From: John A Cima (Generation - 34) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=JOHN171D28]
Sent: 2/16/2016 4:29:21 PM
To: Michael J Winters (Generation - 34) [/O=DOMINION/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=MIC1082]
Subject: FW: Possum Point RE: Outfall 010 Bulkhead
Attachments: SOP Abandon Seal Pipe.pdf

From: David R Payne (Generation - 34)
Sent: Tuesday, February 16, 2016 3:36 PM
To: Doug Wight (Generation - 34)
Cc: John A Cima (Generation - 34)
Subject: Possum Point RE: Outfall 010 Bulkhead

Doug,

The concrete specification looks acceptable however the bulkhead grouting performed should have a non-shrinkage admixture to ensure that it is watertight. Please review the attached SOP from USACE.

Ray

From: Doug Wight (Generation - 34)
Sent: Tuesday, February 16, 2016 9:28 AM
To: David R Payne (Generation - 34)
Cc: John A Cima (Generation - 34)
Subject: FW: Outfall 010 Bulkhead

Ray,

Please take a quick look at the proposed concrete spec to 'cap' the end of the 72" culvert. We are looking at a few options at this time, I'll fill you in.

Thanks,

Doug

From: Michael A Glagola (Generation - 34)
Sent: Tuesday, February 16, 2016 8:13 AM
To: Doug Wight (Generation - 34); John A Cima (Generation - 34); Michael J Winters (Generation - 34)
Subject: FW: Outfall 010 Bulkhead

FYI

From: Scott Quinlan [mailto:s.quinlan@gaiconsultants.com]
Sent: Monday, February 15, 2016 4:51 PM
To: rwilliams@gloverconstruction.com
Cc: Michael A Glagola (Generation - 34); Jeffrey R Marcell (Generation - 3); 'John Glover'; John Klamut; John DeBarbieri
Subject: Outfall 010 Bulkhead

Rueben:

Options for plugging Outfall 010:

1. Bulkheading options:
    a. Clean end of culvert, install bulkhead, fill culvert above sediment
        i. Catch the toe drainage via sandbags upstream or install pipe to collect flows.
        ii. Collect downstream waters and divert to Pond D.
        iii. Remove downstream pneumatic plug.
        iv. Clean out end of culvert.
        v. Install formwork / plug. Formwork upstream is within pipe and formwork downstream is at outfall pipe. Seal formwork / plug with bentonite waterstop and dewater downstream end of culvert.

vi. Drill concrete culvert, install steel reinforcement (#4 bar @ 8" o.c.) for cast-in-place concrete, and epoxy annulus.

vii. Install 3,000 p.s.i fast-setting / curing concrete within formwork and into rebar.

viii. Cure and then remove formwork.

ix. Restore disturbed areas

x. Fill remaining culvert voids with flowable fill or grout.

b. Clean entire culvert, install bulkhead, fill entire culvert

i. Same as 1.a except cleanout all debris in pipe first.

ii. Fill entire culvert with flowable fill or grout.

c. ALTERNATE: Concrete masonry unit / brick and mortar bulkhead & fill pipe opening

i. Same as Option 1.a. or 1.b but install CMU / brick and mortar bulkhead. Can install some rebar inside CMU's and fill void with concrete for some structural support.

ii. Fill culvert voids with flowable fill or grout.

2. Grouting culvert only

a. Install metal plates or plywood on upstream end.

b. Collect upstream and downstream waters and divert to Pond D.

c. Remove downstream pneumatic plug.

d. Clean out end of culvert.

e. Install downstream metal plate or plywood. Backfill with dirt material to secure in place.

f. Fill culvert voids with flowable fill or grout.

g. Remove upstream and downstream metal plates or plywood.

h. Restore disturbed areas.

Pick an option or describe some variation of the above, and we will prepare sketch with details, as needed. We will follow up this discussion with phone call. A general specification for pipe grouting has been attached for your reference.

Sincerely,

Scott C. Quinlan, PE
Director – Energy Water Resources Engineering and Planning

GAI Consultants

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