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Via Certified Mail – Return Receipt Requested

March 1, 2012

Ms. Meghan Dooley
Contaminated Sites Program
Department of Environmental Conservation
555 Cordova Street
Anchorage, AK 99501

Re: City of Unalaska – Drainage Projects

Dear Ms. Dooley:

The attached document presents a soils management plan for City of Unalaska storm drain improvements near the Rocky Point Management Area and the Pre-WWII Tank Farm area in Dutch Harbor, Alaska.

If you have any questions or concerns regarding this matter, please contact myself or Robert Lund at 907-581-1260.

Sincerely,

Nancy Peterson
Director of Public Works

cc: Tyler Zimmerman, City Engineer

Work Plan for Ilulaq Lake/East Point Road & Delta Way

Prepared by

City of Unalaska
Department of Public Works
PO Box 610
Unalaska, Alaska 99685

Prepared for

Ilulaq Lake / East Point Road & Delta Way
Drainage Improvements
DPW Project No. 10101
Dutch Harbor, Alaska

February 29, 2012

Robert Lund, P.E.

LIST OF ATTACHMENTS

LIST OF TABLES

LIST OF ACRONYMS

	Text revised from the initial December 2009 draft is highlighted in grey
AAC	Alaska Administrative Code
ACLs	alternative cleanup levels
ADEC	Alaska Department of Environmental Conservation
AK Z10	Alaska State Plane Zone 10 coordinate system
ARD	Aleutian Recording District
bgs	below ground surface
BTEX	benzene, toluene, ethylbenzene, and total xylenes
^{o}C	degrees celcius
CFR	code of federal regulations
CMP	corrugated metal pipe
cm/s	centimeters per second
CoC	chain of custody
COPC	contaminants of potential concern
CULs	cleanup levels
DRO	diesel range organics
DPW	City of Unalaska Department of Public Works
DW	Delta Way
EPA	Environmental Protection Agency
EPR	East Point Road
FUDS	formerly used defense sites
GEOID 06	a mathematical model of the surface of the earths equipotential surface (2006 version)
GRO	gasoline range organics
GPS RTK	global positionings system with real time kinematic satellite navigation
MLLW	mean lower low water (tide level, 0.00 feet elevation in NGVD 29 elevation system)
MSL	mean sea level, about 2.13 feet above MLLW
NAD 83	North American datum 1983 (horizontal)
NAVD 88	North American vertical datum 1988
NGVD 29	national geodetic vertical datum 1929
No.	number
NOAA	national oceanic and atmospheric administration
NOI	notice of intent
PAHs	polynuclear aromatic hydrocarbons
PE	professional engineer
PID	photo-ionization detector
PPE	personal protective equipment
ppmv	parts per million by volume
psi	pounds per square inch
RPMA	Rocky Point Management Area
RRO	residual range organics
SAP/QAP	sample analysis plan and quality assurance procedures
SCM	site conceptual model
SDMH	storm drain manhole on East Point Road
SDMH DW	storm drain manhole Delta Way
SP	stockpile
UCO	Unalaska Code of Ordinances
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
VOCs	volatile organic compounds
WWII	World War 2

WORK PLAN FOR ILULAQ LAKE/EAST POINT ROAD & DELTA Way

1.0 Introduction

The City of Unalaska, Alaska (the City) has prepared this Work Plan for management of excavated soils during necessary storm drain improvements at the Ilulaq Lake/East Point Road & Delta Way Drainage Project (the Project) in Dutch Harbor, Alaska. The civil engineering scope and details of the Project are included in the associated civil design plans (**Attachment A**; the Plans).

The City of Unalaska owns the public rights of way including East Point Loop Road and Delta Way and has also established public utility easements through privately owned land adjacent to these rights of way. The storm drain improvements will be installed within the public right of way and in other areas designated as public utility easements. These areas are contiguous to the Rocky Point Management Area (the RPMA) and the World War Two Tank Farm FUDS Site No. F10AK084103 on Amaknak Island (the FUDS Site).

This Work Plan presents the soil management plan by the following:

- Introduction to the Project and the vicinity;
- Preliminary Site Conceptual Model;
- Proposed clean-up levels;
- Overview of proposed activities;
- Soils management Work Plan;
- Conclusions and recommendations;
- References; and
- ADEC guidance documents adopted by reference.

The City of Unalaska requests a waiver to 18 AAC 75.355 whereby a qualified and objective person employed by the City of Unalaska, Robert Lund, P.E., will conduct and supervise the Work Plan activities for the City. A resume is included as **Attachment B** which demonstrates qualifications to perform this work including several years experience planning and conducting similar activities both in and outside of Alaska. As an employee of the City of Unalaska DPW, Mr. Lund will have sole responsible charge and supervisory control for the regulatory aspects of this Project as defined in this Work Plan, and report directly to the DPW director Nancy Peterson. ADEC pre-approval is required should the City elect to substitute another individual or organization to conduct and supervise this Work Plan.

1.1 BACKGROUND DOCUMENTATION

This work plan adopts the ADEC guidance documents listed in **Section 8.0** by reference.

During preparation of this Work Plan, the City also reviewed the following environmental reports related to the Project area:

- *Annual Area-Wide Groundwater Monitoring and Maintenance Report – 2009 Rocky Point Management Area Dutch Harbor, Unalaska, Alaska.* Stantec Consulting Corporation for Chevron Environmental Management Company, 2009.

- *Work Plan Remedial Action Pre-World War Two Tank Farm* FUDS Property No. F10AK084103. Jacobs Engineering Group, Inc. for USACE. August 2007.

- *Well Installation, Development, and Survey Report FINAL* – Contract No. W911KB-08-D-0004 Task Order 0007 FUDS Property No. F10AK084103. AECOM Environment for USACE. June 2011.

- *FINAL 2009 Groundwater Monitoring Program Report, Amaknak Pre-WWII Tank Farm* Contract No. W911KB-08-D-0004 Task Order 0007 FUDS Property No. F10AK084103. AECOM Technical Services for USACE. February 2012.

- *2007 Pipeline Closure Documentation Rocky Point Management Area Dutch Harbor, Unalaska, Alaska.* Stantec Consulting Corporation for Chevron Environmental Management Company, 2008.

- *2008 Pipeline Closure Documentation Rocky Point Management Area Dutch Harbor, Unalaska, Alaska.* Stantec Consulting Corporation for Chevron Environmental Management Company, 2009.

- *2010 Pipeline Closure Documentation Rocky Point Management Area Dutch Harbor, Unalaska, Alaska.* Stantec Consulting Corporation for Chevron Environmental Management Company, 2011.

1.2 SITE DESCRIPTION AND BACKGROUND

The storm drain installations are both placed in Section 3, Township 73 South, Range 118 West, USGS Quadrangle Unalaska (**Attachment A**).

The RPMA and the FUDS Site have been used as bulk petroleum storage and distribution facilities for the fueling of marine vessels and loading of tanker trucks for over 70 years. The Department of Defense initially operated fueling facilities through the conclusion of World War II. Standard Oil of California, a corporate predecessor to Chevron, subsequently leased portions of the facilities until 1986. Since 1986, Delta Western has leased and operated portions of the facility for fueling operations. Surface rights to most of the land on Amaknak Island, including the RPMA and the FUDS Site, were transferred to Ounalashka Corporation in response to the Alaska Native Claims Act of 1971 (Stantec, 2009).

Various reports written by the responsible parties for area wide soil and groundwater total petroleum hydrocarbon contamination attribute it to fueling operations which have historical extent from the 1920's to ongoing operations in the present day. Due to the heterogeneous nature of the soil and groundwater in the vicinity and anecdotal evidence, the City of Unalaska has assumed that both soil and groundwater impacts could be present in any location excavated as shown in the Plans.

ADECs 2011 *Monitoring Well Guidance* requires that all monitoring wells be surveyed. In general, the vertical coordinates given in the Plans and this Work Plan are in NGVD 29 MLLW (NOAA, 2003). Stantec's monitoring well data is given in NGVD 29 MSL; and USACE data is given in both NGVD 29 MLLW and/or NAVD 88 GEOID 06. For the purposes of comparing the elevations given in this Work Plan to others, approximately 0.00 feet MLLW elevation given in the Plans is equivalent to 2.13 feet elevation in MSL given by Stantec. NGVD 29 is not readily converted to GEOID 06 in the Aleutian Islands; however based on AECOM, 2011 record of survey GEOID 06 is approximately 9.19 feet higher than NGVD 29 MLLW in the vicinity of the Plans.

East Point Road Storm Drain

The East Point Road storm drain replaces an existing storm drain and will run from Ilulaq Lake to Iliuliuk Bay which is on the ADEC 2010 list of impaired waters for total petroleum hydrocarbons.

The East Point Road storm drain originates at Ilulaq Lake at Station 0+00 (53° 53' 14.03355" North latitude, -166° 32' 12.56411" West longitude in NAD 83). Ilulaq Lake's only surface water hydraulic connection to Iliuliuk Harbor is through this storm drain. This portion of Ilulaq Lake is recorded on ARD Plat No. 305-1988-88-14. At Station 0+29, the Storm Drain enters an easement through the Horizon Lines, Inc. (Horizon) yard, which is located on Tract A of ARD Plat 305-1994-94-1. The Horizon yard is used to store and load/off-load cargo containers. At Station 1+59, the Storm Drain enters the East Point Road right of way which is an unpaved gravel road. At Station 12+69, the Storm Drain leaves the East Point Road right of way and is converted to a sediment separator as it enters a utility easement which crosses ARD Plat No. 305-90-5 through Parcel 1-A and connects to the existing Iliuliuk Bay outfall pipe at Station 13+36. This area is currently crossed by aboveground and operational Delta Western, Inc. (Delta Western) fuel lines. The Iliuliuk Harbor outfall pipe is an existing 24" diameter CMP drain which discharges at Station 13+78 (53° 53' 23.92637" North latitude, -166° 32' 7.24855" West longitude in NAD 83; 1378 horizontal feet of drain pipe away from Station 0+00). Connection is made the existing 24" CMP at Station 13+36.

The East Point Road storm drain runs through or is in a right of way adjoining land zoned Marine Related/Industrial from Station 0+00 to Station 12+69. From Station 12+69 through Station 13+36, it runs through land zoned Marine Dependent Industrial. These zoning descriptions are per City of Unalaska Code of Ordinances 8.12.060. With the exception of East Point Road right of way, all of these properties are owned by the Ounalashka Corporation and leased to others.

Delta Way Storm Drain

The Delta way storm drain will replace an existing storm drain and runs from about half way up Delta Way down to Iliuliuk Harbor.

The new Delta Way storm drain originates at the tie in of an existing storm drain line to a catch basin at Station 0+00 in the Delta Way right of way (53° 53' 24.94687" North latitude, -166° 32' 16.37548" West longitude in NAD 83). At Station 2+75, the storm drain leaves Delta Way and cuts across the corner with East Point Road through an easement that crosses L1 of ARD Plat No. 305-1990-90-5. At Station 3+50, the storm drain begins the crossing of East Point Road. At Station 4+03, the storm drain enters an easement through the Delta Western Office Area on Tract B of ARD Plat No. 305-1990-90-5 and discharges to Iliuliuk Bay at Station 5+37 (53° 53' 28.52612" North latitude, -166° 32' 10.38882" West longitude in NAD 83; 537 horizontal feet of drain pipe away from Station 0+00).

The Delta Way storm drain runs through or is in a right of way which adjoins land zoned Marine Related/Industrial from Station 0+00 to Station 4+10. From Station 4+10 to Station 5+37 the land is zoned Marine Dependent Industrial. These zoning descriptions are per City of Unalaska Code of Ordinances 8.12.060. With the exception of Delta Way and East Point Road right of ways, all of these properties are owned by the Ounalashka Corporation.

Summer Bay Road Contingency Stockpile Location

The Summer Bay Road Contingency Stockpile would be located along Summer Bay Road in Unalaska, Alaska **(Attachment A**). The Contingency Stockpile will be located at approximately 53° 53' 09" North latitude, -166° 30' 24" West longitude in Section 1, Township 73 South, Range 118 West, USGS Quadrangle Unalaska, Lot 2, Coxcomb Subdivision, and ARD Plat No. 94-25. The property is owned by the City of Unalaska, is undeveloped, adjacent to but not on the Landfill, and is zoned Public/Quasi-Public per City of Unalaska Code of Ordinances 8.12.120.

1.3 REGIONAL AND LOCAL GEOLOGY/HYDROGEOLOGY

The new storm drains are located in Unalaska (Port of Dutch Harbor), Alaska, across from the entrance of Dutch Harbor to Iliuliuk Bay.

The bedrock underlying the area is typically found at depths from exposed to 12 feet bgs. The Unalaska area consists of interbedded volcanic flows of andesites and basalt extrusive rocks known as the Unalaska Formation (Drewes, et. aI., 1961). The USGS found the bedrock to be dominated by hydrothermally altered volcanic rocks that are intruded by numerous dikes and veins. Some altered tuffs as well as outcrops of coarse sandstone are also present (Lemke, 1995). Formations of granodiorite batholith (typically mined and crushed for engineered fill which is used extensively in developed areas such as roads and parking areas) are also present in Unalaska (USDIGS 1028).

The native surface soil in the area is generally somewhat permeable coarse-silty loam (dark brown) or clay (orange/brown) or is composed of till which consists of stony material interbedded with clay (orange/brown) and silt (dark brown). Soils tend to contain more clay

(orange/brown) towards the bottom. These soils extend five to twelve feet bgs or more and are interbedded with layers of colluvial sediments ranging from a few inches to a few feet in thickness (Drewes, et. al., 1961). Numerous lenses of volcanic ash and lapilli are also found throughout the top-soil.

The area has been developed over the years and many feet of aggregate and silty fill material must be assumed to have replaced and/or overlay native bedrock or soils (USACE 2009 estimates 4-6 feet in the FUDS Site). Cobbles or to some extent sand would be expected in areas that were formerly part of a beach prior to development.

Groundwater flows through the unconsolidated sediments in the Unalaska area and typically away from the nearby mountains towards the coast. Groundwater is also found in secondary openings, including fractures or joints found in the volcanic bedrock (Lemke, 1995). Groundwater is typically found at depths around 10-feet bgs and may be subject to tidal influence (USACE 2009 estimated measurable influence 400-feet inland). During storm events, field observations have shown that groundwater most readily flows between the base of engineered fill and native soils, through seeps in silty/clay material, and in the degraded aggregate along the top of bedrock. Due to the hilly terrain and native clay like materials, discrete discontinuous pockets of groundwater or other liquids may be expected.

The island of Unalaska has mean annual precipitation of about 58-inches. The mean snow fall is about 69-inches. The snow water equivalent is included in the precipitation total (Lemke, 1995).

According to NOAA, 2003 the mean range of tides between MHW and MLLW in Unalaska are about 3.73-feet. The maximum high and low tides recorded in Unalaska have a range of 9.18 feet historically. The highest tide was recorded January 27, 1960 at 6.70-feet above MLLW and the lowest was recorded January 29, 1999 at 2.48-feet below MLLW.

It can be very windy in Unalaska/Port of Dutch Harbor; the structural design wind speed exceeds 150 mph plus per ASCE 7-10 (approximately the upper confidence levels of 50 to 100 years return periods). The average monthly wind speed ranges from a low of 8.3 mph in July to a high of 12.7 mph in November (Alaska Energy Authority, 2005).

2.0 PRELIMINARY SITE CONCEPTUAL MODEL

This preliminary SCM is intended to summarize the status of the Site with respect to handling any contaminated media encountered during the storm drain installations. The preliminary SCM also identifies exposure pathways that present a risk to human health or other environmental receptors.

The environmental fate of petroleum hydrocarbons is discussed below to demonstrate that COPC at the Project site are subject to many natural and manmade factors which influence their phase (vapor, liquid, dissolved, adsorbed to soil, etc.), position, and overall mass with respect to time.

Petroleum products released into the environment undergo weathering processes with time. These processes can include degradation, evaporation (volatilization), diffusion and advection transport through the saturated soil stratigraphy, sorption onto soil components, leaching (transfer to the groundwater from soil media) into solution, and entrainment (physical transport along with the groundwater). The rate of weathering is highly dependent on environmental conditions including the depth of the release below ground surface, type of soils, depth to groundwater, the presence of utility lines, etc. Degradation processes are dependent on many factors, including the type and quantity of microorganisms present, environmental conditions (temperature, oxygen levels, moisture, etc.), predominant hydrocarbon types, nutrient availability, soil types, and the bioavailability of particular hydrocarbon contaminants.

2.1 CONTAMINANTS OF POTENTIAL CONCERN

The COPC at the Site include the following constituents which are typically associated with petroleum hydrocarbon releases into the environment:

- BTEX;
- GRO;
- DRO;
- RRO; and
- PAHs.

2.2 SOURCES OF CONTAMINATION

This Work Plan address's hydrocarbon impacted materials generated by others which may be encountered by the City of Unalaska in the public right of way in various combinations of: fueling infrastructure (such as active or abandoned pipelines), free product (pure fuel), impacted soil, impacted vapors, or impacted groundwater.

2.3 POTENTIAL RECEPTORS

The first group of receptors are individuals who may be exposed to the COPC during and following excavation and disposal activities. These would include any excavation workers.

The second group of receptors are those environmental receptors such as surface/ground water and soils which may be affected by deliberate or inadvertent transport of contaminated material via preferential pathways or materials handling methods.

2.4 EXPOSURE PATHWAYS

Potential routes of exposure are through:

- ingestion;
- inhalation;
- direct contact;
- outdoor inhalation;
- migration to groundwater or surface water; and
- cross contamination.

3.0 PROPOSED CLEANUP LEVELS

All proposed CULs are based on the maximum concentration detected within decision units per 18 AAC 75.380(c) (1).

Native overburden soils above the new storm drain locations will be pre-characterized during execution of this Work Plan. The intent of the pre-characterization is to define those portions of the existing soil above the proposed storm drain (from 0-4-feet bgs) which may be beneficially reused as clean fill. To qualify for disposal as clean fill, those soils must not exceed CULs per 18 AAC 75.340 Table B1 and/or B2 Method 2 Migration to Groundwater in the over 40 inch Precipitation Zone (Method 2 CULs) for all COPCs.

No CULs are proposed for the storm drain locations because this Work Plan maintains that cleanup of excavated materials removed and replaced into the excavation remain the responsibility of others. Unless moved to the Contingency Stockpile, excavated soils from below 4-feet bgs or any pre-characterized soils not meeting Method 2 CULs will be placed back into the excavation within 200 feet of the original location and the top 4-inches of surfacing will be clean fill (see Section 5.4).

Cleanup levels for a Contingency Stockpile of uncharacterized soils removed from the Project site will be proposed under separate cover based on the proposed location of final disposal. The Contingency Stockpile will be located near the City of Unalaska Landfill which has CULs per 18 AAC 75.340 Table B1 and/or B2 Method 2 Migration to Groundwater in the over 40 inch Precipitation Zone for all COPCs.

4.0 SOIL AND GROUNDWATER MANAGEMENT OVERVIEW

Section 5.0 presents a detailed Soils Management Work Plan. The following text is an executive summary of **Section 5.0**:

Drainage improvement activities would normally involve excavating and removing soils for installation of storm drain infrastructure (pipes, catch basins, and etc.) followed by classified backfill of the excavations and specified completion of grading surface (as shown in the Plans). The Project is within a known contaminated area. In accordance with 18 AAC 75, the City proposes to install the storm system improvements so that excess materials such as soil and excavation dewatering effluent are minimized and managed properly.

Due to a lack of suitable disposal options, the City also proposes to install the improvements in such a manner that excess soil that must be handled in accordance with 18 AAC 75.370 *Soil Storage and Disposal* is replaced into the excavation, as backfill, to the extent practicable. A contingency plan is incorporated into this Work Plan in the event that unforeseen circumstances necessitate offsite stockpiling of uncharacterized and potentially contaminated soil.

Task 1 – Details activities which must take place before any field work can begin. The activities include receiving ADEC approval of this Work Plan, preparing and reviewing an OSHA required health and safety plan, conducting locates of underground utilities, traffic control, and following a statement of compliance with various regulations that must be adhered to by all participants during execution of this Work Plan.

Task 2 – Details pre-characterization of the new storm drain routes in order to show whether those soils above 4-feet bgs or portions thereof can be beneficially reused as clean fill. These activities must take place at least 2-months in advance of beginning to install the new storm drains to allow enough time to receive the analytical reports, prepare and submit a draft report to ADEC, receive ADEC comments back, submit the final report, and receive final ADEC approval.

Task 3 – Proposes that pre-characterization of the native soils beneath the Contingency Stockpile location should not be required by ADEC until after the Contingency Stockpile is removed.

Task 4 – Details a soil management plan to be followed during installation of the new storm drains. This work cannot begin until the ADEC approval from **Task 2** is received. The activities described here include: preparing the Contingency Stockpile location near the City Landfill (if needed); excavating the top 4-feet of soil as allowed in **Task 2** and beneficially reusing it as clean fill; excavating the remainder of the trench while temporarily stockpiling that soil next to the trench; installing the storm drain system; placing the temporarily stockpiled soil back into the excavation; and completing the installation by placing a layer of clean fill on the top surface.

Task 5 – Details the installation of bentonite/sand seals at selected intervals along the new storm drain system to prevent liquid contamination from flowing down along the outside sides of the storm pipe and contaminating other areas.

Task 6 – Details the abandonment methods for existing storm drains being replaced by this project so that they could not provide a contaminant migration pathway in the future.

Task 7 – Stipulates that the handling of excavation dewatering water will be conducted properly under an NOI submitted to ADEC's Water Division under separate cover from this Work Plan. In addition a waste management Work Plan Addendum will be submitted for approval to ADEC's contaminated Sites Program prior to start of work.

Task 8 - Details a plan to characterize the Contingency Stockpile and report those results to ADEC. If the results are below Method 2 CULs near the City Landfill, then the City will request permission to use the material as clean fill. If CULs are exceeded, then a disposal or remediation plan must be submitted to ADEC and upon removal of the Contingency Stockpile the native soils beneath the Contingency Stockpile will have to be characterized to demonstrate to ADEC that contamination did not leach out.

Task 9 – Describes how decontamination rinsate will be properly handled and disposed of during the Project.

Task 10 – Details the reporting requirements for this project. Those reports are: a pre-characterization and work plan addendum report for the top 4-feet of soils above the new storm drains; an NOI and Work Plan addendum for excavation dewatering, a report on the stockpile characterization and the new storm pipe installation activities; and possibly a third report assessing contamination of the soil beneath the Contingency Stockpile location when it is removed.

5.0 SOILS MANAGEMENT WORK PLAN

The below tasks are for all activities on the new Delta Way Storm Drain and for activities from Station 1+59 to the outfall of the new East Point Road Storm Drain (see the Plans). East Point Road stations 0+00 to 1+59 are excluded because they are located outside of the RPMA which is bounded on the Ilulaq Lake side of East Point Road.

5.1 Task 1 - Pre-Field Activities

Receive ADEC approval of the final version of this Work Plan.

As required by the Occupational Health and Safety Administration (OSHA) "Hazardous Waste Operations and Emergency Response" guidelines (29 CFR 1910.120), the contractor(s), the City, and/or their agent, each will prepare a site specific Health and Safety Plan (HASP). At a minimum, the HASP will define the proposed activities, describe physical and chemical hazards that may be associated with the work, provide a map to the nearest emergency medical facility, and include material safety data sheets for any hazardous chemicals that will be used or produced during the work. A copy of the HASP will be available onsite at all times during field work. The individuals performing field activities will review the HASP prior to beginning field operations at the Site.

Prior to mobilizing, and as needed throughout the Project, the City/the contractor will locate and mark subsurface utilities at the Project site and similar marking will also be performed by TelAlaska, a local telecommunications provider.

Appropriate traffic control will be planned whenever work is conducted in the right of way or other heavily trafficked areas.

All appropriate easements and ADEC approvals will be acquired and followed during field activities.

The work will be performed in accordance with the Plans, this Work Plan, and all other local, state, and federal regulations.

5.2 Task 2 – Overburden Pre-Characterization

All field screening and confirmation sampling will be by the City and in accordance with this Work Plan and ADECs *2009 DRAFT Field Sampling Guidance;* adopted by reference in this Work Plan and the SAP/QAP (**Attachment D**).

Prior to construction activities, the City will characterize the top 2-feet surface soils (as defined in 18 AAC 75.990(127)) and the first 2-feet of subsurface soils (total of 4-feet bgs) along the Plans storm drain routes and submit an *Overburden Characterization Report and Work Plan*

Addendum (see **Task 10**) to ADEC. The report will use Plan stationing to clearly define lineal and vertical extents where the soil is suitable for beneficial reuse on or off the Project site as clean fill per the proposed Method 2 CULs.

The purposes of these activities are to avoid cross contamination of surface and near surface soils, and to allow room for soil displacement caused by the storm drain infrastructure. The top 4-feet of soil has been judged as a candidate for beneficial reuse because it is predominantly composed of import fill and lies above the contaminated groundwater table. Pre-characterization at the full future trench excavation depths is impracticable due to groundwater and the heterogeneous nature of the location of contamination in the Project vicinity.

The proposed test pits will first be staked out with GPS RTK equipment. Utility locates will be conducted. An excavator bucket will be used to advance the test pits. Traffic control will be required during these activities.

The basis for the frequency and location of all overburden pre-characterization soil samples is ADECs *2010 Draft Field Sampling Guidance* with modifications. The guidance contains the following text: *Table 2A applies to all excavated soils removed from the ground including soils placed into stockpiles, drums, or other containers. Overburden soils would need to be sampled as excavated soil unless it has been demonstrated that the overburden soils are clean and was approved in a site-specific work plan*.

The rate of sample collection will be per **Table 1** for an imaginary stockpile that would be generated if the top 4-feet of soil was removed from the planned storm drain locations. The following calculations are based on **Table 1**. The volume of a 4-feet wide by 4-feet deep cut (4-feet is the excavator bucket width) along 1,714 lineal feet of trench (neglecting the first 159 feet of the EPR drains from the Horizon Yard) is approximately 1,015 cubic yards.

Test pits will be advanced to 4-feet bgs at maximum 50-feet intervals along the 1,714 lineal feet of trench for a total of 36 test pits. PID screens will be taken twice from each test pit, once at 2-feet bgs and once from 4-feet bgs for a total of 72 PID screens. This is one PID screen per 14 cubic yards of the imaginary stockpile.

One Confirmation sample will be taken from each test pit from the vertical horizon with the highest PID reading (either 2-feet bgs or 4-feet bgs). This is a total of 36 confirmation sample locations. This rate represents one confirmation sample per 28 cubic yards from the imaginary stockpile. Confirmation samples taken from 2-feet bgs would be considered a sidewall sample and those taken from 4-feet bgs would be considered a floor sample.

Table 1 - Storm Drain Pre-Characterization Soil Sample Collection

By Volume (cubic yards)	**# of Screening Samples**	**Minimal # of Laboratory Samples**
0-10	5	1
11-50	5	2
51-100	1 per 10 cubic yards	3
More than 100	1 per 14 cubic yards, spaced at a minimum 2 per 50 lineal feet, 1 at 2-feet bgs and 1 from 4-feet bgs	1 sample per each 28 cubic yards, spaced at a minimum 1 per each 50 lineal feet

Confirmation soil samples will be analyzed by *SGS Labs* for GRO by method AK101, BTEX by EPA method 8021, PAHs by EPA method 8270D, DRO by method AK102, and RRO by method AK103 as shown in **Table 2**.

Table 2 - Overburden Pre-Characterization Analytical and Sample Requirements (Soil)

Method	**Matrix**	**Container (jars)**	**Preservative**	**Hold time**
AK101/EPA 8021 (GRO/BTEX)	Soil	(1) 4-oz amber wide mouth jar with septa lid	Methanol, Temperature 4 ^{o}C +/- 2 ^{o}C	14 days
AK102/AK103 (DRO/RRO)	Soil	(1) 4oz amber wide mouth jar	Temperature 4 ^{o}C +/- 2 ^{o}C	14 days
EPA 8270D (PAHs)	Soil	(1) 4oz amber wide mouth jar	Temperature 4 ^{o}C +/- 2 ^{o}C	14 days

The City may gather extra confirmation samples (opportunity points) judged necessary to provide better resolution of the horizontal and vertical extent of potential or proven impacts. These activities may include advancing additional test pits along the storm drain path between the 36 original test pits and/or collecting confirmation samples from both elevations in any test pit. Opportunity points will be advanced, sampled, and reported to ADEC in the same manner as the 36 planned test pits.

Excavated soil from test pits will be placed back into the original excavation and compacted with the hoe bucket.

5.3 Task 3 – Contingency Stockpile Foundation Pre-Characterization

The proposed location of the Contingency Stockpile is shown on **Attachment A,** and its construction is detailed on Sheet C-9 of the Plans.

Characterization of the native soils below the Contingency Stockpile location is recommended only at a point in time after a Contingency Stockpile was eventually removed because the City owns the Contingency Stockpile location property and has liability for cleanup.

In the case that any portion of the Contingency Stockpile exceeds CULs for its location, upon its removal, the soil beneath the Contingency Stockpile will be characterized in a manner to be proposed in the future *Storm Drain Installation, Contingency Stockpile Characterization Report and Work Plan Addendum* (see **Task 10**).

5.4 Task 4 – Construction Soils Management Plan

Following overburden pre-characterization, reporting, and ADEC approval all storm drain improvements will begin to be installed per the Plans.

If needed, a Contingency Stockpile cell will be installed per the Plans sheet C-9 *Contaminated Material Storage Cell* at the Summer Bay Road Contingency Stockpile location (**Figure 1**). The Contingency Stockpile would be installed and maintained per 18 AAC 75.370 *Soil Storage and Disposal,* the Plans, and this Work Plan. Any grossly contaminated material identified by olfactory evidence and appearance (sheen, oily appearance, globules of oil, etc.) will be segregated to one side of the contingency stockpile with separation from apparently cleaner material provided by minimum 10 mil visqueen.

As allowed by the future ADEC approved *Contingency Stockpile Characterization Report and Work Plan Addendum* (see **Task 10**) a maximum of the top 4-feet of native soil may be excavated, and beneficially reused as clean fill on or off the Project site. Any portion characterized as not meeting CULs per 18 AAC 75.340 Table B1 and/or B2 Method 2 Migration to Groundwater in the over 40 inch Precipitation Zone for all COPCs will be handled in an identical manner as the soil from below 4-feet bgs (see following paragraph).

Soil from below 4-feet bgs (and portions of soil from above 4-feet bgs that did not meet Method 2 CULs) will be temporarily stockpiled near the edge of the trench on minimum 10 mil visqueen. If this temporarily stockpiled native soil is left overnight it will be covered with minimum 6 mil visqueen.

Following excavation, the storm drain pipe will be installed in the trench and bedded with clean fill to 6-inches above top of pipe per the Plans. The remainder of the excavation will be backfilled with the temporarily stockpiled soil to 4-inches from the top of the excavation sidewalls. The temporarily stockpiled soil will not be used as backfill more than 200 feet from the original location of its excavation, unless every 10 yards screened below 20 ppmv with a PID meter. The purpose of the 200-feet limit is to constrain the movement of contaminated materials throughout the site while still allowing freedom for the temporary stockpiles to be moved out of the heavy traffic areas common to the project area as needed.

The final surface cover will be at least 4-inches (minimum) of clean compacted aggregate fill per the Plans.

Temporarily stockpiled soil which does not fit back into the trench would be hauled to the Contingency Stockpile.

See **Task 5** and **Task 6** for details of mitigation of preferential pathways.

5.5 Task 5 – Mitigation of Preferential Pathways for New Storm Pipe

Storm drain lines are sloped to allow water to flow through them under gravity. The potential for the bedding around these pipes to act as preferential pathways for migration of groundwater and/or hydrocarbons will be mitigated using anti-seepage seals installed at intermittent locations.

Excavation water or other liquids will be prevented from entering the new storm drain lines by temporarily sealing upstream ends during construction.

Bentonite/sand seals will be installed along the storm drain system. The bentonite/sand seals will be installed downstream of the following manholes (see the Plans): SDMH 1, SDMH 2, SDMH 3, SDMH 4, SDMH 5, SDMH 6, SDMH 7, SDMH 8, SDMH 9, SDMH 10, SDMH 11, SDMH 12, SDMH 13, SDMH 14, SDMH DW 1, SDMH DW 2, SDMH DW 3, and SDMH DW 4.

An additional bentonite/sand seal will be installed between the East Point Road storm water treatment basin and the tie in to the existing 24-inch diameter CMP outfall line.

An additional bentonite/sand seal will be installed midway between SDMH DW 4 and the respective outfall into Iliuliuk Bay.

The final bentonite/sand seals will be a minimum of 1-foot hydrated thickness and will extend for a minimum of the width of the trench, and from the base of the trench to at least 6-inches above the top of pipe or 5-feet bgs, whichever is closest to ground surface.

5.6 Task 6 – Mitigation of Old Storm Drains Preferential Pathway

Plugs will be installed inside the former storm lines to prevent them from acting as pathways for contaminant migration. Following installation and commissioning of the new East Point Road storm drain, the existing storm drain inlet at the Ilulaq Lake outfall and the existing storm drain pipe cutoffs at SDMH 7, SDMH 8, SDMH 14, SDMH DW 1, and SDMH DW 2 will be abandoned in-place by completely filling a minimum 3-feet long section near each corrugated pipe end with a plug. The plug will meet a specification that it will: adhere to the perimeter of the pipe, be inert, be practically impermeable, be non-shrinking, and be able to resist deterioration. The plugs will be composed of a bentonite/sand mixture with stabilizing materials added as needed to meet the specification. Following installation of the plugs the pipe ends will be crushed.

After installation of the plugs and pipe end crushing an exterior bentonite/sand seal will be installed around the outside of the cutoff ends of the existing storm drain pipe at SDMH 7, SDMH 8, SDMH 14, SDMH DW 1, and SDMH DW 2. The final bentonite/sand seals will be a minimum of 1-foot hydrated thickness and will extend for a minimum of 1-foot beyond the

perimeter of the pipe end (i.e. a hydrated 4-feet diameter bentonite/sand wall that is 1-foot thick, minimum).

5.7 Task 7 – Water Treatment and Discharge

The Project storm drain installation contractor or an ADEC approved agent will conduct the activities associated with excavation dewatering, for the City, under the State of Alaska Wastewater General Permit Excavation Dewatering GP 2009DB0003. These activities will consist of submitting a NOI with ADEC's Division of Water (Adele Fetter, Environmental Program Specialist, 907-269-7235) and following all of the ADEC Division of Water NOI conditions of approval. The ADEC Division of Water has preliminarily indicated that appropriate treatment and laboratory analysis of treated excavation water may be required for this Project.

The ADEC Division of Contaminated sites has indicated that an approved waste management plan that details handling, transporting, and disposing of excavation water (including method and location of disposal) is required before storm line installation begins. The waste management plan will be submitted with a Work Plan addendum once the NOI has been acquired.

In addition, the City's Project contract will attempt to minimize dewatering volume by:

- Allowing for stopping work on rainy days;
- Attention to tidal cycles may also assist in reducing dewatering volume near the shoreline; and
- Scheduling work from late July through August during the period of the lowest seasonal groundwater levels.

5.8 Task 8 – Contingency Stockpile Characterization

Following completion of the Contingency Stockpile (if needed), it will be topographically surveyed for volume calculation and opened for sampling. On completion of sampling activities, the Contingency Stockpile will be closed and secured pending final disposal in a manner that meets 18 AAC 75.370 and the Plans sheet C-9 *Contaminated Material Storage Cell*.

Characterization samples of the Contingency Stockpile will be collected in accordance with ADECs *May 2010 Draft Field Sampling Guidance* adopted by reference in this Work Plan, the SAP/QAP (**Attachment D**), and **Table 3** below.

Table 3 - Contingency Stockpile Soil Sample Collection

By Volume (cubic yards)	**# of Screening Samples**	**# of Laboratory Samples**
0-10	5	1
11-50	5	2
51-100	1 per 10 cubic yards	3
More than 100	1 per 10 cubic yards	3, pus 1 sample per each additional 200 cubic yards

Confirmation soil samples will be analyzed by *SGS Labs* for GRO by method AK101, BTEX by EPA method 8021, PAHs by EPA method 8270D, DRO by method AK102, and RRO by method AK103 as shown in **Table 4**.

Table 4 - Contingency Stockpile Analytical and Sample Requirements (Soil)

Method	**Matrix**	**Container (jars)**	**Preservative**	**Hold time**
AK101/EPA 8021 (GRO/BTEX)	Soil	(1) 4-oz amber wide mouth jar with septa lid	Methanol, Temperature 4 ^{o}C +/- 2 ^{o}C	14 days
AK102/AK103 (DRO/RRO)	Soil	(1) 4oz amber wide mouth jar	Temperature 4 ^{o}C +/- 2 ^{o}C	14 days
EPA 8270D (PAHs)	Soil	(1) 4oz amber wide mouth jar	Temperature 4 ^{o}C +/- 2 ^{o}C	14 days

5.9 Task 9 – Waste Management

All excavation dewatering and handling is the responsibility of the Contractor as defined in **Task 7**, which will also include handling of any decontamination rinsate.

5.10 Task 10 - Data Analysis and Reporting

Following overburden pre-characterization activities (see **Task 2**) and within 6-weeks of receipt of laboratory analytical results, the City of Unalaska will submit a draft *Overburden Characterization Report and Work Plan Addendum* to ADEC. The report will be written in accordance with ADEC's 2009 *Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites* and ADEC's 2009 *Environmental Laboratory Data and Quality Assurance Requirements*. The report will use Plan stationing to clearly define lineal extents where the top 4-feet of native soils are or are not fit for offsite disposal as clean fill through the following elements:

- Site description and background;

- Narrative description of fieldwork;
- Results and findings;
- Revised site conceptual model;
- Assessment of data quality including ADEC's *Laboratory Data Review Checklist*;
- Work plan addendum with the proposed lineal extents of the location of soils qualified for off-disposal as clean fill; and
- Conclusions and recommendations.

The work described in **Task 4** will not begin until ADEC has approved the above *Overburden Characterization Report and Work Plan Addendum* from **Task 2***.*

An ADEC approved NOI and a Work Plan addendum are required prior to beginning excavation dewatering activities as described in **Task 7**.

Following Contingency Stockpile characterization activities and within 6-weeks of receipt of laboratory analytical results, the City will submit a draft *Storm Drain Installation, Contingency Stockpile Characterization Report, and Work Plan Addendum* to ADEC. The report will be written in accordance with ADEC's 2009 *Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites* and ADEC's 2009 *Environmental Laboratory Data and Quality Assurance Requirements*. The report will describe the storm drain installation activities, outline disposal or remediation options for the Contingency Stockpile, and if needed present a work plan for characterizing the native soils beneath a Contingency Stockpile; as well as:

- Site description and background;
- Narrative description of fieldwork;
- Results and findings;
- Revised site conceptual model;
- Proposed cleanup levels for the stockpile location;
- Proposed disposal and/or monitoring and cleanup plan for the stockpiles;
- Assessment of data quality including ADEC's *Laboratory Data Review Checklist*;
- Work plan addendum to characterize the native soil beneath the Contingency Stockpile (if needed);

- Additional reporting for the Contingency Stockpile describing the characterization of the native material beneath it and/or for remediation and/or disposal will be proposed as needed; and

- Conclusions and recommendations.

No other work will be performed except for Contingency Stockpile maintenance until ADEC has approved the above *Storm Drain Installation, Contingency Stockpile Characterization Report and Work Plan Addendum.*

6.0 CONCLUSIONS AND RECOMENDATIONS

This Work Plan was written with the intent of being protective of human health, the environment, and to follow all applicable local, state, and federal regulations. The City of Unalaska thanks ADEC for their review of this Work Plan, and requests written guidance and eventual approval to implement the activities described herein.

A copy of written correspondence with ADEC including comments to the first draft of this document and the City responses are included in **Attachment E**.

7.0 REFERENCES

Alaska Energy Authority, 2005. *Weather Station Wind Resource Summary for Dutch Harbor (Unalaska Airport), AK*.

American Society of Civil Engineers – Structural Engineering Institute, 2010. *Minimum Design Loads for Buildings and Other Structures (ASCE 7-10)*. American Society of Civil Engineers, Reston, Virginia.

Drewes, Harald, G.D. Fraser, G.L. Snyder, and H.F. Barnet Jr., 1961. *Geology of Unalaska Island and Adjacent Insular Shelf, Aleutian Islands, Alaska.* In Investigations of Alaskan Volcanoes. US Geological Survey Bulletin 1028-S. United States Government Printing Office, Washington D.C.

Lemke, K.J. and A.M. Vanderpool, 1995. *Overview of Environmental and Hydrogeologic Conditions at Dutch Harbor, Alaska.* US Geological Survey Open-File Report 95-411, Anchorage, Alaska.

National Oceanic and Atmospheric Administration, 2003. Published Benchmark Sheet for 9462620 Unalaska, Dutch Harbor Alaska – Datums Page.

United States Department of the Interior Geological Survey (USDIGS 1028). *Geologic Map of Unalaska Island, Alaska, and Adjacent Submarine Areas – Bulletin 1028 Plate 75*.

8.0 DOCUMENTS ADOPTED BY REFERENCE

Alaska Department of Environmental Conservation, May 2010. *Draft Field Sampling Guidance*. http://www.dec.state.ak.us/spar/csp/guidance/Draft%20Field%20Sampling%20Guidance.pdf

Alaska Department of Environmental Conservation. *Laboratory Data Review Checklist*. http://www.dec.state.ak.us/spar/csp/guidance/amqa/lab-data-review-checklist.pdf

Alaska Department of Environmental Conservation, October 2010. *Policy Guidance on Developing Conceptual Site Models*. http://www.dec.state.ak.us/spar/csp/guidance/FINAL%20CSM%20Guidance%20Master%20Nov%202010.pdf

Alaska Department of Environmental Conservation, September 23, 2009. *Site Characterization Work Plan and Reporting Guidance for Investigation of Contaminated Sites*. http://www.dec.state.ak.us/spar/csp/guidance/site-characterization-wp&r.pdf

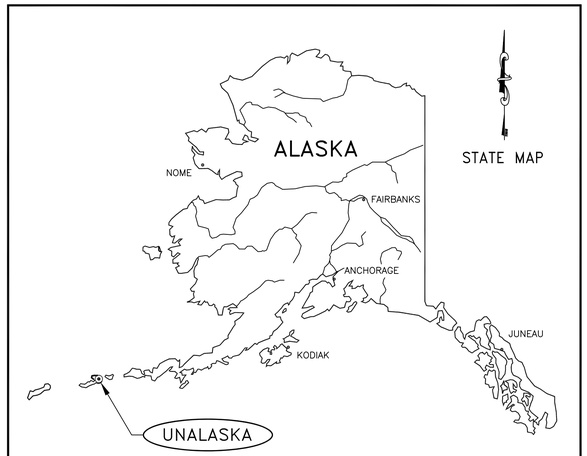
Alaska Department of Environmental Conservation, March 2009. *Technical Memorandum – Environmental Laboratory Data and Quality Assurance Requirements*. http://www.dec.state.ak.us/spar/csp/guidance/tm_lab_qa.pdf

Alaska Department of Environmental Conservation, August 12, 2008. *Technical Memorandum – 08-001. Guidelines for Data Reporting, Data Reduction, and Treatment of Non-Detect Values*. http://www.dec.state.ak.us/spar/csp/guidance/tech-memo-data-reporting-and-ND.pdf

ATTACHMENT A

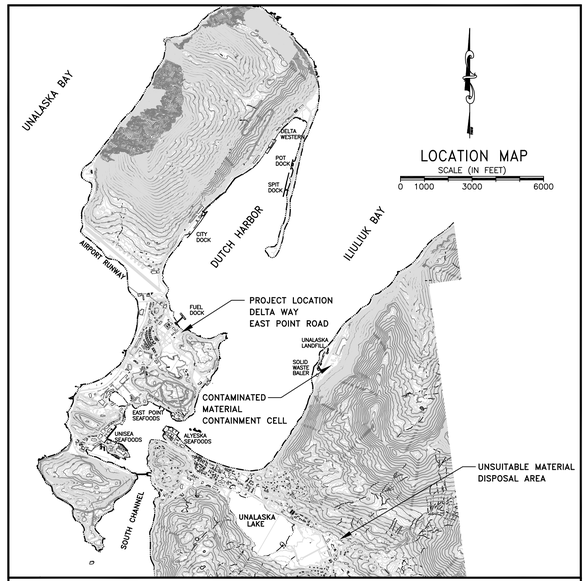
CITY OF UNALASKA DRAINAGE PROJECTS
ILULAQ LAKE / EAST POINT ROAD & DELTA WAY

DPW Project No. 10101



STATE MAP

FOR PERMITTING
02/01/10



LOCATION MAP

SHEET INDEX

REV	DATE	DESCRIPTION
1	02/01/10	FOR PERMITTING

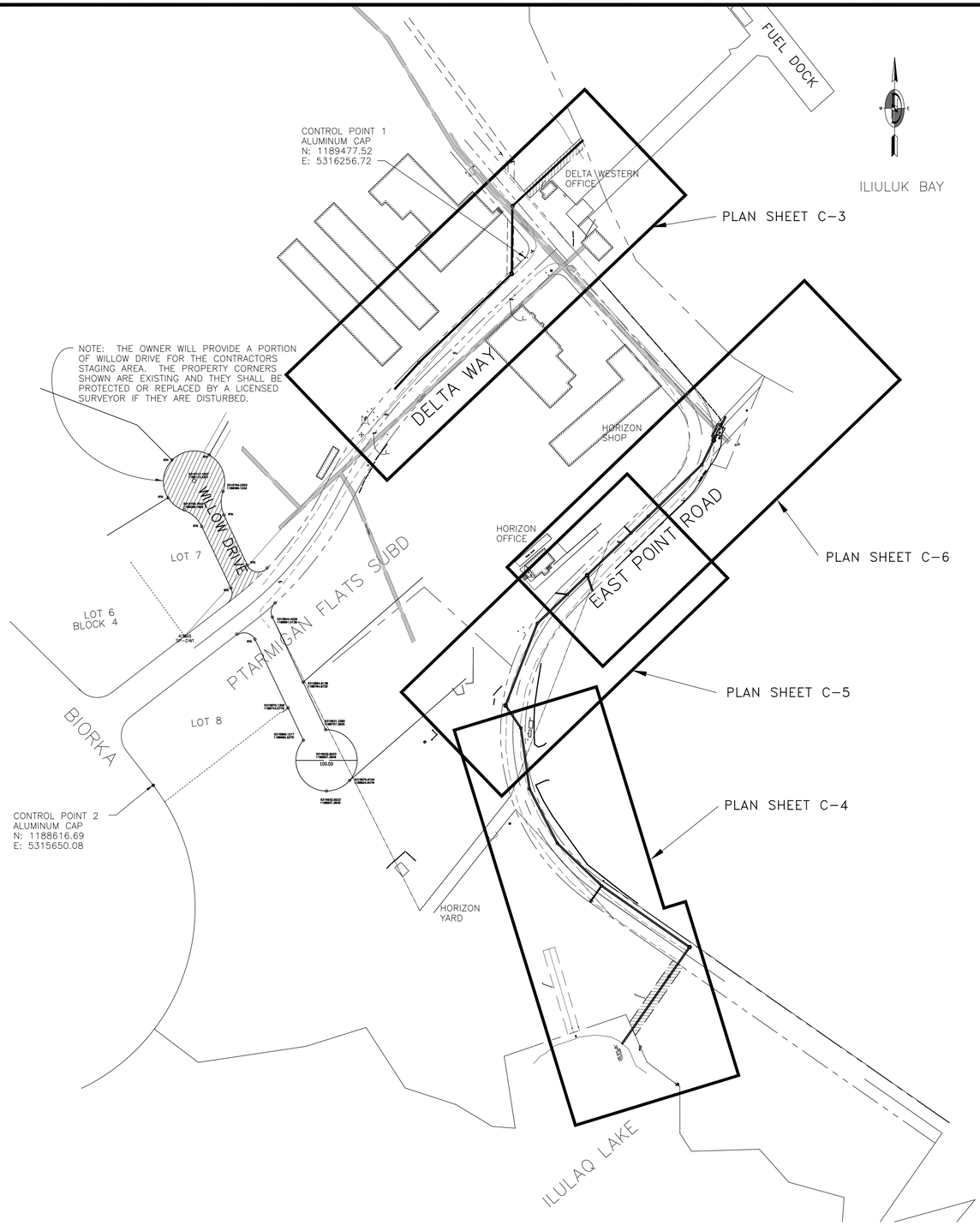
STATE OF ALASKA
49TH
THOMAS REGAN
CE-7125
EXP. 12-31-2010
REGISTERED PROFESSIONAL ENGINEER

REGAN ENGINEERING, P.C.

PROJECT: CITY OF UNALASKA DRAINAGE PROJECTS
ILULAQ LAKE / EAST POINT ROAD & DELTA WAY

TITLE: COVER SHEET

DESIGNED BY:	TR	DATE:	02/01/10	SHEET NO:	C-1 OF 10
CHECKED BY:	TR	COU DPW PROJECT NO:	10101		



PROJECT LAYOUT

ABBREVIATIONS

BLDG.	BUILDING
B.P.	BOTTOM OF PIPE
C/L	CENTERLINE
CL	CLASS
CMP	CORRUGATED METAL PIPE
CPP, CPEP	CORRUGATED POLYETHYLENE PIPE
CONC.	CONCRETE
DIA.	DIAMETER
D.I.P., DI	DUCTILE IRON PIPE
DEG.	DEGREE
E	EAST
ELEV.	ELEVATION
E, ELECT	ELECTRIC
FDN	FOUNDATION
FF	FINISH FLOOR
FT.	FEET
GV&VB	GATE VALVE & VALVE BOX
HYD	HYDRANT
INSUL.	INSULATION
INV.	INVERT
L	LENGTH
L.F.	LINEAR FEET
LT.	LEFT
MH	MANHOLE
MAX.	MAXIMUM
MIN.	MINIMUM
O.C.	ON CENTER
PID	PHOTOIONIZATION DETECTOR
R	RADIUS
ROW	RIGHT OF WAY
RT.	RIGHT
S	SOUTH
S	SEWER
SDMH	STORM DRAIN MANHOLE
S.S.	STAINLESS STEEL, SANITARY SEWER
STA., STN.	STATION
SSMH	SANITARY SEWER MANHOLE
TAN	TANGENT
TH	TESTHOLE
TON	TOP OF NUT
UGE, UE	UNDERGROUND ELECTRIC
UGT, UT	UNDERGROUND TELEPHONE
UTV	UNDERGROUND TELEVISION
W	WEST
W/	WITH
WV	WATER VALVE

GENERAL NOTES

1. THE CONTRACTOR SHALL OBTAIN UTILITY LOCATES PRIOR TO THE START OF ANY EXCAVATION.
2. AT A SUFFICIENT DISTANCE PRIOR TO ENCOUNTERING A KNOWN OBSTACLE OR A TIE INTO AN EXISTING PIPE, THE CONTRACTOR SHALL EXPOSE AND VERIFY THE EXACT LOCATION OF THE OBSTACLE OR PIPE SO THAT ALIGNMENT AND/OR GRADE MAY BE DETERMINED BEFORE THE PIPE SECTIONS ARE LAID IN THE TRENCH AND BACKFILLED. NO EXTRA PAYMENT WILL BE MADE FOR REWORK OF NEWLY INSTALLED UTILITIES REQUIRED BY FAILURE TO EXPOSE EXISTING UTILITIES.
3. ALL UTILITY INTERRUPTIONS SHALL BE COORDINATED WITH THE DEPARTMENT OF PUBLIC UTILITIES. ALL VALVES SHALL BE OPERATED BY CITY PERSONNEL ONLY.
4. ALL UTILITIES SHOWN ARE APPROXIMATE. THE CONTRACTOR SHALL VERIFY THE EXACT LOCATION OF UTILITIES PRIOR TO THE INSTALLATION OF ANY PIPE.
5. THE CONTRACTOR IS RESPONSIBLE TO REPAIR AND/OR REPLACE ANY UTILITIES SHOWN THAT ARE DAMAGED DURING CONSTRUCTION.
6. STATIONING FOR THE STORM DRAIN SYSTEM IS ALONG THE CENTERLINE OF THE UTILITY.
7. SOILS TESTHOLE INFORMATION WAS OBTAINED FROM THE TRYCK-NEIMAN-HAYES/ WINCE-CORTHELL-BRYSON PAVING DESIGN CONDUCTED IN 2000-2001. THE TESTHOLES WERE LOGGED BY GOLDER ASSOCIATES IN MAY OF 2000. TESTHOLES WERE EXCAVATED BY NORTHERN MECHANICAL.
8. THE CONTRACTOR IS RESPONSIBLE FOR ALL TRAFFIC CONTROL, INCLUDING FLAGGERS, BARRICADES, CONES, CANDLES, ETC. ALL WORK SHALL BE CONDUCTED IN ACCORDANCE WITH THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, LATEST ADDITION. ONE LANE OF TRAFFIC SHALL REMAIN OPEN AT ALL TIMES UNLESS OTHERWISE APPROVED BY THE ENGINEER. THIS WORK IS CONSIDERED INCIDENTAL TO OTHER WORK PERFORMED AS PART OF THIS CONTRACT.

LEGEND

	EXISTING	PROPOSED
ELECTRIC BOX		
TELEPHONE OR CABLE PEDESTAL		
PROPERTY LINE		
SANITARY SEWER LINE	SS	
WATER LINE	W	W
UNDERGROUND ELECTRIC	UE	
UNDERGROUND TELEPHONE	UT	
STORM DRAIN PIPE	SD	
ELEVATION CONTOUR (5' INTERVAL)	25	
ELEVATION CONTOUR (1' INTERVAL)		
SANITARY SEWER MANHOLE	MH	
LIGHT POLE		
WATER VALVE		
CONCRETE JERSEY BARRIER		
HYDRANT		
PROPERTY CORNER		
SOILS EXPLORATION TESTHOLE	19	
CMP CULVERT		
HOUSE OR STRUCTURE		
STORM DRAIN MANHOLE (TYPE I)		
STORM DRAIN MANHOLE (TYPE II)		
CATCH BASIN OR MANHOLE		
EASEMENT		
PHONE BOOTH	PB	
CONCRETE UTILIDOR (ABANDONED)		
GROUNDWATER MONITORING WELL	MW	
SIGN		
BOLLARD		

REV	DATE	DESCRIPTION
1	02/01/10	FOR PERMITTING

STATE OF ALASKA
THOMAS REGAN
CE-7125
EXPIRES 12/31/2010
REGISTERED PROFESSIONAL ENGINEER

REGAN ENGINEERING, P.C.

PROJECT:
CITY OF UNALASKA DRAINAGE PROJECTS
ILULAQ LAKE / EAST POINT ROAD & DELTA WAY

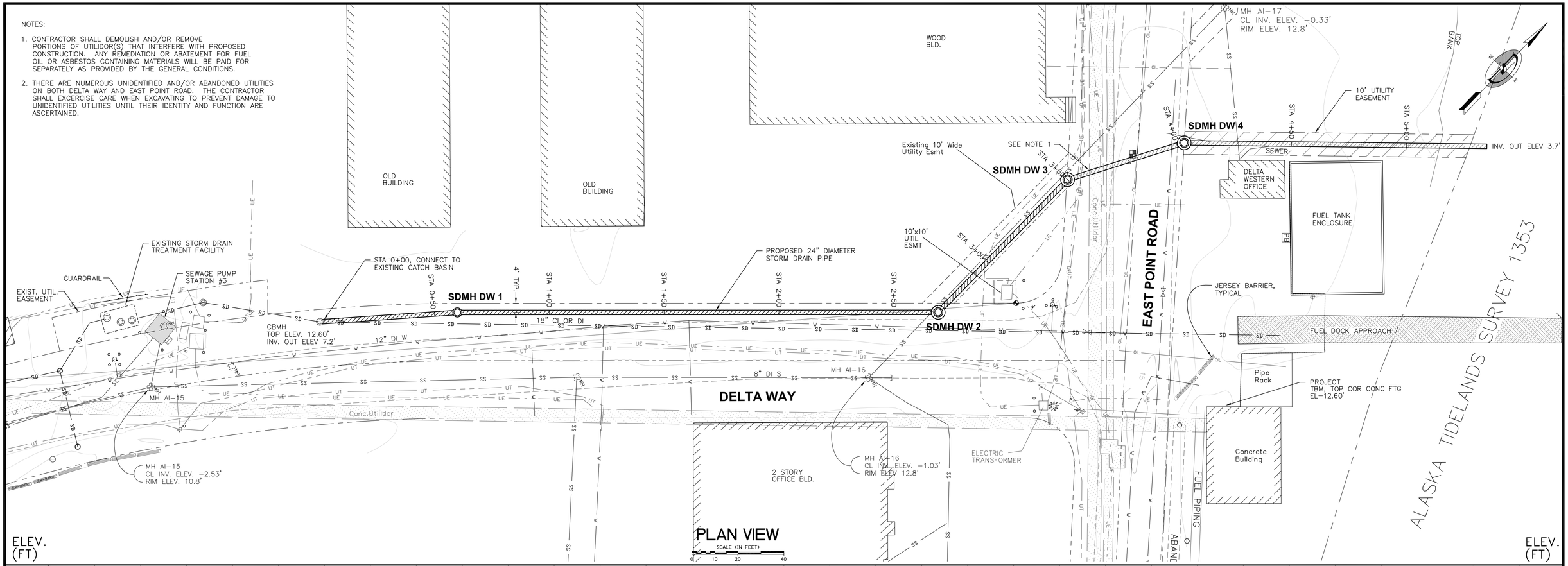
TITLE:
PROJECT LAYOUT, LEGEND, NOTES

DESIGNED BY:	TR	DATE: 02/01/10	SHEET NO: C-2 OF 10
CHECKED BY:	TR	COU DPW PROJECT NO: 10101	

NOTES:

1. CONTRACTOR SHALL DEMOLISH AND/OR REMOVE PORTIONS OF UTILIDOR(S) THAT INTERFERE WITH PROPOSED CONSTRUCTION. ANY REMEDIATION OR ABATEMENT FOR FUEL OIL OR ASBESTOS CONTAINING MATERIALS WILL BE PAID FOR SEPARATELY AS PROVIDED BY THE GENERAL CONDITIONS.

2. THERE ARE NUMEROUS UNIDENTIFIED AND/OR ABANDONED UTILITIES ON BOTH DELTA WAY AND EAST POINT ROAD. THE CONTRACTOR SHALL EXCERCISE CARE WHEN EXCAVATING TO PREVENT DAMAGE TO UNIDENTIFIED UTILITIES UNTIL THEIR IDENTITY AND FUNCTION ARE ASCERTAINED.



PLAN VIEW

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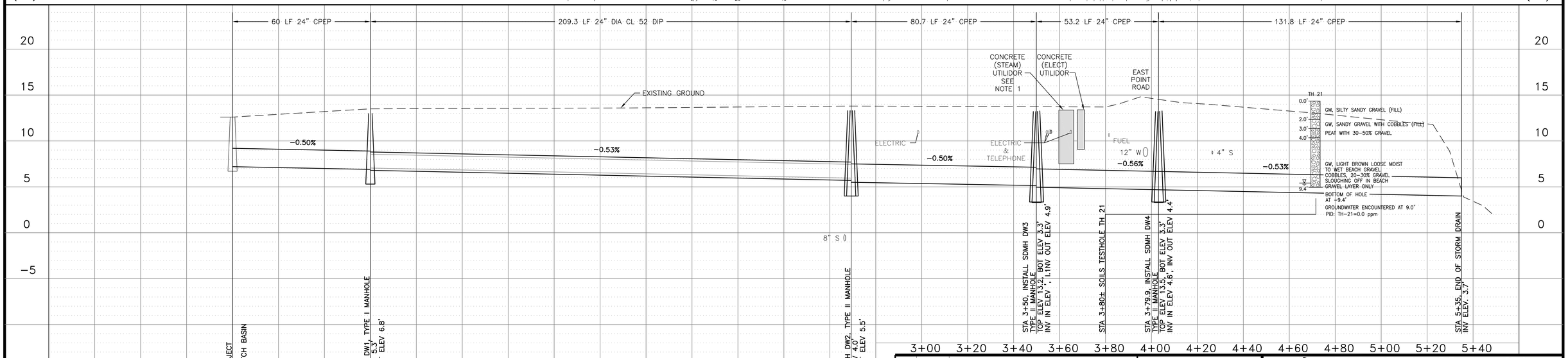


REV	DATE	DESCRIPTION
0	12/10/11	100% FOR REVIEW

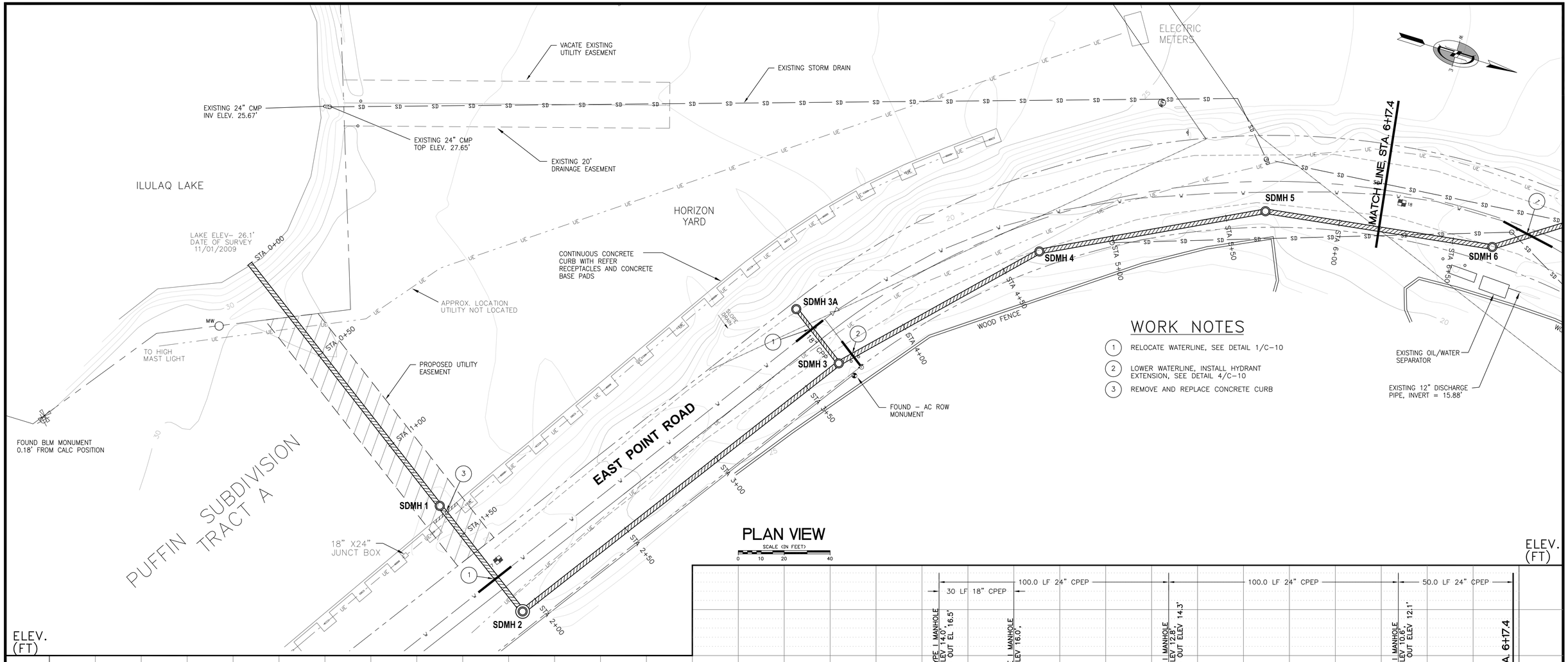
STATE OF ALASKA
49TH
THOMAS REGAN
CE-7125
12-10-2011
REGISTERED PROFESSIONAL ENGINEER

REGAN ENGINEERING, P.C.

PROJECT:
CITY OF UNALASKA DRAINAGE PROJECTS
ILULAQ LAKE / EAST POINT ROAD & DELTA WAY

TITLE:
DELTA WAY
STORM DRAIN PLAN & PROFILE

DESIGNED BY:	TR	DATE: 12/10/11	SHEET NO: C-3 OF 10
CHECKED BY:	TR	COU DPW PROJECT NO: 10101	



WORK NOTES

1. RELOCATE WATERLINE, SEE DETAIL 1/C–10
2. LOWER WATERLINE, INSTALL HYDRANT EXTENSION, SEE DETAIL 4/C–10
3. REMOVE AND REPLACE CONCRETE CURB

PLAN VIEW

SCALE (IN FEET)
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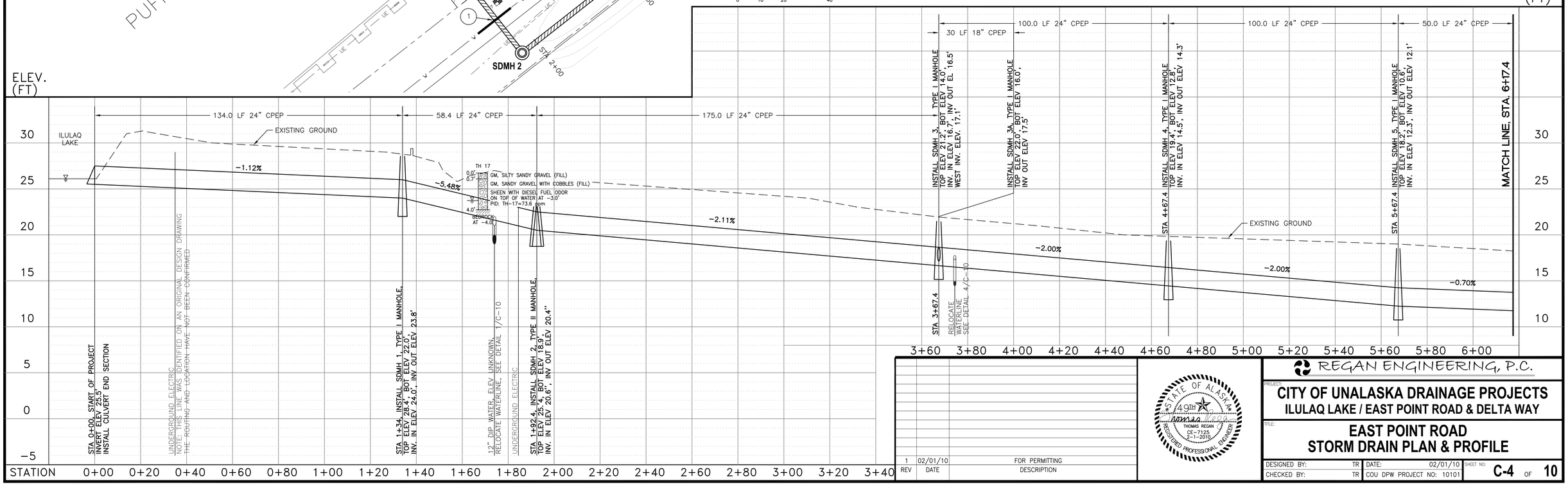


REV	DATE	DESCRIPTION
1	02/01/10	FOR PERMITTING

STATE OF ALASKA — THOMAS REGAN — CE–7125 — 2–1–2010 — REGISTERED PROFESSIONAL ENGINEER

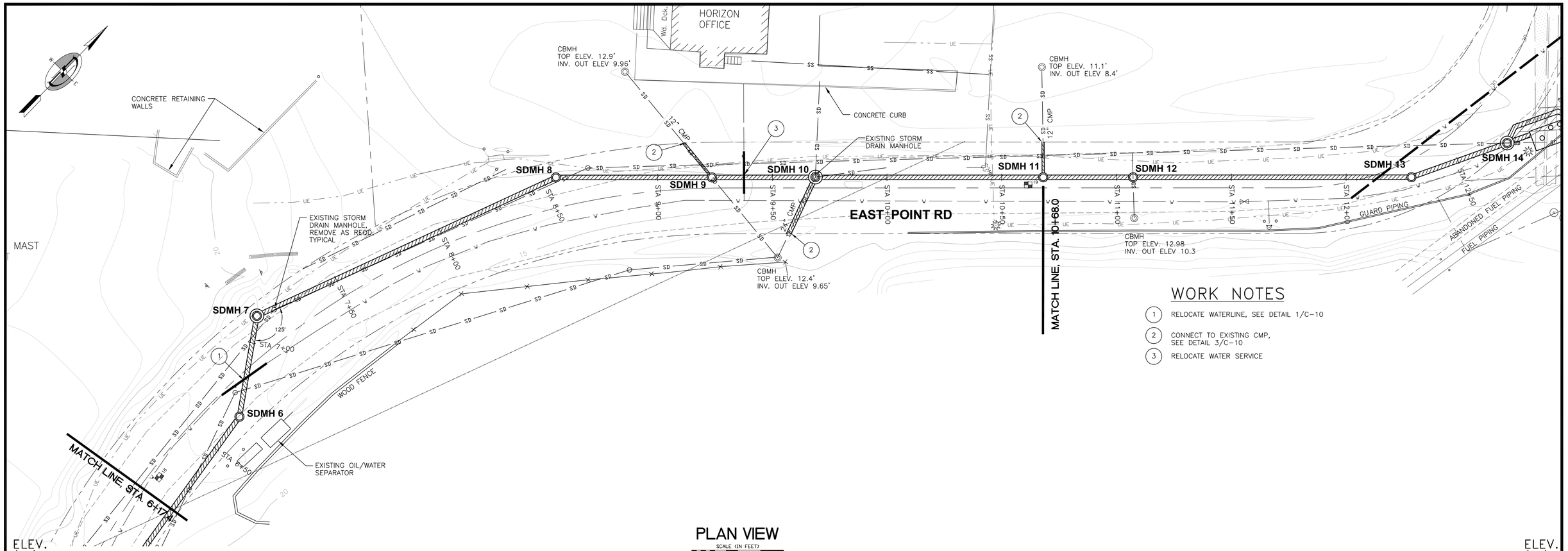
REGAN ENGINEERING, P.C.

PROJECT:
CITY OF UNALASKA DRAINAGE PROJECTS
ILULAQ LAKE / EAST POINT ROAD & DELTA WAY

TITLE:
EAST POINT ROAD STORM DRAIN PLAN & PROFILE

DESIGNED BY:	TR	DATE:	02/01/10
CHECKED BY:	TR	COU DPW PROJECT NO:	10101

SHEET NO: C-4 OF 10



WORK NOTES

1. RELOCATE WATERLINE, SEE DETAIL 1/C-10
2. CONNECT TO EXISTING CMP, SEE DETAIL 3/C-10
3. RELOCATE WATER SERVICE

PLAN VIEW

SCALE (IN FEET)
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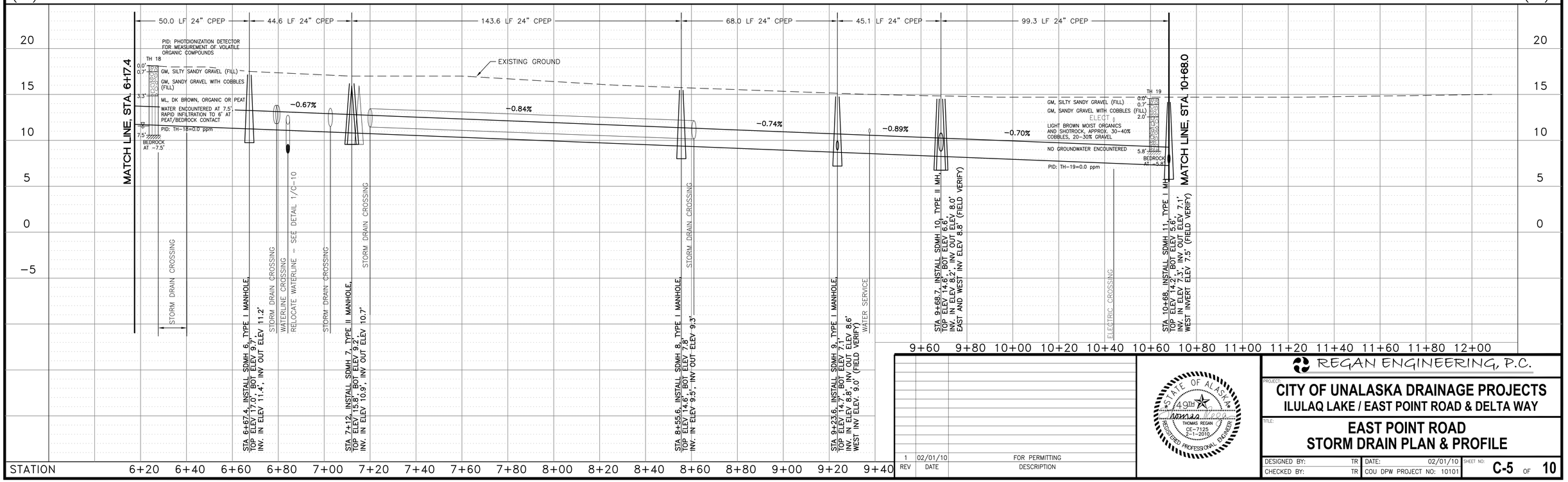


REV	DATE	DESCRIPTION
1	02/01/10	FOR PERMITTING

STATE OF ALASKA — THOMAS REGAN — CE-7125 — 2-1-2010 — REGISTERED PROFESSIONAL ENGINEER

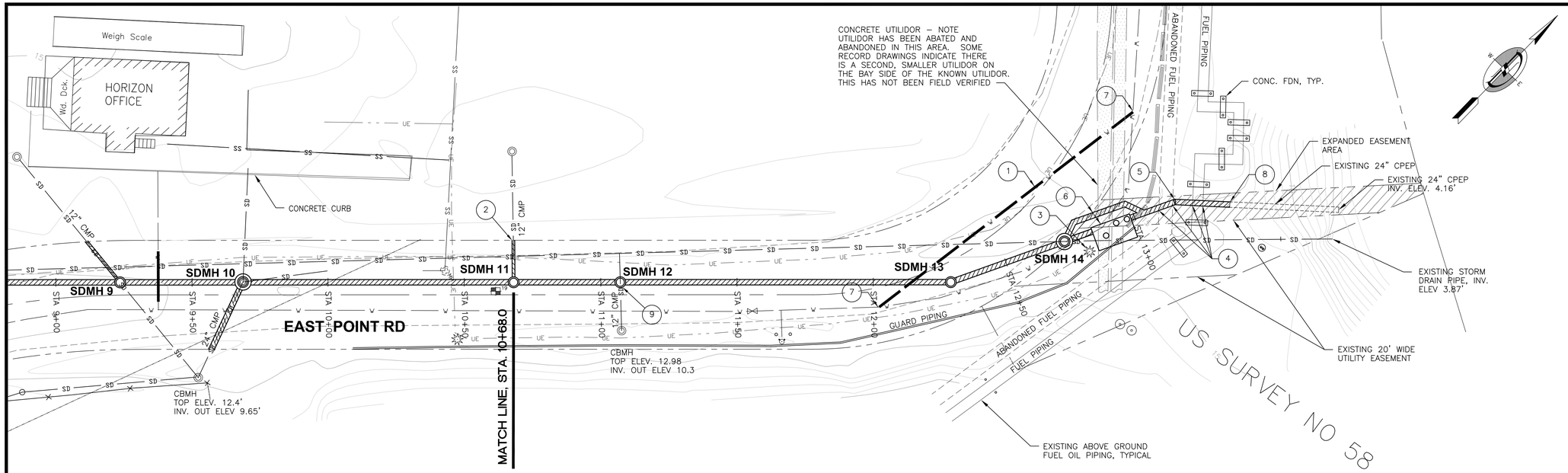
REGAN ENGINEERING, P.C.

PROJECT:
CITY OF UNALASKA DRAINAGE PROJECTS
ILULAQ LAKE / EAST POINT ROAD & DELTA WAY

TITLE:
EAST POINT ROAD STORM DRAIN PLAN & PROFILE

DESIGNED BY:	TR	DATE:	02/01/10
CHECKED BY:	TR	COU DPW PROJECT NO:	10101

SHEET NO: C-5 OF 10

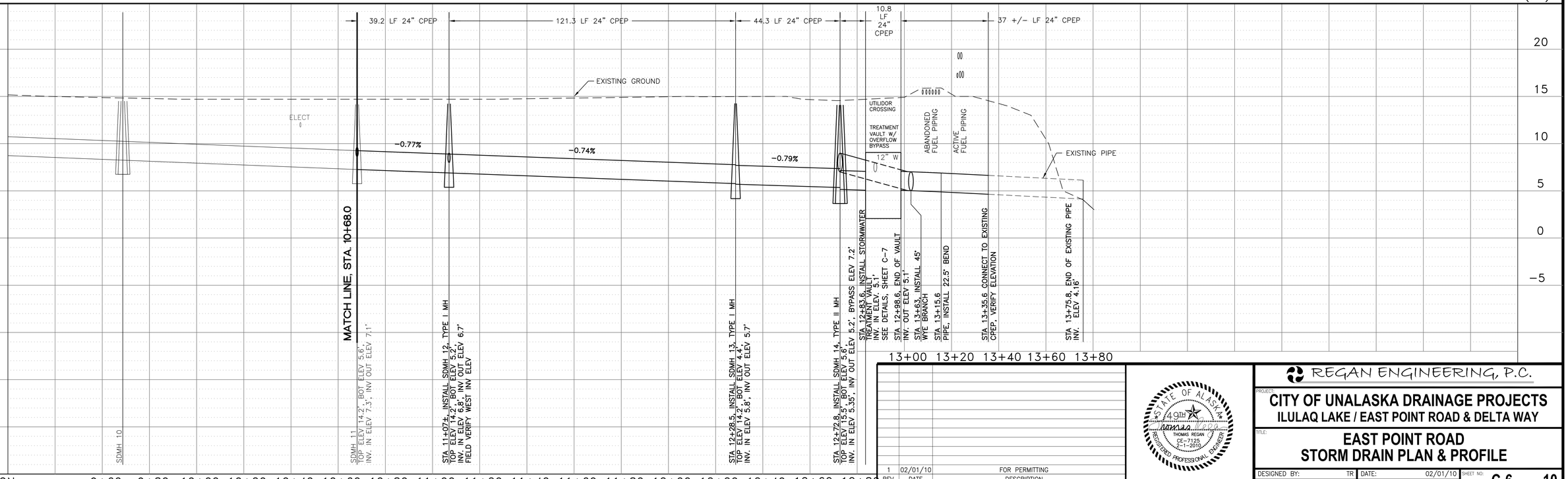


WORK NOTES

1. INSTALL WATER MAIN
2. CONNECT TO EXISTING CMP, SEE DETAIL 3/C–9
3. REMOVE AND REPLACE LIGHT POLE AND ELECTRIC FEED
4. EXCAVATE UNDER EXISTING ABANDONED AND LIVE FUEL PIPING
5. INSTALL 22.5° BEND
6. INSTALL STORMWATER TREATMENT SYSTEM AND BYPASS. SEE SHEET C–7
7. CONNECT TO EXISTING WATER MAIN
8. CONNECT TO EXISTING 24" CPEP, SEE DETAIL 3/C–10. CONFIRM ELEVATION PRIOR TO START OF CONST.
9. CONNECT EXISTING 12" CMP TO NEW MANHOLE. INVERT TO–BE–DETERMINED.

PLAN VIEW

SCALE (IN FEET)
0 10 20 40



REV	DATE	DESCRIPTION
1	02/01/10	FOR PERMITTING

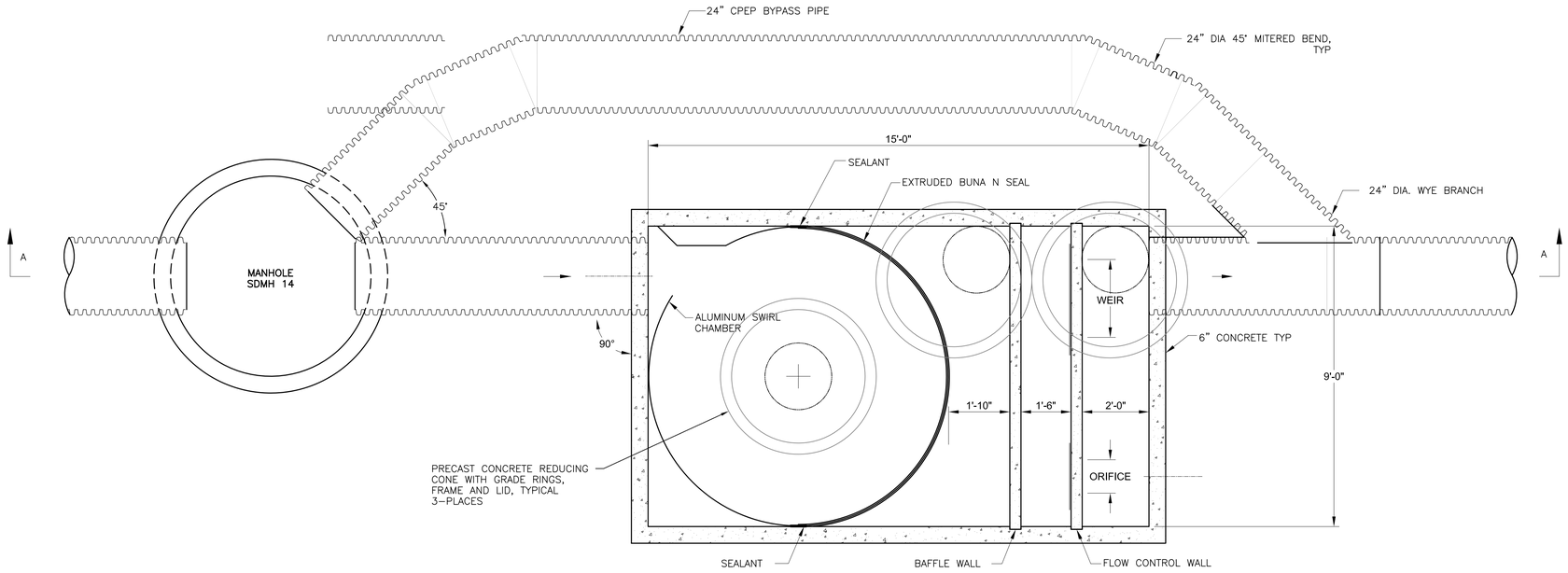
STATE OF ALASKA
THOMAS REGAN
CE–7125
2–1–2010
REGISTERED PROFESSIONAL ENGINEER

REGAN ENGINEERING, P.C.

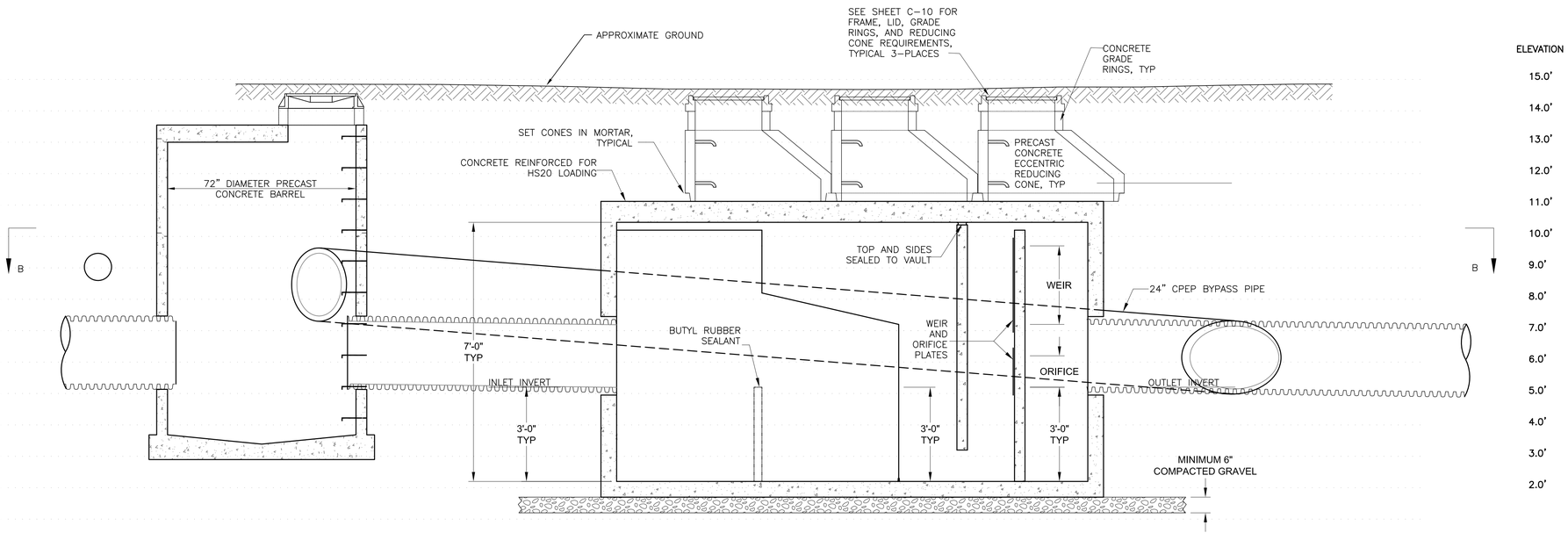
PROJECT:
CITY OF UNALASKA DRAINAGE PROJECTS
ILULAQ LAKE / EAST POINT ROAD & DELTA WAY

TITLE:
EAST POINT ROAD
STORM DRAIN PLAN & PROFILE

DESIGNED BY:	TR	DATE: 02/01/10	SHEET NO: C-6 OF 10
CHECKED BY:	TR	COU DPW PROJECT NO: 10101	



PLAN VIEW B – B



SECTION A – A

NOTES:
1. STORMWATER TREATMENT SYSTEM (SWTS) SHALL HAVE:
   PEAK TREATMENT CAPACITY: 14 CFS
   SEDIMENT STORAGE: 4.8 CU YD
   SEDIMENT CHAMBER DIA: 9' MIN
2. SWTS SHALL BE CONTAINED IN ONE RECTANGULAR STRUCTURE
3. SWTS REMOVAL EFFICIENCY SHALL BE DOCUMENTED BASED ON PARTICLE SIZE
4. SWTS SHALL RETAIN FLOATABLES AND TRAPPED SEDIMENT UP TO AND INCLUDING PEAK TREATMENT CAPACITY
5. SET SWTS INVERTS IN AND OUT AT THE SAME ELEVATION
6. SWTS SHALL HAVE NO INTERNAL COMPONENTS THAT OBSTRUCT MAINTENANCE ACCESS
7. INLET PIPE MUST BE PERPENDICULAR TO THE STRUCTURE

REV	DATE	DESCRIPTION
1	02/01/10	FOR PERMITTING

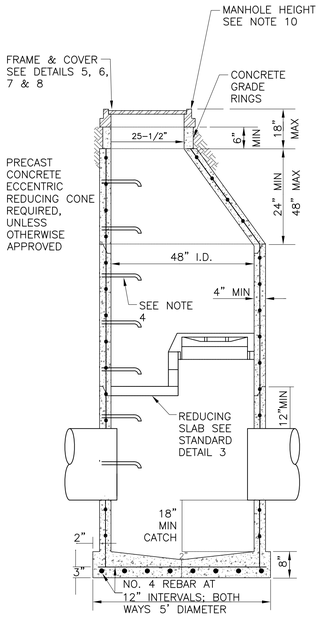
STATE OF ALASKA
THOMAS REGAN
CE-7125
2-1-2010
REGISTERED PROFESSIONAL ENGINEER

REGAN ENGINEERING, P.C.

PROJECT:
CITY OF UNALASKA DRAINAGE PROJECTS
ILULAQ LAKE / EAST POINT ROAD & DELTA WAY

TITLE:
STORM WATER TREATMENT BASIN

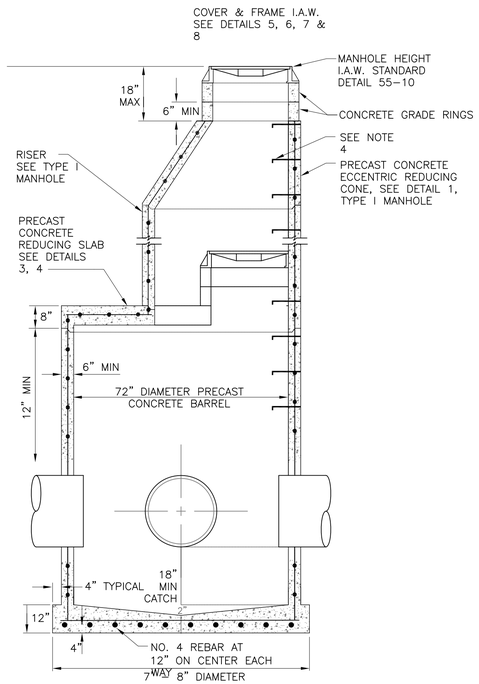
DESIGNED BY:	TR	DATE:	02/01/10	SHEET NO:	C-7 OF 10
CHECKED BY:	TR	COU DPW PROJECT NO:	10101		



DETAIL 1 - TYPE I MANHOLE

NOTES:

1. MANHOLE SECTIONS SHALL CONFORM TO A.S.T.M. C-478.
2. EXTEND PIPE 2" INTO MANHOLE. SEAL PIPE PENETRATIONS WITH NON-SHRINKABLE GROUT MIXED WITH POTABLE WATER I.A.W. MANUFACTURERS RECOMMENDATIONS.
3. BLOCKOUTS SHALL BE FORMED.
4. PLACE LADDER RUNGS 12" ON-CENTER ON UNOBSTRUCTED SIDE OF MANHOLE 18" MAX. FROM BOTTOM OF MANHOLE & 6" MAX. FROM TOP OF CONE. IF UNOBSTRUCTED SIDE NOT AVAILABLE, BOTTOM RUNG TO BE PLACED 6" OVER SMALLEST PIPE.
5. MANHOLE SHALL HAVE MINIMUM OF ONE 6" GRADE RING.
6. BACKFILL AROUND MANHOLE WITH A MINIMUM OF 3' TYPE II CLASSIFIED FILL & BACKFILL. BACKFILL SHALL BE INCIDENTAL TO COST OF MANHOLE INSTALLATION.
7. CATCH BASIN LEADS SHALL ENTER THE MANHOLE AT LEAST ONE PRIMARY LEAD DIAMETER ABOVE THE TOP OF THE PRIMARY LEAD UNLESS MINIMUM PIPE SLOPES CANNOT BE ACHIEVED.
8. STEEL REQ'D FOR BARREL SHALL CONFORM TO A.S.T.M. C-478. EMBED STEEL IN BASE SO THAT FIRST BARREL SECTION IS CONNECTED WITH BASE.
9. "RAM-NEK" OR EQUAL AND PRIME BARREL JOINTS. HEAT "RAM-NEK" AND SEAL SURFACES BEFORE FINAL ASSEMBLY.
10. LOCATE TOP OF FRAME 4" TO 6" BELOW FINISHED GRADE IN AREAS WHERE SOLID LID IS REQUIRED, AT GRADE WHERE SLOTTED OR DOMED LIDS ARE REQUIRED.



DETAIL 2 - TYPE II MANHOLE

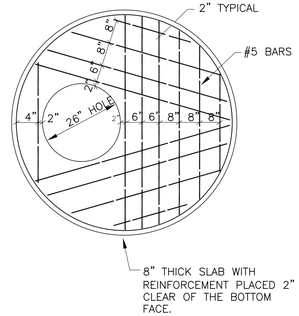
EAST POINT ROAD STORM DRAIN MANHOLE SUMMARY

Item	Station	Location		Distance	Azimuth	Manhole	Lid	Pipe Size	Pipe	Elevations	
		Northing	Easting	(feet)	(degrees)	Type	Type	and Type	Slope	Inv. In	Inv. Out
Lake	0+00	1188194.8	5316414.9			N/A	N/A			-	25.5
				134.0	34.894993			24" CPP	1.12%		
SDMH 1	1+34	1188304.7	5316491.6			I	SOLID			24.00	23.8
				58.4	34.881178			24" CPP	5.48%		
SDMH 2	1+92.4	1188352.6	5316525.0			II	DOMED			20.6	20.4
				175.0	-55.104811			24" CPP	2.11%		
SDMH 3	3+67.4	1188452.7	5316381.5			I	DOMED			16.7	16.5
				100.0	-46.138553			24" CPP	2.00%		
SDMH 4	4+67.4	1188522.0	5316309.4			I	DOMED			14.5	14.3
				100.0	-27.087724			24" CPP	2.00%		
SDMH 5	5+57.4	1188611.1	5316263.8			I	SOLID			12.3	12.1
				100.0	-8.019091			24" CPP	0.70%		
SDMH 6	6+67.4	1188710.1	5316249.9			I	SOLID			11.4	11.2
				44.6	-34.163870			24" CPP	0.67%		
SDMH 7	7+12	1188747.0	5316224.8			II	DOMED			10.9	10.7
				143.6	21.194512			24" CPP	0.84%		
SDMH 8	8+55.6	1188880.9	5316276.8			I	SOLID			9.5	9.3
				68.0	46.006967			24" CPP	0.74%		
SDMH 9	9+23.6	1188928.1	5316325.7			I	SOLID			8.8	8.6
				45.1	45.952812			24" CPP	0.89%		
SDMH 10	9+68.7	1188959.5	5316358.1			I	SOLID			8.2	8.0
				99.3	46.089235			24" CPP	0.70%		
SDMH 11	10+68	1189028.4	5316429.6			I	SOLID			7.3	7.1
				39.2	45.993469			24" CPP	0.77%		
SDMH 12	11+07	1189055.6	5316457.8			I	SOLID			6.8	6.7
				121.3	46.018796			24" CPP	0.74%		
SDMH 13	12+28.5	1189139.8	5316545.0			I	SOLID			5.8	5.7
				44.3	26.345022			24" CPP	0.79%		
SDMH 14	12+72.8	1189179.5	5316564.7			II	SOLID			5.35	5.2
				43.0	33.434501			24" CPP			
Bend	13+15.8	1189218.1	5316583.8								
				20.2	77.391575			24" CPP			
Connect	3+67.4	1189231.4	5316599.0								
TOTAL				1202.0							

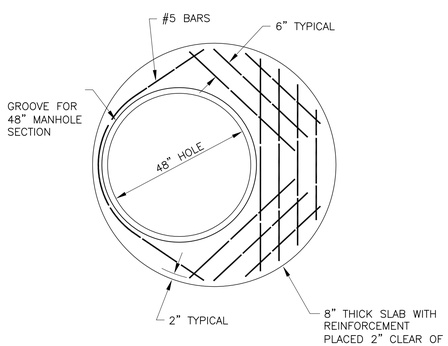
DELTA WAY STORM DRAIN MANHOLE SUMMARY

Item	Station	Location		Distance	Azimuth	Manhole	Lid	Pipe Size	Pipe	Elevations	
		Northing	Easting	(feet)	(degrees)	Type	Type	and Type	Slope	Inv. In	Inv. Out
EXISTING	0+00	1189262.3	5316043.2			EXIST	SLOTTED			-	7.2
				60.0	42.386094			18" CPP	0.50%		
MH DW-1	0+60	1189306.6	5316083.7			I	SOLID			6.9	6.8
				209.3	46.291177			18" CPP	0.53%		
MH DW-2	2+69.3	1189451.2	5316235.0			I	SOLID			5.7	5.5
				110.6	0.549260			18" CPP	0.54%		
MH DW-3	3+79.9	1189561.8	5316236.1			I	SOLID			4.9	4.7
				157.5	46.972984			18" CPP	0.51%		
END	5+32.4	1189669.3	5316351.2			N/A	-			3.9	3.9
TOTAL				537.4							

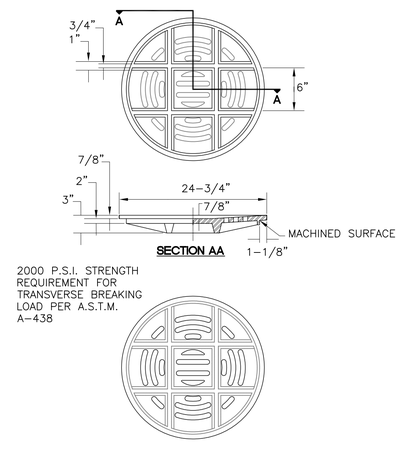
NOTE: SEE SHEET C-2 FOR HORIZONTAL CONTROL POINTS



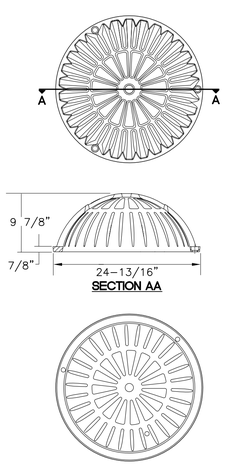
DETAIL 3 - TYPE I OR II MANHOLE REDUCING SLAB



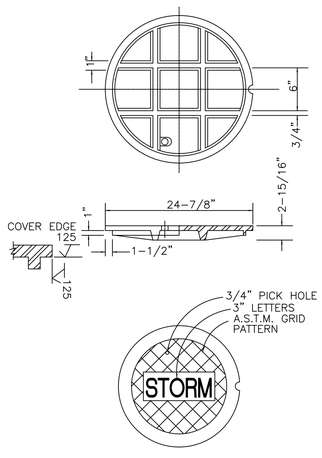
DETAIL 4 - TYPE II MANHOLE REDUCING SLAB



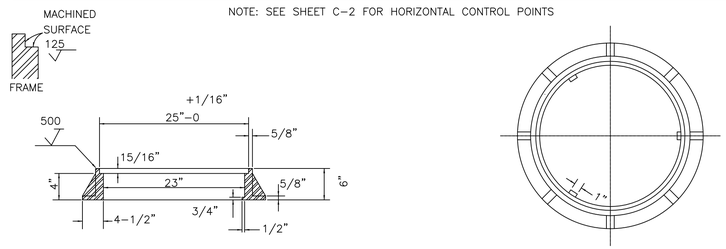
DETAIL 5 - SLOTTED MANHOLE LID



DETAIL 6 - DOMED MANHOLE LID



DETAIL 7 - SOLID MANHOLE LID



DETAIL 8 - MANHOLE FRAME

REV	DATE	DESCRIPTION
1	02/01/10	FOR PERMITTING

STATE OF ALASKA — THOMAS REGAN — CE-7125 — EXP. 12-31-2010 — REGISTERED PROFESSIONAL ENGINEER

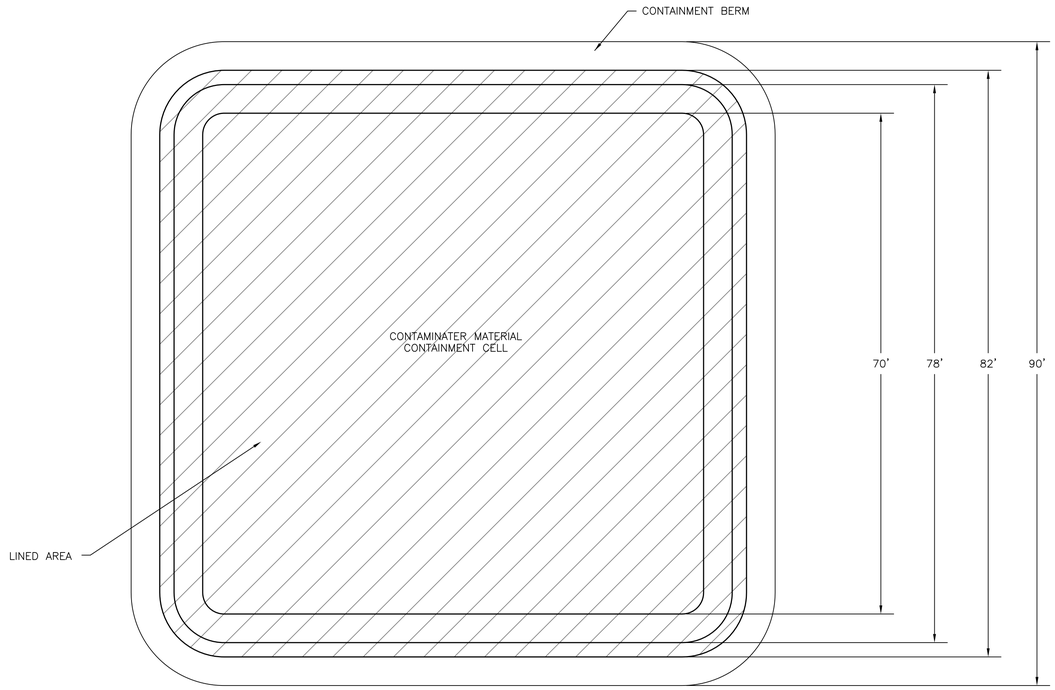
REGAN ENGINEERING, P.C.

PROJECT:
CITY OF UNALASKA DRAINAGE PROJECTS
ILULAQ LAKE / EAST POINT ROAD & DELTA WAY

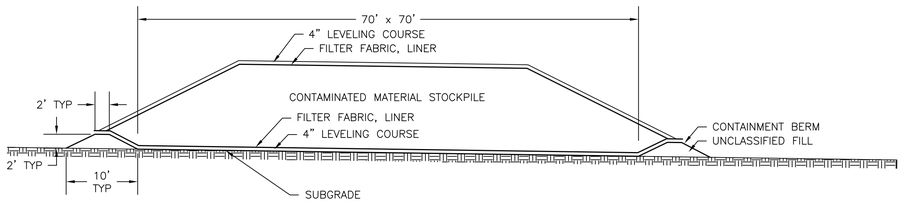
TITLE:
MANHOLE DETAILS, SCHEDULE

DESIGNED BY:	TR	DATE:	02/01/10
CHECKED BY:	TR	COU DPW PROJECT NO:	10101

SHEET NO: **C-8** OF **10**



PLAN VIEW - CONTAMINATED MATERIAL STORAGE CELL



SECTION - CONTAMINATED MATERIAL STORAGE CELL

GENERAL NOTES:

1. THE CITY WILL DESIGNATE A SITE FOR CONSTRUCTION OF THE CONTAMINATED MATERIAL CONTAINMENT CELL. THE SITE WILL LIKELY BE ON TOP OF THE LINED LANDFILL CELLS.
2. PREPARE SUBGRADE BY UNIFORMLY GRADING THE AREA TO SLOPE TO ONE CORNER OF THE PROPOSED CELL.
3. CONSTRUCT CONTAINMENT BERMS AROUND ENTIRE PERIMETER OF CELL TO DIMENSIONS SHOWN.
4. SPREAD LEVELING COURSE TO COVER EXISTING SUBGRADE AND BERMS TO PROVIDE A UNIFORM BED FOR THE BOTTOM LINER. NO MATERIALS IN CONTACT WITH THE LINER SHALL EXCEED 1".
5. COVER AREA WITH FABRIC AND LINER TO TOP OF BERMS. PLACE LEVELING COURSE OVER LINER TO PROTECT LINER FROM EQUIPMENT AND ANGULAR STONES IN THE UNSUITABLE MATERIAL TO BE STORED.
6. FILL CELL WITH UNSUITABLE MATERIAL STARTING AT HIGH END OF CELL. TEMPORARILY COVER THE MATERIAL TO PREVENT WATER INFILTRATION AND OIL CONTAMINATION OF SURROUNDING AREAS.
7. AFTER ALL FILL HAS BEEN PLACED, COVER CELL WITH PERMANENT FABRIC AND LINER AND THEN COVER LINER WITH LEVELING COURSE TO PREVENT IT FROM WIND AND ELEMENTS.

OPERATION NOTES:

1. CONTRACTOR IS RESPONSIBLE TO CONTAIN WATER IN THE NEW CELL AND TO TREAT ANY WATER THAT COLLECTS AT THE LOWER CORNER OF CELL TO REMOVE OIL CONTAMINATION.
2. CONTRACTOR IS RESPONSIBLE TO MAINTAIN THE TEMPORARY AND PERMANENT FABRIC AND LINERS UNTIL THE CELL IS FILLED AND CLOSED OUT.
3. THE LINER SHALL BE CONSTRUCTED AND INSTALLED TO PREVENT ANY MIGRATION OF WATER OR WASTE OFF OR THROUGH THE LINER INTO THE ADJACENT SOIL, GROUND WATER, OR SURFACE WATER AT ANY TIME DURING THE ACTIVE LIFE OF THE CONTAINMENT CELL.

SPECIFICATIONS:

1. ALL EARTHEN MATERIALS SHALL MEET THE REQUIREMENTS OF THE SPECIFICATIONS FOR THE TYPE OF MATERIAL LISTED.
2. FILTER FABRIC SHALL BE NON-WOVEN POLYPROPYLENE WITH A GRAB TENSILE STRENGTH OF 205 LBS, MIRAFI 180N OR GEOTEX 801 OR EQUAL.
3. TOP AND BOTTOM LINER SHALL BE OIL RESISTANT REINFORCED POLYETHYLENE, HOT AIR FUSION WELDED TO FIT PROJECT REQUIREMENTS AND BE WATER TIGHT, NOMINAL THICKNESS 20 MIL, TENSILE STRENGTH MD 376 LBS., "LAYFIELD OR RPE 25" OR EQUAL.

REV	DATE	DESCRIPTION
1	02/01/10	FOR PERMITTING

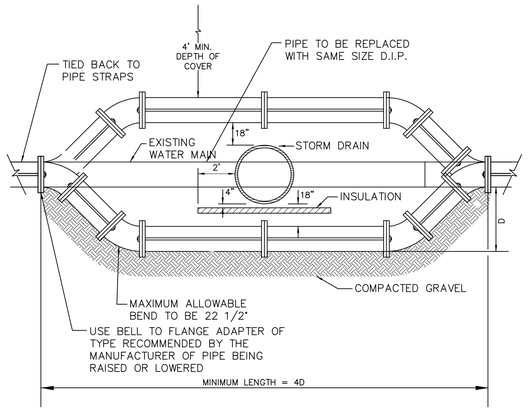
STATE OF ALASKA
THOMAS REGAN
CE-7125
2-1-2010
REGISTERED PROFESSIONAL ENGINEER

REGAN ENGINEERING, P.C.

PROJECT:
CITY OF UNALASKA DRAINAGE PROJECTS
ILULAQ LAKE / EAST POINT ROAD & DELTA WAY

TITLE:
CONTAMINATED MATERIAL STORAGE CELL

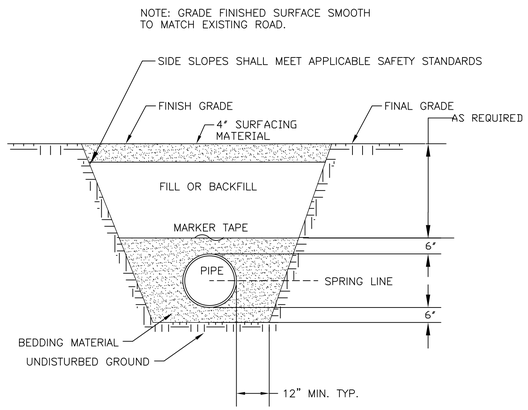
DESIGNED BY:	TR	DATE: 02/01/10	SHEET NO: C-9 OF 10
CHECKED BY:	TR	COU DPW PROJECT NO: 10101	



NOTES:

1. ALL JOINTS TO BE TIED TOGETHER WITH 3/4" THREADED ROD OR EQUAL.
2. RELOCATED WATER LINE SHALL BE NO LESS THAN THREE (3') FEET DISTANCE FROM STORM SEWER LINE, UNLESS INSULATED.
3. INSULATION SHALL CONSIST OF INSULATION BOARD (R-18) AND SHALL BE POSITIONIED NO LESS THAN (4) FOUR INCHES FROM STORM SEWER.
4. EIGHTEEN (18") INCHES IS THE MINIMUM INSULATED SEPARATION DISTANCE.

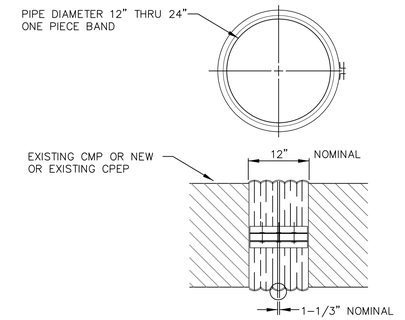
DETAIL 1 - RELOCATE WATER MAIN



NOTES:

1. BEDDING MATERIAL UNDER PIPE SHALL BE PLACED AND COMPACTED PRIOR TO INSTALLATION OF THE PIPE.
2. SUBSEQUENT BEDDING SHALL NOT BE PLACED ABOVE THE SPRING LINE OF THE PIPE IN A SINGLE LIFT.
2. ALL BEDDING SHALL BE COMPACTED TO A MINIMUM OF 95% MAXIMUM DENSITY

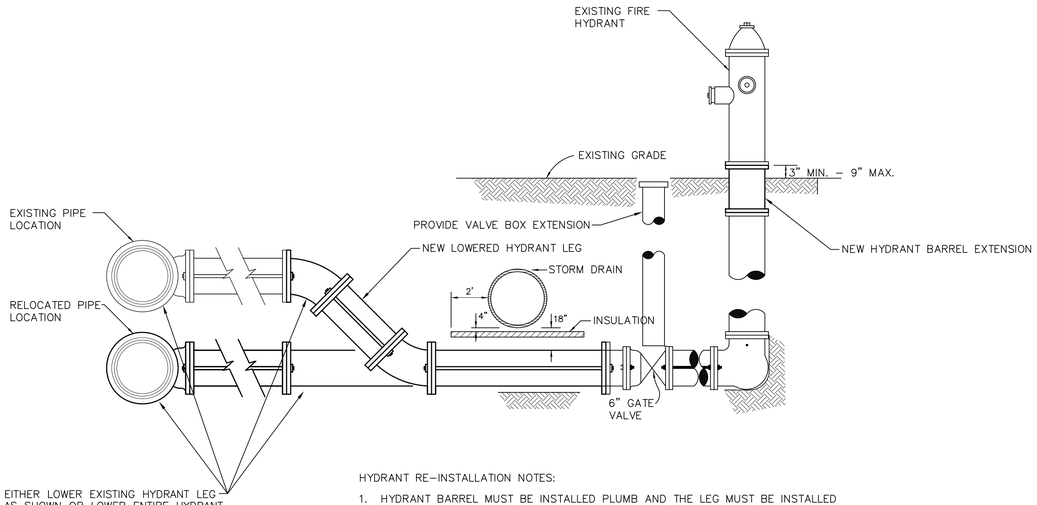
DETAIL 2 - TYPICAL TRENCH SECTION



NOTES:

1. COUPLINGS SHALL BE POLYETHYLENE, WITH DOUBLE WIDE COUPLINGS USED FOR CONNECTION TO EXISTING CMP's. REPAIRS TO DAMAGED CMP AND FOR EXTENSIONS TO CMP WITHOUT ANNULAR ENDS.
2. PROVIDE PLASTIC LOCKING CABLES TO SECURE COUPLING BANDS AS RECOMMENDED BY MANUFACTURER.

DETAIL 3- CONNECT TO CMP, CPP



HYDRANT RE-INSTALLATION NOTES:

1. HYDRANT BARREL MUST BE INSTALLED PLUMB AND THE LEG MUST BE INSTALLED LEVEL.
2. VALVES SHALL BE TIED TO THE MAIN LINE AND HYDRANTS SHALL BE TIED TO THE VALVE.

DETAIL 4 - LOWER HYDRANT LEG

REV	DATE	DESCRIPTION
1	02/01/10	FOR PERMITTING

STATE OF ALASKA 49TH THOMAS REGAN CE-7125 2-1-2010 REGISTERED PROFESSIONAL ENGINEER

REGAN ENGINEERING, P.C.

PROJECT:
CITY OF UNALASKA DRAINAGE PROJECTS
ILULAQ LAKE / EAST POINT ROAD & DELTA WAY

TITLE:
DETAILS

DESIGNED BY:	TR	DATE:	02/01/10	SHEET NO:	C-10 OF 10
CHECKED BY:	TR	COU DPW PROJECT NO:	10101		

ATTACHMENT B

Robert Lund, P.E.

Robert has 7 years of professional experience as a civil / environmental engineer. His experience has included design work on surface grading and drainage projects, remediation systems, remedial excavations, and groundwater treatment systems. He has been involved in the development of work plans, environmental characterizations, remedial action plans, basis of design reports, equipment specifications, and permitting for building and air/water discharge. Robert's field work experience includes pilot studies, soil, water, and air groundwater sampling practices, aquifer testing, bioremediation, construction oversight, and remediation equipment installation/operations. Robert's technical abilities include the production of engineered drawings/maps in the AutoCAD format and surveying for design.

EDUCATION

Bachelor of Science, Environmental Resources Engineering, Humboldt State University, Arcata, California, 2004

First Aid / CPR, American Red Cross

Arctic Engineering, University of Fairbanks

CIVIL ENGINEERING REGISTRATION

Professional Engineer – State of Alaska

Professional Engineer - State of Washington

Professional Engineer - State of Oregon

PROFESSIONAL TRAINING

Loss Prevention System (Chevron Environmental Management Company), Chevron

Transportation Worker Identification Credential (TWIC), U.S. Department of Homeland Security

8-Hour Supervisor Hazardous Waste Operations Training, Occupational Safety & Health Administration

40-Hour Hazardous Waste Operations Training, Occupational Safety & Health Administration

IATA Dangerous Goods Training

RCRA Hazardous Waste Management for Generators

PROJECT EXPERIENCE

Civil and Environmental Construction Projects

Engineering Surveys, Unalaska, Alaska (Engineering Technician)
Performance of engineering surveys for the layout of subsurface structures, surface grades, volume estimates, environmental sample points, and environmental planning. Familiarity with the use of Total Stations, GPS-RTK equipment, and AUTOCAD for these purposes.

Storm Water Separators, Unalaska, Alaska (Engineering Technician)
Designed and drafted civil improvement plans for installation of three API type concrete storm water separators onto existing drainage lines. Purpose was to mitigate siltation and to provide emergency containment in event of a fuel spill.

Supply Center Civil Improvements, Sacramento County, California (Project Engineer)
Designed and drafted civil improvement plans for installation of new sidewalk, lighting, and surface drainage along the property boundary.

Retail Service Station Excavation, Goleta, California (Project Engineer)
Completed grading construction plans for a remedial excavation at a former retail LUST site.

Former Bulk Plants WWII Era Pipeline Abandonments, Dutch Harbor, Alaska (Field Engineer)
Served on a remote pipeline abandonment project as an Alaska State Qualified soil sampler, construction surveyor, water treatment system operator, and interim construction oversight superintendent during extended pipeline abandonment and soil removal activities of WWII era military refueling facilities. Soil sampling was conducted according Alaska Department of Environmental Quality guidelines and consisted of coordination with excavation contractors, field

screening, direction of excavation efforts, logistics with shipping samples from a remote location, sampling for soil delineation in excavations and empty pipe beds, and sampling/compositing various materials for waste profiling. Operations of the water treatment system incorporated bench scale testing, pH cracking of emulsified oil, iron treatment with flocculation and precipitation, and pH buffering.

Former Bulk Plant Remedial Excavation and Rebuild, Stockton, California (Project Engineer)
During offsite remedial excavation activities worked closely with the engineer of record on the civil reconstruction plans for two paved parking lots and ancillary features, storm water pollution prevention plan, vapor monitoring, and performed field engineering oversight throughout rebuild construction activities.

Drinking Water

Standard Service Details, Unalaska, Alaska (Engineering Technician)
Design and drafting of standard City details for water services.

Community Drinking Water System, Manteca, California (Project Engineer)
Project engineer for reverse engineering of an existing non-compliant drinking water supply at a mobile home park. Submitted a technical report to the California Department of Health services with a design of a pilot scale iron and manganese treatment system, chlorination system, secondary waste train, water treatment systems estimated demand, technical specifications, capacity, drafted process schematics, plan for regulatory compliance activities, O&M plan, and sampling/analysis plan.

Non-community Drinking Water Treatment, Dixon, California (Project Engineer)
Project engineer for drinking water project which included reverse engineering of an existing non-compliant volatile organic compound/nitrate treatment system for drinking water supplied from a groundwater well on a LUST site. Developed and submitted a technical report to the California Department of Health services with the water treatment systems estimated demand, technical specifications, capacity, as-built schematics, plan for regulatory compliance activities, O&M plan, emergency operations, and sampling/analysis plan. Provided support to the owner/operators during implementation of the plan and transition of the project operations.

Environmental

USACE Wetland Permitting, Unalaska, Alaska (Engineering Technician)
Completed the application and mapping to renew an existing expired permit remove and fill marginal wetlands near the City Landfill and received subsequent approval from the Department of the Army.

Heating Oil Spill Cleanup, Unalaska, Alaska (Engineering Technician)
In cooperation with the Alaska Spill Prevention and Pollution Response Program planned and directed the excavation of soils contaminated with spilled heating oil and their removal from a residential area to an off-site lined cell. Following the excavation conducted the subsequent sampling, surveying, and reporting to the agency. Follow-up work includes stockpile remediation scheduled for summer 2012.

Heating Oil Spill Cleanup, Unalaska, Alaska (Engineering Technician)
In cooperation with the Alaska DEC Contaminated Sites Program planned and directed the excavation of soils contaminated with heating oil, segregation, and their removal to off-site cell locations. The contamination was a discovery made at the start of the construction season for a municipal housing development. Following the excavation conducted the subsequent sampling, surveying, and reporting to the agency. Follow-up work includes the planning, installation, and testing of several monitoring wells and stockpile remediation scheduled for summer 2012.

Stockpile Bioremediation, Unalaska, Alaska (Engineering Technician)
Planning and design of an off-grid bioventing compressor system for remediation of stockpiles of hydrocarbon impacted soils. Performed fertilization calculations, biocells design, and material acquisition. Project is pending construction in summer 2012.

Former Bulk Plant Dual Phase Extraction Testing, McMinnville, Oregon (Project Engineer)
Project engineer for a former bulk terminal with separate phase hydrocarbons above the groundwater surface. Designed a dual phase extraction and separate phase hydrocarbon pilot test, wrote the work plan, acquired the applicable air discharge permits, and coordinated the field

activities. Following the pilot test generated the test report and recommended interim extraction events and revision of the site conceptual model prior to developing a final remedial action plan.

Former Retail Service Station Remediation System Implementation, Ely, Nevada (Project Engineer)
Project Engineer for the engineering portion of a work plan to implement a soil vapor extraction and air sparge remediation system, developed equipment specifications, designed and drafted construction drawings, applied for and acquired electrical power, and applied for and acquired an air discharge permit from the Nevada Bureau of Air Pollution Control.

Oberto Smokecraft, Albany, Oregon (Project Engineer)
Acted as lead engineer on this project to procure equipment, design/build injection manifolds, coordinate and execute quarterly nutrient injections into a solvent plume, and recommend/analyze the bio-parameters.

Multiple Locations, Oregon and Washington (Project Engineer and Project Manager)
Engineer and financial project manager for several LUST sites in various stages of progress towards closure. Status included monitoring, characterization, pending remediation, active remediation, and site closure.

Retail Service Station Dewatering Observation, Stockton, California (Project Engineer)
Project engineer responsible for monitoring the dewatering activities of a public sewer improvement project beneath the right of way adjacent to a service station with an open LUST case. Coordinated and performed aquifer monitoring with pressure transducer data loggers during the sewer construction activities.

Retail Service Stations Remediation System Implementation, Monterey County, California (Project Engineer)
Served as the project engineer on development of design plans for soil vapor extraction and in-situ ozone sparge remediation systems on several retail sites combined into one construction project. Also conducted permitting activities with the building department, wind/seismic calculations, permitting with the Monterey Bay Unified Air Pollution Control District, acquired the new electrical service, construction oversight, and executed system commissioning.

Retail Service Station Remediation System Implementation, San Francisco, California (Project Engineer)
Project engineer who implemented design plans for a soil vapor extraction and in-situ ozone sparge remediation system on a small site with equipment footprint limitations, a short window construction schedule and acoustic abatement concerns. Concluded permitting activities with the building department and the Bay Area Air Quality Management District, acquired new electrical service, conducted construction oversight, and executed system commissioning.

Retail Service Station Soil Vapor Extraction and Ozone Injection System Commissioning, Cupertino, California (Project Engineer)
Project engineer on the design and implementation of acoustic mitigation of an existing remediation system's process equipment. The purpose of controlling sound was to allow for 24 hour a day operation. Concluded electrical power acquisition, acoustic abatement, and executed the remediation system commissioning.

Bulk Fuel Plant Remediation System and Water Treatment System, Lower Lake, California (Project Engineer)
Project engineer for the design for a dual phase extraction and in-situ ozone sparge groundwater and soil remediation system. The groundwater treatment system design was mechanical oil water separation with polishing carbon canisters. Applied for and received permits from the local building authority, the local air district as well as electrical service.

Former Bulk Plant Remediation System and Treatment System Upgrade, Stockton, California (Project Engineer)
Project engineer conducting pilot tests on new lateral soil vapor extraction well field, the existing dual phase extraction well network, and slug testing. Following analysis of pilot testing data designed and implemented an expansion of the existing onsite remediation and groundwater treatment system (enhanced mechanical separation, organo-clay, and granular activated carbon). Conducted acquisition of electrical power, building permits, wind/seismic calculations, air discharge permits with the San Joaquin Valley Air Pollution Control District, treated water discharge permit, construction oversight, and executed system commissioning. Also coordinated and executed intermittent free product recovery programs from off-site wells.

Robert Lund, P.E.

Retail Service Station Dual Phase Extraction Pilot Testing, San Jose, California (Project Engineer)
Project engineer to design a dual phase extraction pilot test, participate in writing the engineering portions of the work plan, coordinate, and execute the testing in the field. Following pilot testing activities, participated in the data tabularization, analysis, and the corrective action plan. As part of the test implemented a pH sensor on the discharge side to automatically track and log pH with automatic shut down on out of range pH readings.

Former Bulk Plant Soil Vapor Extraction Pilot Testing, Modesto, California (Project Engineer)
Project engineer writing the engineering portion of a work plan for soil vapor extraction testing, acquired fire department permits, implemented a soil vapor extraction pilot test, coordinated, and executed the testing in the field. Following pilot testing activities participated in the generation of the remediation system implementation plan, design basis document, equipment specifications, and construction drawings.

Former Bulk Plant Dual Phase Extraction Testing, Red Bluff, California (Project Engineer)
Project engineer at a former bulk terminal recently converted to a shopping center; designed a dual phase extraction pilot test, participated in writing the engineering portions of the work plan, acquired the applicable air discharge permits, and coordinated/executed the dual phase extraction/re-injection pilot testing in the field. Following the pilot test participated in the writing of the corrective action plan for a treatment regime of soil vapor extraction and air sparging, design basis document, equipment specifications, and construction drawings (electrical, process and instrumentation, and plumbing/mechanical details).

Bulk Plant Sparge Tests, Fort Bragg, California (Project Engineer)
Project engineer coordinating and performing air sparge pilot testing and radius of influence measurements in a shallow aquifer. Following the test tabularized/analyzed the test data and summarized with conclusions in a corrective action plan.

Bulk Plant Slug Testing, Redding, California (Project Engineer)
Project engineer performing slug testing of shallow and deep aquifer groundwater monitoring wells in the field followed by data analysis and reporting. Also performed slug testing at several other similar facilities.

Former Bulk Plant Remediation System Design with Free Product Removal, Los Angeles, California (Acting Project Engineer)
Acting project engineer for completing the design basis document, performing remediation equipment specifications, and construction drawings for a soil vapor extraction/air sparge/free product recovery system at a former bulk terminal now developed as a small footprint retail site.

Water Treatment

Retail Service Station Remediation System and Groundwater Treatment System O&M, San Jose, California (Project Engineer)
Project engineer responsible for O&M of a dual phase extraction system, compliance with fire department requirements, and air/water discharge permits compliance including NPDES. The groundwater treatment system was an ex-situ ozone treatment system followed by a carbon polisher. Following problems which appeared with elevated pH readings from groundwater contact with ozone and/or the concrete containment slab performed an engineering cost analysis of the existing ex-situ ozone water treatment system. On approval replaced the treatment system with a large capacity tank converting the treatment system to a safer/reliable and cost saving pump and haul system appropriate to the actual site groundwater yield.

Retail Service Station Remediation System and Groundwater Treatment System O&M, Stockton, California (Project Engineer)
Project engineer conducting O&M of the dual phase extraction, air stripping/granular activated carbon groundwater treatment system, ozone in-situ sparge treatment system, and compliance with air and treated water discharge permits. When vapor concentrations of volatile organic compounds from the dual phase extraction system and the stacked shallow tray air stripper had reached deminimus concentrations redesigned the vapor abatement system to employ vapor phase granular activated carbon treatment vessels, bypass the air stripper, and then following the rebuild conducted recommissioning of the vapor/groundwater extraction and treatment equipment.

Former Bulk Plant Remediation System and Treatment System, Stockton, California (Project Engineer)
Project engineer responsible for O&M of the dual phase extraction/product recovery system, groundwater treatment system, and compliance with applicable air and discharge

regulations. Developed O&M and sampling plans for the system. The groundwater treatment system consisted of mechanical oil/water separation, organo-clay, and granular activated carbon with lower explosion limit monitors on discharge.

Oregon State Penitentiary, Salem, Oregon (Project Engineer)

Project engineer for O&M and troubleshooting of a groundwater extraction and air stripping treatment system for groundwater contaminated with chlorinated solvents. Duties included updating the P&ID and O&M manuals, field trouble shooting, maintaining a register of breakdowns, and operator support.

Oberto Smokecraft, Albany, Oregon (Project Engineer)

Project engineer for O&M and troubleshooting of a groundwater extraction and air stripping treatment system of groundwater contaminated with chlorinated solvents.

Retail Service Station (Offsite) Groundwater Collection and Treatment Design, San Marcos, California (Project Engineer)

Project engineer assisting the engineer of record with design plans and specifications for a groundwater treatment system to collect and treat contaminated water seeping from weep holes in a retaining wall to be built in the path of the groundwater flow direction off of a LUST site. The treatment system consisted of granular activated carbon system with programmable logic controllers for process control. Work on the design also included an ozone sparge in-situ treatment component and an infiltration trench to collect treated groundwater.

ATTACHMENT C

SAMPLING FIELD NOTES

Date:. **Weather:.**

Time of Arrival:. **Time of Departure:.**

Sampler & Other Personnel On-site:.

SAP/QAP Calculations:.

PPE / Sampling Equipment Used:.

PID Calibration Record:.

Model No:.	Serial No:.	Zero Adjust:.	Gas (ppm)	Reading (ppm)	Comments:.
Mini Rae Lite			100		

Other Calibration Records:

General Sample Locations/Descriptions/Types:.

Samples Released To (Lab/Shipping Arrangements/Preservation Method):.

Notes:.

ATTACHMENT D

Sample Analysis Plan and Quality Assurance Procedures

Field Screening Standard Operating Procedures

The following headspace screening procedure will be used to obtain and analyze field screening samples with a PID meter:

- In order to protect the integrity of field screening results; the PID meter will be span calibrated according to manufacturer specifications on a daily basis using ambient air as zero and 100 ppmv isobutylene gas. Both at ambient temperature of at least 40° F;

- Collect sample from freshly uncovered soil at least 12 inches below ground surface. Bias the sample location towards the greatest potential impacts indicated by visual and olfactory evidence;

- Partially fill (one-third to one-half) a clean re-sealable plastic bag with the sample to be screened. Total capacity of the bag may not be less than 8 ounces, but the container should not be so large as to allow vapor diffusion and stratification effects to significantly affect the sample;

- Quickly seal the re-sealable plastic bag;

- Allow headspace vapors to develop in the container for at least 10 minutes, but no longer than one hour. Shake or agitate the plastic bag for 15 seconds at the beginning and end of the headspace development period to assist volatilization. Warm the headspace to at least 40° F (approximately 5° C);

- After headspace development, insert the PID probe to a point about one-half the headspace depth. Minimize the container opening and avoid uptake of water droplets and soil particles into the probe;

- After probe insertion, take the peak PID meter reading and record it; and

- Record all field-screening results in the field record or logbook.

Field Documentation

Field documentation includes: photographs, soil sampling records, shipping records, calibration records, chain of custody records, and photographs. These documents record such details as where, when, how, and from whom any vital project information was obtained. Documentation should be complete and accurate enough to reconstruct the field activities by others.

The following information is recommended to be recorded in the field logbook or on the appropriate forms:

- Time of arrival at and departure from the site;
- Other personnel on-site;
- Changes in personnel and responsibilities with reasons for the changes;
- Summary of meetings or discussions with regulatory agencies;
- Deviations from procedures;
- Calibration readings for any instrument used and instrument model and serial number;
- Sample shipping arrangements (i.e., air bill number) and recipient laboratories;
- Sample location and description;
- Sketch showing sample location and measured distances;
- Sampler's name(s);
- Date and time of sample collection;
- Designation of sample as composite or grab;
- Type of sampling equipment used;
- Field instrument readings;
- Field observations and details related to analysis or integrity of samples (i.e., weather conditions, noticeable odors, colors, etc.);
- Preliminary sample descriptions;
- Sample preservation; and
- Lot numbers of the sample containers, sample identification numbers and explanatory code, chain of custody form numbers, and custody seal numbers.

Field documentation forms are located in **Attachment C**.

Field Sampling Standard Operating Procedures

All samples will be prepared in accordance with laboratory instructions. At a minimum, the following information will be included on the sample label:

- Date and time of sample collection;

- Samplers initials;
- Sample identification; and
- Preservative or extraction agent if used.

Confirmation soil samples for non-volatile analysis will be collected with sterile sample spoons from at least 12-inches bgs including samples collected from the excavator bucket and placed into amber glass jars.

Confirmation soil samples for volatile analysis will be collected using a sterile coring device where soft soils predominated, in the case that soils are to hard (compacted aggregate) then as much care as is possible will be used to collect the sample with a sterile sample spoon. The sample will be a weight of 25 to 30 grams. The sample will immediately and in the field be immersed in enough methanol to completely cover the soil sample in the pre-tarred jar.

Chain of custody records will be maintained for each sample. Samples will be kept at four degrees centigrade +/- two degrees by storing and shipping sample containers in insulated coolers on ice or gel freeze packs. Prior to shipment the field technician will place custody seals on all coolers to determine if the samples may have been tampered while being transported to the laboratory.

Sample Identification

Sample points will be identified as:

- Overburden pre-characterization samples will be identified by the corridor they came from, their stationing in the plans, and their relative depth. I.e. DW-0+50-2 is an overburden sample taken on the Delta Way corridor, at station 0+50, from 2-feet bgs. Or EPR-1+160-4 is an overburden sample taken from the East Point Road corridor, at station 1+60, from 4-feet bgs.
- Stockpile confirmation samples will be identified as SP-#-Depth. The # is a unique arbitrary identifier for a location on the horizontal plane of the stockpile. The depth is the depth below stockpile ground surface the sample was collected from;
- Duplicate samples will be identified as DUP-1, DUP-2, DUP-3 and so on; and
- Trip blanks will be labeled as TB-01, TB-02, TB-03 and so on.

Field Decontamination Procedures

Personnel will use clean disposable sampling gloves when acquiring samples. A stainless steel trowel and/or disposable plastic spoons will be used for the collection of samples. Prior to use and between each sampling location, reusable sampling implements will be immersed in a bucket of Alconox® detergent cleaning solution, Citrosol or Simple Green; scrubbed, rinsed, and dried. The small volume of wash and

rinse water will be disposed of on the stockpile and allowed to infiltrate the contaminated material.

Laboratory Calibration Methods

The EPA checks the calibrations traceable quality control standards for the laboratory.

Field Quality Control Samples

Personnel will take two types of field quality control samples. These are sample duplicates and trip blanks. The objective and frequency of these samples are discussed below.

Field duplicates are samples collected simultaneously from the same sampling locations. Personnel will use identical sampling methods to retrieve one duplicate for every 10 samples. Personnel will follow the same QA/QC methods for collecting, packaging, recording, and shipping the duplicate samples as all other samples.

Trip blanks are samples prepared from sterile media at the laboratory and shipped with the sample containers. Trip blanks remain with the samples after collection and are analyzed for volatile compounds. This analysis determines if any cross-contamination occurred during shipping. Personnel will never open the trip blank containers during the entire sampling process. Personnel will use one trip blank per cooler. If the laboratory finds any contamination within the trip blank, Personnel will use the results to evaluate any possible impacts to associated samples.

Temperature blanks will be submitted with each cooler.

Laboratory

Confirmation samples will be sent to a laboratory qualified and licensed in the State of Alaska by ADEC to perform the required analyses. The project laboratory, **SGS Labs**, will analyze all samples, perform all quality assurance analysis, and submit reports in accordance with ADECs March 2009 *Technical Memorandum Environmental Laboratory Data and Quality Assurance Requirements;* adopted by reference in this Work Plan.

The laboratory will forward a copy of the completed analytical results to The City of Unalaska.

ATTACHMENT E

STATE OF ALASKA

SEAN PARNELL, GOVERNOR

DEPT. OF ENVIRONMENTAL CONSERVATION

DIVISION OF SPILL PREVENTION AND RESPONSE
CONTAMINATED SITES PROGRAM

555 Cordova Street
Anchorage, AK 99501
PHONE (907) 269-3056
FAX (907) 269-7649
www.dec.state.ak.us

File No: 2542.38.018

March 2, 2012

Nancy Peterson
City of Unalaska, Department of Public Works
P.O. Box 610
Unalaska, Alaska 99685

Re: Approval for the revised Work Plan for Ilulaq Lake/East Point Road and Delta Way Drainage Improvements and

Dear Ms. Peterson,

Thank you for submitting the draft work plan referenced above which was received by the Department of Environmental Conservation (ADEC) electronically on March 1, 2012. ADEC has carefully reviewed the revised plan and has determined that all comments have been adequately addressed. ADEC approves of the revised plan. Please submit a final hardcopy of the work plan to ADEC. Should any major deviation from the approved work plan occur please contact ADEC immediately.

The approved work plan requested a waiver for the requirement for having an impartial third party conduct the site characterization and excavation activities detailed in the work plan. The State of Alaska under regulation 18 Alaska Administrative Code (AAC) 75.355 requires that "the analysis is conducted or supervised by a qualified, impartial third party." Under 18 AAC 75.390, however, "If the department determines that a waiver of modification will be protective of human health, safety, and welfare of the environment, the department will waive or modify the site cleanup rules based on a review of the quantity or concentration of the discharge or release, soil and groundwater conditions, surface water and topography, geology water and land use, construction methods and materials, and any other human health or environmental factor important to the evaluation."

The City of Unalaska (City) has proposed that the work be conducted by a City employee, Robert Lund. ADEC formally waives the requirement for having an impartial third party conduct and oversee site work. ADEC grants this waiver

specifically for Robert Lund on this project only and reserves the right to revoke the waiver based on adequacy of work performed.

If you have any questions regarding this letter please contact me at (907) 269-3056 or Meghan.Dooley@alaska.gov.

Sincerely,

Meghan Dooley
Environmental Program Specialist

Cc: Tyler Zimmerman, City of Unalaska

REVIEW **PROJECT: City of Unalaska Drainage Improvements**
COMMENTS DOCUMENT: Work Plan for Ilulaq Lake/East Point Road and Delta Way Drainage Improvements
Location: Unalaska, Alaska

City of Unalaska/ADEC	**DATE:** January 20, 2012 **REVIEWER:** Meghan Dooley (DEC) **PHONE:** 269-3056	**Action taken on comment by:**

Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	City of Unalaska/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)
1.	Page 1.1, Section 1.0	ADEC will approve the request for a waiver under 18 AAC 75.355. The waiver will follow under the final work plan approval letter.		Accepted.	
2.	Page 1.2, Section 1.2	Please use the updated 2011 Monitoring Well Guidance.		Accepted. The reference is revised to note the 2011 ADEC Monitoring Well Guidance. The reference to a specific required coordinate system was removed.	
3.	Page 3.8, Section 3.0	Paragraph 1: Method 2 Tables B1 and B2 are the cleanup levels for the stockpiled soil to be used as clean backfill offsite. Cleanup levels for the soil within the trench (deeper than 4'bgs) to backfill onsite in the location of origin will be the maximum concentration detected in the decision unit for this project. Clean fill will need to be used to bring the trench to grade (top 4").		Accepted. The text was clarified with a note that native backfill will be replaced within 200-feet of its original location and that the top 4" of fill will be clean fill.	
4.	Page 5.11, Section 5.2	The text states that "all field screening and confirmation sampling will be by the Responsible Person". Has this been agreed to by the RP? Who is the RP that will be conducting the sampling? The work plan requests a third party sampling waiver in the Introduction. Please clarify in the work plan who will be conducting the sampling and directing the excavation.		Accepted. The entire text has been revised to replace "Responsible Person" with "the City of Unalaska (the City)". The third-party waiver requested in Section 1.0 previously defines the person directing the excavation, collecting samples for the City and supervising soil management	

City of Unalaska/ADEC	**DATE:** January 20, 2012 **REVIEWER:** Meghan Dooley (DEC) **PHONE:** 269-3056	**Action taken on comment by:**

Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	City of Unalaska/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)
				during construction (the "Qualified Person") as Robert Lund. A sentence has also been added to Section 1.0 stating that substitution of the qualified person would require prior ADEC approval.	
5.	Page 5.12, Table 1	This table does not reflect the sampling frequency described in the text. The text states two field screening samples will be collected for each test pit and one analytical sample will be collected for every four test pits. The table describes the sample frequency for a stockpile. Please clarify.		Accepted. The work plan is amended with language to clarify that the calculations in Section 5.2 are based on and support Table 1. Table 1 is a modified version of Table 2A from ADECs 2010 Draft Field Sampling Guidance.	
6.	Page 5.12, Section 5.2	Please provide more detail on how analytical samples will be collected. ADEC requests an analytical sample be collected at each test pit. It is not clear otherwise how soil will be managed if one analytical sample representing 4 test pits exceeds cleanup levels. What depth will analytical samples be collected at?		Accepted. The work plan has been amended to require a minimum of at least 1 confirmation sample from each test pit. The confirmation sample from each test pit will be from 2-feet bgs or 4-feet bgs, whichever has the highest PID reading.	
7.	Page	ADEC concurs that pre-sampling of the stockpile		Accepted.	

City of Unalaska/ADEC	**DATE:** January 20, 2012 **REVIEWER:** Meghan Dooley (DEC) **PHONE:** 269-3056	**Action taken on comment by:**

Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	City of Unalaska/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)
	5.13, Section 5.3	area is not required, however post sampling following removal of the stockpile will be necessary if soil exceeds Method 2 Cleanup Levels in order to ensure that no contamination leached from the stockpile.			
8.	Page 5.14, Section 5.4	The top 4 feet will be eligible for reuse as clean fill off site so long as it meets Method 2 Cleanup Levels. It is not clear where the soil from the top 4 feet will be stored during pipe installation. Please clarify in the text where all soil will be stored. "The temporarily stockpiled soil will not be used as backfill more than 200 feet from the original location of its excavation, unless every 10 yards screened below 20 ppmv with a PID meter." It is not clear why the soil would need to be used further than 200 feet from the original location.		Accepted. Following pre-characterization activities a characterization report and work plan addendum will be submitted to ADEC which will define those sections of the top 4-feet which meet Method 2 cleanup levels (CULs)(See Section 5.10). Those portions of the top 4-feet which did not meet CULs would be handled in the same manner as the soil from below 4-feet bgs. The work plan has been amended with text which explains the 200-feet soil relocation limit based on site specific traffic concerns.	

REVIEW **PROJECT: City of Unalaska Drainage Improvements**
COMMENTS DOCUMENT: Work Plan for Ilulaq Lake/East Point Road and Delta Way Drainage Improvements
Location: Unalaska, Alaska

City of Unalaska/ADEC	**DATE:** January 20, 2012 **REVIEWER:** Meghan Dooley (DEC) **PHONE:** 269-3056	**Action taken on comment by:**

Item No.	Drawing Sheet No., Spec. Para.	COMMENTS	REVIEW CONFERENCE A - comment accepted W - comment withdrawn (if neither, explain)	CONTRACTOR RESPONSE	City of Unalaska/ADEC RESPONSE ACCEPTANCE (A-AGREE) (D-DISAGREE)
9.	Page 5.15, Section 5.6	ADEC is concerned that the old storm drain may become a conduit for contaminant migration. ADEC requests that a ten foot section of the drain inlet and outlet be filled and the ends crushed. Additionally, ADEC requests that 10 foot sections of the pipe be filled at each manhole or other access point.		Accepted with modifications. Abandoned storm drain pipe will be plugged as described in Section 5.6.	
10.	Page 5.15, Section 5.7	Please provide more detail in the text with how water will be managed. Will there be a water treatment system? Where will it be stored during construction?		Accepted with modifications. A note has been added which clarifies that ADEC Division of Water will likely require treatment and laboratory analysis. And also a note has been added that ADEC Division of Contaminated Sites will require a materials management work plan for water treatment after the NOI.	

Robert Lund

From: Tyler Zimmerman
Sent: Friday, January 20, 2012 12:10 PM
To: Robert Lund
Subject: FW: Comments for the Drainage Improvement Work Plan
Attachments: 1-20-2012 Comment Letter Drainage Improvement Plan.pdf; 1-20-2012 Drainage Improvements Comments.docx

FYI

From: Dooley, Meghan K (DEC) [mailto:meghan.dooley@alaska.gov]
Sent: Friday, January 20, 2012 10:11 AM
To: Nancy Peterson
Cc: Tyler Zimmerman
Subject: Comments for the Drainage Improvement Work Plan

Nancy,

Attached you will find comments for your response for the Draft Ilulaq Lake/East Point Road and Delta Way Drainage Improvement Work Plan. A hard copy letter will follow in the mail. Please contact me with any questions.

Have a great weekend!

Meghan Dooley
Environmental Program Specialist
ADEC Contaminated Sites Program
(907) 269-3056

Robert Lund

From: Dooley, Meghan K (DEC) [meghan.dooley@alaska.gov]
Sent: Tuesday, February 14, 2012 8:17 AM
To: Robert Lund
Cc: Tyler Zimmerman; Thomas Regan
Subject: RE: City of Unalaska - Drainage Improvement Work Plan

Robert,

An approved waste management plan that details handling, transporting and disposing of investigation-derived wastes (including method and location of disposal) is required before the work begins. It may be submitted with the work plan or as a work plan addendum once the NOI has been acquired by the contractor.

I hope this helps. Please let me know if this is clear or if you have any other questions.

Have a great day!

Meghan Dooley
Environmental Program Specialist
ADEC Contaminated Sites Program
(907) 269-3056

From: Robert Lund [mailto:rlund@ci.unalaska.ak.us]
Sent: Monday, February 13, 2012 8:38 AM
To: Dooley, Meghan K (DEC)
Cc: Tyler Zimmerman; 'Thomas Regan'
Subject: City of Unalaska - Drainage Improvement Work Plan

Meghan,

Regarding *Section 5.7 Task 7 – Water Treatment and Discharge* of the draft work plan. We were wandering if you have been able to find out whether the ADEC Contaminated Sites Program does require a work plan to coincide with the NOI approved through the ADEC Division of Water?

Thanks -

Robert Lund, P.E.
Engineering Technician
City of Unalaska
Port of Dutch Harbor
tel: 907-581-1260 x 106
rlund@ci.unalaska.ak.us