow groundwater such as near natural drainages, springs or wetlands.

Above-ground facilities: Above-ground containment areas must be sized and installed correctly, and diligently maintained in order to be effective. However, this option, particularly if a prefabricated container is unavailable, is better suited in areas with potentially high water tables to prevent leaching of wastewater into groundwater or in areas where excavation is not practical.

Design

Location: Do not place concrete washout facilities within 50 feet of storm drains, open ditches, or waterbodies. Concrete washout facilities should be placed in a location that provides convenient access for concrete trucks, preferably near the area where the concrete is being poured. Larger sites with extensive

concrete work should have concrete washout facilities at multiple locations for ease of use.

Capacity: Concrete washout facilities should be in sufficient quantity and size to handle the expected volume of solids, wash water, and rainfall to prevent overflow. To estimate capacity, Concrete Washout Systems, Inc., (2006) estimates that 7 gallons of wash water are used to wash one truck chute and 50 gallons are used to wash out the hopper of a concrete pump truck.

Containment area: The containment area of the washout facility can consist of a pre-fabricated container or a self-installed containment area. The prefabricated container selected should be of a sufficient size and capacity to contain the expected volume of generated waste from washout operations. Self-installed containment areas can either be installed above- or below-ground, and should be constructed to dimensions that provide sufficient capacity to contain the expected volume of generated waste from washout operations. For larger sites, it is recommended that self-installed containment (both above and below ground) areas be 10 feet wide by 10 feet long, with a depth to provide the sufficient capacity. However, above-ground self-installed containment areas shall not exceed a size and capacity in which the selected outside barrier becomes structurally unsound when filled with waste materials.

Cover: A temporary cover should be used as necessary to prevent rain or other precipitation from filling the facility and causing wash water to discharge into the environment. The cover should be secure, non-collapsing, non-water collecting cover.

Materials

Pre-fabricated washout containers: Prefabricated containers are usually made of sturdy materials such as plastic or metal.

Self-Installed facilities: Self-installed washout facilities can be made of a variety of materials depending on availability and site needs.

Barrier/Sidewalls: The sidewalls of an above-ground containment area can be made from staked straw bales, earthen berms, barrier walls and wood planks to name a few.

Liner: The liner should be an impermeable plastic sheeting of at least 10-mil thickness, and should be free of holes, tears, and other defects that may compromise the impermeability of the material. Because they are more prone to leaks, it is recommended that above-ground facilities use sheeting of at least 30-mil thickness or double or triple line the containment area if using the 10-mil thick sheeting.

Anchors: Anchors are used to secure the liner and certain sidewall materials for self-installed above ground containment areas. Types of anchors that may be used include, but are not limited to, sand bags, 6" wire staples, and wood or metal stakes.

Installation

Site considerations: The number and size of facilities provided should depend on the expected demand for storage capacity. Locate each facility at a location as described above.

Each facility on-site should have highly visible signage to indicate washout locations. It is recommended that signs be at least 48" by 24" and have 6" black letters on white background, and be placed at a height of 3 feet above ground level and within 30 feet of the facility.

If the washout facility is located on undeveloped property or off-pavement, stabilized access should be provided to prevent tracking (see Vehicle Tracking Entrance/Exit BMP).

Prefabricated washout containers: Installation of these containers is minimal. These containers are usually delivered to the site and would only need to be placed in the appropriate location. Some pre-fabricated models may involve assembly of the container and/or its accessories.

Self-Installed facilities:

Above-ground washout:

Construct the sidewalls to the desired size and capacity for the containment area. If not using an earthen berm for this purpose, ensure that the sidewall material is secure and each unit is butted tightly end to end. For use of straw bales in construction of the sidewall, it is required/recommended that the sidewall construction conform to the installation instructions provided below to ensure structural integrity. Line the entire area with the lining material, bringing the sheeting up over the sidewalls and securing the ends with sandbags, staples or other appropriate anchor.

Straw bales:

Excavate a trench the width of the bale and the length of the proposed barrier to a minimum depth of 4 in. Place the bales in a single row, lengthwise, with ends of the adjacent bales tightly abutting one another. Ensure that all bales are wire-bound or string tied. Install bales so that the bindings are oriented around the sides, rather than along the tops and the bottoms of the bales, in order to prevent deterioration of the bindings. Place and anchor each bale with at least two wood stakes, minimum dimensions, 2 in. x 2 in. x 36 in., or with # 4 reinforcing bars, driving the first stake toward the previously placed bale to force the bales together. Drive the stakes or reinforcing bars a minimum of 12 in. into the ground. Fill any gaps between bales with tightly wedged straw.

Below-ground washout:

Excavate a flat, subsurface pit to the desired size and capacity for the containment area. The resulting sidewall should not exceed 3:1 slopes. The base of the pit should be free of rocks and debris that may cause damage to the liner. It is recommended that the excavated material be used to create a berm along three sides of the pit, leaving the side providing access relatively flat. It is recommended that the berm be at least one foot high. Line the entire area with the lining material, bringing the sheeting up over the sidewalls and berm, and securing the ends with sandbags or other appropriate anchor.

Identify the washout pit with lath and flagging on three sides, leaving the approach unflagged.

Inspection

Check all concrete washout facilities frequently to determine if they have been filled to 70 percent capacity, which is when the materials need to be removed.

For any self-installed facility, inspect the plastic liner to ensure it's securely anchored and intact. Inspect the sidewalls for leaks and to ensure they have not been damaged by construction activities. For any prefabricated facility, inspect the unit for leaks and potential damage.

Check to ensure that each facility sign is still secure and visible.

Note whether facilities are being used regularly and whether operators have washed their chutes or hoppers in other locations. This helps to determine if additional facilities need to be placed, perhaps in more convenient locations, if additional signs or new signs need to be installed, or if operator education is needed.

Maintenance

Existing facilities must be cleaned once the washout is two-thirds full.

Concrete washouts are designed to promote evaporation where feasible. However, if stored liquids are not evaporating and are reaching capacity, vacuum and dispose of liquids in an approved manner (check with the local sanitary sewer authority to determine if there are special disposal requirements for concrete wash water).

Remove hardened solids whole or break them up first depending on the type of equipment available. Then re-use the solids on-site or haul them away for recycling or disposal. When removing materials from a self-installed washout, either construct another facility for use during cleaning or, if the existing structure is still intact, it can be re-used.

Before relining the structure, inspect it for signs of weakening or damage and make any necessary repairs. Then line the structure with

new plastic sheeting, checking that it is free of holes, tears and other damage. It is important that new plastic be used after every cleaning as equipment can damage the existing liner.

Any damaged facilities should be repaired promptly. If necessary, a new facility may be required until the existing facility is operational. Contain any spill or discharge of concrete waste materials

Replace or display new signage as needed.

Removal

An operational concrete washout facility should remain in place until all concrete for the project (or phase of the project) is poured. When the concrete facility is no longer needed, the hardened concrete should be removed and properly disposed of. Materials used to construct any above-ground containment area should be removed from the site and properly disposed of.

Holes, depressions or other ground disturbance caused by the creation or removal of the facility should be backfilled and stabilized with an approved stabilization BMP.

BMP C153: Material Delivery, Storage and Containment

Purpose

Prevent, reduce, or eliminate the discharge of pollutants from material delivery and storage to the stormwater system or watercourses by minimizing the storage of hazardous materials onsite, storing materials in a designated area, and installing secondary containment.

Conditions of Use

These procedures are suitable for use at all construction sites with delivery and storage of the following materials:

- Petroleum products such as fuel, oil and grease
- Soil stabilizers and binders (e.g. Polyacrylamide)
- Fertilizers, pesticides and herbicides
- Detergents
- Asphalt and concrete compounds
- Hazardous chemicals such as acids, lime, adhesives, paints, solvents and curing compounds
- Any other material that may be detrimental if released to the environment

Design and Installation Specifications

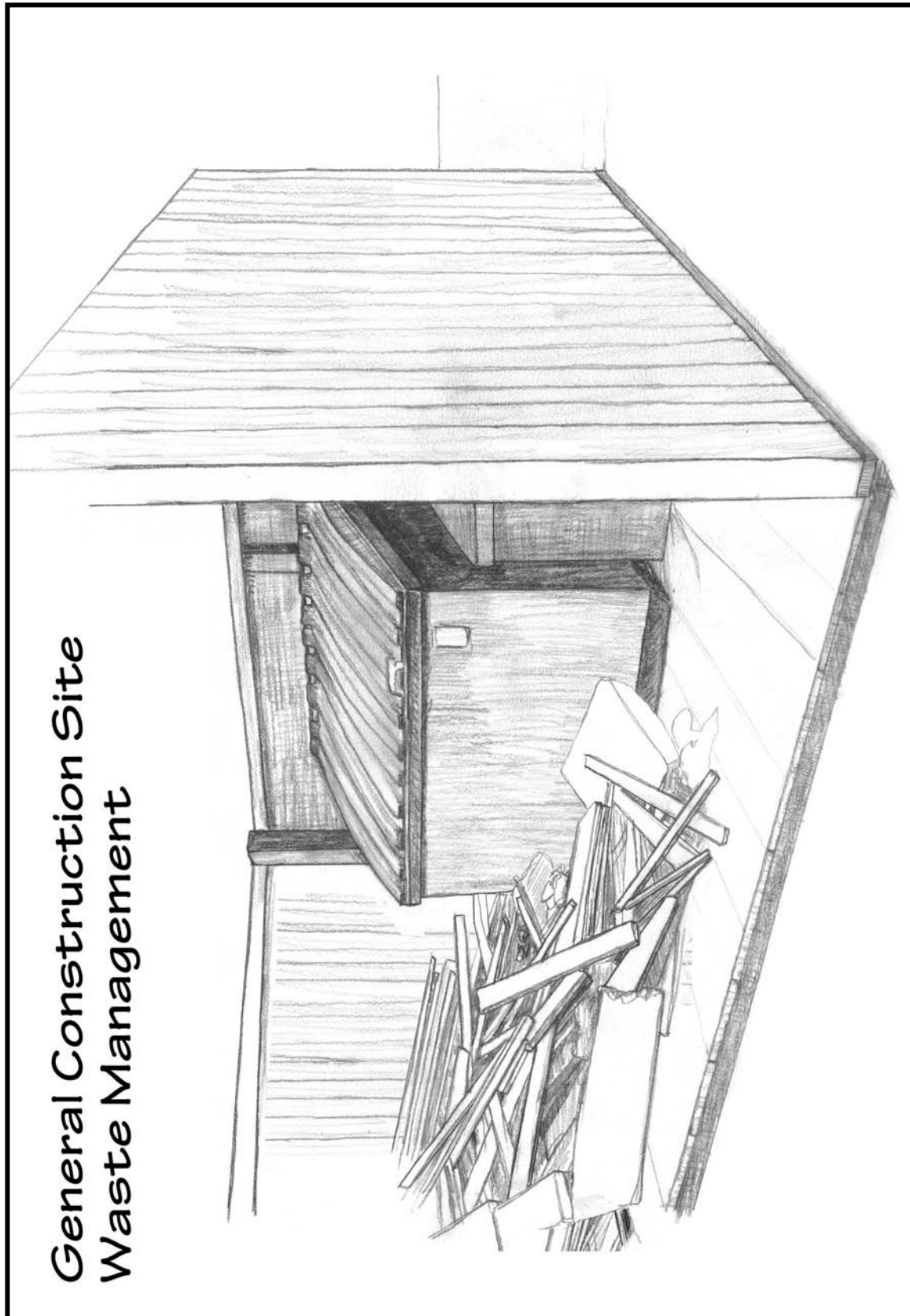
The following steps should be taken to minimize risk:

- Temporary storage area should be located away from vehicular traffic, near the construction entrance(s), and away from waterways or storm drains.
- Material Safety Data Sheets (MSDS) should be supplied for all materials stored. Chemicals should be kept in their original labeled containers.
- Hazardous material storage on-site should be minimized.
- Hazardous materials should be handled as infrequently as possible.
- During the wet weather season (Oct 1 – April 30), consider storing materials in a covered area.
- Materials should be stored in secondary containments, such as earthen dike, horse trough, or even a children's wading pool for non-reactive materials such as detergents, oil, grease, and paints. Small amounts of material may be secondarily contained in "bus boy" trays or concrete mixing trays.
- Do not store chemicals, drums, or bagged materials directly on the ground. Place these items on a pallet and, when possible, in secondary containment.

- If drums must be kept uncovered, store them at a slight angle to reduce ponding of rainwater on the lids to reduce corrosion. Domed plastic covers are inexpensive and snap to the top of drums, preventing water from collecting.

Material Storage Areas and Secondary Containment Practices:

- Liquids, petroleum products, and substances listed in 40 CFR Parts 110, 117, or 302 shall be stored in approved containers and drums and shall not be overfilled. Containers and drums shall be stored in temporary secondary containment facilities.
- Temporary secondary containment facilities shall provide for a spill containment volume able to contain precipitation from a 25 year, 24 hour storm event, plus 10% of the total enclosed container volume of all containers, or 110% of the capacity of the largest container within its boundary, whichever is greater.
- Secondary containment facilities shall be impervious to the materials stored therein for a minimum contact time of 72 hours.
- Secondary containment facilities shall be maintained free of accumulated rainwater and spills. In the event of spills or leaks, accumulated rainwater and spills shall be collected and placed into drums. These liquids shall be handled as hazardous waste unless testing determines them to be non-hazardous.
- Sufficient separation should be provided between stored containers to allow for spill cleanup and emergency response access.
- During the wet weather season (Oct 1 – April 30), each secondary containment facility shall be covered during non-working days, prior to and during rain events.
- Keep material storage areas clean, organized and equipped with an ample supply of appropriate spill clean-up material (spill kit).
- The spill kit should include, at a minimum:
 - 1-Water Resistant Nylon Bag
 - 3-Oil Absorbent Socks 3"x 4'
 - 2-Oil Absorbent Socks 3"x 10'
 - 12-Oil Absorbent Pads 17"x19"
 - 1-Pair Splash Resistant Goggles
 - 3-Pair Nitrile Gloves
 - 10-Disposable Bags with Ties
 - Instructions



General Construction Site Waste Management

Construction BMP	Alaskan climatic regions				
	Coastal	Southcentral	Western	Interior	Arctic
General Construction Site Waste Management Feasibility	○	○	○	○	○
Description	Building materials and other construction site wastes must be properly managed and disposed of to reduce the risk of pollution from materials such as surplus or refuse building materials or hazardous wastes. Practices such as trash disposal, recycling, proper material handling, and spill prevention and cleanup measures can reduce the potential for storm water runoff to mobilize construction site wastes and contaminate surface or groundwater.				
Installation	Solid Wastes: • Designate a waste collection area on the site that does not receive a substantial amount of runoff from upland areas and does not drain directly to a waterbody. • Ensure that containers have lids so they can be covered before periods of rain, and keep containers in a covered area whenever possible. • If secondary containment is used, include a protocol in the SWPPP and train employees on disposal of accumulated precipitation. • Schedule waste collection to prevent the containers from overfilling. • Clean up spills immediately. For hazardous materials, follow cleanup instructions on the package. Use an absorbent material such as sawdust or kitty litter to contain the spill. • During the demolition phase of construction, provide extra containers and schedule more frequent pickups. • Collect, remove and dispose of all construction site wastes at authorized disposal areas. Contact a local environmental agency to identify these disposal sites. Hazardous Materials and Wastes: • Consult with local waste management authorities about the requirements for disposing of hazardous materials. • To prevent leaks, empty and clean hazardous waste containers before disposing of them. • Never remove the original product label from the container because it contains important safety information. Follow the manufacturer's recommended method of disposal, which should be printed on the label. • Never mix excess products when disposing of them, unless specifically recommended by the manufacturer.				

General Construction Site Waste Management *(continued)*

Installation <i>(continued)</i>	Pesticides and fertilizers: • Follow all federal, state and local regulations that apply to the use, handling or disposal of pesticides and fertilizers. • Store pesticides and fertilizers in a dry, covered area. • Construct berms or dikes to contain stored pesticides and fertilizers in case of spillage. • Follow the recommended application rates and methods. • Have equipment and absorbent materials available in storage and application areas to contain and clean up any spills that occur. Petroleum Products: • Store new and used petroleum products in covered areas, where practicable, and place within berms or dikes to contain any spills. • Immediately contain and clean up any spills with absorbent materials. • Have equipment available in fuel storage areas and in vehicles to contain and clean up any spills that occur. Detergents: • Use detergents only as recommended, and limit their use on the site. Do not dump wash water containing detergents into the storm drain system; direct it to a sanitary sewer or contain it so that it can be treated at a wastewater treatment plant.
Maintenance	Inspect storage and use areas and identify containers or equipment that could malfunction and cause leaks or spills. Check equipment and containers for leaks, corrosion, support or foundation failure, or other signs of deterioration, and test them for soundness. Immediately repair or replace any that are found to be defective.
Feasibility symbols: ☐ Widely feasible ☐ Might be feasible in certain situations ☒ Feasible only with major design adaptation ☐ Infeasible and not recommended	

APPENDIX D

SUPPORTING DOCUMENTATION

Supporting documentation for Historic Properties, Endangered Species, including the Environmental Review Checklist/Findings of No Significant Impact, can be found in an appendix of the Special Provisions.

APPENDIX E

DOT&PF Utility Permit

STATE OF ALASKA
DEPARTMENT OF TRANSPORTATION
AND PUBLIC FACILITIES
UTILITY PERMIT
(MAJOR)

Permit No.
3-294300-16-58

Page No. 1 of 19

Approval
Recommended: Martin Peters

Date: April 15, 2016

Title: Regional Utility Permit Officer

Region: Southcoast

THE STATE OF ALASKA, acting by and through the DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES, hereinafter called the DEPARTMENT, under provisions of AS 19.25.010 19.25.020, grants a Utility Permit to **City of Kake of PO Box 500, Kake, AK 99830** hereinafter called the PERMITTEE, permission to construct, install and thereafter perform routine maintenance, use and operate the **three 3 inch and two 2 inch pipes, Schedule 80 and SDR17 HDPE fuel line crossing. Tank farm to fuel header.** hereinafter called the FACILITY, located as follows: State Route **294300, Keku Road** Route Mileage **0.895** across, along or under property of the DEPARTMENT, acquired and utilized in the operation and maintenance of a State Transportation System, at the aforementioned locations and/or positions and in strict conformance with plans, specifications and special provisions attached hereto and made a part hereof, and not otherwise.

A. In accepting this Utility Permit for the Facility, the PERMITTEE agrees to comply with the provisions of AS 02.15.102, AS 02.15.106, AS 19.25.010, AS 19.25.200, AS 35.10.210, and AS 35.10.230; the terms, requirements and regulations as set forth in 17 AAC 15 as authorized under Administrative Procedures Act, AS 44.62.010 - 44.62.650 and the applicable policies, directives and orders issued by the Commissioner of the Department.

B. The entire cost of routine maintenance operations of the FACILITY are to be paid for by the PERMITTEE, and said FACILITY shall comply with all applicable codes.

C. The PERMITTEE's construction, installation and maintenance operations of the FACILITY shall be accomplished with minimum interference and interruption of the use, operation and maintenance of the DEPARTMENT's right of way and/or public facility; or as hereinafter provided in the DEPARTMENT's Special Provisions, attached hereto and made a part hereof, and shall at all times in no way endanger the general public in its use of the public property. Utility Permits expire if construction or installation of the facility has not started within one year after the date of approval, unless the applicant obtains an extension of time in writing from the department. 17AAC15.011(d)

D. The DEPARTMENT, in granting the Utility Permit, reserves the right to use, occupy and enjoy its property for a public transportation system and for public transportation purposes in such a manner and at such times as it deems necessary, the same as if this instrument had not been executed by the DEPARTMENT. If any such use by the DEPARTMENT shall at any time necessitate any change in location or manner of use of said FACILITY, or any part thereof, such change or alteration shall be made by the PERMITTEE according to the terms of one of the two clauses set out below as identified by a check mark before the applicable clause.

_____(1) The PERMITTEE will be reimbursed in full by the DEPARTMENT for all costs incurred in making such changes or alterations to the FACILITY that qualified under the provisions of AS 02.15.104(c), AS 19.25.020(c), or AS 35.10.220(c).

 X (2) The PERMITTEE shall promptly remove or relocate said FACILITY at no cost to the DEPARTMENT in accordance with the provisions of AS 02.15.104(c) (4) or (5), AS 19.25.020(c) (4) or (5), AS 35.10.220(c) (4) or (5).

E. On public property being utilized for right of way on highways originally established as, or converted to, controlled access highways, ingress and egress thereto for maintenance and operation of the FACILITY is limited to the locations as designated by the DEPARTMENT. However, the DEPARTMENT may allow the PERMITTEE ingress and egress whenever such is necessary to effect repairs and maintenance of the FACILITY and when no other access is available. If the DEPARTMENT determines such access is in conflict with the use of the controlled access highway, the FACILITY will be relocated.

F. The DEPARTMENT for the purpose of this Utility Permit, hereby disclaim any representation of implication to the PERMITTEE that the DEPARTMENT has any title in any property other than the interest conveyed to the DEPARTMENT for specific purposes as described by the instrument conveying the land to the DEPARTMENT.

G. The PERMITTEE by these presents accepts notice and agrees that any expenses or damages incurred by the PERMITTEE through the abandonment, removal, reconstruction or alteration of any public facility, or incurred by said PERMITTEE as a result of this disclaimer shall be borne by said PERMITTEE at no expense whatsoever to the DEPARTMENT.

H. The waiver or breach of any terms or conditions of this Utility Permit or Provisions of the Administrative Code, by the DEPARTMENT shall be limited to the act or acts constituting such breach, and shall never be construed as being continuing or a permanent waiver of any such term or condition, unless expressly agreed to in writing by the parties hereto, all of which shall remain in full force and affect as to future acts or happenings, notwithstanding any such individual waiver or any breach thereof.

I. Only the Commissioner of the DEPARTMENT or his delegate shall have the authority to waive any term or condition herein contained.

J. The PERMITTEE shall not assign or transfer any of the rights authorized by this Utility Permit except upon notification to and approval by the DEPARTMENT.

K. The PERMITTEE agrees to comply with all regulations concerning present and future use of the public property acquired, or reimbursed by Federal-Aid funds.

L. The PERMITTEE shall give the DEPARTMENT not less than ten (10) days prior written notice, unless otherwise agreed to by the parties hereto, of the PERMITTEE's intention to enter upon the DEPARTMENT's property for the purpose of major maintenance, reconstruction, altering or removal of the FACILITY, provided, however, that normal routine maintenance is excepted from this provision, and provided further, that in any instance of sudden emergency requiring prompt and immediate action to protect the public safety, or to mitigate damage to private or public property, no prior notification to the DEPARTMENT will be required. The PERMITTEE shall notify the DEPARTMENT and the Alaska State Troopers, of the location of the emergency and extent of work required by the most expeditious means of communication as soon as reasonably possible to do so, and the PERMITTEE shall take such measures as are required to protect the health and safety of the traveling public or public facility users for the duration of such emergency operations.

M. The PERMITTEE shall indemnify and hold harmless the State of Alaska and the DEPARTMENT, or either of them, from all liability for damage to property, or injury to or death of persons, arising wholly or in part from any action taken by the PERMITTEE in relation to the PERMITTEE's FACILITIES on DEPARTMENT rights of way or other permitted locations.

N. The PERMITTEE is subject to all previous Easements and Utility Permits and any damage to any other utility will be the PERMITTEE's responsibility.

O. The PERMITTEE agrees to be responsible for the compliance with all applicable Federal, State, and local laws, regulations, codes and ordinances.

P. The PERMITTEE agrees to be responsible for obtaining all other appropriate permits or letters of non-objection needed from Federal, State and local agencies, or conflicting lessees, property owners or utilities.

Q. The PERMITTEE may be required, within thirty (30) days after completion of any improvement placed upon or in the premises herein, deliver to the DEPARTMENT as-built drawings showing the location and construction specifications of said improvement.

R. This Utility Permit is issued under the provisions of applicable Alaska Statutes and Administrative Code, effective as of the date of execution of this instrument by the DEPARTMENT.

S. The PERMITTEE agrees that the FACILITY will be constructed in accordance with the attached:

1. Plans consisting of Attached plan sheets **KAKE BULK FUEL UPGRADES**
2. Specifications consisting of: Alaska Department of Transportation Standard Specifications with associated Alaska Statutes.
3. Other *See Below.

which, by this reference, are made a part hereof, and in accordance with the applicable codes pertaining to the FACILITY, and not otherwise, unless prior written authorization is obtained from the DEPARTMENT to do so.

T. The PERMITTEE agrees to reimburse the DEPARTMENT for actual costs of inspection and testing as required during the performance of work proposed by the PERMITTEE. The scope of inspection and testing shall be determined by the Regional Utilities Engineer. The costs billed to the PERMITTEE will be the actual DEPARTMENT's costs incurred while performing the inspection and testing.

U. The PERMITTEE agrees by entering on the DEPARTMENT's property to indemnify the DEPARTMENT and its contractors of all costs tangible or intangible that would be the result of any delay in a construction project of the DEPARTMENT caused by work done under this permit.

V. The PERMITTEE agrees to reimburse the DEPARTMENT for the length of the facility to be installed in excess of 200 feet (as indicated on the attached plans referenced to in paragraph "S" above) which is calculated to be linear feet at \$1.00 per foot = \$0.00 (but not to exceed \$10,000) payable at the time the permit is executed by the DEPARTMENT unless arrangements have been made for the PERMITTEE to be billed on a monthly basis.

Added Special Conditions:

The contractor must maintain daily inspection reports while work is being performed in the state right of way. Those reports will contain photos, methods, material used, compaction effort and associated testing. Compaction test results will consist of initial tests and the final passing tests. Those tests will show density and moisture content. Strip testing is an acceptable method. Strip tests will show progression to the break point where density hits maximum attainable density. A count of total vibratory passes will be documented and used for each consecutive lift of fill material added to the trench.

6.8 b. of this permit calls out wire mesh or reinforcing steel in the temporary concrete patch. Wire mesh or reinforcing steel may be replaced by poly fiber mesh additive in the concrete mix and will be applied according to manufacturers specifications.

PIPE CARRIERSTRANSMITTANT: UNLEADED GASOLINE FLASH POINT: -45 DEG FTRANSMITTANT: DIESEL #1 FLASH POINT: 100 DEG FTRANSMITTANT: DIESEL #2 FLASH POINT: 126 DEG FWORKING PRESSURE: 40 PSI TEMPERATURE: 25-65 DEG FNUMBER OF CONDUITS (PIPES): 5DIAMETER OF PIPE: Three 3" pipes, Two 2" pipesTYPE AND CLASS OF PIPE: SCHEDULE 80 STEEL and HDPE SDR 17ENCASEMENT DIAMETER AND TYPE: 6" HDPE carrier pipeVENT LOCATIONS: TANKS (in tank farm North of Keku Street)CATHODIC PROTECTION: YESCROSSING ANGLE: 80 DEG LENGTH: 60 FT

DEPTH BELOW ROAD SURFACE (MIN 48"): 6' to 7' below road surface

DEPTH BELOW DITCH BOTTOM (MIN 36"): 4' below ditch bottom

METHOD OF CROSSING INSTALLATION: BORING _____ JACKING _____ OPEN CUT XLONGITUDINAL FACILITY LENGTH: NoneOFFSET FROM HIGHWAY CENTERLINE: None

DEPTH OF BURIAL (MIN 36"): _____

METHOD OF LONGITUDINAL INSTALLATION: None

CONSTRUCTION CODE(S) APPLICABLE: _____

ADDITIONAL INFORMATION: The pipe alignment for the project has changed from the previous utility permit request for the project. The fuel pipes will now cross Keku road about 320 feet to the east of the existing fuel pipe crossing. The proposed construction schedule for the pipe road crossing is in the Spring of 2017. If the DOT Keku Road paving project is scheduled for construction during the summer of 2016, the tank farm contractor will be directed to install pipe sleeves at the road crossing so that any new pavement that is placed by the DOT road paving project will not need to be cut to later install the tank farm piping across Keku road. After the tank farm is

completed in the spring 2017, the existing fuel pipes that cross Keku road will be drain of all fuel, cleaned, filled with cement slurry, and abandoned in place.

ELECTRICAL AND COMMUNICATIONS FACILITIES**OVERHEAD FACILITIES**

Associated electrical and communications crossings are not a part of this permit and will be permitted separately.

NUMBER OF CIRCUITS: None

VOLTAGE AND PHASE: _____

CONDUCTOR TYPE AND SIZE: _____

STRUCTURE TYPE: _____

CROSSING ANGLE: _____ LENGTH: _____

MINIMUM VERTICAL CLEARANCE: _____

LONGITUDINAL FACILITY LENGTH: _____

OFFSET FROM HIGHWAY CENTERLINE: _____

UNDERGROUND FACILITIESNUMBER OF CONDUCTORS (CABLES) Two communication cablesVOLTAGE AND PHASE: 120 V single phase _____ confines _____CONDUCTOR (CABLE) TYPE AND SIZE: six 12 gaugeNUMBER AND SIZE OF CONDUITS: one 1.5" electrical conduitSIZE AND TYPE OF ENCASUREMENT: 6" HDPE carrier pipe

CROSSING ANGLE: _____

DEPTH BELOW ROAD SURFACE (MIN 48"): 5' to 7' below road surfaceDEPTH BELOW DITCH BOTTOM (MIN 36"): 4' below ditch bottomMETHOD OF CROSSING INSTALLATION: BORING _____ JACKING _____ OPEN CUT X _____LONGITUDINAL FACILITY LENGTH: None _____

OFFSET FROM HIGHWAY CENTERLINE: _____ DEPTH OF BURIAL (MIN 36"): _____

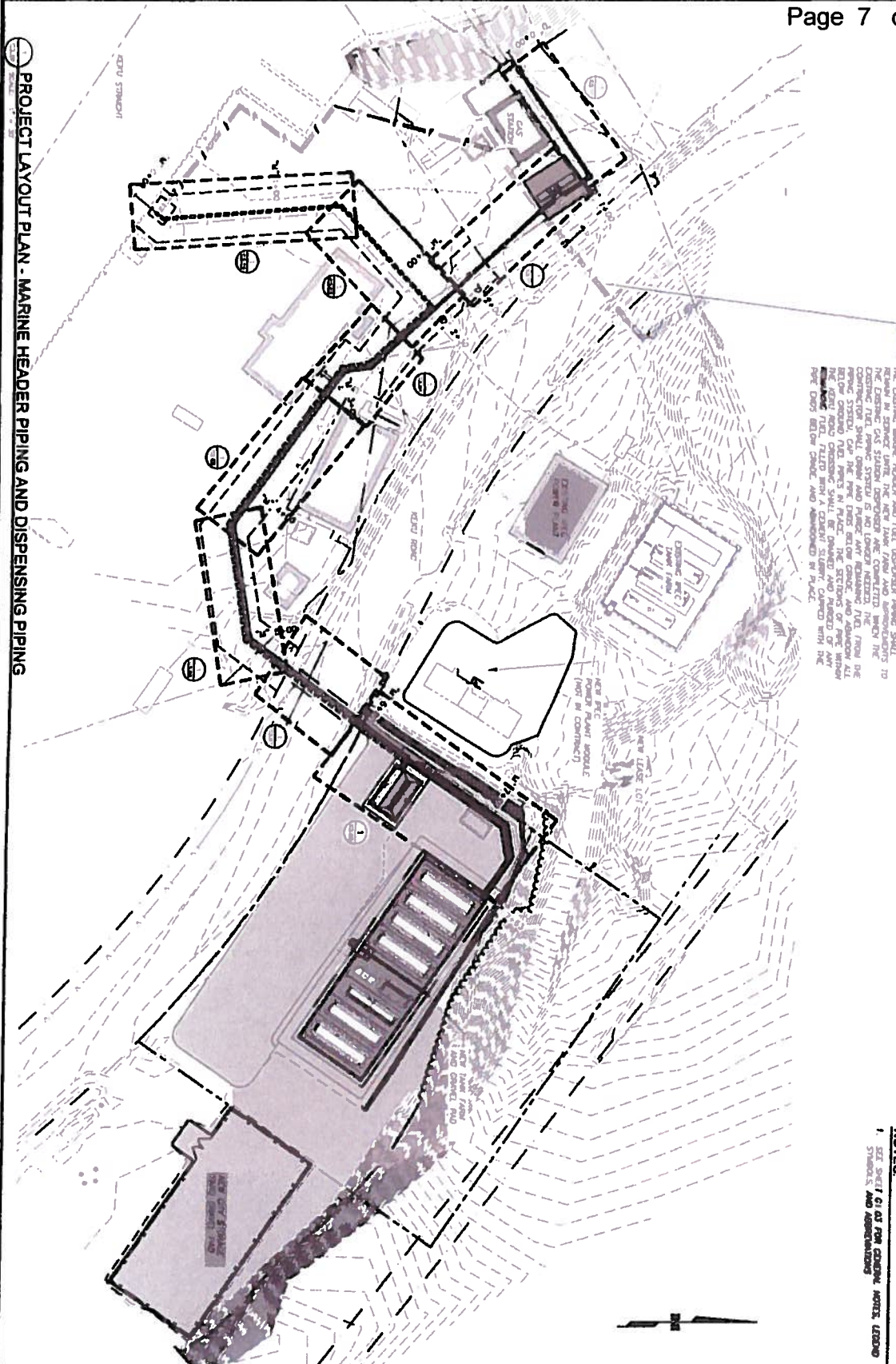
METHOD OF LONGITUDINAL INSTALLATION: TRENCHING _____ PLOWING _____

CONSTRUCTION CODE(S) APPLICABLE: specifications.

ADDITIONAL INFORMATION: _____



PROJECT LAYOUT PLAN - MARINE HEADER PIPING AND DISPENSING PIPING



THE EXISTING MAJOR HAZARD AND FUEL DESCRIPTION BEING SMALL REMAINS IN SERVICE UNIT, THE NEW FUEL TANK AND AMMUNITIONS TO BE REMOVED. THE EXISTING GAS STATION DEVICES ARE COMPLETED. WHEN THE EXISTING FUEL PUMP SYSTEM IS NO LONGER NEEDED, THE CONNECTIONS SHALL BE REMOVED AND PLACED AWAY REMAINING THE FUEL FROM THE EXISTING SYSTEM. THE NEW EXISTING FUEL PUMP AND ADDITIONAL FUEL TANKS SHALL BE REMOVED. THE SECTIONS OF PIPE BETWEEN THE EXISTING FUEL CROSSING SHALL BE REMOVED. THE EXISTING FUEL TANKS SHALL BE FILLED WITH A COALIN SLURRY CAPTURED WITH THE PIPE DROPS BEFORE CLOSURE AND ABANDONED IN PLACE.

NOTES:

1. SET UP! GLAD FOR CHORD, NOTES, LEADS, STAPLES, AND ASSIGNING

SPECIAL PROVISIONS

1.0 GENERAL AND ADMINISTRATION

- 1.1 The PERMITTEE shall have a copy of this permit at the work site at all times.
- 1.2 The permit, together with these Special Provisions shall take precedence over any additional plans, exhibits, attachments, and/or schedules should discrepancies appear.
- 1.3 All contact between the DEPARTMENT and the PERMITTEE's Contractor shall be through a representative of the PERMITTEE. If the PERMITTEE chooses to perform the work with other than its own forces, a representative of the utility shall be present at all times unless otherwise agreed to by the DEPARTMENT. Failure to comply with this provision is grounds for restricting any further work by the PERMITTEE in the DEPARTMENT's right of way.
- 1.4 Any rights granted by this permit may not be assigned or transferred to another entity without prior written approval from the DEPARTMENT. If the utility is sold to another utility or merges with another utility, the new utility shall inform the DEPARTMENT in writing within 30 days after the date of transaction.
- 1.5 Any request for waiver or exception of Special Provision(s), or any request for change in location, alignment, or construction method, shall be submitted in writing to the Regional Utilities Engineer.
- 1.6 The PERMITTEE agrees to furnish the DEPARTMENT with a set of as built plans within sixty (60) days from the completion of the work covered by this Permit.
- 1.7 The PERMITTEE agrees to provide design locates, at no cost to the DEPARTMENT, upon request. If a utility locate service is not available, reference markers shall be installed and maintained at both ends of underground highway crossings, and at angle points in the alignment of the underground Facility. Where utilities are attached to a bridge, the PERMITTEE will attach a plate on the conduit at each abutment describing the content of the pipe or conductor, and the name and phone number of the owning utility.
- 1.8 The Regional Utilities Engineer may assign an inspector or inspectors in order to insure compliance with the provisions of this utility permit. The inspector has the authority to suspend all work in the event of noncompliance.
- 1.9 The PERMITTEE agrees to reimburse the DEPARTMENT for actual costs of inspections during construction of the Facility. Inspection activities will include on-site review of traffic control, highway crossings, and restoration of the right of way. Inspection may also include any testing required to verify conformance to the DEPARTMENT's standards, and responding to questions and/or complaints from the public or agencies. Actual direct and indirect charges shall provide the basis for billings, which include wages, benefits, per diem, travel and vehicle expenses, and lodging.

1.10 This permit will expire if construction or installation of the Facility has not started within one year after the date of approval, unless the PERMITTEE obtains an extension of time in writing from the DEPARTMENT.

2.0 COORDINATION

2.1 The PERMITTEE shall notify the Department's Regional Utility Permit Officer ten (10) days prior to beginning work:

Southeast Region
(907)465-4544
(907)465-6216 (fax)

2.2 The PERMITTEE agrees to coordinate their work with other projects, both public and private that may occur within the project limits covered by this permit. The PERMITTEE agrees not to interfere or hinder the work being performed by other contractors.

2.3 The PERMITTEE shall coordinate and obtain the necessary temporary driveway permits for access to travel way from haul routes or staging areas where existing access does not exist. Contact the Department's Right-Of-Way Section at (907) 465-2838 for the driveway permit application or apply on line at www.dot.state.ak.us/permits

3.0 ENVIRONMENTAL

3.1 The PERMITTEE is responsible for obtaining authorization from the U.S. Army Corps of Engineers for any ground disturbing activities in areas designated as wetlands.

3.2 If the PERMITTEE, its Contractor, or Agent discovers environmental contamination in the right-of-way while constructing the Facility, they shall immediately stop work and notify the Department's Regional Utility Engineer.

3.3 The PERMITTEE is not responsible for the cost of investigation, cleanup, or disposal of any contaminated soils it discovers during work on the Facility within the Department's right-of-way, **unless:**

a. The PERMITTEE, its Contractor, or Agent fails to immediately notify the Department of the contamination, or;

b. The contamination is attributed to the PERMITTEE's Facility, or actions of the PERMITTEE, its Contractors, or its Agents.

3.4 If the PERMITTEE, its Contractor, or Agent discovers cultural, historic or archeological resources as a result of ground altering activities, all work that would disturb these resources shall be stopped and the State Historic Preservation Office shall be contacted immediately at (907) 269-8721.

3.5 The PERMITTEE shall not hold the DEPARTMENT responsible for any delay, redesign, rerouting, or additional cost due to encountering environmental contamination, or cultural, historic, or archeological resources.

3.6 The PERMITTEE shall provide an Alaska Certified Erosion and Sediment Control Lead (AK-CESCL) trained person, with the authority to direct activities required by the SWPPP, APDES permit or other permit conditions, during all construction and maintenance activities authorized by this permit that involve ground disturbing activities. Provide proof of current AK-CESCL certification upon request.

3.7 The PERMITTEE, on behalf of itself and its contractors, officers, officials, employees, and agents, shall indemnify, hold harmless, and defend at its sole cost and expense, the DEPARTMENT, its contractors, officers, officials, employees, and agents from any and all fines, costs, claims, damages, liquidated damages, judgments, or civil penalties assessed by the Alaska Department of Environmental Conservation (ADEC) pursuant to AS 46.03.760(E), arising wholly or in part from any action taken by the PERMITTEE in relation to the PERMITTEE's Facilities on DEPARTMENT's rights of way or other permitted locations. This indemnification provision is in addition to and shall be construed as consistent with General Provision M.

4.0 NOTIFICATIONS

4.1 The PERMITTEE is responsible for notifying businesses and residents that front the project of scheduled road and driveway closures, or any work that may affect them. Property owners shall receive the notices a minimum of 48 hours prior to commencement of the work. Notices shall include a detailed description and map of the project, anticipated construction schedule and contact name and number of a representative of the PERMITTEE.

4.2 The PERMITTEE shall submit weekly public information notices that identify road closures, restrictions to traffic, and detours. Coordinate this effort with the State DOT/PF Navigator Information Program.

5.0 TRAFFIC CONTROL

5.1 The PERMITTEE shall submit a Traffic Control Plan (TCP) to the Department for approval a minimum of ten (10) days before beginning construction.

5.2 The PERMITTEE or the PERMITTEE's contractor shall designate a Traffic Safety Supervisor who shall be responsible for the maintenance of traffic operations on a 24-hour basis. This individual shall have received formal work zone traffic control training. The Department must be supplied with the name of this individual along with written verification of his/her credentials as well as a 24-hour telephone number where he/she can be reached.

5.3 The PERMITTEE shall insure that flagmen are certified by either the International Municipal Signal Association (IMSA) or the American Traffic Services Association (ATSSA). Documentation of certification shall be provided if requested.

5.4 The PERMITTEE shall provide traffic control devices, conforming to the latest addition of the Manual on Uniform Traffic Control Devices published by the U.S. Department of Transportation and Alaska Traffic Manual Supplement while constructing the Facility, or thereafter performing routine maintenance.

5.5 All traffic control devices required by the approved Traffic Control Plan, including signs, barricade, and flagmen, shall be in place prior to beginning work within the right of way.

5.6 The PERMITTEE shall remove or cover all temporary traffic control devices as soon as practical when they are no longer needed or when work on the Facility is suspended for short periods of time.

5.7 The PERMITTEE shall not park vehicles, equipment, or store materials on road or pathway surfaces at any time, unless specifically allowed by the traffic control plan.

5.8 At the close of each work day the construction site on non-detoured roadways shall be restored to a condition that allows two-way traffic to flow in conformance with the normal traffic patterns in that area, unless otherwise approved by the Regional Utilities Engineer.

5.9 The PERMITTEE shall conduct periodic inspections of temporary traffic control devices left in place during non-working hours. A 24 hour telephone contact number for the traffic control supervisor shall be provided to the local State Troopers of Police Departments.

5.10 All illumination and signalization shall remain operational during the construction of the Facility.

5.11 Reduced speed and two-way traffic shall be maintained on non-detoured roadways between the peak traffic hours of 7:30 a.m. to 9:00 a.m. and from 4:30 p.m. to 5:30 p.m.

6.0 EXCAVATION AND BACKFILL

6.1 The PERMITTEE shall backfill and compact all trenches within road prisms and pathways in 6-inch lifts or as accepted by the DEPARTMENT. 6-inch lifts are required if no inspector is present. The backfill shall be of suitable non-frost susceptible, non-organic material (0-6% passing No. 200 sieve). All excavated non-acceptable material shall be removed from the State right-of-way or property by the PERMITTEE.

6.2 The road prism is defined to include the finished roadway surface and underlying structural layers out to, and including, any unpaved shoulders, curbs, and attached pathways.

6.3 The PERMITTEE shall compact all trenches within or crossing road prisms and pathways at a minimum of 95% of the optimum density. All compaction tests shall be at the PERMITTEE's expense. A copy of each test will be submitted to the DEPARTMENT.

6.4 The PERMITTEE shall backfill all trenches, bore pits, and other excavations located outside road and pathway prisms with clean, non-organic, and compactable material meeting the requirements of Select Material, Type C, as defined in the DEPARTMENT's Standard Specifications for Highway Construction. Existing material is acceptable as backfill provided it meets the requirements of Select Material, Type C.

6.5 The PERMITTEE shall remove material not suitable for use as backfill from the site, t. The Permittee shall replace unsuitable backfill material with imported material meeting the requirements of Select Material, Type C.

6.6 All backfill shall be compacted to existing undisturbed soil densities or better, and graded to blend with the existing ground surface. All costs associated with removal of unusable material and placement of import material is the responsibility of the Permittee.

6.7 The top six (6) inches of the road surface or surface under pavement shall be crushed aggregate D-1

7.0 PAVEMENT REPLACEMENT AND TRAFFIC MARKINGS

7.1 Pavement cuts may be authorized from May 1st to September 30th and will only be permitted on an emergency basis from October 1st through April 30th unless the Regional Utilities Engineer approves a request for exception. Planned pavement cuts must be repaired by September 30th. No more than 2500 feet of pavement by project stationing can be disturbed without final repair

7.2 All asphalt cuts shall be permanently repaired with hot asphalt. Asphalt concrete pavement shall be Type II, Class B installed in conformance with Section 401 of the Alaska DOT&PF Standard Specifications dated 2002. The proposed job mix design shall be submitted for review and approval by the department.

7.3 If the edge of the pavement is damaged during this construction the permittee shall have his contractor replace the pavement to the centerline of the roadway at least 10 feet each side of the damaged area. If the damage is intermittent and less than 50 feet between damaged areas the permittee shall make the repair continuous to cover the damage.

7.4 For service crossings, pre-saw the area to be excavated. After completion of the utility, saw back the existing pavement a minimum of 1-1/2' over undisturbed earth on each side of the trench. Install 6" of asphalt installation hot mix which shall be spread and compacted in layers. The top layer shall not exceed a 2" compacted depth. Paint the entire area of all top-lift longitudinal joints with a 1/8" thick band of polymerized bituminous joint adhesive prior to placement the abutting lanes. The modified joint adhesive materials shall be Crafcro Pavement Joint Adhesive No. 34524, or an approved equal. The temperatures and application method of the joint adhesive shall be per manufacturer's recommendations.

7.5 For lane replacement, pre-saw the area of pavement effected by the utility installation. Cut the pavement so that the edges are vertical, the sides are parallel and the ends are perpendicular to the direction of traffic. The depth of pavement to be replaced will match the depth of the existing pavement unless otherwise specified. The pavement will be spread in layers not to exceed 2" to the seam nearest the centerline of the roadway. Paint the entire area of all top-lift longitudinal joints with a 1/8" thick band of polymerized bituminous joint adhesive prior to placement the abutting lanes. The modified joint adhesive materials shall be Crafcro Pavement Joint Adhesive No. 34524, or an approved equal. The temperatures and application method of the joint adhesive shall be per manufacturer's recommendations.

7.6 If the contract quantity is less than 1500 tons, the asphalt concrete pavement will be accepted based upon the engineers approval of the job mix design and the placement and compaction of the asphalt concrete to the specified depth and finished surface requirements and tolerances. The engineer's approval of the job mix design does not relieve the PERMITTEE or their contractor from the responsibility to produce the approved mix and is subject to field verification testing for oil content, density and gradation. The gradation, density and asphalt content shall be determined in accordance with section 410-4.02. If a calibrated nuclear content gauge is not available, asphalt content of the mix may be determined by extraction in accordance with AASHTO T-164. A minimum of two tests shall be taken for each approved mix design or as designated by the engineer.

7.7 The finished pavement surface will be tested after final rolling at selected locations using a 16-foot straightedge. Variations of more than 3/16 inch from the testing edge between any two contacts will be corrected.

7.8 Temporary Patches

a. A Polymer modified cold mix asphalt or concrete patch may be used as a temporary patch subject to written approval of the Regional Utilities Engineer. The temporary patch will be replaced as soon as hot asphalt is available. For crossings, saw back existing pavement a minimum of 1' over undisturbed earth on each side of the trench. Paint edges with STE-1 tack coat and install 4" of polymer-modified cold asphalt. Damage to the pavement surface at locations other than crossings will be repaired by replacement of asphalt to the seam nearest centerline of the roadway with 4" of polymer-modified cold asphalt. All edges are to be saw cut and painted with STE-1 tack coat. The polymer-modified cold asphalt shall be spread and compacted in 2" lifts, each compacted to a minimum of 94% of maximum density. Asphalt patch density shall be field controlled utilizing a calibrated nuclear densometer at two locations per patch. Field testing results shall be certified by a registered engineer and forwarded to DOT&PF.

b. Temporary concrete patches shall be a minimum of 6" thick with 6" x 6", 6 gage wire mesh or suitable reinforcing steel installed 3" below the finished grade. Concrete shall be Class A, six sack mix, with a slump range of 2"-4".8

7.9 Asphalt concrete mixture that becomes contaminated with foreign material, is segregated or is in any way determined to be defective will be removed. Defective materials will be removed for the full thickness of the course.

7.10 The Permittee shall replace all damaged or removed pavement markings in kind.

8.0 DRAINAGE

8.1 The PERMITTEE shall be responsible for assuring that all water entering the Department's storm drain facility meets the minimum criteria for water quality standards as set forth in the Alaska Administrative Code(18 AAC 70.010-.110).

8.2 The PERMITTEE shall maintain existing drainage patterns during construction of the Facility. Ditches will be restored to the originally designed flow lines unless otherwise agreed to by the DEPARTMENT.

8.3 The PERMITTEE shall be responsible for all erosion control prior to slopes becoming stabilized.

8.4 The PERMITTEE is responsible for installing and maintaining BMPs required by the NDPES permit throughout the duration of the project.

8.5 The PERMITTEE shall notify the Department of Transportation of drainage problems caused by the work under this Permit and will remedy the problem as directed by the Department of Transportation.

8.6 The PERMITTEE shall replace all culverts damaged by work under this Permit with a culvert. of the same size, or 18-inch, whichever is greater.

9.0 RIGHT OF WAY PROTECTION, MAINTENANCE, AND RESTORATION

11.1 The PERMITTEE shall cleanup within one day behind installation of the facility. The PERMITTEE will not be allowed to trench or plow more than can be cleaned up the following day.

11.2 The PERMITTEE or their contractor shall immediately repair any damage of existing utilities, storm drainage or other highway structures caused as a result of construction authorized by this permit.

11.3 Heavy tracked equipment operation will not be permitted on a paved roadway or shoulder, unless approved in writing by the Regional Utilities Engineer. If approved, planking or rubber tires shall be utilized between the vehicle tracks and the pavement. The PERMITTEE shall repair damage to the pavement as a result equipment operation as directed by the DEPARTMENT.

11.4 The PERMITTEE or his contractor will be responsible for winter and spring maintenance of the road shoulders, ditch lines, backslopes, road surfaces, taxiways, and runways that have not been left in a neat and clean condition, satisfactory to the Maintenance Section of the Department of Transportation.

11.5 The PERMITTEE shall dispose of trees, brush or other natural growth by mechanical chipping or hauling away. Stumps and grubbing piles shall be loaded and hauled to a disposal site outside the DEPARTMENT's right of way. Trees left for the public shall be limbed and stacked in a location where loading does not interfere with the safe operation of the travel way.

11.6 Guardrail that is removed or damaged during construction shall be replaced in accordance with Section 606 AKDOT&PF Standard Specifications dated 2004, and Standard Drawings Manual.

11.7 Any Survey monument or monument accessory that will be disturbed or destroyed during construction of the Facility shall be referenced prior to beginning work, and restored or replaced by a Registered Land Surveyor licensed in accordance with AS 34.65.040. All monument records shall be reviewed by the DEPARTMENT prior to filing with the District Recorder.

11.8 Highway signs that are in conflict with construction shall be relocated on a temporary basis and reinstalled at the original location as soon as possible. Signs that are damaged during construction shall be replaced in kind to the DEPARTMENT's standards, and at no cost to the DEPARTMENT.

11.9 The PERMITTEE shall replace all curbs and gutters to an existing undisturbed joint.

11.10 The PERMITTEE shall maintain all roadways, pedestrian and bicycle facilities affected by the pavement removal in a smooth and passable condition at all times.

11.11 The PERMITTEE shall provide street sweeping to keep free of loose material all paved portions of the roadway and haul routes open to the public, including sections of roadway off the project where your operations have deposited loose material. Use a street sweeper that can collect materials rather than eject them on the shoulder of the road.

11.12 The PERMITTEE shall furnish, haul, and place water for dust control and pavement flushing. Use water trucks that can provide a high-pressure water stream to flush the pavement and a light-water spray to control dust. If the flushing operations contaminate or fill adjacent catch basins, clean and restore them to their original condition. Pavement flushing and dust control is required in sections off the project where flushing is required.

11.13 Upon completion of the work within the State right-of-way or State property, the PERMITTEE shall remove all equipment, dispose of all waste material and shall leave the premises in a neat and clean condition satisfactory to the Department of Transportation.

10.0 TOPSOIL AND SEEDING

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10.1 The PERMITTEE shall replace and restore all vegetation disturbed. Unless otherwise required, re-vegetation shall consist of establishing seeded grassed slopes over the disturbed ground. The PERMITTEE shall use all means necessary to maintain and protect the disturbed slopes from erosion until such time as the vegetation is established.

10.2 The PERMITTEE shall replace any topsoil lost as a result of construction under this permit.

10.3 The PERMITTEE shall re-seed all areas within the DEPARTMENT's right-of-way disturbed by work under this permit with a seed mix approved by the DEPARTMENT.

10.4 The PERMITTEE shall re-grade all disturbed areas to blend with the existing ground surface and re-seed after completing backfill of pipe.

10.5 If re-seeding is not complete by August 15th, then re-shaping of all disturbed areas shall be completed by July 1st of the following year. The PERMITTEE is responsible for all erosion control measures and cleaning of ditches and culverts.

11.0 OVERHEAD FACILITIES

11.1 New and relocated aerial facilities shall maintain a minimum vertical clearance of twenty feet (20') in all locations within the right of way. (17 AAC 15.201)

11.2 The PERMITTEE shall install guy guards on all down guys installed within the right of way.

11.3 The PERMITTEE shall remove all overhead lines abandoned as the result of this Permit.

11.4 Guy/Anchor attachment shall not be located within clear zone.

.12.0 UNDERGROUND FACILITIES

12.1 The depth of burial for underground facilities constructed or installed under pavement, roadway or runway surfaces must be at least four feet measured from the surface of the pavement to the top of the cable, conduit, pipeline or encasement.

12.2 Underground facilities constructed under other surfaces, including unlined ditches must be buried at least three feet, measured in any direction from the surface to the top of the cable, conduit, pipeline or encasement.

12.3 The PERMITTEE shall place buried caution tape one foot directly above the Facility being installed.

12.4 The PERMITTEE shall obtain locates for any existing traffic signals, traffic interconnect cables, street light facilities, or FAA cables prior to construction. Damages shall be repaired and restored to working order within eight hours at the PERMITTEE's expense. Any splice must be located within a Type II Junction Box or as directed by the DEPARTMENT.

13.0 WARRANTY

13.1 Warrant and Warranty, for the purposes of this Permit, shall mean the DEPARTMENT's concurrence block authority on any warranty release issued by the PERMITTEE.

13.2 The PERMITTEE shall warrant the materials and workmanship of the road, and road right-of-way, to ensure completion of the construction, including the restoration of surfacing, slopes, slope treatment, drainage facilities, pathways, and right-of-way cleanup for the warranty period.

13.3 The DEPARTMENT will notify the PERMITTEE of any surface deformity. The PERMITTEE shall prepare a corrective action plan for review and approval by the DEPARTMENT. The corrective action plan shall include:

- a) A methodology to determine if the pavement surface deformation is due to subsurface forces, such as subsidence or drainage, and;
- b) A proposal for correcting the surface variation.

13.4 The PERMITTEE shall remedy promptly, without cost to the DEPARTMENT, any and all defects in materials and workmanship resulting from defective materials and workmanship. If the defect, in the opinion of the DEPARTMENT, is of such a nature as to demand immediate repair, the DEPARTMENT shall have the right to take corrective action and the cost thereof shall be borne by the PERMITTEE.

13.5 The PERMITTEE or his designee and the DEPARTMENT shall perform construction inspection of the road. The PERMITTEE or his designee shall handle any coordination with respect to inspection activities involving both the DEPARTMENT and PERMITTEE.

13.6 The Warranty period shall mean a period of two (2) years from the acceptance of the road. The Warranty shall remain in effect until final inspection and acceptance by the DEPARTMENT.

14.0 RELEASE OF WARRANTY

14.1 The PERMITTEE and the DEPARTMENT shall perform an inspection prior to the end of the warranty period. The PERMITTEE or his designee is responsible to schedule and coordinate with the Department the final warranty inspection. The PERMITTEE shall correct any defect in the work revealed by the warranty inspection.

14.2 Upon the PERMITTEE's satisfactory performance of all its obligations under this Permit, the Department shall execute a written statement acknowledging performance and release of the warranty obligations. Release of the warranty shall not release the PERMITTEE of all other provisions of the permit.

14.3 Any damage to the roadway prism, fill slopes, ditches, backslopes, structures or underground utilities determined to be a result of work authorized by this permit that becomes apparent within two (2) years after project completion and acceptance by the DEPARTMENT shall be repaired by the PERMITTEE

15.0 MAINTENANCE AND OPERATIONS

15.1 The PERMITTEE shall perform routine maintenance on the utility facility on a continuing basis. Routine maintenance may be performed without prior notification of the department however closure of a highway, pedestrian facility, pathway, sidewalk or creating a detour to perform routine maintenance must be specifically authorized by permit. The PERMITTEE shall apply for an annual lane closure permit to cover routine maintenance operations. Prior authorization must be obtained from the department before performing any maintenance that requires excavation, plowing, jacking or boring within the right of way.

15.2 The PERMITTEE may perform emergency maintenance without prior notice to the department as long as appropriate traffic control is established and maintained. If the project requires major reconstruction and or placement of traffic control devices for an extended period a lane closure permit is required. If the road surface is affected by the emergency maintenance, contact the local maintenance foreman as soon as possible and place pavement break warning signs in advance of the site until such time as the pavement has been repaired.

15.3 The PERMITTEE is responsible for maintenance and adjustment of manhole frames, valve boxes, junction boxes or other structures located in the pavement or sidewalk.

15.4 The PERMITTEE shall apply for a new utility permit if the facility authorized by this permit is to be reconstructed or modified substantially. If the proposed modifications are not substantial, the PERMITTEE need only apply for an amended permit. A utility permit application is required for all new service connections.

In consideration of the benefits accruing to the Permittee by reasons of the foregoing agreement, this permit is hereby accepted by the Permittee and the Permittee hereby agrees to comply with all of the terms, provisions, conditions, stipulations therein contained. Dated this _____ day of _____, 20 _____

City of Kake

By: _____

Title: _____

Attest: _____

Title: _____

ACKNOWLEDGEMENT OF COMPANY OR PERMITTEE

STATE OF ALASKA)
_____ JUDICIAL DISTRICT)ss

BE IT REMEMBERED that on this _____ day of _____, 20 _____, before me the undersigned, a Notary Public of the State of Alaska, personally appeared

and _____
both to me personally known and known to me to be the identical individuals named in and who executed the foregoing permit, and acknowledged the said instrument to be the free and voluntary act and deed of the above named company for the uses and purposes therein expressed and on oath stated that they were authorized to execute said instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of my office the day and year first above written.

My Commission Expires: _____

A Notary Public

The State of Alaska, acting by and through its Department of Transportation and Public Facilities has caused this Utility Permit to be executed on this _____ day of _____, 20 _____

STATE OF ALASKA DEPARTMENT OF TRANSPORTATION AND PUBLIC FACILITIES

Southcoast Region

By: _____

Title: Regional Utility Engineer

ACKNOWLEDGEMENT OF DEPARTMENT

STATE OF ALASKA)
1 st. JUDICIAL DISTRICT)ss

BE IT REMEMBERED that on this _____ day of _____, 20 _____, before me, the undersigned, a Notary Public of the State of Alaska, personally appeared

of the Department of Transportation and Public Facilities known to me to be the identical individual who executed the foregoing permit, and he acknowledged to me that he executed the same for and on the behalf of the State of Alaska Department of Transportation and Public Facilities with full authority so to do, and for uses and purposes therein expressed.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of my office the day and year first above written.

My commission Expires _____

A Notary Public

APPENDIX F

City Owned Unclassified Material - Sales Agreement

City of Kake

UNCLASSIFIED FILL SALES OFFER

The City of Kake ("City") offers to sell unclassified fill to a contractor for use on the Kake Bulk Fuel Upgrade Project ("BFU Project") and Kake Rural Power System Upgrade project ("RPSU Project"). The Alaska Energy Authority ("AEA") intends to procure a contractor to construct the BFU Project and RPSU Project (together "Projects").

The City owns the land where the BFU Project will be located and representatives of the City have been in consultation with representatives of AEA, AEA's engineering consultants, and Kake Tribal Fuel (KTF) in regards to the design of the Project.

The City previously passed resolution #2016-05 which: 1) supported the BFU Project site selection, pipeline alignment, future easements, and future lease lot boundaries; 2) agreed to consider selling gravel material for use in the Project, the IPEC generator pad and for trench fill; 3) agreed to designate a location for relocating gravel within the City's quarry; and 4) supported relocating the city's equipment storage yard.

The City of Kake previously passed resolution #2016-09 agreeing to: 1) accept grants from AEA for BFU Project related costs including but not limited to construction, City and KTC legal fees, and fill compensation, subject the City's approval of grant terms. Since this resolution, AEA has requested that the City offer to sell unclassified fill directly to the AEA's contractor.

AEA has granted funds to the City of Kake for the BFU Project and AEA will manage the construction of the project. AEA has granted funds to Inland Passage Electric Cooperative ("IPEC") for the RPSU Project and AEA will manage the construction of the RPSU Project.

The City offers to sell unclassified fill (stockpiled on the BFU Project site) to AEA's general contractor at \$8/CY in place, based on HDL design documents and quantity estimates. The in place estimate is for fill material after contractor handles, screens, processes, transports, places, and compacts the gravel material. HDL estimated quantities are:

- 1) Contractor prepared and placed Structural Fill: 2,865 CY, or \$22,920 lump sum.
- 2) Any additional contractor used unclassified fill, measured after contractor processing: by the CY, measured by truck count.

The City understands that the contractor is responsible for selecting its source of fill, and may select a difference source than the city's stockpile.

Approved by the City of Kake:

Christine Bitterman
Signature

Mayor
Title

6/6/16
Date