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GOVERNOR
MAJ GEN
DOUGLAS A.
FARNHAM
COMMISSIONER

MAINE OFFICE OF DAM SAFETY



PETER J. ROGERS
DIRECTOR

Certified Mail

Date: December 21, 2021

Bucksport Mill LLC
Attn: Dave Bryant
PO Box 1874
Bucksport, ME 04416

SUBJECT: Dam Inspection Report for MEMA #110 – Alamoosook Lake Dam

Dear Mr. Bryant:

On behalf of Commissioner Douglas Farnham, thank you for your cooperation to facilitate the required inspection of your dam by the Maine Office of Dam Safety.

Per Title 37-B MRSA, Chapter 24: Dam Safety, your dam is required to be inspected every six (6) years for condition and every twelve (12) years for hazard. Your dam was inspected on October 12, 2021 by Tony Fletcher, PE. Please find attached the condition report with recommendations and downstream hazard reclassification recommendation.

Should you disagree with the findings and recommendations of this report you may respond in writing to this office within twenty (20) days of receipt of this letter. Further you must file the basis of your appeal within 3 months of receipt of this letter.

Should you have any queries, please do not hesitate to contact either the Dam Safety Administrator, Tara Ayotte at (207)-624-4400 or tara.ayotte@maine.gov or the Operations and Response Division Director Steven Mallory at steven.mallory@maine.gov.

Thank you again.

Sincerely,

Peter.J. Rogers (Dec 21, 2021 14:48 EST)

Peter J. Rogers
Director

Enc: Distribution List
Dam Report

MAINE EMERGENCY MANAGEMENT AGENCY
72 STATE HOUSE STATION
AUGUSTA, MAINE 04333-0072
PHONE: 207-624-4400/800-452-8735
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Tara Ayotte, Dam Safety Administrator, MEMA (MEMA Dam File)

OTHER

Andrew Sankey, Hancock County EMA Director
Town of Orland, 91 School House Street, Orland ME 04472
Kyle Nenninger, Bucksport Generation LLC, 2 River Road, Bucksport ME 04416



State of Maine
Department of Defense, Veterans and Emergency Management
Maine Emergency Management Agency
Office of Dam Safety

#110 Alamoosook Lake Dam
Town of Orland, Hancock County, ME

Hazard & Condition Report
Date of Inspection – 10/12/2021

Prepared for:
The Operations Director
MEMA

Prepared by:
Tony Fletcher PE
Acting State Dam Inspector

MEMA, 45 Commerce Drive, Suite #2, 72 State House Station, Augusta, Maine 04333-0072
Phone: 207-624-4400/800-452-8735 Fax: 207-287-3178

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Attachments

A	Eight Inspection photographs, with descriptions.	2 Pages
B	B1 - Site Location Map, B2 - Lake Water System Schematic	2 Pages
C	#110 Alamoosook Lake	1 Page
D	Plan & Downstream Elevation of Dam including photo positions	1 Page
E	Stream Stats - E1=Location & Basin, E2=24 Hour Precipitation, E3=Peak Flow/Return Interval	3 Pages
F	Breach Maps F2,F3,F4 from <u>Alamoosook Lake Breach Study</u> 2/10/20, showing houses & bridges impacted by study breach	3 Pages

Memorandum

To: The Operations Director, MEMA
Copy: MEMA Dam Safety Office
From: Acting State Dam Inspector
Date: December 21, 2021

RE: Condition Assessment of #110 Alamoosook Lake Dam, Town of Orland, Hancock County, ME

Attached please find my hazard & condition report for Alamoosook Lake Dam, an 18' high, 165' long, 91-year-old, concrete mass gravity dam, located downstream of Toddy Pond Dam, on the Narramissic River, in the Town of Orland, Hancock County, ME. The dam is owned by Bucksport Mill LLC, represented by Mr. Dave Bryant, who, together with the dam operator, attended the inspection. The dam is used to augment the supply of water to Silver Lake for private & public use. Alamoosook Lake is used mainly for recreation.

Regarding the dam's Hazard; I have reviewed the dam's emergency action plan (EAP) & the MEMA dam file. The dam's current emergency action plan (EAP) has been tested, however, its dam breach inundation map (DBIM) does not show all downstream infrastructure which could be impacted by a dam breach. Further, the dam's EAP does not have a complete list of all houses, dams, roads & bridges which could be impacted by a breach of this dam. Attachment F shows the DBIM from the "Alamoosook Lake Dam Breach Study" (02/07/20) by MEMA which is considered sufficiently accurate to be used as a basis to recommend the reclassification of this dam to a "high potential hazard".


With regards to the dam's condition. The following dam components were inspected on the afternoon of 10/12/21 - the left abutment & non-overflow section of the dam wall, the right abutment, security fencing, the upstream concrete face of the dam from the shore, the downstream concrete face of the dam from the gate structure & shore, the gate structure from the top & downstream & the walkway. Components not inspected were; the gates, the fishway, the downstream pump house & the Orland Village Dam. The Gate was not tested. Inspection findings: horizontal cracking of the left non-overflow part of the dam (4&5), trees & brush within 20' of the dam on both sides of the river, general deterioration of all concrete work (cracking, spalling, crazing & possibly ASR). The ogee spillway (photo 7) (which was dry on the day) is flaking & has moss or algae growing on its downstream surface. Fencing & gantries are bent in places & show corrosion. Despite the dam's visually poor material condition, no evidence of settlement or misalignment was seen.

My recommendations are that MEMA reclassify Alamoosook Lake Dam from a "significant" to a "high" potential hazard dam & request the dam owner to do the following within the times allowed;

- 1) Correct & update the EAP per paragraph 11) of this report.
- 2) Arrange a table-top exercise (TTX) to test the edited EAP before the 2022 spring runoff.
- 3) Write an "operation & maintenance plan" for the dam before 2023.
- 4) Copy the O&M plan to MEMA to the Town & shorefront property owners association.
- 5) Submit as-built construction records of the dam to MEMA for record purposes.
- 6) Root out all brush & trees within 20 feet of the dam before 2023. Restore surface & lawn.
- 7) Repair the cracks in the concrete non-overflow section at the left abutment (Photos 4&5).
- 8) Rehabilitate decayed concrete & mortar on the dam & spillway & repair security fencing & posts before 2023.
- 9) Commission an underwater inspection of the toe area of the dam to determine if the dam is being undercut by erosion.

If you have any questions about this report, please do not hesitate to contact me.

Sincerely,



Tony Fletcher PE
Acting State Dam Inspector



Preface - Information for the Dam Owner & Operator.

The purpose of this report is to recommend “necessary remedial measures” to improve the safety of this dam per Title 37B MRSA c 24, “Dam Safety”, a copy of which may be obtained from the Dam Safety Office, MEMA. The purpose of this law is to determine which dams are “jurisdictional” based on size dams in Maine are constructed, maintained & operated in a safe manner. The law mandates two types of dam assessment; “hazard” to estimate a dams “potential to cause damage” if it failed & a “condition” assessment to determine what “necessary remedial measures” are required to improve the safety of the dam which normally requires a field inspection. Only those dams classified a high & significant hazard dams require “condition” inspections every 6 years. Maine dam safety law does not authorize the Department to issue permits to construct or repair dams. This is the duty of the Maine Department of Environmental Protection.

The “hazard” classification of a dam is a measure of its “potential” to cause downstream damage if it failed. It is NOT a measure of its “condition”. Dams classified a) “High hazard” threaten human life, b) “significant hazard” threaten downstream property damage, c) “low hazard” have a low potential to cause either loss of life or downstream property damage. The law requires “hazard” assessments every 12 years for all dams. The “hazard” of a dam may be assessed by inspection of the dam’s basin and downstream watercourse, or it may be assessed using dam breach analysis. In terms of the law, dams which are classified “high hazard” (HH) or “significant hazard” (SH) require “emergency action plans” (EAP’s), a plan intended to minimize the downstream impacts of dam failure. This plan must be exercised regularly by the dam owner to test its effectiveness.

The “condition” of a dam is determined by a visual inspection of components of a dam, such as the top, upstream & downstream faces, the toe & groin areas, all abutments, spillway & outlet structures & the reservoir shoreline. Other items considered are - gates, power features, mechanisms, security arrangements, dam operation & maintenance procedures, etc. A condition inspection seeks defects which would lead to failure or breach of the dam. Dam defects include - root penetration from vegetation & trees growing on or near the dam which also conceals dam surfaces, any movement observed (misalignment, settlement, cracks joint opening), leakage, seepage, piping, debris blocking gates & spillways, concrete conditions & ASR (see below) missing control features, toe scour, mis-operation & the like. During the condition assessment for this dam, its design, stability, foundation, construction, EAP, SOP’s were not assessed. No surveys, material sampling or testing was done. The foundation was not investigated nor was the gate tested. Attachment A shows photograph taken during the inspection.

Note 1 - Alkali-Silica Reaction (ASR) (also Alkali-Aggregate Reaction - AAR) is the decay of concrete that occurs under humid or wet conditions. ASR is an irreversible, internal chemical reaction, occurring within the body of the concrete, between un-hydrated sodium & potassium alkalis in the Portland cement & high silica aggregates (common in the north east USA). The products of this reaction expand & physically change the properties of the concrete. Indicators that ASR is occurring in concrete are; surface cracks, crumbling, spalling & discoloration. ASR can occur, at joints, pipe/concrete interfaces & at dam/foundation joints, where it can reduce the dam’s resistance to sliding. When found, the extent of ASR degradation should be recorded & monitored. The depth ASR can be determined by coring & sampling. Decayed concrete should be cut out & replaced by new concrete.

The Office of Dam Safety, Operations Division, Maine Emergency Management Agency (MEMA), are responsible for implementing Maine Dam Safety Program (MDSP) per MRCS Tittle 37B C24 “Dam Safety”. This report was prepared by an independent contractor to the department. Queries regarding this report should be addressed the Director or Planning Associate.

Table 1 Contacts

General Enquiries Office of Dam Safety. MEMA, 45 Commerce Drive, Suite #2, Augusta, ME 04333-0072 Tel: 207-624-4400 Fax: 207-287-3178	Director of Operations Steven Mallory Tel: (207) 624-4476 Fax: (207) 287-3178	Acting State Dam Inspector Tony Fletcher Tel: (207) 624-4465	Dam Safety Emergency Planning. Tara Ayotte Tara.Ayotte@maine.gov Tel: (207) 624-4432 Fax: 207-287-3178
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Note 2 – Right to appeal the findings of this report. Per Title 37b, C 24 “Dam Safety”, if a dam owner disagrees with the findings of this report, the dam owner, lessee or other person in control of the dam, must notify the Commissioner, Maine Department of Defense, Veterans & Emergency Management (DVEM) within 20 days of receiving this report. The dam owner then must provide the “basis of disagreement” to the commissioner within 3 months of receipt of the inspector’s report. The dam owner may apply for & be granted a further 3-months extension to this deadline for good cause, but no more.

#111 ALAMOOSOOK Lake Dam – Hazard & Condition Report

1) Purpose & Method

The purpose of this report is to recommend necessary remedial measures to improve the safety of ALAMOOSOOK Lake Dam. This report is based on; a review of the file, an assessment of the emergency action plan (EAP) & the 10/12/21 visual inspection of the dam. The inspection was based on the inspection checklist & guidelines directory in the dams MEMA file.

2) Attachments

The following documents are attached to this report for reference & information purposes. Please examine & read remarks.

Table 2. Attachments		
Attachment	Pages	Description & Comments
A	2	11 Inspection photographs, with descriptions.
B	2	B1 Site Location Map by Kleinschmidt Associates B2 The Lake Water System by Champion International
C	1	Google Earth Map of Alamoosook Lake
D	1	Plan & Elevation of Dam copied from Kleinschmidt Associates EAP showing dimensions & photo positions
E	3	Stream Stats - E1=Location & Basin, E2=24 Hour Precipitation, E3=Peak Flow/Return Interval
F	1	F1=Dam Breach Inundation Map #2 F2=DBIM #3 F3=DBIM #4 From "Alamoosook Lake Breach Study" 2/6/20

Note 3 – The MEMA "Dam Safety Assessment", done during this inspection, is not attached to this report, but is on file.

3) Emergency Contacts

Table 3 - Dam Owner, Contact, Town Fire & Police Safety & County EM Director			
Dam Owner Dave Bryant Bucksport Mill, LLC PO Box 1874 Bucksport, ME 04416 Phone 920-470-1061 Cell 920-470-1061 Fax 207-469-1704 jmcglin@aimrecyclinggroup.com	Dam Operator Kyle Nenninger Bucksport Generation, LLC 2 River Road Bucksport, ME 04416 Phone 207-469-1311 Cell 207-852-8844 Fax 207-469-1704 richard@buckgen.com	Orland Fire Department 91 School House Street Orland, Maine 04472 Phone 207-469-3079 Bucksport Fire/Police Phone 207-469-7951	Hancock County EM Director: Andrew Sankey 50 State St., Suite 4, Ellsworth, ME 04605 Office: (207) 667-8126 Cell 207-266-0743 Fax: (207) 667-1406

Note 4 – Dam owner must confirm that these contacts are correct & included in the dams EAP.

4) Previous Inspections

Table 4. Previous Inspections or reports on MEMA file			
Rpt.	Date	By	Principal Defects
1	8/27/76	SWCC	Dam Registration
2	1/1/93	DEP	Dam Registration
3	6/6/96	MEMA	Concrete deterioration
4	10/28/81	COE	Inventory of Dams. No known COE Report
5	11/16/98	KA	Appendix A from the owner EAP by Kleinschmidt Assoc., located in the MEMA EAP file
6	11/4/11	MEMAS	EAP requires TTX / Trees at L abutment / general concrete deterioration (AAR) / rusting steel posts /
7	5/2/13	MEMA	Trees around L abutment / general concrete deterioration / rusting steel posts /
8	2/6/20	MEMA	Alamoosook Lake Dam Breach Study

Note 5 – The principal defects recorded in these reports concern, in the main, dam maintenance such overgrowth, localized depressions in the embankments & concrete deterioration. Also, the dam's spillway does not have the necessary capacity to pass the 50 year flood & must be considered inadequate for a significant of high potential hazard dam.

5) Description of the Dam

Alamoosook Lake dam is a 91-year-old, 18-foot-high, 165-foot-long, significant hazard, concrete mass gravity (CMG) structure, located in the Town of Orland, Hancock County, Maine (D). The dam is part of the old Champion Lake Water System (B1 & B2). The right abutment fishway, pumphouse & gate structure are accessed from Soper Road. The left abutment is accessed from Carrier Road, through forest. There is no walkway across the dam. The dam's gate structure is fenced, gated & locked. Alamoosook Lake is mainly recreational. No engineering records are currently available for this dam.

6) Reservoir (Lake) (1,000-acre-feet = 340 million gallons)

The dam forms Alamoosook Lake, 1,133 acres in extent, storing an estimated 6,100-acre-feet (af) of water at elevation 20.00' (top of the ogee spillway). (By comparison, Toddy Pond stores 10,521 af at NP). The freeboard of Alamoosook dam is 3', freeboard storage at least 3,400-acre-feet so when the lake reaches the top of dam (TOD) elevation 23.00', storage is at least 9,500 af.

The Lake is used mainly for recreation, however occasionally water may be pumped into Silver Lake from this dam's pump station located in B2. The reservoir will operate at elevation 21.30' with its 15" stoplogs in place.

7) Basin & Runoff

Alamoosook dam is at the outlet of a 95-square-mile (sm) basin of rolling, rural, wooded hills which shows some deforestation & urban development. The basin includes Toddy Pond. As an indicator of storm flows & precipitation, the "Stream-Stats" unrouted estimate of the 100-year flood is 4,980-cubic-feet-a-second (cfs). The precipitation for the 100-year storm is 6.25" & the for the 500 year storm 7.9". The flood of record (FOR) for the dam is unknown.

Note-6 One factor which can substantially increase runoff from this basin is the depth of snow & ice on the basin prior to a storm. If snow cover is effectively, say, 9", & a 6" storm occurs in mid-April, runoff will be substantially higher than from just the storm. The final runoff is difficult to estimate, however, the dam owner must know the water equivalent of snow & ice cover on the basin before the spring melt to anticipate when to operate the gate & the likelihood of a dam overtopping & importantly, what to do if the dam does overtop. Be prepared. These operating procedures must be written into dam's O&M plan & the dam's EAP.

8) Dam Outlets

The dam has 4 outlets - a fishway, a pump intake with screens, a waste gate, all located in the right non-overflow section. To the left of waste gate is the ogee spillway, controlled by flashboards. The main spillway to the right of this structure is a 70' long, concrete mass gravity (CMG) "ogee" spillway which can be fitted with 15-inch flashboards (D).

When the lake is at top of dam (TOD) elevation 23.0', the 5.5' wide waste gate has a capacity of 530 cfs & the 70' wide ogee spillway 1,200 cfs without flashboards & 520 cfs with flashboard. The maximum discharge from dam outlets with WL at TOD is 1,730 cfs.

9) The Downstream Watercourse. (Narramissic River)

Attachments F1, F2, F3, are "dam breach inundation maps" (DBIM's) copied from the draft MEMA "Alamoosook Lake Dam Breach Study" dated 2/7/20, by MEMA. The flood line on this map was derived from a 8,000 cfs breach of Alamoosook dam. The breach was routed down the Narramissic River valley for 2.5 miles to the Orland Village Dam. The time of arrival & flood water depth are shown at 7 downstream sections A-G. Infrastructure impacted by this flood; the pump station, 6 bridges, several miles of road & the Orland Village Dam. It is recommended that the dam owner produce a similar DBIM for inclusion into the dam EAP.

10) Hazard Assessment

There are two dam breach inundation maps (DBIM) in the existing dam EAP. One is supplied by MEMA, dated 07/31/17 & shows houses but no flood lines. The other is dated 11/12/98 by Kleinschmidt Associates which uses a USGS topo-quad map & 10 flood cross sections but does not go as far as the Orland village Dam which the MEMA breach study does. The peak breach flows used in the KA analysis are, "sunny day" breach of 346 cfs, the "record" breach of 1,000 cfs & "Top of Abutment" breach of 1,284 cfs.

By comparison, the breach flow of the MEMA study was 7,960 cfs reducing to 5,340 cfs at section A, about 6 times the breach flow used in the existing EAP. The breach flow caused by the overturning of the 70' ogee spillway section, head pond at spillway crest (elevation 20.00') is 12,000 cfs (9.4 times the capacity of the dams outlets or 2.7 time the 100-year flood). Using the MEMA DBIM, about 9 houses fall inside the dam breach flood zone. Accordingly, Alamoosook Lake Dam is a "high potential hazard dam" & must be reclassified by MEMA

11) Recommended Changes the Dams Emergency Action Plan (EAP)

The EAP breach flows in the current Alamoosook Dam EAP are lower than the MEMA Study breach flow. Further, the dam breach inundation map does not extend to the Orland Village Dam located downstream of US Route 166. I recommend the following be done to improve the Alamoosook Dam EAP;

- 1) Make replacement dam breach flood maps (DBIM's - example F1,F2,F3) using a 1 hour, 70 wide, TOD overturning breach.
- 2) Agree new flood maps with MEMA & replace current EAP DBIM's. Copy map to MEMA in a PDF format.
- 3) List all house & downstream infrastructure flooded by the breach & include; address, # occupants, contact & telephone #.
- 4) Re-test new EAP & DBIM before the 2022 spring runoff.

12) Field Inspection 10/12/21

The day was sunny fine & mild. Both sides of the dam were inspected. The dam owner attended the inspection. The dam was not overflowing, but the waste gate was operating (note flow in photo 6.)

Dam components inspected were; a portion of the right upstream shoreline, the right abutment, the left abutment, the exposed faces of each non-overflow structure, the ogee spillway from either side, the security fencing & posts, the downstream riverbanks, the fishway, the steelwork gantry columns & fence posts, the walkway & signage. Under drainage or pressure relief drains were not found. Only construction drawings will determine if they exist. Free-flowing leaks were not seen but that does not mean they don't exist, especially from the toe of the dam.

Components not inspected were – the gantries, screens, gates & pump inlets, the fishway, the waste gate & takeoff gates & screens, the pump station, downstream infrastructure in the path of a dam breach flood. Also not inspected was the underwater toe area of the dam. Despite this, the inspection of the underwater toe area should be a priority of the dam owner to determine the extent of toe scour or undercutting of the dam. See Attachment D, Section A, which shows where the inspection should be to determine the extent of scour from overflow of the spillway.

No design, construction records or maintenance reports were available for this inspection. The dam's stability or features such as foundation drainage, reinforcement, a stability assessment or other hidden details, could not be determined for this inspection.

13) Inspection Findings

Trees & brush are growing within 20' of the dam on both sides of the river.

Large horizontal cracks have formed in the left non-overflow concrete section of the dam (4,5).

There is a general deterioration of the concrete in the dam which exhibits; large cracks, hairline cracks, spalling, disintegration in placed. There is a distinct possibility that ASR exists in places in the structure. Of concern are large horizontal cracks in the structure at the left abutment. The ogee spillway (D, which was dry on the day) exhibits flaking & supports the growth of moss or algae over most of its surface. The steel fence posts & gantries show corrosion.

14) Conclusion

Although no movement or misalignment of the monolith was seen, it appears horizontal sliding or overturning of the left (looking downstream) non-overflow section is imminent. Other concerns are the loss of significant areas of surface concrete on the ogee section of the spillway, exposed only because the spillway was not overflowing. Standard operating procedures (SOP's) are recommended to establish inspection & operating regimen for this dam, as well as keep a record of events.

The current DBIM's in the EAP are outdated & do not show all downstream infrastructure, in particular houses, which the MEMA Breach Study does. Therefore, the dam owner must develop cogent maps which show all infrastructure impacted by a dam breach along the Narramissic River. The Alamoosook Lake Dam EAP must be modified accordingly & tested before the 2022 spring runoff.

15) Recommendations

Based on this report, I recommend that MEMA reclassify Alamoosook Lake Dam from a "significant" to a "high" potential hazard dam & that the dam owner do the following;

- 1) Correct & update the EAP per paragraph 11) of this report.
- 2) Arrange a table-top exercise (TTX) to test the edited EAP before the 2022 spring runoff.
- 3) Write an "operation & maintenance plan" for the dam before 2023.
- 4) Copy the O&M plan to MEMA, the dam EAP, the Town & shorefront property owners association.
- 5) Submit as-built construction records of the dam to MEMA for record purposes.
- 6) Root out all brush & trees within 20 feet of the dam before 2023. Restore surface & lawn.
- 7) Repair the cracks in the concrete non-overflow section at the left abutment.
- 8) Rehabilitate decayed concrete & mortar on the dam & repair security fencing where broken before 2023.
- 9) Commission an underwater inspection of the toe area of the dam to determine if the dam is being undercut by erosion.



Tony Fletcher PE
Acting State Dam Inspector



1. Alamoosook Lake drawn down about 30". Little new development seen in the basin or along the lake shore. Convention, "left" means left looking downstream.



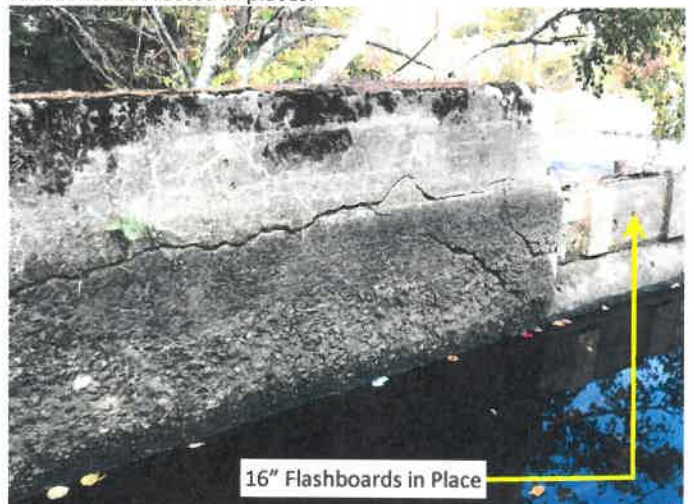
3. Right abutment. Typical surface concrete deterioration. Main body of concrete shows no movement. Fence & poles corroding. Gate locked. Warning signs posted



5. Left non-overflow section taken from left downstream. Crack matches horizontal crack in 4. Above. Clear trees & brush to allow for regular easy inspection of abutment. Note ledge.



2. View from right upstream shoreline. No debris seen on screen. General concrete deterioration. Security fence, Gate & Fishway functional but rusted in places.



4. Left abutment. Horizontal & diagonal crack through the structure. See photo 5 taken from opposite face. Concrete aggregate exposed possibly due to surface corrosion by tannin in the water.



6. View of gate & fishway structure. No movement seen. Concrete spalling & flaking on ogee spillway. Green trace on spillway is either algae or moss. No instability seen.



7. Sluice gate & Left concrete ogee weir spillway. Photograph modified to accentuate concrete surface deterioration. Owner requested to have the underwater toe area probed for undercutting by water currents in tail-pond.



8. Breach of Alamoosook Dam likely to wash out Upper Falls Road CMP Bridge.



Champion

BUCKSPORT, MAINE

WATER SERVICE
LAKE WATER SYSTEM
SCHEMATIC

SCALE - 1" = 100' M D Y F.

DRAWN - J.A. SMITH 7 19 94

APPD -

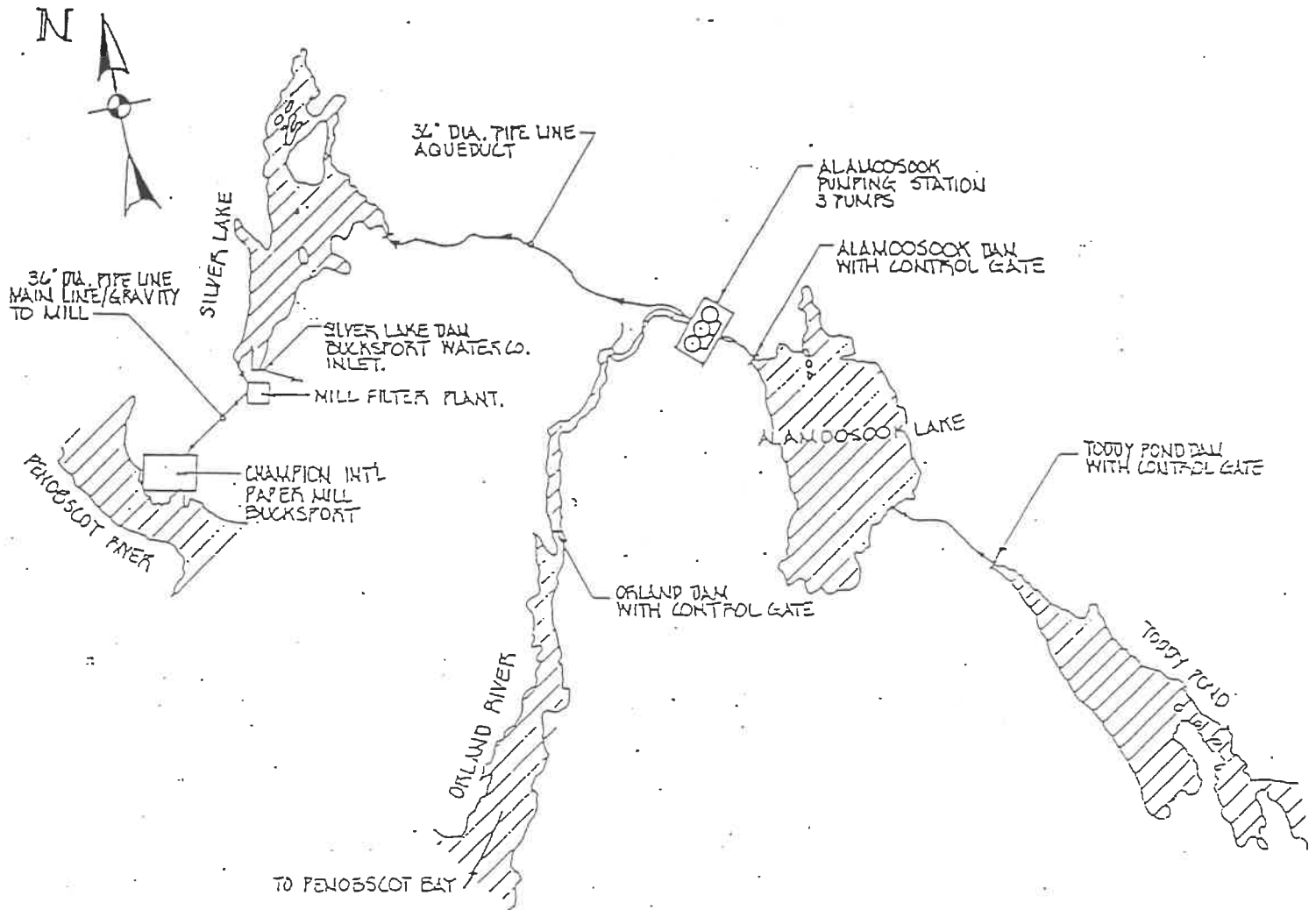
JOB CHARGE 5-875

B2

DWG. NO.

REV.

5-15272



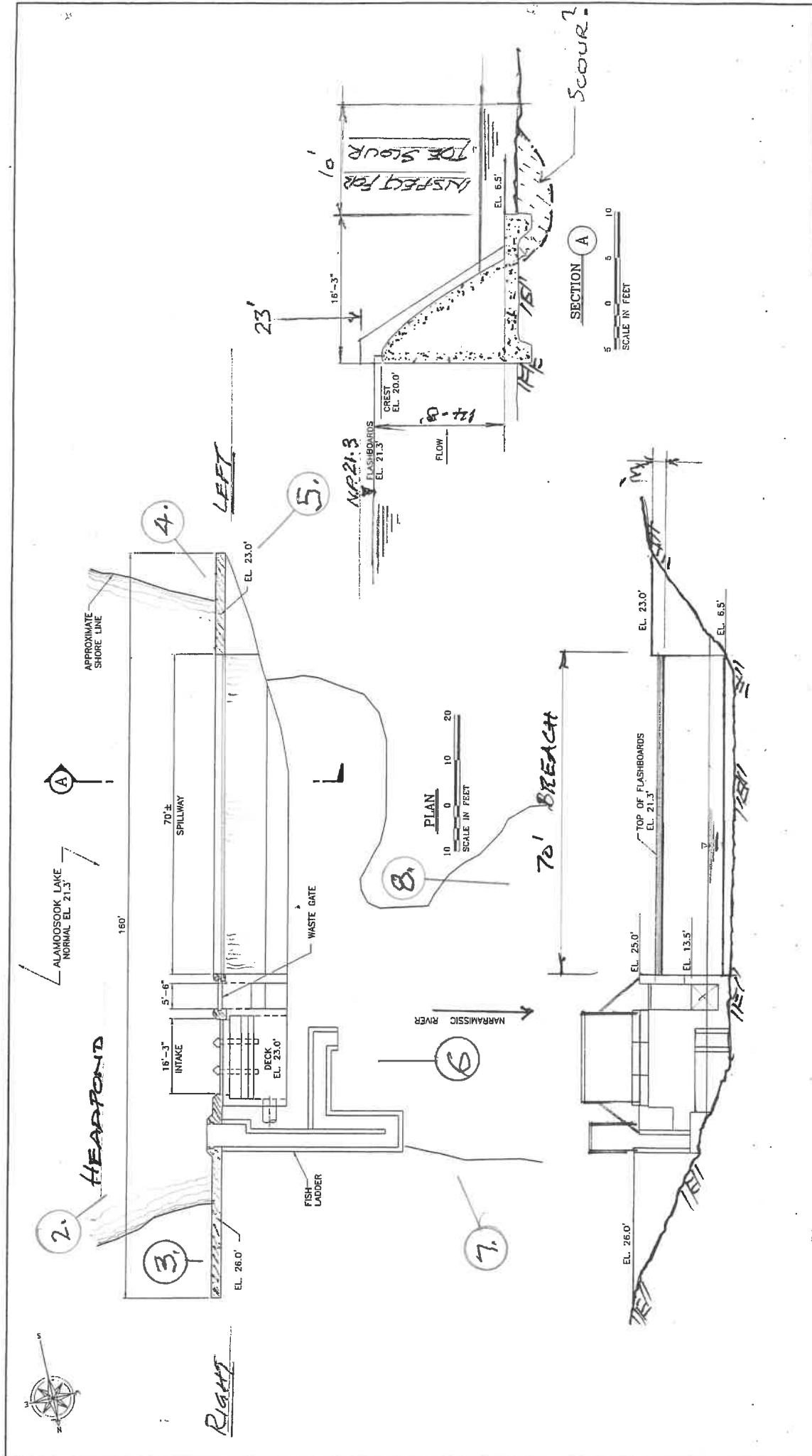
LAKE WATER SYSTEM



#110 Alamoosook Lake

Shoreline = 67,400 ft
Area = 1,133 acres





CHAMPION INTERNATIONAL CORP.
BUCKSPORT, MAINE

ALAMOSOOK LAKE

PLAN, ELEVATION AND SECTION A

KA Kleinschmidt Associates
Consulting Engineers
Pittsfield, Maine

Date	Chkd.	Revision
Drawn by: R. Q. A.		Date: 11-3-98
Designed by: M.H.		Date: 11-10-98
Checked by: J.E.		Date: 11-10-98
Scale: 1" = 10'-0"		Scale: 1" = 10'-0"

ELEVATION

SCALE IN FEET

SECTION A

SCALE IN FEET

NOTE:
ELEVATIONS ARE APPROXIMATE USGS DATUM
AS DERIVED FROM MILL DATUM. ASSUMED USGS
DATUM EQUALS MILL DATUM MINUS 100'.

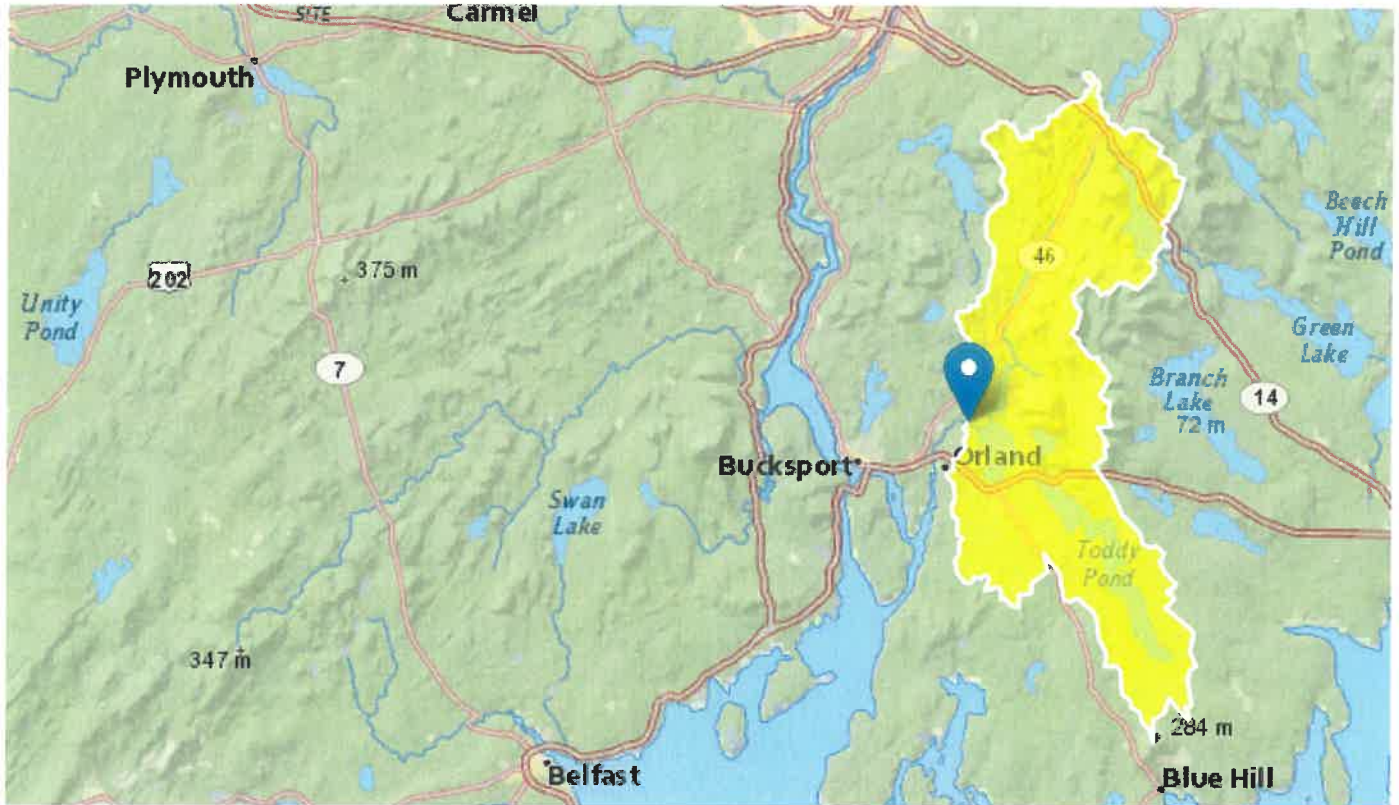
StreamStats Report for #110 Alamoosook Dam, Orland, Hancock, ME

Region ID: ME

Workspace ID: ME20211108170811648000

Clicked Point (Latitude, Longitude): 44.59221, -68.72144

Time: 2021-11-08 12:08:34 -0500



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	94.83	square miles
I24H2Y	Maximum 24-hour precipitation that occurs on average once in 2 years - Equivalent to precipitation intensity index	2.98	inches
STORAGE	Percentage of area of storage (lakes ponds reservoirs wetlands)	14.935	percent

Parameter Code	Parameter Description	Value	Unit
I24H5Y	Maximum 24-hour precipitation that occurs on average once in 5 years	3.67	inches
I24H10Y	Maximum 24-hour precipitation that occurs on average once in 10 years	4.24	inches
I24H25Y	Maximum 24-hour precipitation that occurs on average once in 25 years	5.03	inches
I24H50Y	Maximum 24-hour precipitation that occurs on average once in 50 years	5.63	inches
I24H100Y	Maximum 24-hour precipitation that occurs on average once in 100 years	6.25	inches
I24H200Y	Maximum 24-hour precipitation that occurs on average once in 200 years	6.93	inches
I24H500Y	Maximum 24-hour precipitation that occurs on average once in 500 years	7.9	inches
SANDGRAVAF	Fraction of land surface underlain by sand and gravel aquifers	0.018	dimensionless

Peak-Flow Statistics Parameters [Statewide multiparameter peakflows SIR 2020 5092]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	94.83	square miles	0.26	5680
I24H2Y	24 Hour 2 Year Precipitation	2.98	inches	1.92	4.17
STORAGE	Percent Storage	14.935	percent	0	29.4
I24H5Y	24 Hour 5 Year Precipitation	3.67	inches	2.48	5.38
I24H10Y	24 Hour 10 Year Precipitation	4.24	inches	2.84	6.38
I24H25Y	24 Hour 25 Year Precipitation	5.03	inches	3.3	7.75
I24H50Y	24 Hour 50 Year Precipitation	5.63	inches	3.65	8.79
I24H100Y	24 Hour 100 Year Precipitation	6.25	inches	3.99	9.88
I24H200Y	24 Hour 200 Year Precipitation	6.93	inches	5.26	11.1

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
I24H500Y	24 Hour 500 Year Precipitation	7.9	inches	5.95	13.1

Peak-Flow Statistics Flow Report [Statewide multiparameter peakflows SIR 2020 5092]

Pll: Prediction Interval-Lower, Plu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	Pll	Plu	ASEp
50-percent AEP flood	1920	ft ³ /s	1040	3560	39.1
20-percent AEP flood	2690	ft ³ /s	1480	4900	38.1
10-percent AEP flood	3230	ft ³ /s	1750	5960	38.9
4-percent AEP flood	3920	ft ³ /s	2100	7320	39.9
2-percent AEP flood	4450	ft ³ /s	2350	8440	39.7
1-percent AEP flood	4980	ft ³ /s	2640	9380	40.7
0.5-percent AEP flood	5480	ft ³ /s	2820	10700	42.8
0.2-percent AEP flood	6150	ft ³ /s	3120	12100	43.8

Peak-Flow Statistics Citations

Lombard, P.J., and Hodgkins, G.A.,2020, Estimating flood magnitude and frequency on gaged and ungaged streams in Maine: U.S. Geological Survey Scientific Investigations Report 2020–5092, 56 p. (<https://doi.org/10.3133/sir20205092>)

Bankfull Statistics Parameters [Central and Coastal Bankfull 2004 5042]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	94.83	square miles	2.92	298

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	94.83	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
----------------	----------------	-------	-------	-----------	-----------



A	
31 Soper Rd	Stormy Day
Time to Wave Arrival	24 sec
Time to Peak Stage	3 min
River Rise (ft)	11.5
Peak Flow (cfs)	5,340

B	
Upper Falls Rd/Bridge #3153	Stormy Day
Time to Wave Arrival	10 min
Time to Peak Stage	28 min
River Rise (ft)	10.5
Peak Flow (cfs)	4,620

#110 Alamoosook Lake Dam Dam Breach Inundation Map

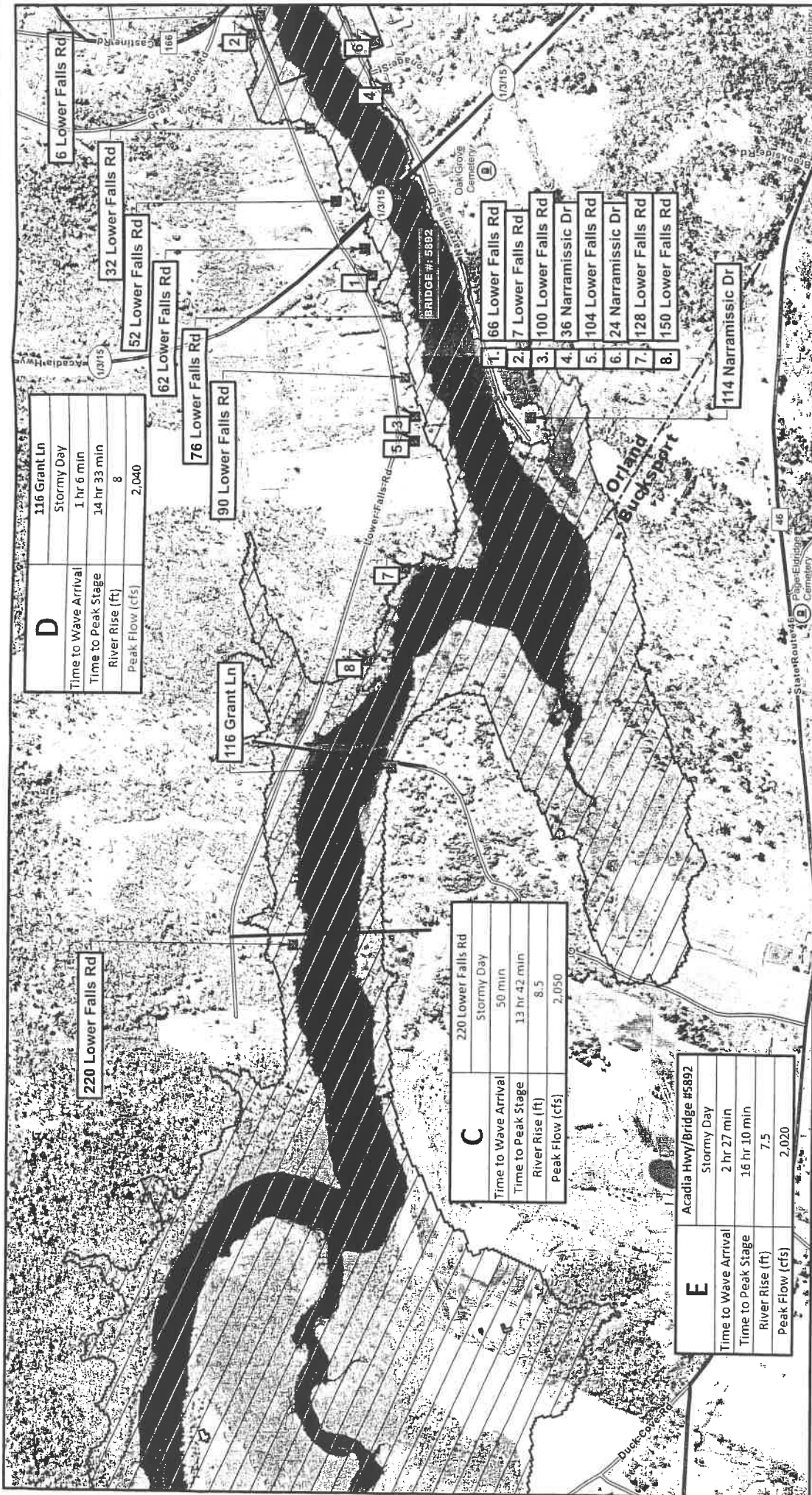
Project Location: Orland, Hancock County, ME

Owner: Bucksport Generation LLC

Map Scale: 1 inch = 500 feet

*Please note the assumptions and methods made and used while creating this inundation map are for guidance and evacuation purposes only. The information shown is approximate, and actual areas inundated will depend on failure conditions and may differ than what is shown.

Rev	Drawn By:	Drawn On:	CHK'd By:	CHK'd On:	Rev. Made:
1.0	Andrew Manz	07/28/2017			Initial Draft
2.0	Andrew Manz	02/09/2020	John Stalley	02/09/2020	Floodlines, Titleblock



D	
116 Grant Ln	
Stormy Day	
Time to Wave Arrival	1 hr 6 min
Time to Peak Stage	14 hr 33 min
River Rise (ft)	8
Peak Flow (cfs)	2,040

C	
220 Lower Falls Rd	
Stormy Day	
Time to Wave Arrival	50 min
Time to Peak Stage	13 hr 42 min
River Rise (ft)	8.5
Peak Flow (cfs)	2,050

E	
Acadia Hwy/Bridge #5892	
Stormy Day	
Time to Wave Arrival	2 hr 27 min
Time to Peak Stage	16 hr 10 min
River Rise (ft)	7.5
Peak Flow (cfs)	2,020

#1110 Alamoosook Lake Dam Dam Breach Inundation Map

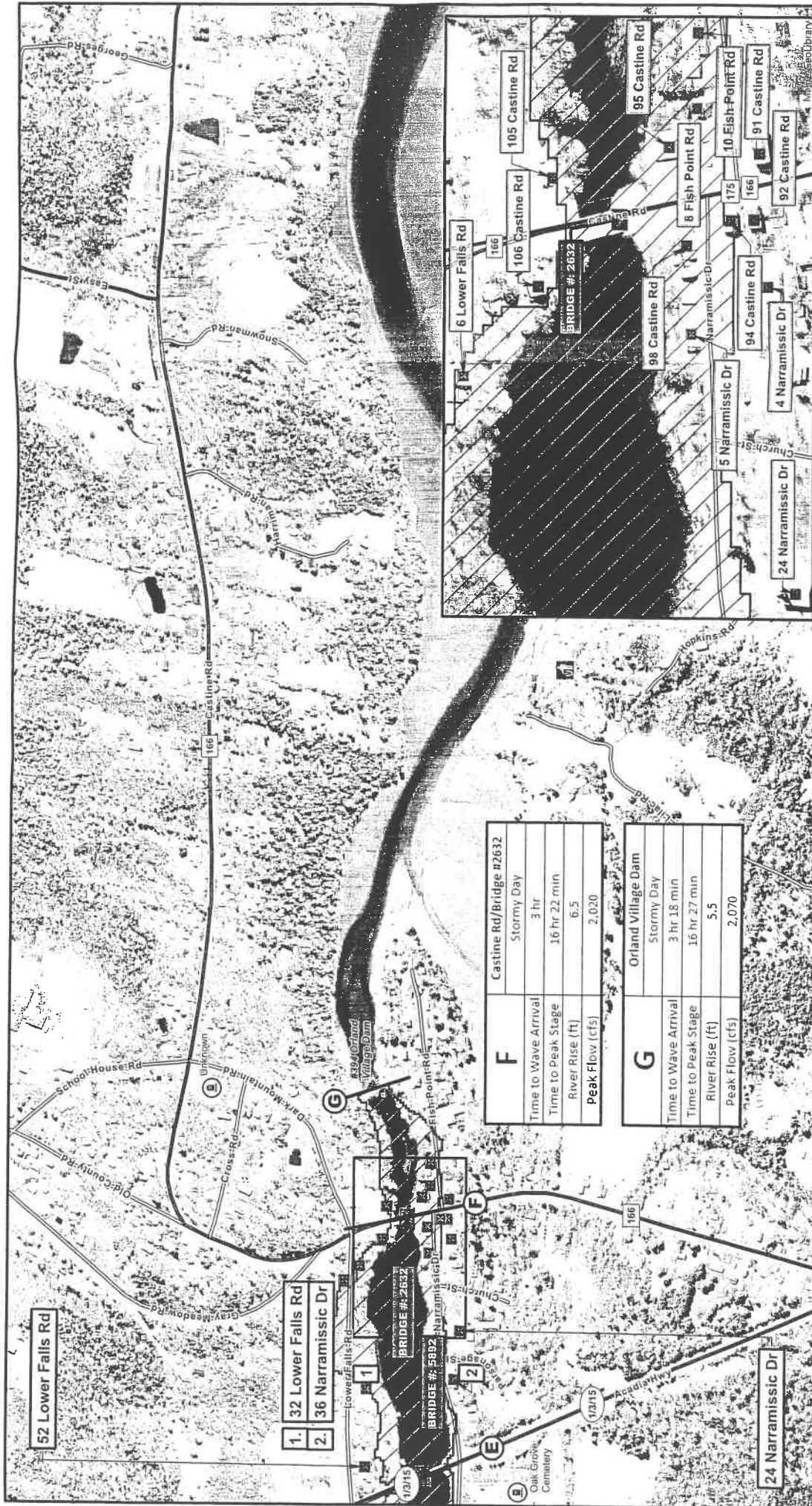
Project Location: **Orland, Hancock County, ME**

Owner: **Bucksport Generation LLC**

Map Scale: 1 inch = 500 feet

*Please note the assumptions and methods made and used while creating this inundation map are for guidance and evacuation purposes only. The information shown is approximate, and actual areas inundated will depend on failure conditions and may differ than what is shown.

Rev	Drawn By:	Drawn On:	CHK'd By:	CHK'd On:	Rev. Made:
1.0	Andrew Marz	07/26/2017			Initial Draft
2.0	Andrew Marz	02/06/2020	John Skelley	02/06/2020	Floodlines, Titleblock



F	
Castine Rd/Bridge #2632	Stormy Day
Time to Wave Arrival	3 hr
Time to Peak Stage	16 hr 22 min
River Rise (ft)	6.5
Peak Flow (cfs)	2,020

G	
Orland Village Dam	Stormy Day
Time to Wave Arrival	3 hr 18 min
Time to Peak Stage	16 hr 27 min
River Rise (ft)	5.5
Peak Flow (cfs)	2,070

#110 Alamoosook Lake Dam Dam Breach Inundation Map

Project Location: Orland, Hancock County, ME

Owner: Bucksport Generation LLC

Rev	Drawn By	Drawn On	CHK'd By	CHK'd On	Rev. Made:
1.0	Andrew Mand	07/29/2017			Initial Draft
2.0	Andrew Mand	02/06/2020	John Skelley	02/06/2020	Floodlines, Titleblock

F3

Map Scale: 1 inch = 500 feet

*Please note the assumptions and methods made and used while creating this inundation map are for guidance and evacuation purposes only. This information shown is approximate, and actual areas inundated will depend on failure conditions and may differ than what is shown.

Commercial Divers Inc.

Inspection Report

Page: _____ of _____ Pages

Date: _____

Report Filed By: _____

Time: _____ AM: ____ PM: ____

Facility: _____ Location In Facility: _____

Area of Inspection: _____

Location: _____ Customer: _____

Site Contact: _____ Site Contact Tel #: _____

Notes:

Commercial Divers Inc.
Consulting

Description

Alamosa 004

Dean

Page

04

Written by

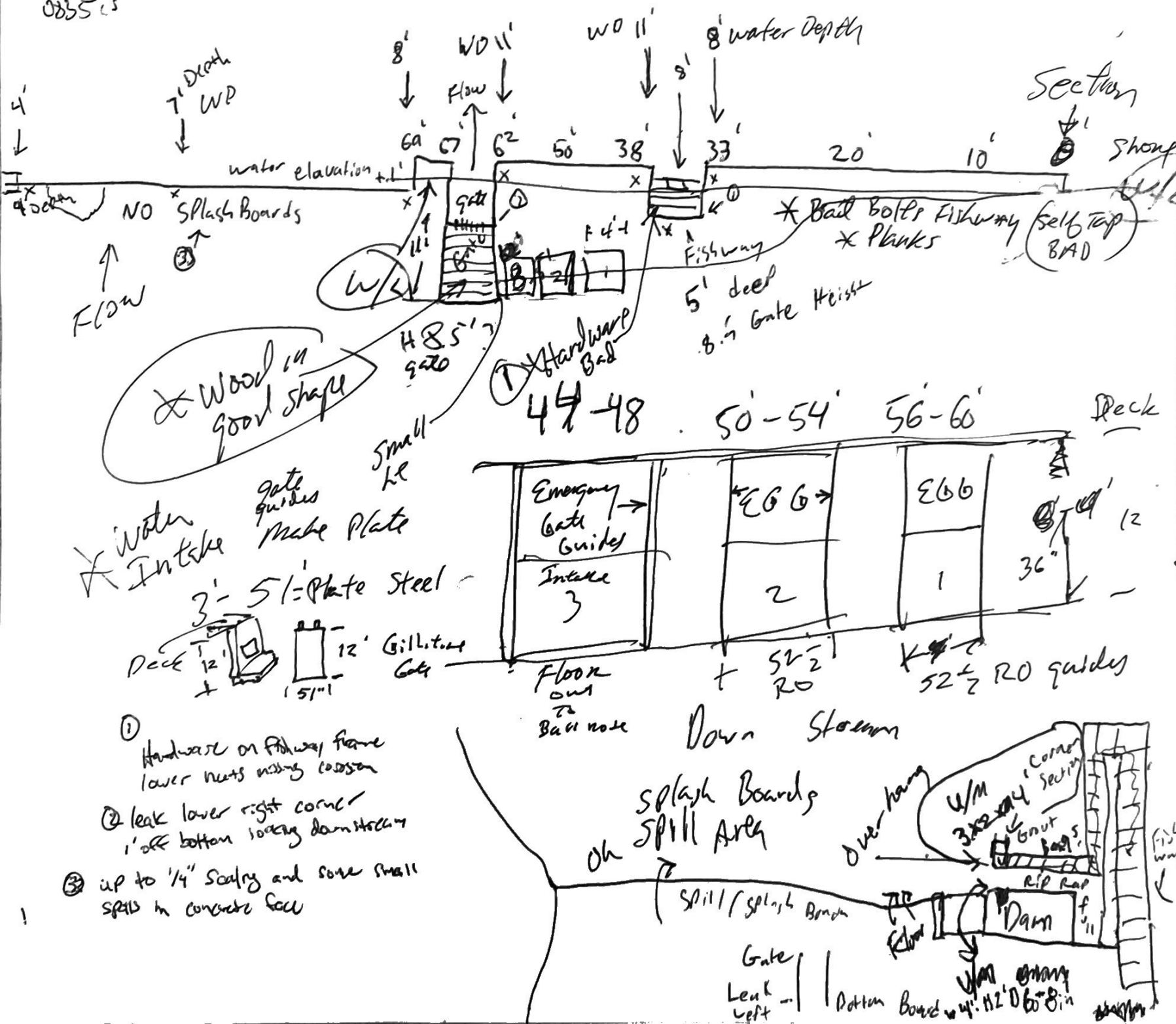
J. Kees & III

Page

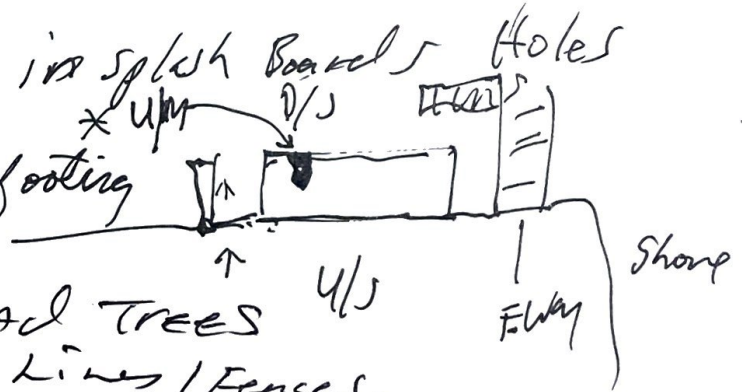
04

Date _____

6/12/2024



- 1 - Check wood on gates (Good) Done
- 2 - Clean Screens (3) (Good) Done
- 3 - Fish-Way Boards Anchors (Bad self taper) Hardware Bad
- 4 - Fence Bad Falling in water. *see video
- 5 - No splash Boards
- 6 - Clean out Debris in splash Boards Holes
- 7 - *Undermine at Tank footing 4X
- 8 - Down stream 2 Bad Trees 4/5
Can Fall on Power Lines / Fences.



2013

Sho.

Alamosook stream



- 11-12-13 Flood gate
- 14 curvey 3" by Flood Gate
- 15 crack with flow 1" x 3' goes in gravel
- 16 crack Flow Floor gravel (Flow on
- 17 Crows 12x4 & spill way

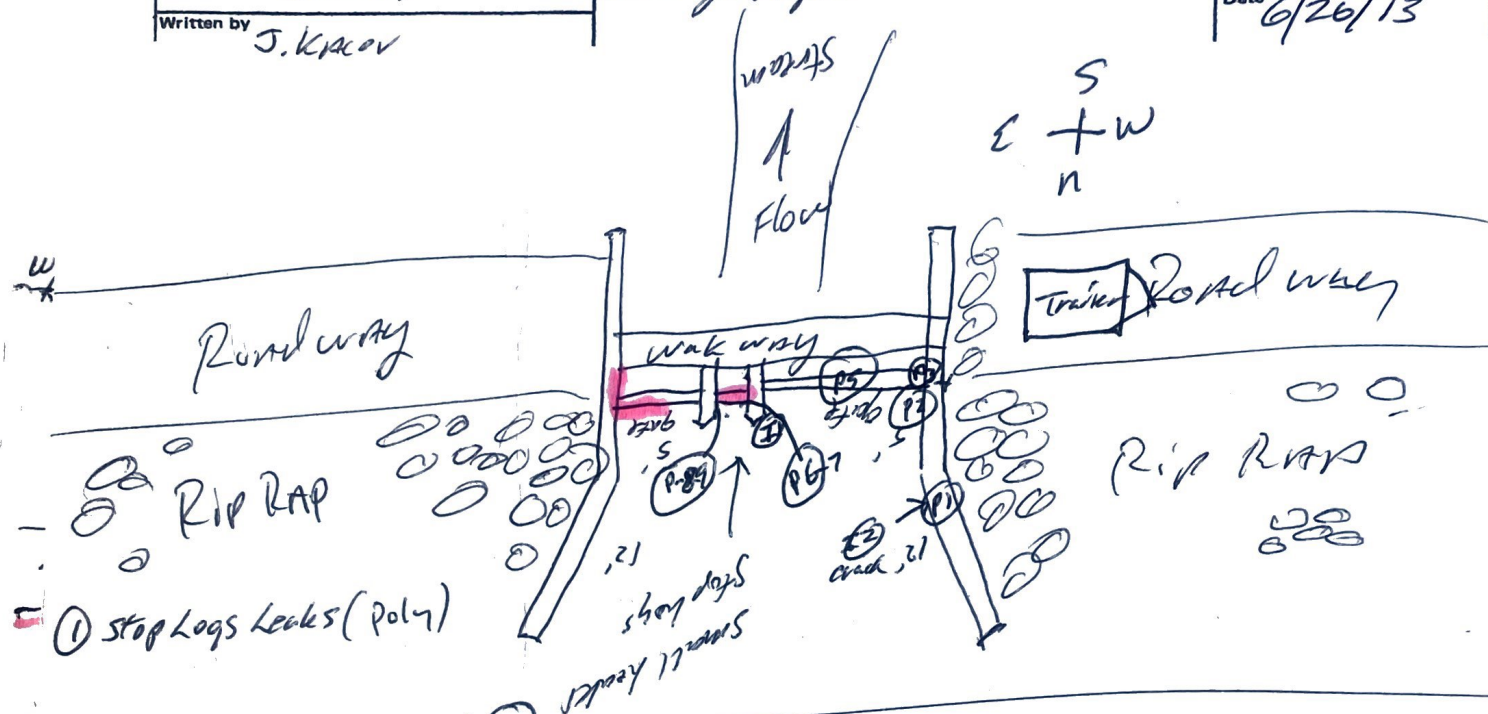
crack get
larger as it
goes down

~~Flood gate Leaks~~
~~Bottom Right~~
~~crack~~ 16 Ft From F. Gate

P-21-27
undermined
Carr Haven
Fishway

Commercial Divers, Inc.

<p>Commercial Divers Inc.</p> <p><i>Consulting</i></p> <p>Written by J. KRAOV</p>	<p>Description</p> <p>Silver Lake Dam/Intake</p> <p>Survey Report</p>	<p>Page of</p> <p>1-1</p> <p>Date 6/26/13</p>
--	---	---



- Camera #1
- Picture 1 Crack west side (I2)
- 2 SO. wall corner
- 3 Corner west concrete
- 4 corner west concrete
- 5 Gate weld west
- P- 6 stop logs / Rust west
- 7 stop logs west
- P- 8 stop logs east
- P- 9 stop logs west
- P- 10 East Gate welds

Finish Film

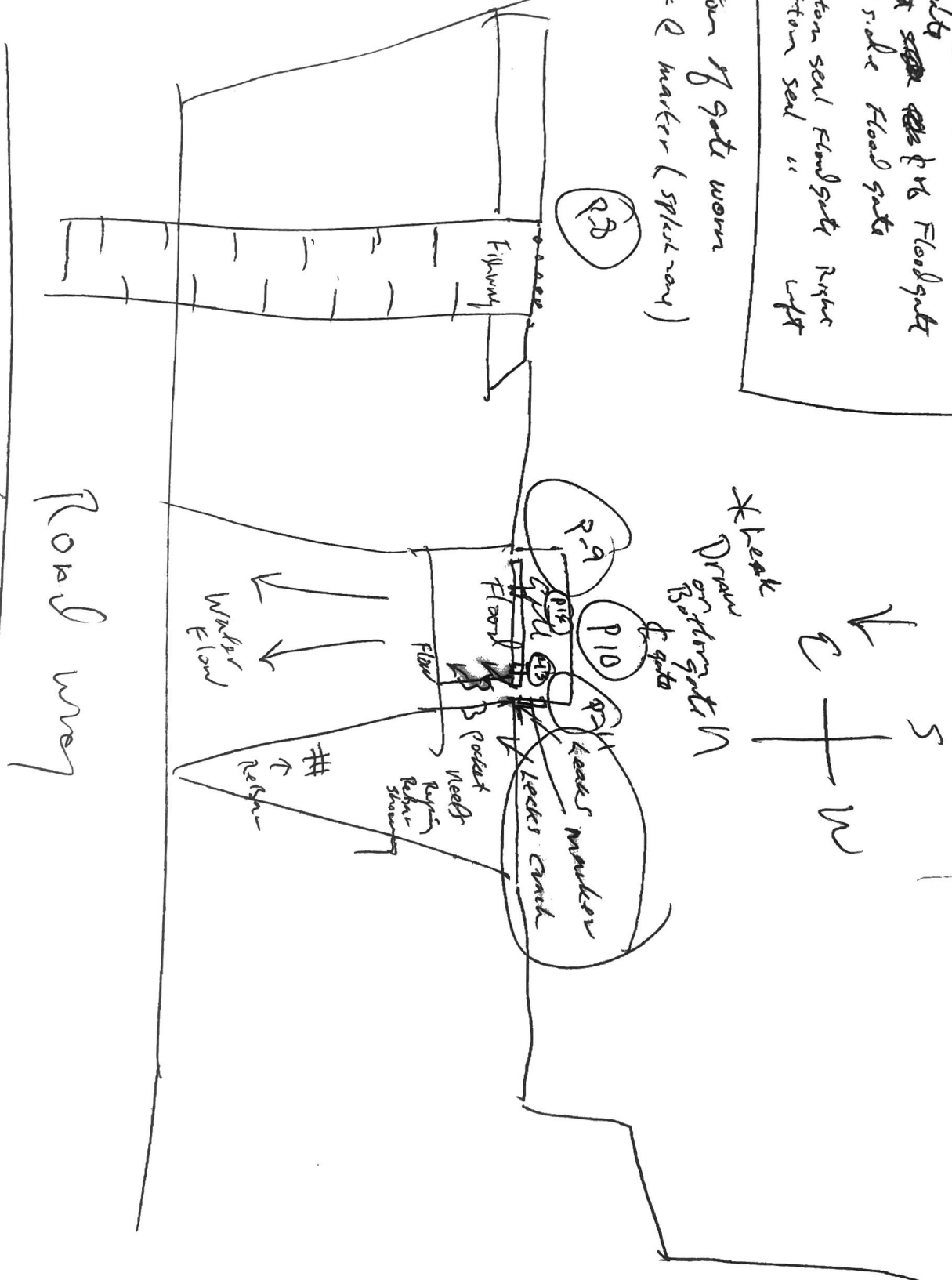
10 Surface Pictures of Area

Tolly Pond Dam

6/27/13

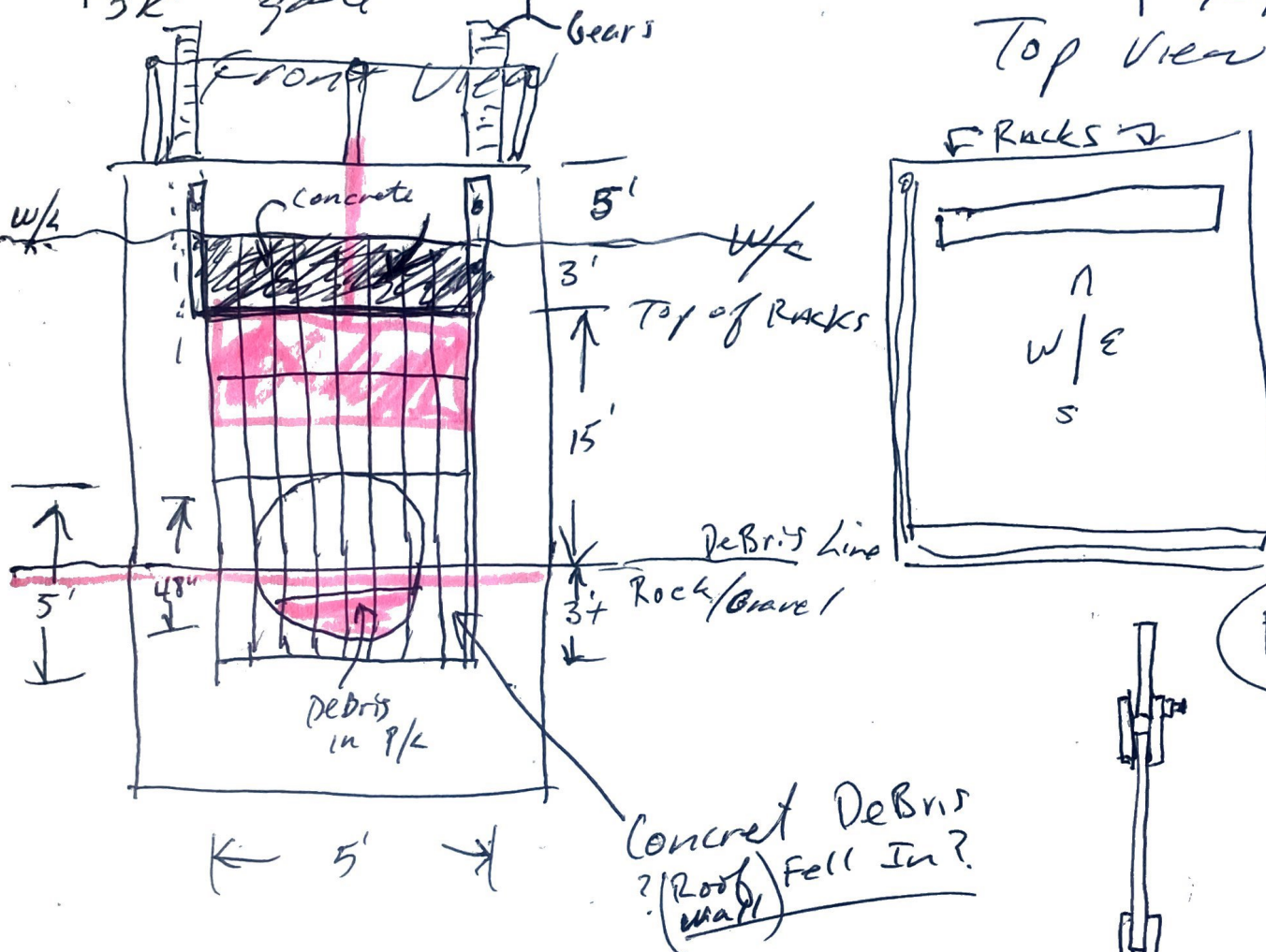
- P-1-7 Top side Photos gate locks
- P-8 Fillingway Inside
- P-9 Floodgate
- P-10 ~~water~~ ~~gate~~ Floodgate
- P-11 left side Floodgate
- P-12
- P-13 Bottom seal Floodgate Right
- P-14 Bottom seal " left

Notes: Bottom of gate worn
Crack @ water (spill way)



Commercial Divers, Inc.
738 Mount Hope Avenue
Bangor, ME 04401 - 5642

Commercial Divers Inc. Consulting Written by <u>SK gate</u>	Description <u>Silver Lake Intake</u> <u>* Fresh Water Intake</u>	Page <u>1</u> of <u>1</u>
		Date <u>6/26/13</u>



Water Pictures

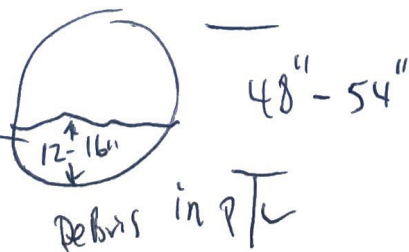
Pic-P-1 SE Corner Building

P-2 Bottom of Racks
sitting on Debris

P-3+6 Flashlight Photo of
48" P/L

P-7+8 Broken ^{gate} stem Pictures
middle stem broken

- * 3 feet of Debris on Racks
- * Gate Stem Broken & Stem
- * Notes: Gate Broken (wooden gate)
Shaft Broken
- 42 min Flash Light Inspection

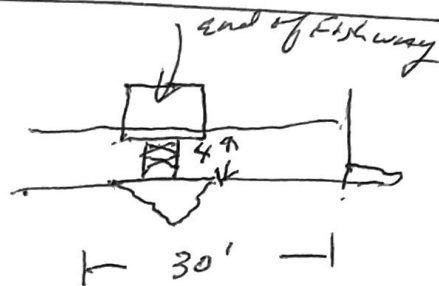


* Toddy Dam To Do:

- ① Gate Repair; Control gate wood is soft/rotted 2013
- ② Gate Pier needs Repair In Concrete walls
- ③ Upstream Grout seams chase into gravel

* Alamoosoc Dam To Do:

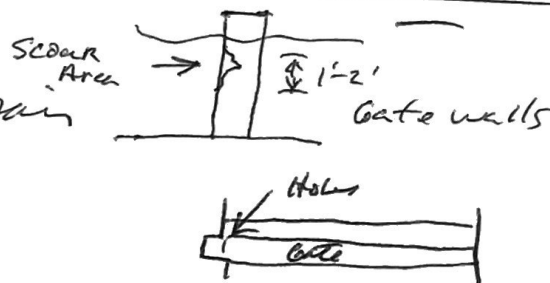
- ① Fishway Rip-Rap + Grout Bags
Cavity under screen Building Underneath



- ② cracks upstream Holes In concrete

* Silver Lake Dam: To Do

- ① Gate walls need concrete Repair
- ② Split in Pier of concrete
- ③ Holes in corner large gate



* Silver Lake Intake To Do:

- ① Clean Racks 3' + Debris Find Floor?, Racks Not Down
- ② Repair + Replace Gate + shaft/bears?, Pad gate Broken
- ③ Clean out 6' opening + 36" P/L * Remove Debris sand/brush
- ④ Repair concrete on Intake

Commercial Divers Inc.

Consulting

Written by

J. KACON

Description

Alomoocho

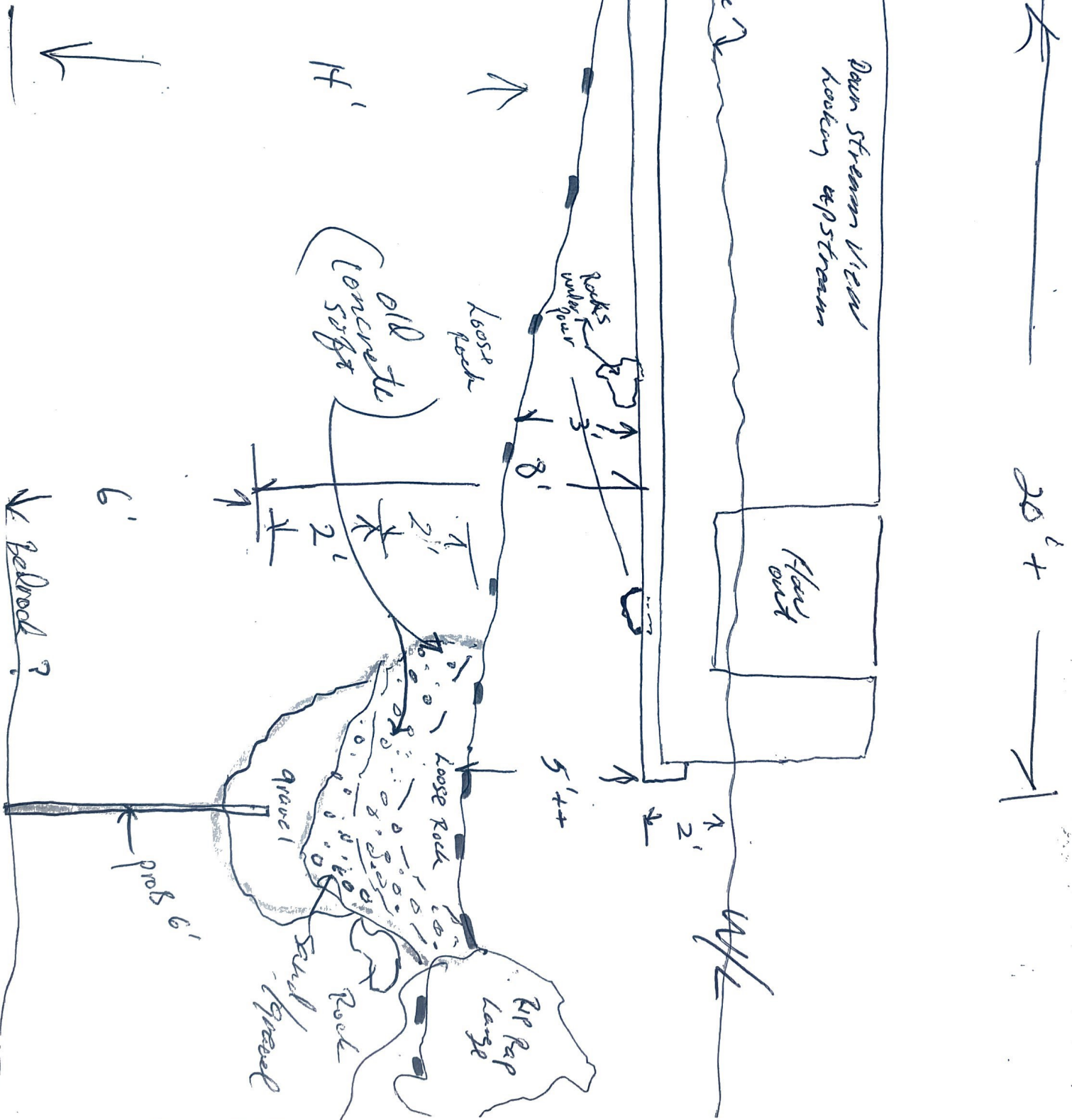
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of

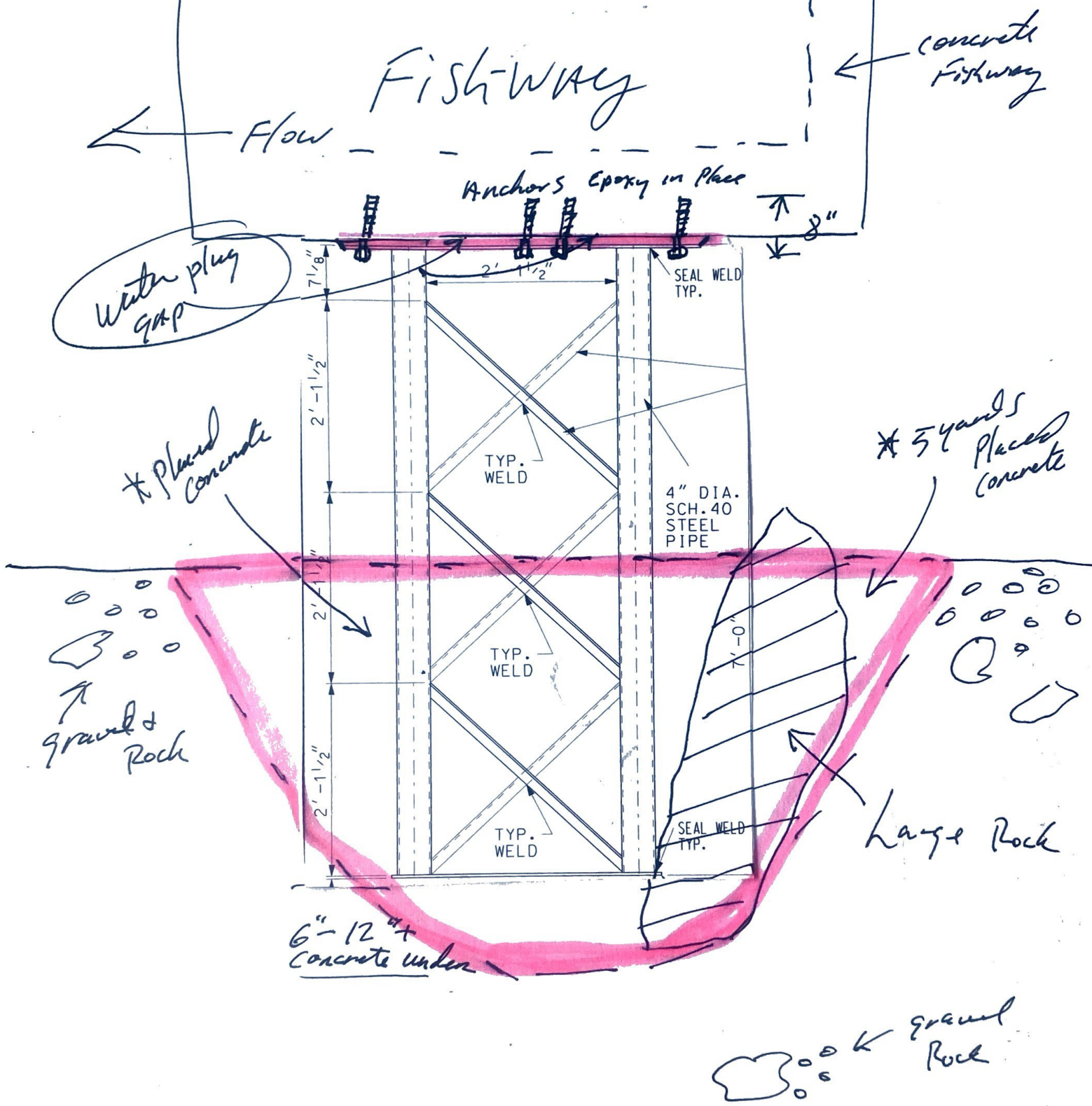
11

Date

8/20/13



Commercial Divers Inc. Consulting	Description Alamoosook Dam Repair Fishway Support	Page of Date 10/7/13
Written by J. Kuen		



Commercial Divers Inc.

Consulting

Written by J. Krause

Description

Silver Lake Dam
Bucksport, Me.

Page

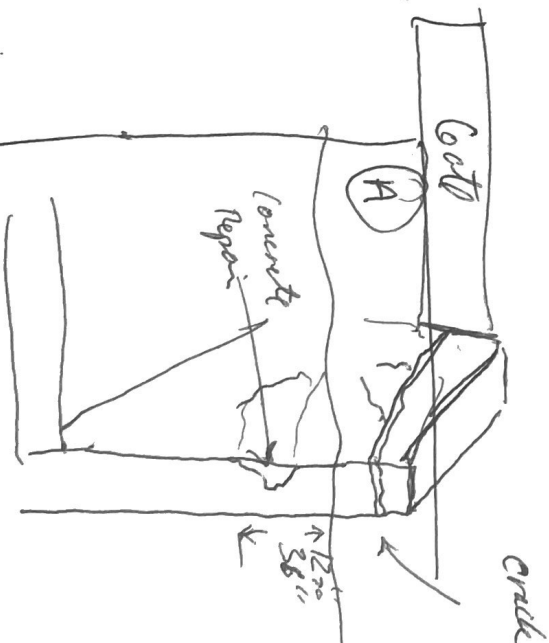
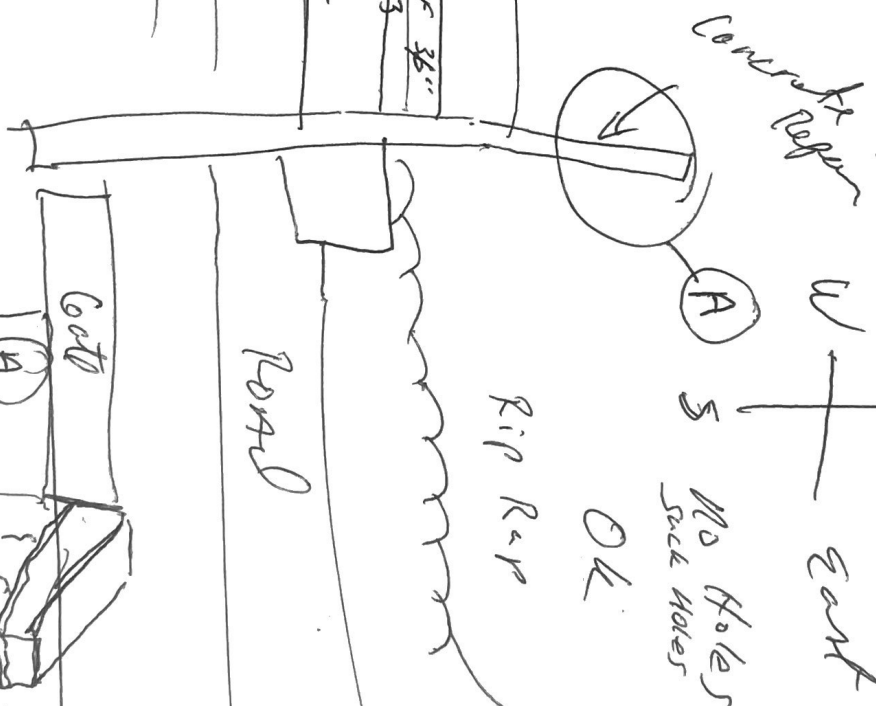
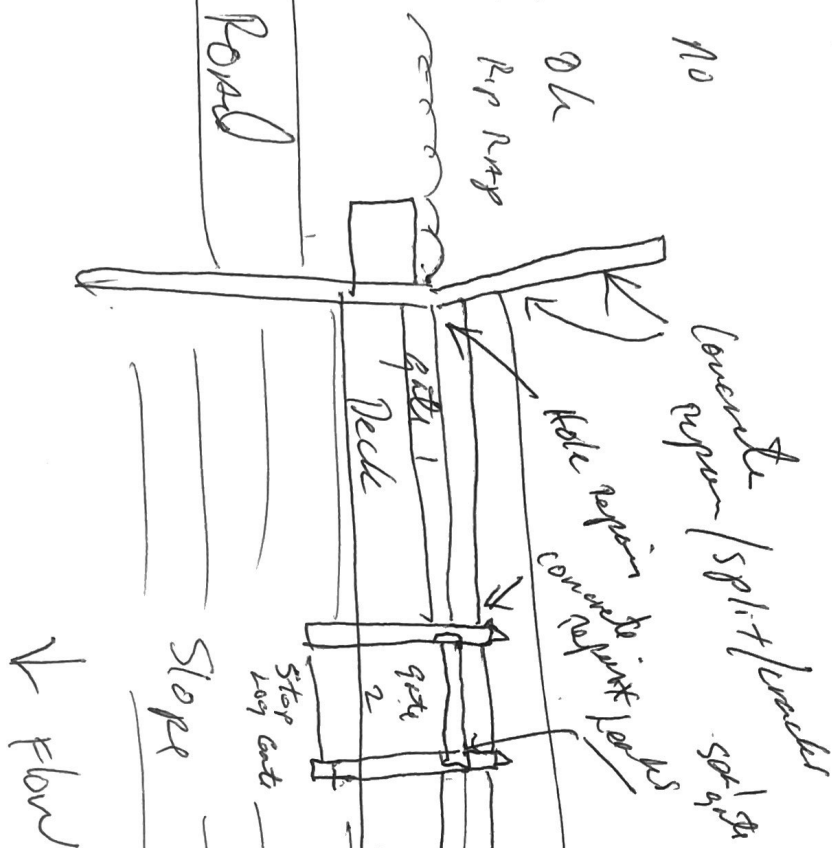
of

2

Date

8/11/14

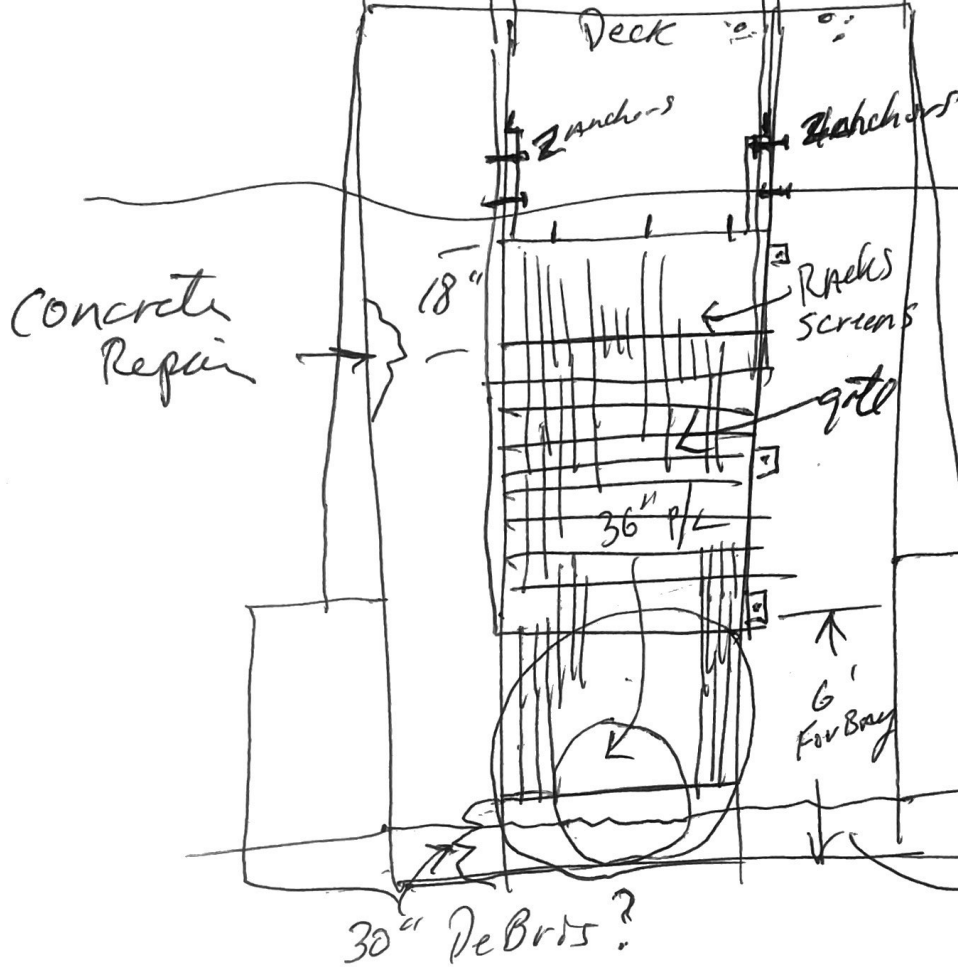
Silver Lake Dam



Silver Lake Intake

#5

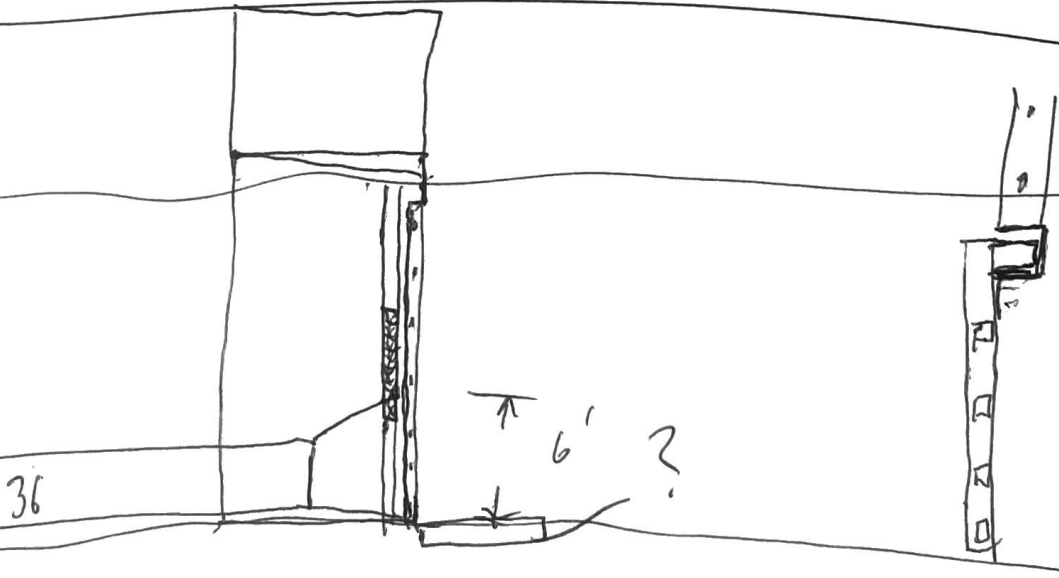
8-11-2014
Draw By S. Kacer



- ① clean Racks
- ② Repair Concrete
- ③ Anchor Bolts Racks
- ④ Clean Floor
Inside 30"
outside Racks
- ⑤ gate Dog in
- ⑥ Pad gate Broken

30+ "
Debris
Rocks

Side View



Commercial Divers Inc. Consulting Written by <i>J. Kaser</i>	Description <i>Inspector Toddy Dams</i> <i>Orland Maine</i>	Page <i>#4</i> of <i>1</i> <i>8/6/14</i> Date <i>8/7/14</i>
---	---	---

Side View

Block walls

Water Line

- To do*
- ① Plug Holes under gravel
 - ② Fill in yard area Holes
 - ANKLE Breaker
 - Sink Holes
 - GRASS



gravel/silt
Soil

Flow

Granite wall

Holes in soil or grass

Leak

Ledge or concrete

Ledge

Tail Race view Looking East

South

gate wench

granite walls

Gate Wood

Wood is soft

Holes in concrete walls

Leaks

Flow

Flow

Down Stream Side

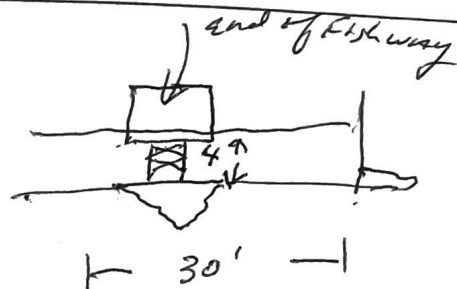
Commercial Divers Inc. <i>Consulting</i> Written by <i>J. Wacev</i>	Description <i>Dam survey Report</i> <i>Toddy / Alamoosoc / silver</i> <i>Silver Intake House</i>	Page <i># 1</i> of Date <i>8/11/14</i>
--	--	---

* *Toddy Dam To Do:*

- ① Gate Repair; Control gate wood is soft/rotted
- ② Gate Pier needs Repair in concrete walls
- ③ Upstream Gravity seams chase into gravel

* *Alamoosoc Dam To Do:*

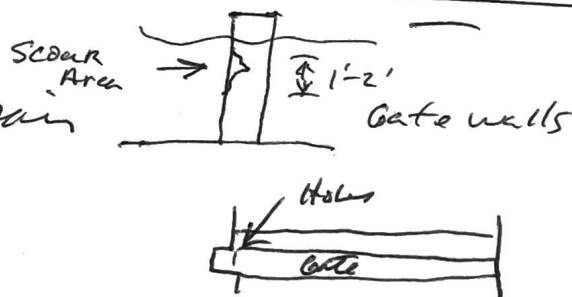
- ① Fishway Rip-Rap + Grout Bags
Cavity under screen Building Undermine



- ② cracks upstream Holes in concrete

* *Silver Lake Dam: To Do*

- ① Gate walls need concrete Repair
- ② Split in Pier of concrete
- ③ Holes in corner large gate



* *Silver Lake Intake To Do:*

- ① Clean Racks 3' + Debris Find Floor?, Racks Not Down
- ② Repair + Replace Gate + shaft/bears?, Pad gate Broken
- ③ clean out 6' opening + 36" P/L *Remove Debris sand/brush
- ④ Repair concrete on Intake

Commercial Divers Inc.

Consulting

Written by J. Kacev

Description

Alamoosoc Dam
Inspection

Page 1 of 1

3

Date 8/8/14

upstream View

Water hose

gate

screen
3 2 1

mill
with
screen

* 6"-8" Rebris / screen
Very
Dirty

Downstream View

To do

- ① Rip-Rap SCOUR Area
- ② Clean Screens Done
- ③ Clean Rebris from Floor 6"-8" Done

Work Completed 8/8/14

* Clean Floor 1-2-3
* Screen 1-2-3
* Cleaned

gate

25'

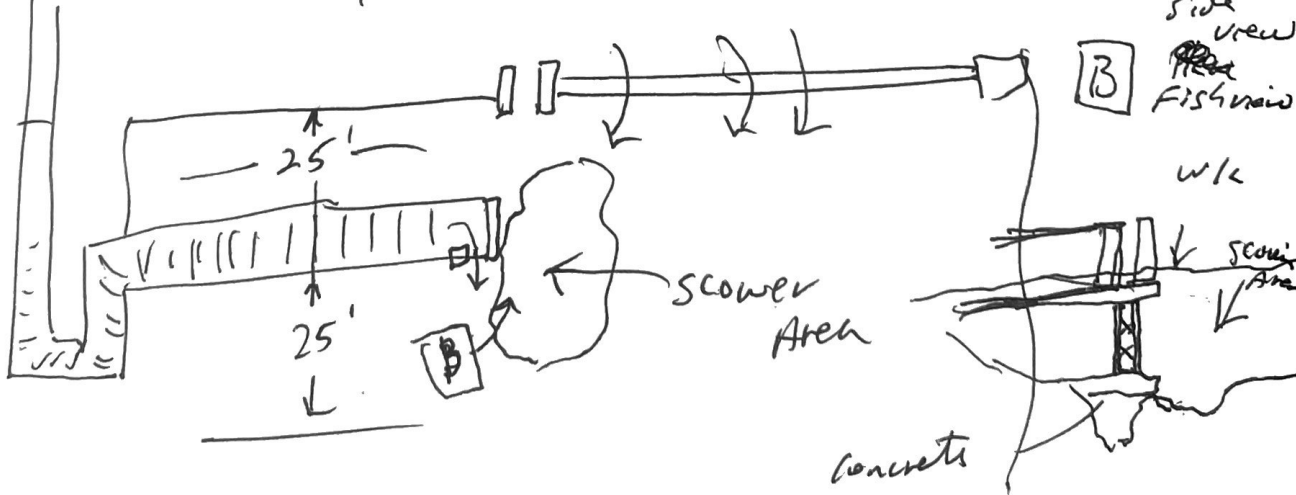
Fishway

4'

scoured Area

concrete
from
2013

Fishway Plan view



Commercial Divers, Inc.

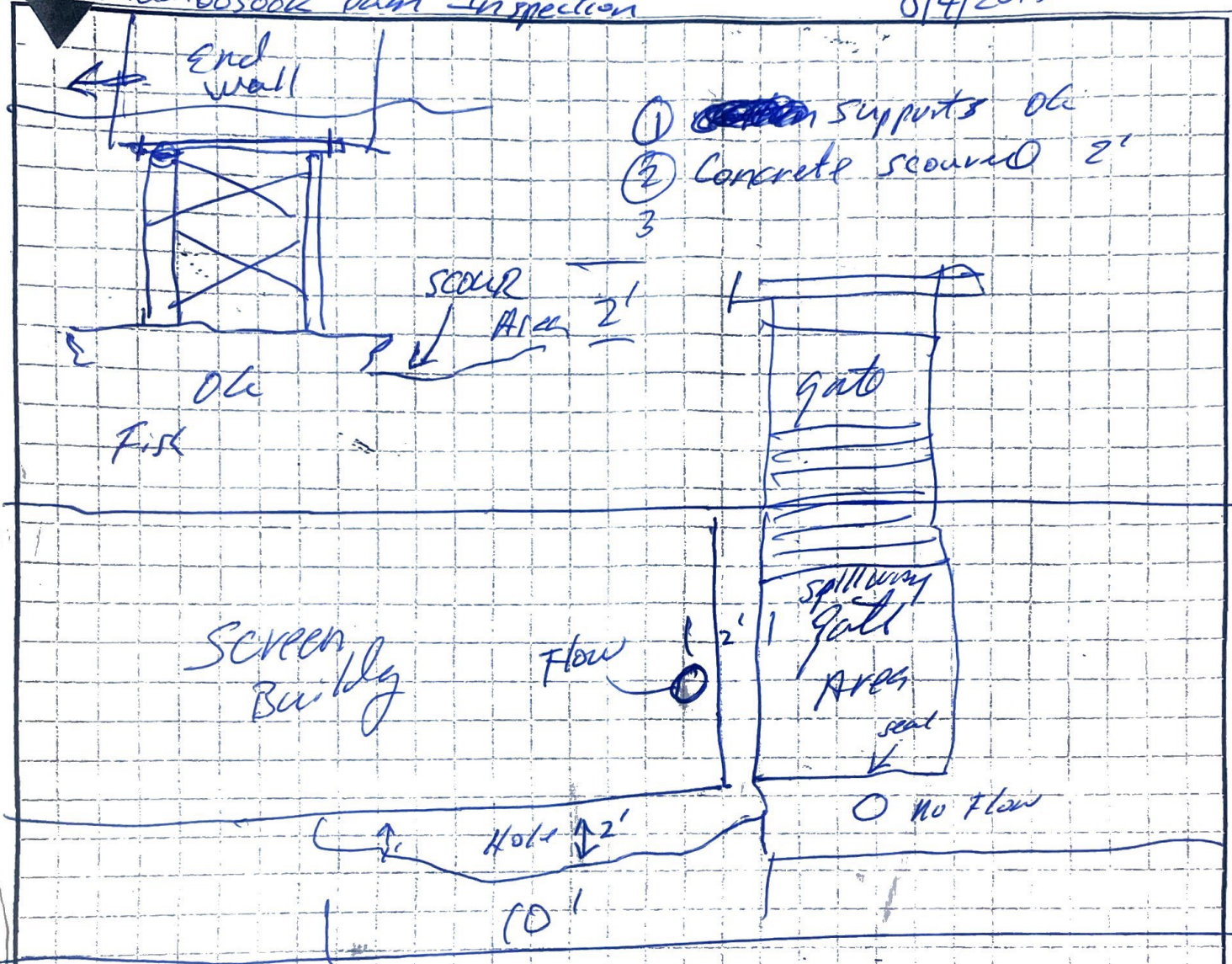
738 MOUNT HOPE AVENUE, BANGOR, ME 04401

PHONE 207-990-6644 • CELL 207-478-9675

0810

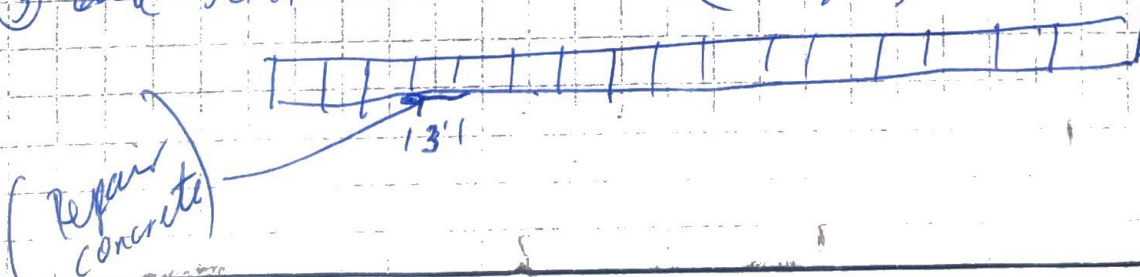
Alcornoosook Dam Inspection

8/4/2015



Up stream Dam

- ① screens bad need clearing
- ② Floor has 2"-3" debris
- ③ Gate seal leaks a little (Flow gate)



Commercial Divers Inc. Bangor, Maine

8/7/2015

List of thing to do, at the AIM dams and intakes.

Toddy Dam- 2 days to repair concrete and cracks underwater and on the surface. We would bring a mason to tend us and do the surface work. We would do as much repairs as time allows. We would need blue star mortar and epoxy.

Alamoosook Dam- 1 day for cracks underwater and 1-2 days downstream rip-raping or grout bags under the fish way and screen house foundation.

Silver Lake Dam- 2-3 days with mason to repair underwater and surface concrete repairs.

Silver Lake Intake- 1-2 days to inspect, do repairs and cleaning of screens of the intake structure. The deck also needs new wood and the gate need to be checked to see what is holding it from falling closed? The pipe is 1/3 full of debris and need to be cleaned out. This was found 2 years ago during the inspections. There is no signage: No Swimming?
*** This is a estimate of the minimum work needed at this time.

Commercial Divers Inc. 738 Mount Hope Ave. Bangor, Maine

Alamoosook Underwater Dam Survey 8/4/2015 Report By: Joe Kacer J

Downstream Survey: The diver with video camera entered the water at the east side rip-rap and checked the new fish way X support column and found no damage to the fish way and footing to the steel X column. There was some riprap missing for the outside edge of the concrete base pier of the X column near the center of the stream. The depth of the missing riprap was 1'-2' and the width was around 4'. The diver proceeded to the back side of the dam, east side to start the tailrace survey. The screen house footing is scoured gravel under the footing and has not change much for last year, the area of scour is 10' wide and 6"-2' in height and 6'-8' in depth under the building. There was no flow noticed anywhere on the tailrace side of the dam that was flowing under or thru cracks /ledge. The only flow was from a re-leaf pipe in the screen building floor area. We think it was drains from construction or a pressure releaf. The gate was in fair condition and the floor was also in good condition with very little broken concrete anywhere. The diver moved to the splashboard area and found no damage or area of concern.

Upstream Survey: The diver with video entered the water on the east side and inspected the concrete face wall of the dam, then the fish way and found very little change from last year. Epoxy and concrete repairs from last years work were in good condition and any new creaks were minimal. We inspected and cleaned the 3 intake screen, after finding them plugged. We also cleaned the screen building floor and inspected the walls and found no damage to the concrete. The diver checked the flood gate and found no damage to the walls of the floor. The diver moved to the splash board area. He inspected and repairs a small hole that the operator had asked to be repaired. It is now leak free and repaired with Slash Zone underwater Epoxy. The divers checked the west side concrete wall and found no leaks or any new cracks that have formed over the last year.

Toddy Dam Underwater Dam Survey:

Downstream Area: This area has no underwater areas for diving and can be viewed from the bridge/tailrace for inspection. We did dry up the downstream gate area with plastic on the gate to check the wooden gate from the backside. We probed it with a screwdriver and found the wood to be hard and in fair condition. There is some broken concrete on the gate pier walls from the freeze thaw effect over the years. We also found some leaks around the gate seals that were repaired with epoxy after the upstream inspection was completed. We found no **new** sink holes in the grass or road from leaks threw the granite walls of the dam, after repairs from last year.

Upstream Area: The diver with video entered the water on the east side of the dam and inspected the concrete wall cap for cracks and found few new cracks on the cap. The fish way opening racks were in good conditions and were found clean of debris. The wood was in good shape at the fish way opening. The cracks that were repaired last year with epoxy or water plug were still intact. The diver moved west and sealed the bottom of the flood control gate with plastic so repairs with epoxy could be done safely on the gate seals around the gate. The upstream piers were checked and the floor at the gate was cleaned to view the area. We found some small cracks around the piers and granite wall that we cleaned with pressure washer to inspect better and repair at a later date. These cracks were just seeping with a very low flow. This dam is built with granite block and we have been re-jointing the seams for a few year. This has been a yearly maintenance schedule and has helped tremendously with leaks. We have been using the Splash zone underwater epoxy on the joints with great success. The diver found no suck holes in the sand this year or in the gravel 30 feet upstream of the dam floor. The diver found some new water intake lines for camps or homes in the area but did not disturb them. They were 30'-40' upstream of the dam on the east bank of gravel.

Commercial Divers Inc. 738 Mount Hope Ave. Bangor, Maine

Alamoosook Underwater Dam Survey 8/4/2015

Downstream Survey: The diver with video camera entered the water at the east side rip-rap and checked the new fish way X support column and found no damage to the fish way and footing to the steel X column. There was some riprap missing for the outside edge of the concrete base pier of the X column near the center of the stream. The depth of the missing riprap was 1'-2' and the width was around 4'. The diver proceeded to the back side of the dam, east side to start the tailrace survey. The screen house footing is scoured gravel under the footing and has not change much for last year, the area of scour is 10'wide and 6"-2' in height and 6'-8' in depth under the building. There was no flow noticed anywhere on the tailrace side of the dam that was flowing under or thru cracks /ledge. The only flow was from a re-leaf pipe in the screen building floor area. We think it was drains from construction or a pressure releaf. The gate was in fair condition and the floor was also in good condition with very little broken concrete anywhere. The diver moved to the splashboard area and found no damage or area of concern.

Upstream Survey: The diver with video entered the water on the east side and inspected the concrete face wall of the dam, then the fish way and found very little change from last year. Epoxy and concrete repairs from last years work were in good condition and any new creaks were minimal. We inspected and cleaned the 3 intake screen, after finding them plugged. We also cleaned the screen building floor and inspected the walls and found no damage to the concrete. The diver checked the flood gate and found no damage to the walls of the floor. The diver moved to the splash board area. He inspected and repairs a small hole that the operator had asked to be repaired. It is now leak free and repaired with Slash Zone underwater Epoxy. The divers checked the west side concrete wall and found no leaks or any new cracks that have formed over the last year.

Commercial Divers Inc. Bangor, Maine 8/7/2015 Report By: J Kacer

Silver Lake Dam Inspection: The diver with video inspected the fore bay of the dam looking for suck holes and found none. The inspection area upstream of the dam was approximately 70 feet. The rip-rap was found in good condition on the face of the dam and gravel road. The road on the top was also in good condition with no hole or sink holes. The diver inspected the concrete wing walls and found small cracks on both sides of the walls. The repairs from last year had some cracks in the epoxy, but the epoxy was still attached to the crack and wall. The wing walls are for holding the rip-rap from coming into the fore bay area of the gate and steel splash boards. The diver found some concrete damage in corners of the splash boards and repaired some of the holes after the inspection with Splash zone underwater epoxy. The flood gate was leaking approximately 300gals a min. and was reduced to 50-100 gals after the inspection with chinking material. The frieze thaw line had a lot of missing concrete and needs some new surface concrete. 1-3 inches have fallen off the face of the wing walls. The dive inspected the concrete area around and under the flood gate and steel splashboards. The diver found some pits in the concrete and some small cracks over the vertical wall area that is around 60 feet wide and 8 feet high. The diver sealed the wooden flood gate with poly film and finishes the day repairing cracks and small holes with epoxy. The lake level look like it was down 2 feet.

Commercial Divers Inc. Bangor, Maine

8/7/2015

List of thing to do, at the AIM dams and intakes.

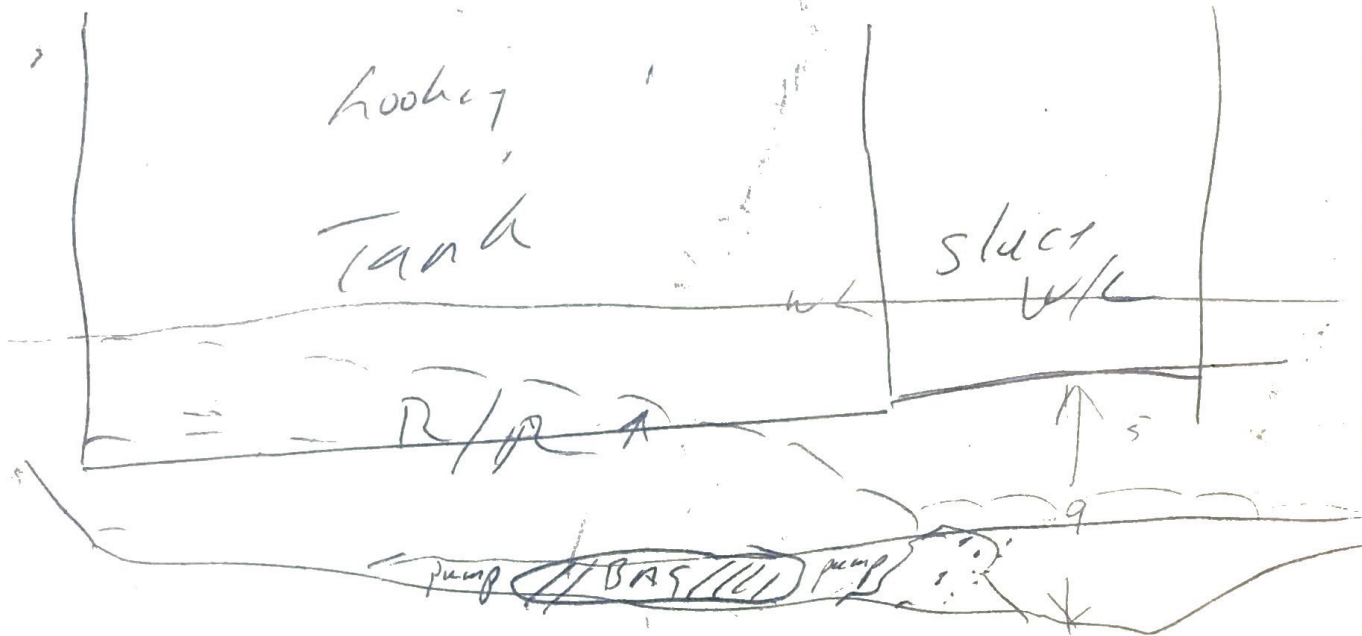
Toddy Dam- 2 days to repair concrete and cracks underwater and on the surface. We would bring a mason to tend us and do the surface work. We would do as much repairs as time allows. We would need blue star mortar and epoxy.

~~**Alameosook Dam-**~~ 1 day for cracks underwater and 1-2 days downstream rip-raping or grout bags under the fish way and screen house foundation.

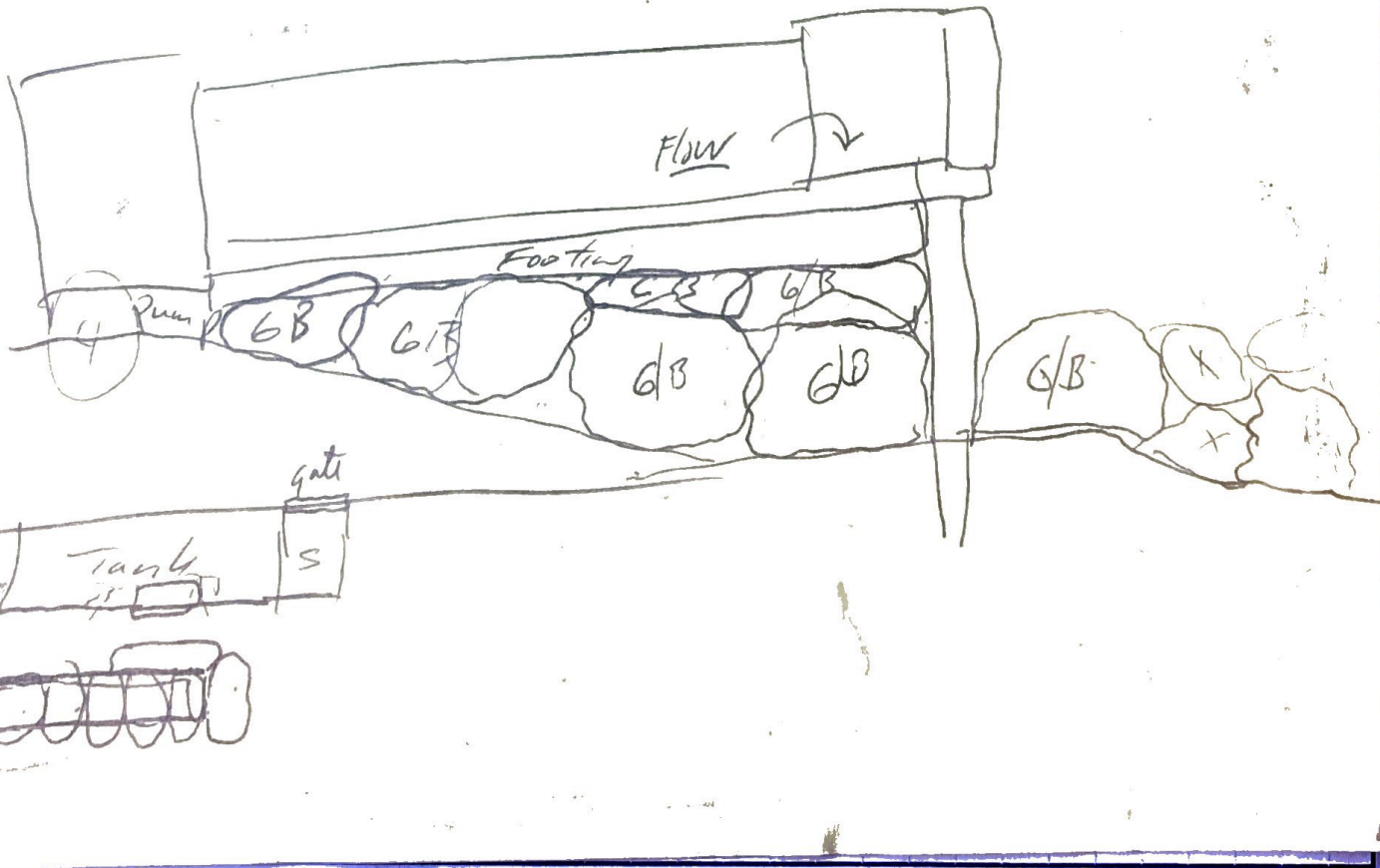
Silver Lake Dam- 2-3 days with mason to repair underwater and surface concrete repairs.

Silver Lake Intake- 1-2 days to inspect, do repairs and cleaning of screens of the intake structure. The deck also needs new wood and the gate need to be checked to see what is holding it from falling closed? The pipe is 1/3 full of debris and need to be cleaned out. This was found 2 years ago during the inspections. There is no signage: No Swimming?
*** This is a estimate of the minimum work needed at this time.

Commercial Divers Inc. <i>Consulting</i>	Description Alamoosoc Dam Rip/Rap Repair Grout Bags	Page of
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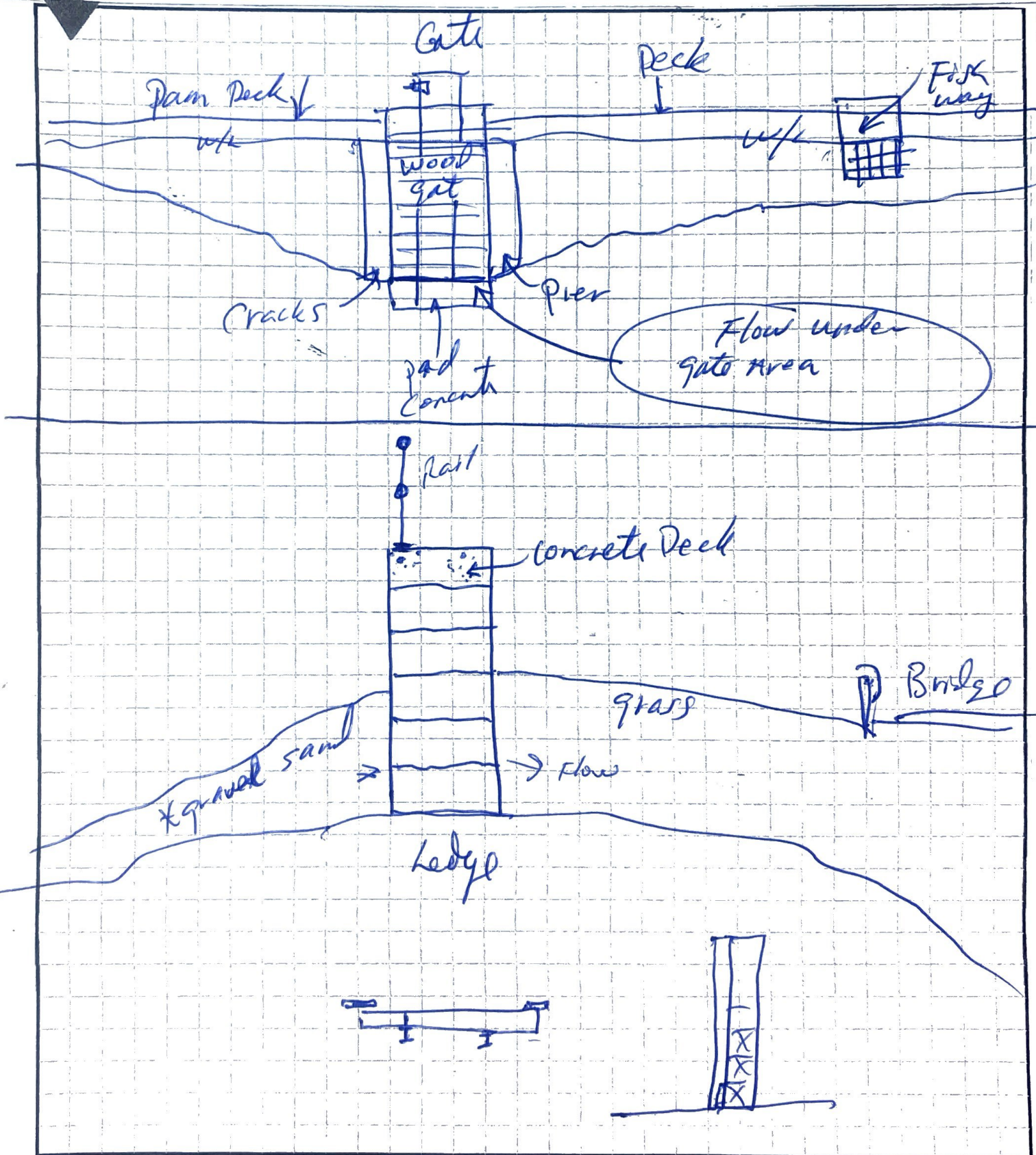
Looking up stream



Commercial Divers, Inc. 8/5/2015

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Toddy Pond Dam



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Consulting

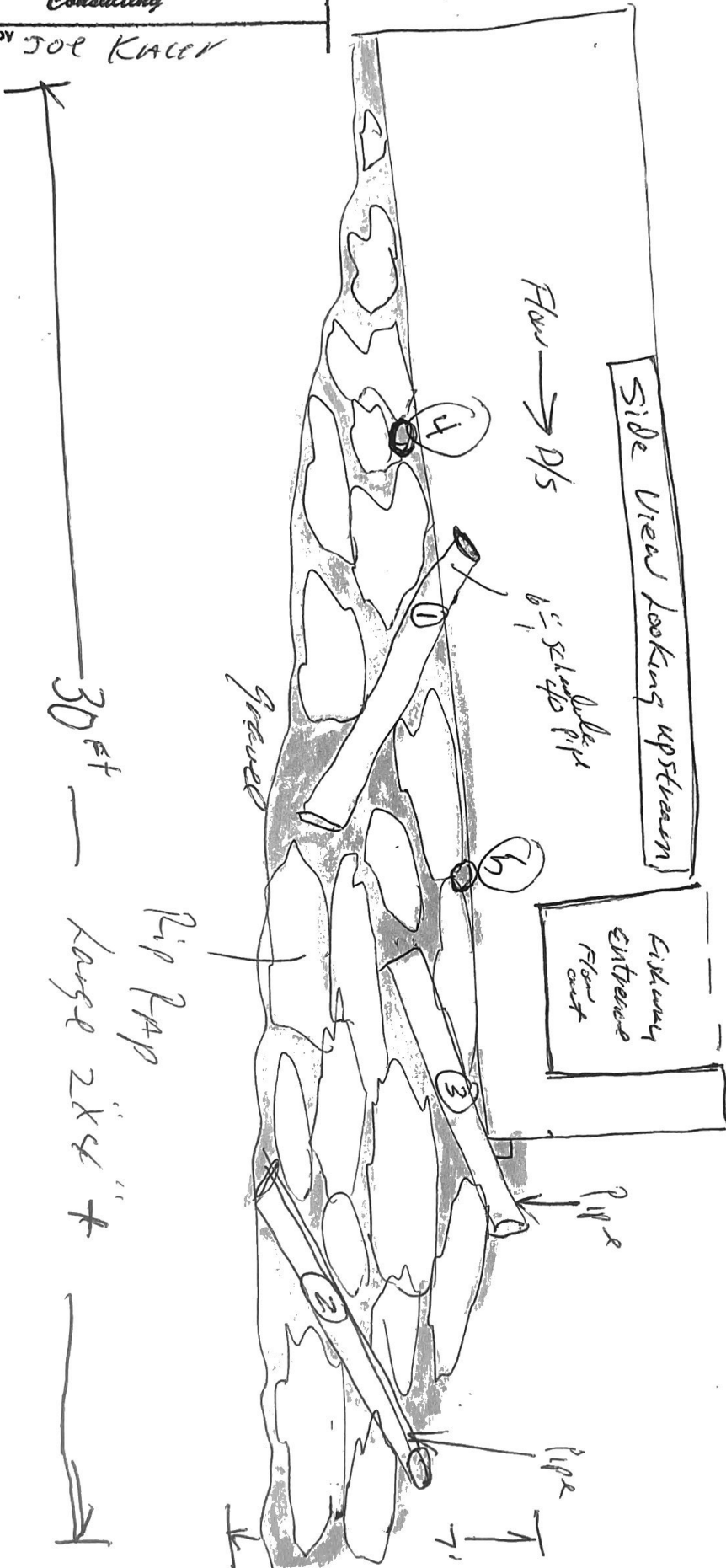
Written by Joe Kacer

Description

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Date 8/20/13



Gravel Pit

Long concrete in 6" pipe

