Keith Kent Craig Wayne WPB 2/1/05

STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

DATE: January 25, 2005

FROM: Grace E. Levergood, P.E. **AT(OFFICE):** Water Division
Dam Safety Engineer gel Dam Bureau

SUBJECT: **Taylor River Pond Dam and Taylor River Pond Dike, Hampton Falls Dam #106.08 (Haz. Class A to B) and Dike #106.09 (Haz. Class AA)**

TO: Harvey Goodwin
NH Dept. of Transportation
Bureau of Turnpikes

Do they have authority to change dam class without public notice?

On July 2, 2004, the State of New Hampshire Department of Environmental Services (DES) conducted a scheduled inspection of the aforementioned dam and dike. Under the provisions of RSA Chapter 482, Sections 8 through 15, DES is authorized to inspect all dams in the State, which by reason of their physical condition, height and location may be a menace to the public safety.

The following is the result of our file reviews and site inspection:

DAM #106.08:

1. The sheet pile spillway was badly deteriorated with a 12" diameter hole in the downstream face adjacent to the right abutment;
2. The downstream left concrete wall of the fishway that abuts the right spillway training wall was badly deteriorated with exposed rebar and leakage;
3. Cracking was evident along the left wall of the fishway;
4. The stoplog bay sill which forms the crest of the spillway was deteriorated;
5. There was settlement of the left abutment adjacent to the sheet pile training wall;
6. There is no operation and maintenance plan (O&M) on file with the DES; and
7. An Emergency Action Plan (EAP) is now required due to the reclassification of this structure.

RECEIVED JAN 28 2005 BUREAU OF TURNPIKES

DES is recommending the following:

1. Make repairs to the steel sheet piling in the following locations:
   a. The spillway face
   b. The crest of the sheet pile spillway
   c. The left abutment wall which are badly deteriorated;
2. Make concrete repairs to the fishway in the following locations:
   a. The downstream left concrete wall of the fishway that abuts the right spillway training wall, is badly deteriorated with exposed rebar and leakage;
   b. The left wall of the fishway that is badly cracked;
3. Bring the left earthen embankment level with the left abutment wall where there is settlement;

WHY IS THERE SETTLEMENT?

4. Complete and submit to DES an O&M plan. Refer to the enclosed guidelines; and

5. Submit a draft EAP. Contact Ms. Bethann McCarthy for assistance with completing this document.

The dam was automatically classified as a low hazard, Class A dam due to its structural height being greater than 6 feet and the maximum storage behind the dam being greater than 50 acre-feet. However, upon examining the structure, the road embankment of Interstate 95 forms the dam. A failure of the primary spillway may cause minor damage to I-95. For this reason and according to Env-Wr 101.05 (d), the dam should be classified as a significant hazard, class B dam.

DES also recommends that Dam #106.09 be combined with #106.08 as one dam number due to the juxtaposition of the dams and our general policy to make immediately adjacent structures one.

culvert limits inlvert

Dike #106.09:

1. There was brush along the upstream face of the dam in the vicinity of the road culvert; and

2. There is no operation and maintenance plan (O&M) on file with the DES.

DES is recommending the following:

1. Remove the brush from the upstream face of the dam in the vicinity of the road culvert; and

2. Complete and submit to DES an O&M plan. Refer to the enclosed guidelines.

what does this involve?

In lieu of repairs to both the dam and dike, removal of the dam should be considered. A meeting was held on January 4, 2005 at NH Department of Transportation (DOT) in Concord to discuss proposed culvert replacement at the emergency spillway and fisheries issues. (See attached memo)

We strongly recommend that any dam repair activities, either to address the items noted above or otherwise, be coordinated with the Dam Safety Section of DES's Dam Bureau. Additionally, should any of these items result in a change in the structural configuration, height, length, or discharge capacity of the dam, a reconstruction permit will be required from the Dam Bureau. Likewise, should completion of any of these items fall under the jurisdiction of the Wetlands Bureau, an application to dredge or fill in the waters of the State may be necessary. If you have any questions relative to the aforementioned findings, please do not hesitate to inquire. Thank you.

Attachments: Sketch Illustrating Deficiencies, Guideline for an O&M plan, memo
cc: Mark Kirorac, NHF&G
Jim Gallagher, P.E., Chief Water Resources Engineer
Jimmy Leung, P.E., Maintenance Section
Bethann McCarthy, P.E., EAP Coordinator
John Nelson, Chief of Marine Fisheries, NHF&G
GEL/was/h:/safety/wendy/memo/10608&09mem2005.doc

STATE OF NEW HAMPSHIRE

INTER-DEPARTMENT COMMUNICATION

FROM: Grace Levergood, P.E.
Dam Safety Engineer
Dam Bureau

DATE: January 12, 2005
AT: Environmental Services
Water Division

SUBJECT: Taylor River Pond Dam, Hampton Falls, NH
Dam #106.08

ATTENDEES: Kevin Nylan, Wayne Brooks, Bill Hauser – DOT
Cheri Patterson, NHFG
Grace Levergood, Ted Diers, Jen Droziak - DES

A meeting was held on January 4, 2005 at NH Department of Transportation (DOT) in Concord to discuss proposed culvert replacement at the Taylor River Pond Dam emergency spillway and fisheries issues. Plans are underway at DOT to line the badly corroded CMP pipe arch culvert that goes under I-95 from the emergency spillway by September 2005. The culvert was inspected by a DOT consultant and found to be in very poor shape. Although not inspected at the same time, the bridge under I-95 at the main spillway is also suspected to be in need of repairs due to its sheet pile make-up. Suggestions were made to forego the repair work on the CMP pipe arch culvert and use the money towards another project. A proposed feasibility study would look at the option of replacing the main spillway with a natural fishway and possibly eliminating the need for the emergency spillway and pipe arch culvert.

NHFG commented that the fish ladder does not function as intended. Also fish are trying to move up the pipe arch culvert with ends at the emergency spillway and has no fish passage instead of moving further upstream to the fish ladder at the main spillway. See the attached NHFG report that discusses the drastic decline in fish passed by the ladder as well as the degraded water quality in the pond upstream of the dam.

Next steps will include:

- Ted Diers of the DES Coastal Program will have Milone & MacBroom and Dick Quinn of USFWS will examine the site and give their expert advice on fish passage.
- DES Dam Bureau will issue their dam safety inspection report to DOT.
- DES and NHFG will develop a dam removal/fish passage concept to DOT.

Taylor River Dam and Fish Ladder

Diadromous fish were denied access to freshwater portions of New Hampshire's coastal rivers to complete their life cycle with the construction of dams in the nineteenth century. The construction of six fishways on five coastal rivers in the late 1960's and early 1970's (Exeter, Lamprey, Oyster, Cocheco and Taylor Rivers) provided anadromous fish access to many acres of freshwater spawning and nursery habitat. Deterioration of these structures due to normal aging make it necessary to assess their effectiveness in passing fish and the reason for impounding water.

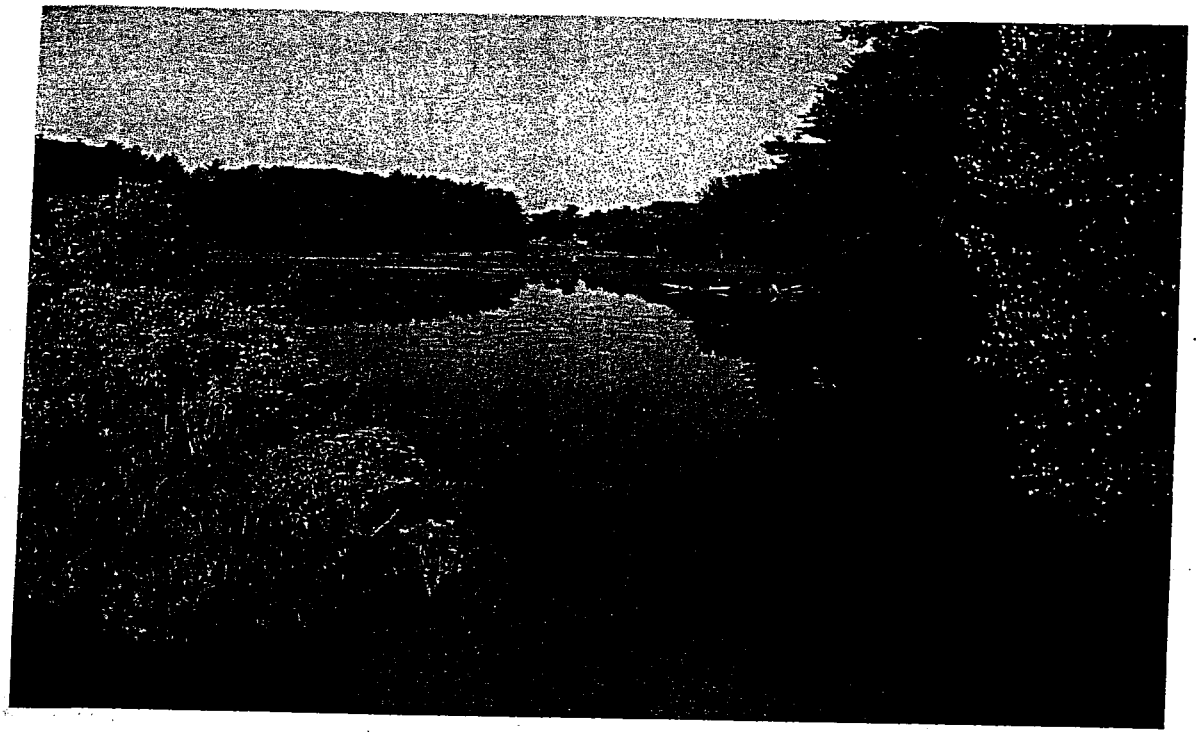
The majority of anadromous fish using the fishways in the spring are alewife and blueback herring (river herring). Adult and juvenile river herring are a very important forage fish for inland, estuarine, and coastal species. For example, juvenile river herring provide a forage base within inland rivers and lakes for such freshwater species as bass and pickerel. In addition, juveniles and adults migrating between the ocean and natal rivers are preyed upon by many sportfish (striped bass, bluefish, etc.) within the Great Bay and Hampton/Seabrook Estuaries. Also, fishermen net adult river herring during the spring spawning run to be used as bait for sport fishing or lobster.

The Taylor River in Hampton/Hampton Falls, New Hampshire has 45 acres of available spawning and nursery habitat between the head of tide dam and next upstream dam. This river system has experienced the most dramatic decline in river herring spawning runs than any other coastal river. The Taylor River had the highest recorded river herring runs (1976 passed 450,000 river herring) in coastal New Hampshire rivers but now is one of the lowest runs (2003 passed 1,300 river herring). This impoundment also has indications of potential water quality concerns as noted in the following pictures with the large growth of algae and weeds during the summer months.

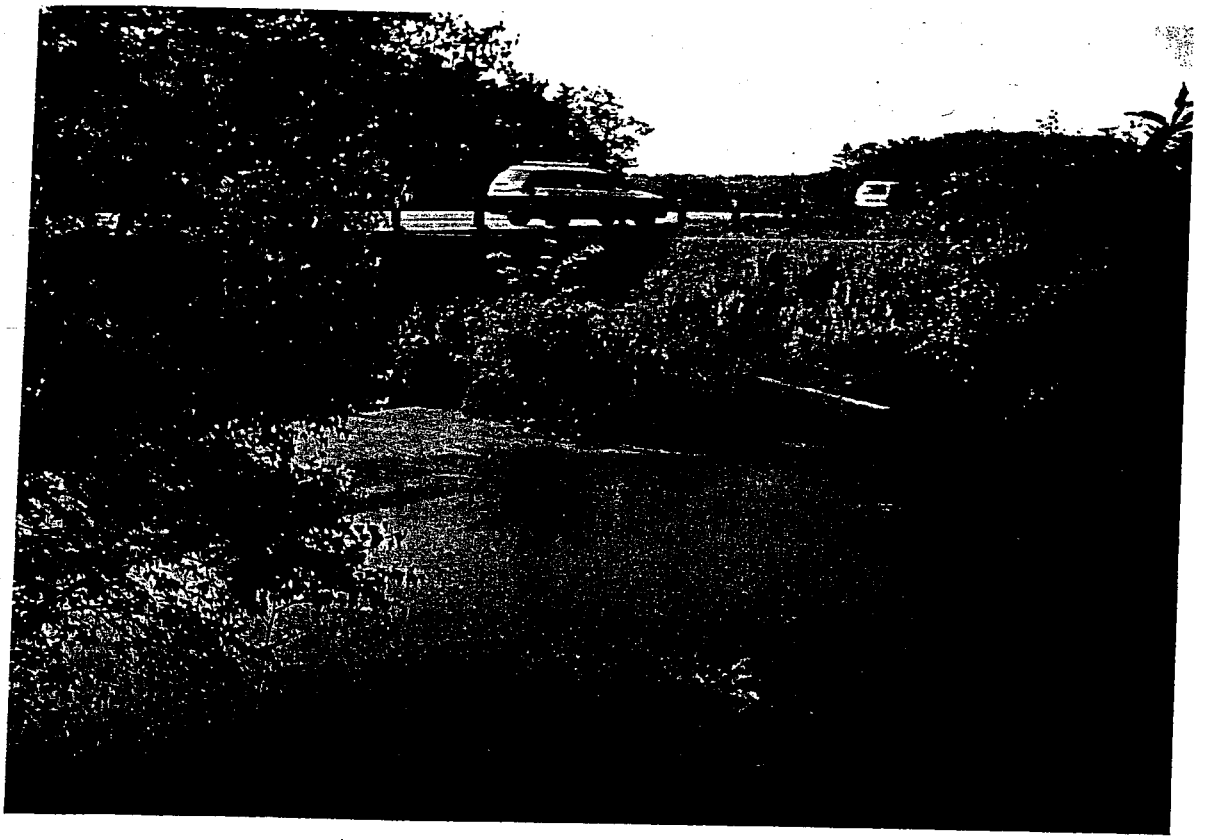
Currently, portions of the cement walls in the Taylor River fish ladder contain substantial holes that allow water to escape thereby reducing its efficiency in attracting and passing a variety of diadromous fish. The Department of Transportation (DOT) owned concrete and steel dam adjacent to I95 also is in severe disrepair that is affecting the integrity of this class A dam. A Department of Environmental Services (DES) dam inspection has been initiated and the final report will be given to DOT in late 2004. At this point New Hampshire Fish and Game, DES and DOT hope to confer on the next logical steps to be taken to remedy this situation of deteriorated structures, water quality and viable habitat for diadromous species utilizing this river system. This may be in the form of repairing the structures or dam removal.

Since the remedial process is still in the early stages between all agencies involved there is no definitive agreement on how to proceed with a grant award towards this project. This should be better defined by spring of 2005.

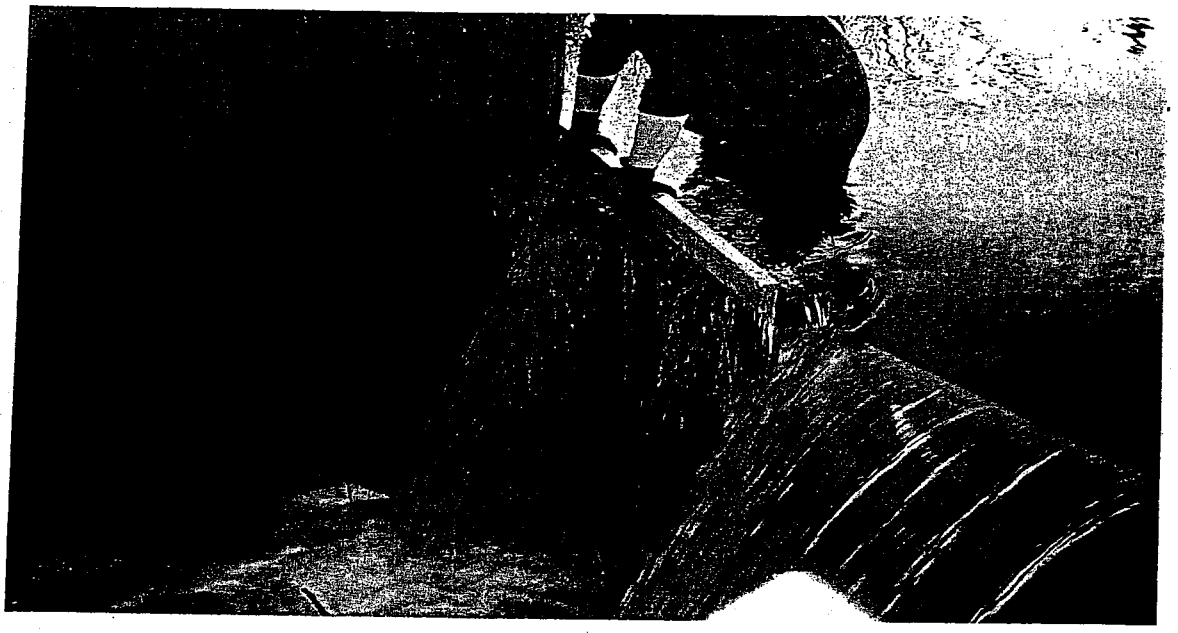
Picture 1. Taylor River impoundment – upstream of dam (west side of I95) – August 2004



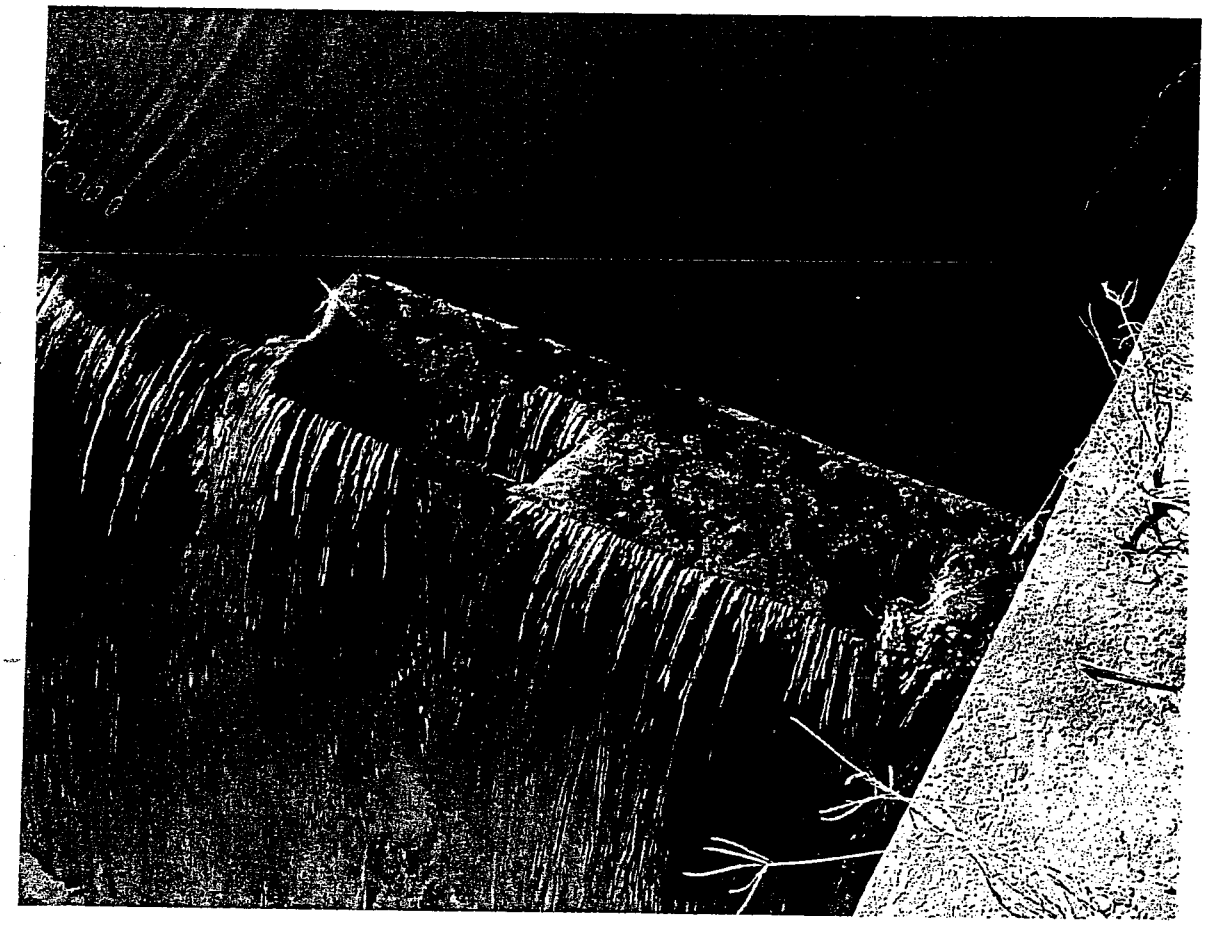
Picture 2. Taylor River fish ladder exit – West side of I95 – August 2004



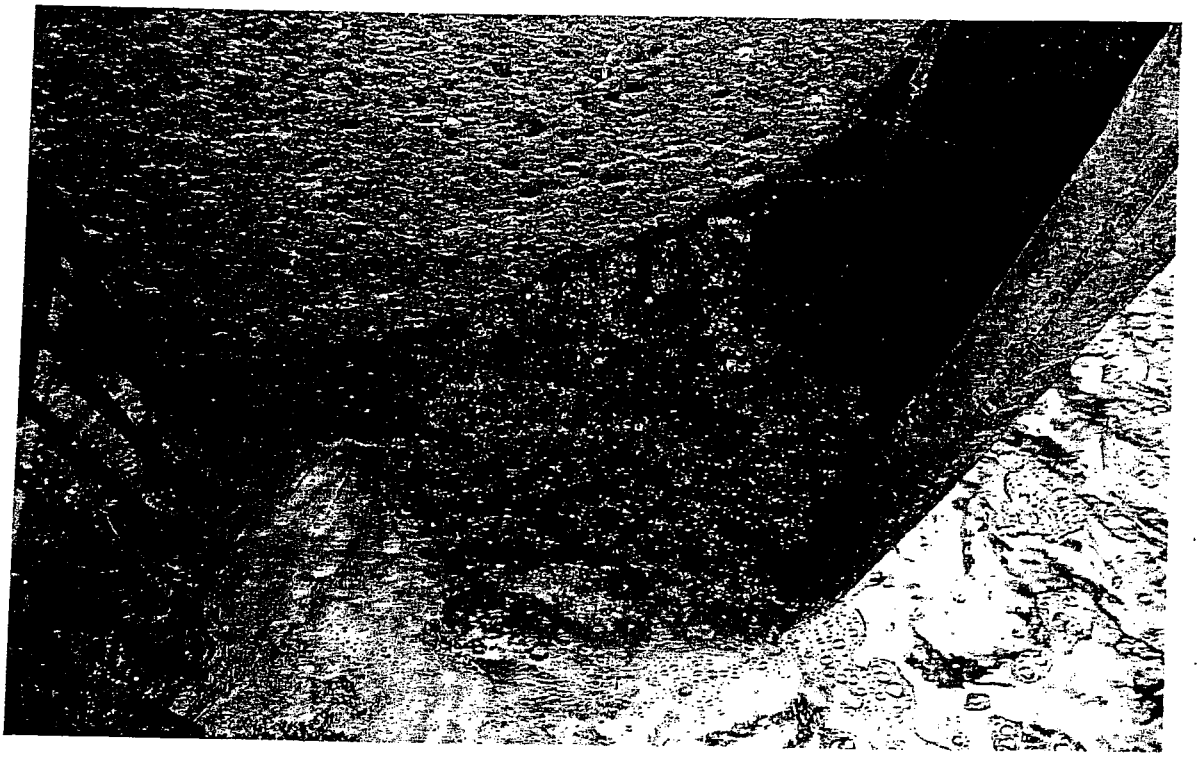
Picture 3. Taylor River dam – water flowing through hole in dam alongside fish ladder entrance – November 2004.



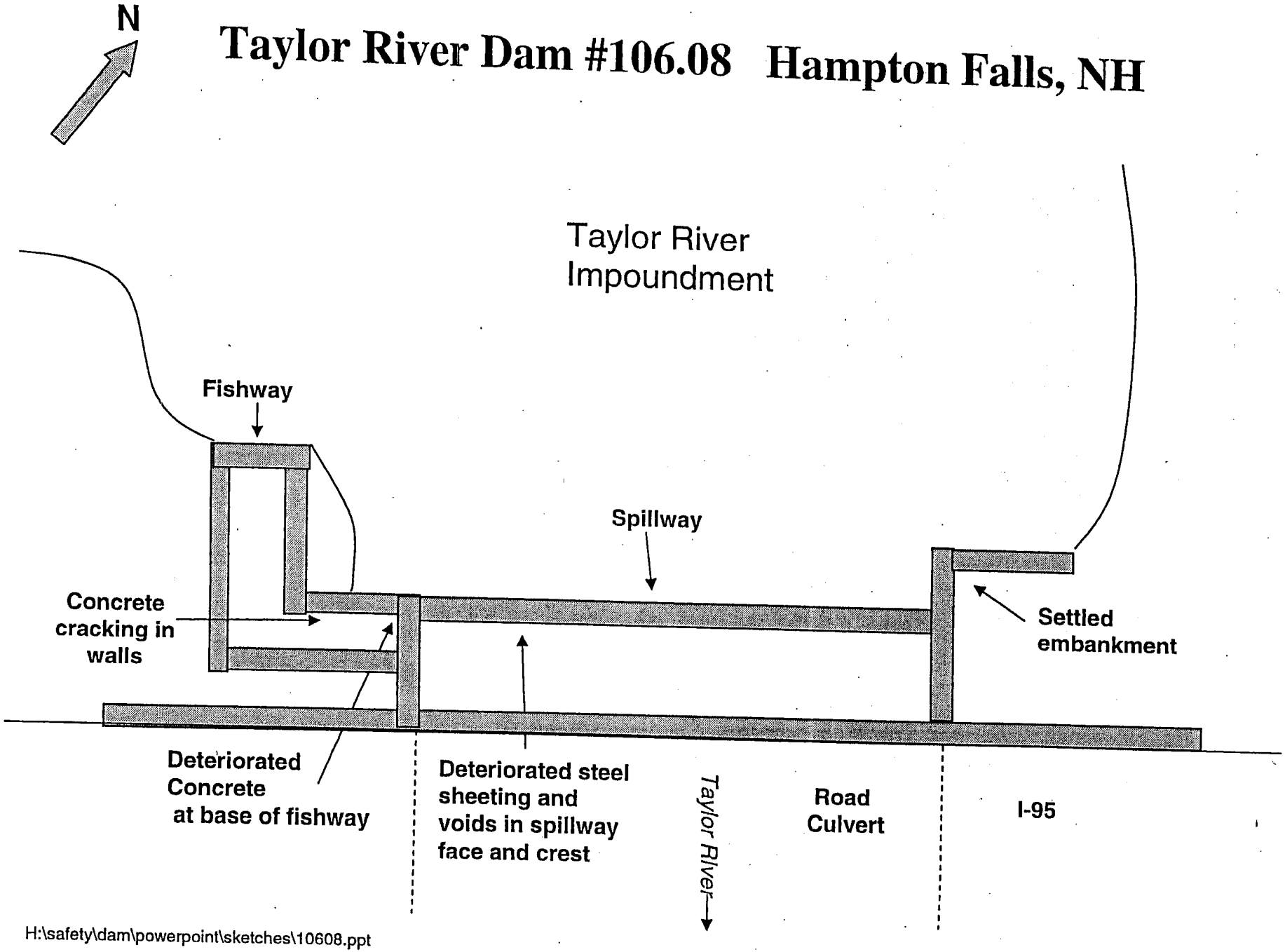
Picture 4. Taylor River dam – two holes on top lip of dam on opposite side of fish ladder entrance – November 2004.



Picture 5. Taylor River fish ladder – deterioration at entrance of fish ladder – August 2004.



Taylor River Dam #106.08 Hampton Falls, NH



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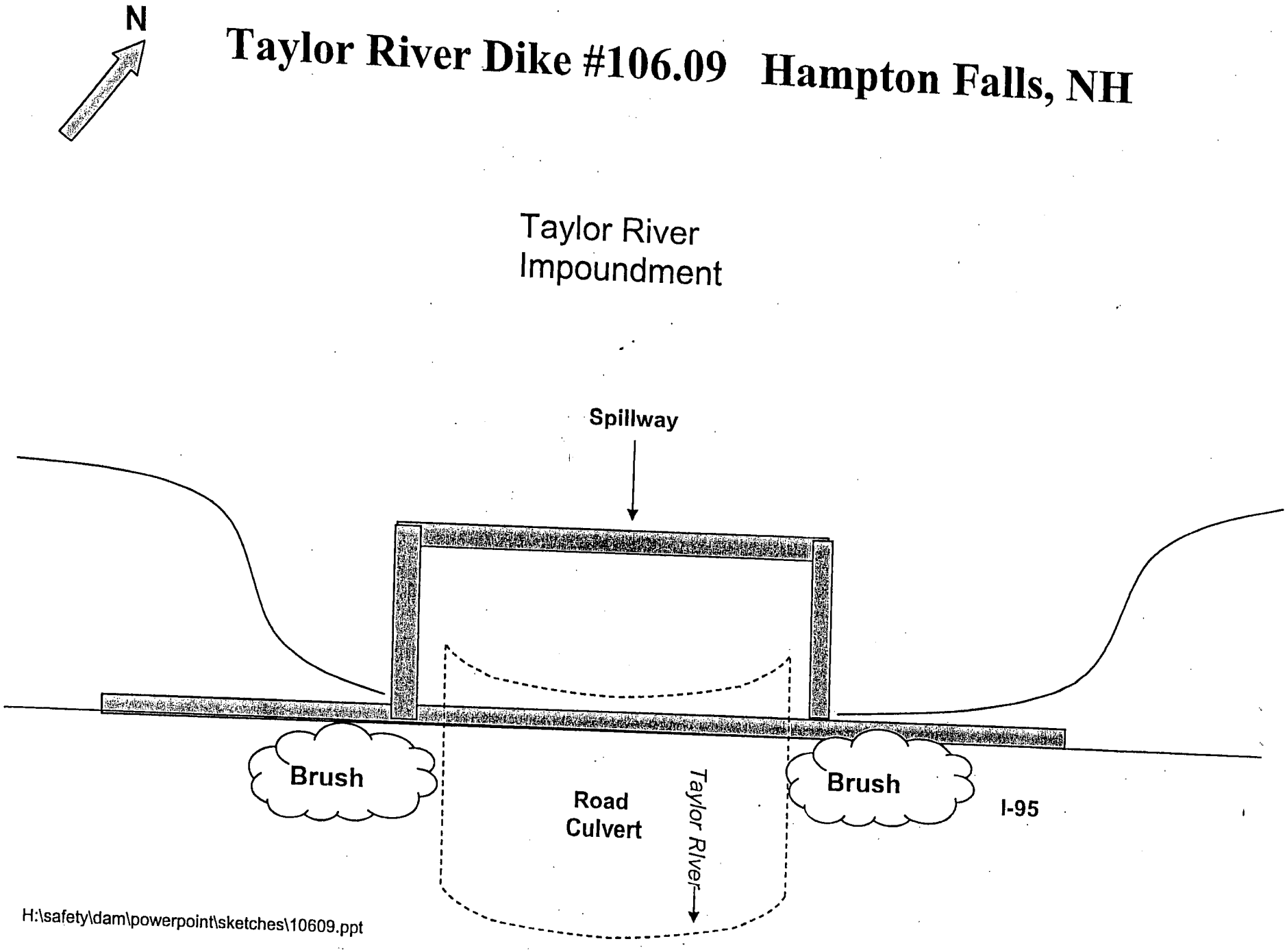
Taylor River Dike #106.09 Hampton Falls, NH



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MOUNTAIN POND DAM O&M
Conway, NH
Dam# 052.38

Seasonal Operation

During the summer season the pond level is maintained at the top of the concrete spillway with no specific operations made. After Columbus Day three (3) stoplogs are removed and the pond is lowered approximately two (2) feet to provide for spring runoff flows.

Emergency Operation

When an excessive rain or spring thaw event is ongoing the pond level and dam are checked every six (6) hours or so. If the pond level shows a steady rise the stoplogs are removed and the gate is opened appropriately to try to match the inflow to the pond.

Maintenance Program

Weekly

- The dam is checked to ensure that no floating debris is restricting outflow.
- An abbreviated walk-through inspection is made of the entire dam with special attention to the cracking in the pier between the spillway and the stoplog bay and to the wet areas along the downstream toe of the dam. Observations are noted in logbook.

Semi-annually

- The embankment vegetation is inspected and any trees or brush that have taken root are removed.
- Any bare or eroded areas of the embankment and abutments are repaired and seeded.

Annually

- The gate mechanism is inspected, repaired and lubricated as necessary.
- The gate is opened to verify that it is operable.
- The integrity of the wooden stoplogs is assessed and are replaced as necessary
- After Columbus dam, with the water level lower, a detailed inspection of the embankment, abutments and concrete surfaces is made and any deficiencies, which are noted, are repaired. The results of the annual inspection are documented in the logbook for future reference and are routinely compared with the previous years inspections.
- The Emergency Action Plan (EAP) is tested.

Emergency Contact Person

Mr. Robert Jones – Dam Owner
Home Tel#: 603-555-1234
Work Tel#: 603-555-6789

It has been determined that a failure of this dam would endanger two (2) town road crossing, Smith road – 0.50 miles downstream and Jones road – 1.00 miles downstream. During extreme high water events, or if a serious problem exists with the dam, the Town of Conway is notified so that if resources exist they may monitor the roads.

(SKETCH OF DAM)

Craig,
I pointed out the Env-Wr. authority in memo.
Kathy

Department of Environmental Services
Water Division
64 No. Main Street
Concord, New Hampshire 03301
Tel. No. (603) 271-3406

CHAPTER Env-Wr 100 ORGANIZATIONAL RULES

PART Env-Wr 101 DEFINITIONS

Env-Wr 101.01 "Acre-foot" means the volume of water that would cover one acre to a depth of one foot.

Source. #1716, eff 2-20-81; ss by #2207, eff 12-13-82; ss by #2900, eff 11-7-84, EXPIRED 11-7-90

New. #5080, eff 2-22-91; ss by #6462-A, eff 2-21-97

Env-Wr 101.02 "Breached dam" means a dam which no longer impounds water during the design storm event as specified in Env-Wr 504.10.

Source. #1716, eff 2-20-81; ss by #2207, eff 12-13-82; ss by #2900, eff 11-7-84, EXPIRED 11-7-90

New. #5080, eff 2-22-91; ss by #6462-A, eff 2-21-97

Env-Wr 101.03 "Class AA structure" means a dam the failure of which would not threaten life or property and meets the following criteria:

(a) Is not greater than 6 feet in height with a storage capacity greater than 50 acre-feet.

(b) Is not greater than 25 feet in height with a storage capacity greater than 15 acre-feet.

Source. #1716, eff 2-20-81; ss by #2207, eff 12-13-82; ss by #2900, eff 11-7-84, EXPIRED 11-7-90

New. #5080, eff 2-22-91; ss by #6462-A, eff 2-21-97

Env-Wr 101.04 "Class A structure" means a dam with a low hazard potential, the failure of which

would result in any of the following:

(a) No possible loss of life as defined in Env-Wr 101.29;

(b) Minimal economic loss;

(c) Major damage to town and city roads; or

(d) Minor damage to Class I and II state highways; or

(e) The release of liquid industrial, agricultural, or commercial wastes or municipal sewage if the storage capacity is less than 2 acre-feet and is located more than 300 feet from a waterbody or water course.

Source. #1716, eff 2-20-81; ss by #2207, eff 12-13-82; ss by #2900, eff 11-7-84; rpld by #4491, eff 9-20-88

New. #5080, eff 2-22-91; ss by #6462-A, eff 2-21-97

Env-Wr 101.05 "Class B structure" means a dam with a significant hazard potential the failure of which would result in any of the following:

(a) Possible loss of life;

(b) Significant economic loss;

(c) Major damage to Class I and Class II state highways;

(d) Minor damage to interstate highways;

(e) Loss of a municipal water supply reservoir which constitutes more than 50% of a community's source or whose loss could endanger public health; or

(f) The release of liquid industrial, agricultural, or commercial wastes or municipal sewage from dams which do not meet the criteria in Env-Wr 101.04(c).

Source. #1716, eff 2-20-81; ss by #2207, eff 12-13-82; ss by #2900, eff 11-7-84; ss by #4491, eff 9-20-88; ss by #5080, eff 2-22-91; ss by #6462-A, eff 2-21-97

Env-Wr 101.06 "Class C Structure" means a dam with a high hazard potential the failure of which would result in any of the following:

(a) Probable loss of life; or

(b) Major damage to interstate highways.

Source. #1716, eff 2-20-81; ss by #2207, eff 12-13-82; ss by #2900, eff 11-7-84, EXPIRED 11-7-90

New. #5080, eff 2-22-91; ss by #6462-A, eff 2-21-97

Env-Wr 101.07 "Consumptive use" means all uses which are not nonconsumptive as defined by Env-Wr 101.25.

Source. #1716, eff 2-20-81; ss by #2207, eff 12-13-82; ss by #2900, eff 11-7-84, EXPIRED 11-7-90

New. #5080, eff 2-22-91; ss by #6462-A, eff 2-21-97

Env-Wr 101.08 "Dam" means "dam" as defined by RSA 482:2,II, namely "any artificial barrier, including appurtenant works, which impounds or diverts water, and which has a height of 4 feet or more, or a storage capacity of 2 acre-feet or more, or is located at the outlet of a great pond. A roadway culvert shall not be considered a dam if its invert is at the natural bed of the water course, it has adequate discharge capacity, and it does not impound water under normal circumstances. Artificial barriers which create surface impoundments for industrial or commercial wastes or municipal sewage, regardless of height or storage capacity, shall be considered dams".

Source. #1702, eff 1-1-81; ss by #2207, eff 12-13-82; ss by #2900, eff 11-7-84, EXPIRED 11-7-90

New. #5080, eff 2-22-91; ss by #6462-A, eff 2-21-97

Env-Wr 101.09 "Dam in disrepair" means "dam in disrepair" as defined by RSA 482:2,V, namely "a dam which is a menace to public safety, or incapable of safely impounding the waters to its crest, or incapable of maintaining a reasonably constant level of waters impounded, or one which does not contain adequate gates and sluiceways to provide for the holding or controlled discharge of waters impounded."

January 5, 2005

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
BUREAU OF HIGHWAY DESIGN

CONFERENCE REPORT

PROJECT: Statewide Culvert Repairs
IM-X-000S(397)
13408
(Various locations throughout the state on Interstate and Turnpike systems)

DATE OF CONFERENCE: January 4, 2005

LOCATION OF CONFERENCE: Aeronautics Conference Room

ATTENDED BY:

NHDOT	NHDES	NH Fish and Game
K. Nyhan	Ted Diers, NH Coastal Program	Cheri Patterson, Marine Fisheries
W. Brooks	Jen Drociak, NH Coastal Program	
W. Hauser	Grace Levergood, Dam Bureau	

SUBJECT: Hampton over-flow structure at the Taylor River outlet

NOTES ON CONFERENCE:

Mr. Brooks provided some background information on the project highlighting the statewide culvert inspection that was done under an earlier contract with Louis Berger Group. He noted that the current contract was intended to address the culverts that were in the worst condition and in need of immediate repair. He noted that the scope of work for this project was to slip-line the existing 6'-1" high x 8'-10" wide steel plate pipe-arch culvert with a smooth interior plastic pipe at a cost of about $200,000. Mr. Brooks noted that the Department has considered the culvert structure to be a separate structure apart from the Bridge and dam 300' north of the culvert. It was noted that NHDES considers the Taylor River outlet to consist of two structures, the dam and the overflow structure, each having an identifying number.

Mr. Brooks noted that Turnpikes has reviewed the structures and recognizes their current poor condition. The existing bridge consists of driven steel sheet piling 15' wide, 10' high with a concrete deck. The dam is immediately upstream of the bridge, also being constructed of driven sheet piling, and is integrated with the bridge structure. There is also a fish ladder that is part of the dam structure, allowing for migration of fish from the salt water to fresh water river networks. Turnpikes has noted that the dam has undergone repairs in the past, correcting corrosion problems.

Ms. Patterson noted that the dam connected to the bridge structure is in very poor condition having many leaks and holes. She stated that the leakage of the dam has undermined the fish ladder, causing concrete spawling. Ms. Levergood stated that the recent inspection report has not been sent to Turnpikes yet, but will indicate the dam to be in very poor condition and in need of major repairs in the near future. Mr. Diers indicated that NHDES has some money and is seeking additional funding for a comprehensive study of the Taylor River watershed and would like to address the dam and fish ladder to improve fish passage through the structure(s). It was noted that NH F&G and DES are planning on bringing experts in fish passage to conduct a preliminary study over the next couple months, a study which will help to identify the potential alternatives to look at in a more comprehensive analysis." Ms. Levergood noted that the

hydrologic model indicated that the secondary pipe-arch may not be necessary with a redesign of the dam structure. It was requested that the Department consider delaying performing work on this culvert until a design for the new dam structure is known and possibly divert the current project funds to this end. Mr. Brooks noted that addressing the dam would likely require also addressing the bridge structure, which would require much more work and funding than is currently available. Mr. Hauser noted that the Ten Year Plan did not currently have a project dedicated to replacing the bridge. He also noted that a considerable amount of the cost would be for traffic control. Mr. Brooks agreed to review the possibility of an interim treatment to the culvert, lasting up to five years to allow for completion of the study. This may save much of the original project cost. Mr. Brooks will discuss this again with Turnpikes and Project Development once the dam inspection report is available. Mr. Brooks noted that if the study revealed a larger project, including complete bridge replacement then replacing the culvert may be necessary. It was agreed that it would be desirable to save the cost of the culvert repair if replacing the other structures is imminent.

Submitted by:

Wayne Brooks
Consultant Supervisor

WPB/wpb/

Noted by: W. Hauser WH, K. Nyhan KN, T. Diers TD
cc: K. Cota, J. Moore, M. Pillsbury, H. Goodwin
S:\STATEWID\13408\CONFRPTS\102004.DOC

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

FAX TRANSMISSION
Water Division – Dam Safety
29 Hazen Drive, PO Box 95
Concord, NH 03302-0095
Phone: (603) 271-3406
Fax: (603) 271-7894

Rice Dam

Date: Oct 12, 2006

To: Rich Tobin

Company: GEI

Fax #: 781-721-4073

From: Grace Leverood

Phone #: 603-271-1971

Comments:
Attached is the latest trip report to the dam. Also have included the hydrology and hydraulics for the dam.

Number of pages: 7 (Including cover letter)

Type of Action
✓ Regular Inspection
___ Follow-up Inspection
___ Post-const. Inspection
Other_____

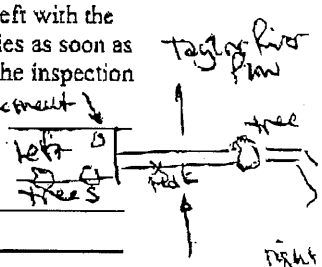
NH Department of Environmental Services
29 Hazen Drive
PO Box 95
Concord, NH 03302-0095
(603) 271-3406
web site: www.des.state.nh.us

NEW HAMPSHIRE DEPARTMENT OF Environmental Services

SITE INSPECTION FORM

Dam Name: Taylor River Pond Dam #: 106.06 Town: Hampton Falls
Date: 7/2/04 Owner: Tom Rice

The following is a listing of findings and, if appropriate, recommendations based upon the evaluation associated with the above referenced dam. The owner or his/her representative should implement the recommendations listed on this form, which are aimed at improving the safety of the dam. This form, a copy of which will be left with the owner or owner's representative, is intended to make dam owners aware of easily correctible deficiencies as soon as an inspection is carried out. More formal compliance notices may be issued after a detailed review of the inspection notes and photographs has been made.



Inspection Findings & Recommendations:

Remove trees and brush

(1) Brush and trees on left abutment of dam
2 trees measured greater than 12" diameter
Tree along downstream face of dam to the left of low level gate

(2) Leakage noted in several locations along upstream spillslab - water migrating beneath concrete slab through stonework - unable to maintain normal pool level in pond.

(3) Left abutment and earth interface has settled and eroded.

(4) Concrete cap on spillway is cracked and deteriorated

(5) Please complete an operation and maintenance plan and submit to DES - refer to guidelines.

(6) Exercise low level gate (in fall)

(7) Sediment buildup in impoundment.

(8) In place of repairs consider dam removal - Contact Stephanie Lindloff at #271-3406 funding may be available.

Owner/Owner Representative:_____ Form left w/Owner/Rep?: (yes) no

DES Inspector: Grace Leversedge Please contact Inspector with any questions.

Distribution: WHITE – File YELLOW – Owner/Rep. PINK - Inspector

Idylwood River Road Dam #1016.016

11-24-04 DLC

FILE	REVIEW
DA = 9.75 mi²	8.47 mi²
HT = 14 ft.	
LENGTH = 125 ft	
SA = 6.3 AC	6.3 AC

Coastal10.apr

AO issued - 10/29/92

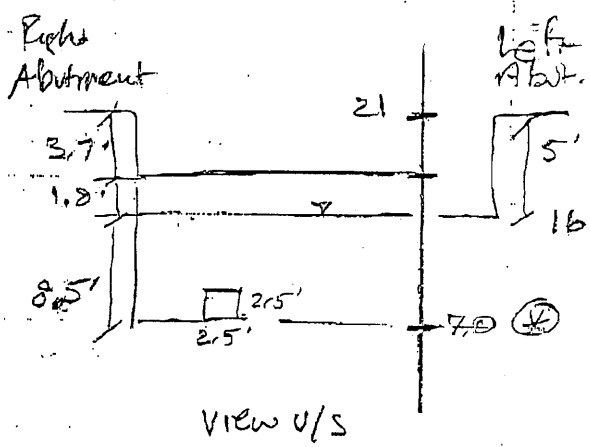
LOO issued 6/3/98

Q50 = 903 cfs
432 cfs → Potters
Qdesign = 2165 cfs

HydroCAD ver 6.0
492 cfs in
463 cfs out
pk elev = 18.17'

OUTLETS

1 - 52' W. x 5' h spillway
1 - 10' W x 3.7' h spillway
1 - 2.5' x 2.5' low level gate

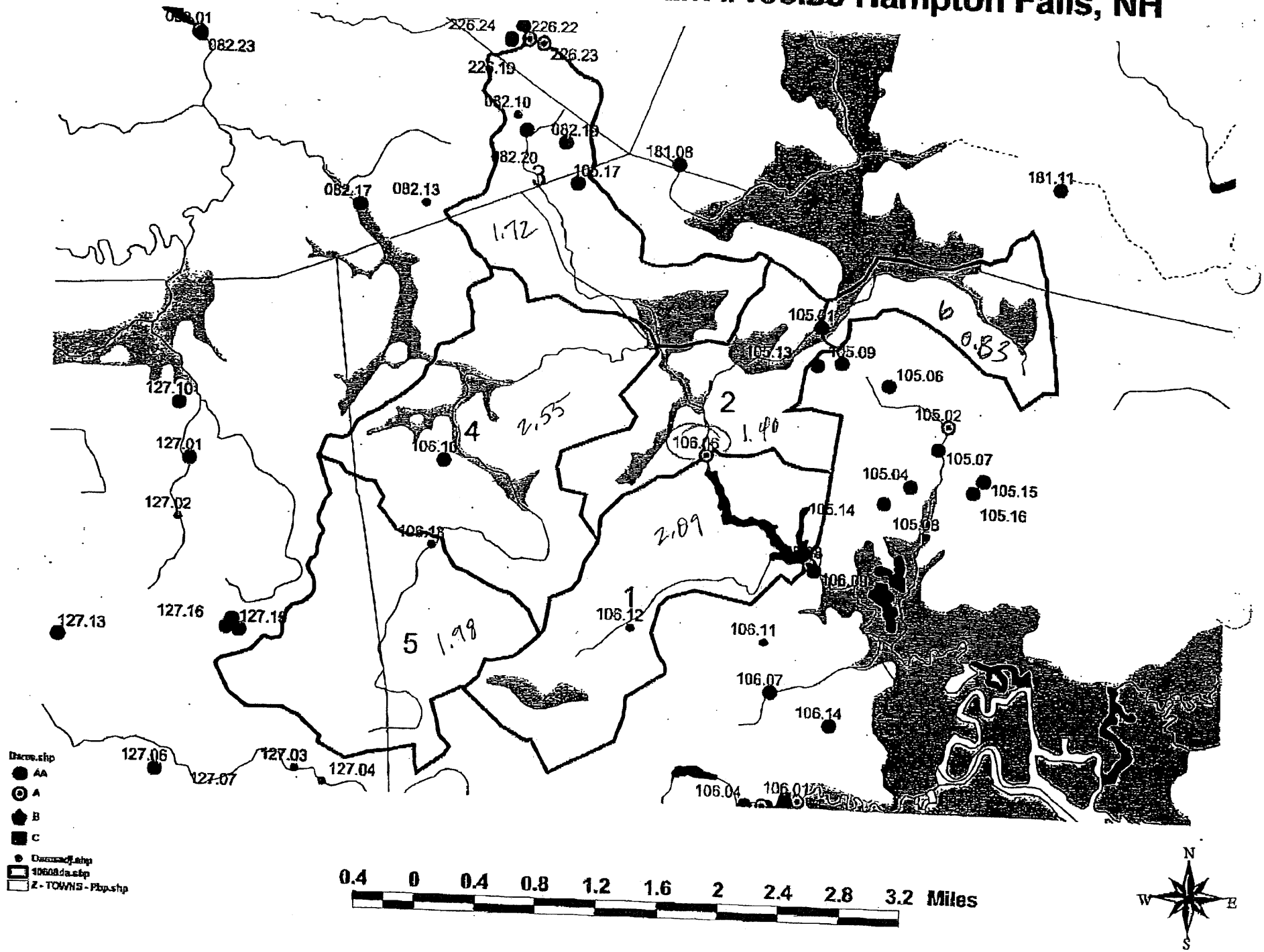


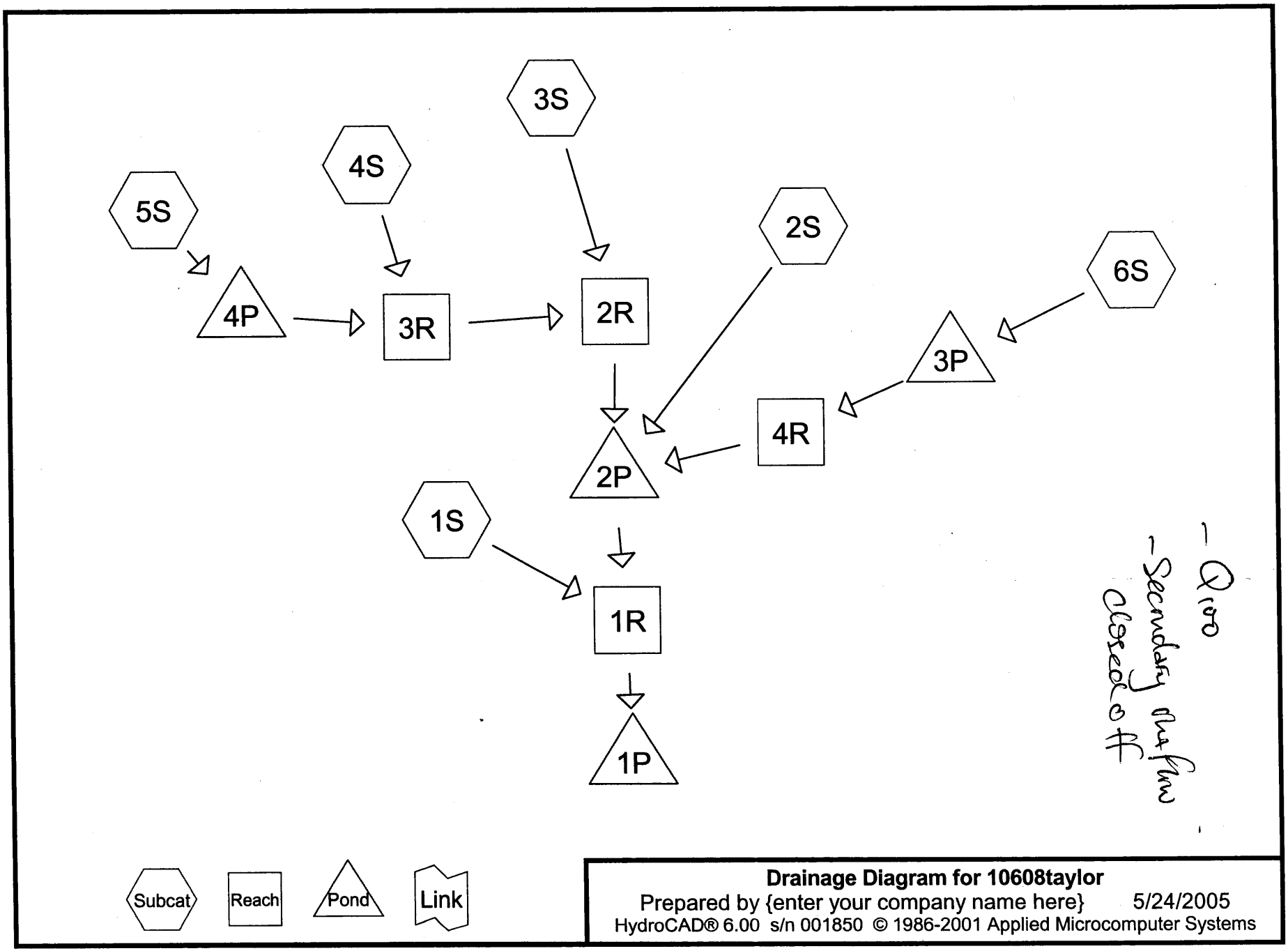
STORAGE	ELEV	SA	AC-FT	FILE
MAX	21	10	10(5) + 18.7 = 68.7	68.8
PERM	16	6.3	0.33(9) 6.3 = 18.7	20.8
BOT	7	0		

Brown Rd D/S Bridge 250' d/s 2 - 12' W x 12.5' h openings
INV = 14'

* BA = 6.5 m USGS NAD = 21.3'

Drainage Area for Taylor Pond Dam #106.06 Hampton Falls, NH





- Q100
- Secondary flow closed off

Drainage Diagram for 10608taylor

Prepared by {enter your company name here} 5/24/2005

Taylor River Pond Dam #106.08 11-19-04 GEL

FILE	AREA
HT = 21 ft	18.5
LENGTH = 50 ft	
DA = 12.5 mi²	10.57 mi²
SA = 45 AC	37 AC

Coastal10.apr

106a06 H+H 5/98 dme

185 quads
186

HydroCAD ver 6.0

Q50 inflow = 626 cfs pk elev = 11.27'
outflow = 418 cfs
Qdischarge = 2038 cfs 1700 cfs w/ frbrd

Also Dam #106.09

OUTLETS

100yr 6.5" Rainfall

1 - 15½' wide x 3h Stoplog bay with d/s fish passage chute

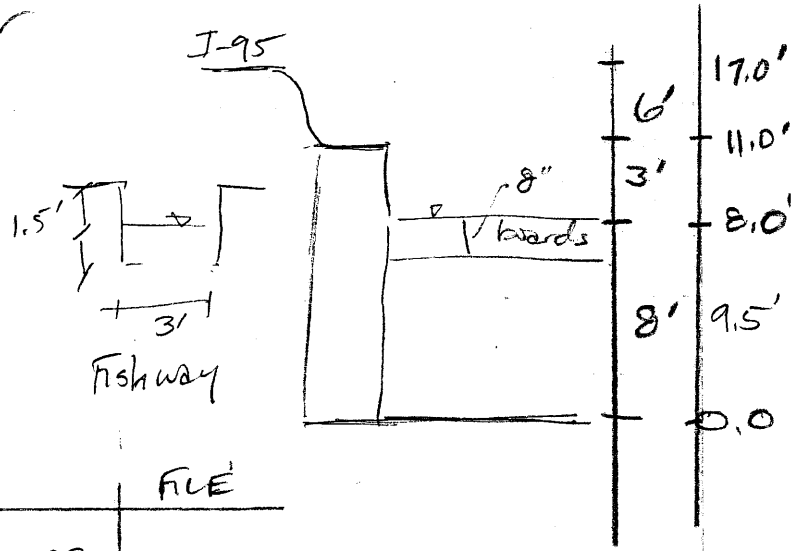
1 - 3' wide fish ladder

Dam #106.09 Em. Spwy

Secondary

1 - 35.5' long x 1.5' wide overflow weir

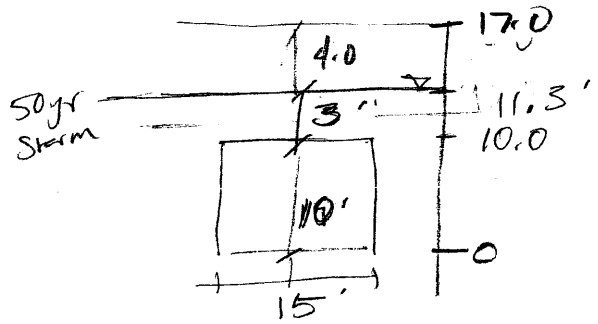
Qdischarge = 506 cfs



STORAGE	ELEV	SA	AC-FT	FILE
MAX	17.0	45	9(45)+98 = 503	
PERM	8.0	37	0.33(8) 37 = 98	
BOT	0.0	0	0	

D/S Road Culvert I-95

Qdischarge = 1658 cfs



Dams in Watershed

#106.09 2nd outlet for Taylor Pond

#106.06 A Taylor River Pond (51AC) Rice Dam

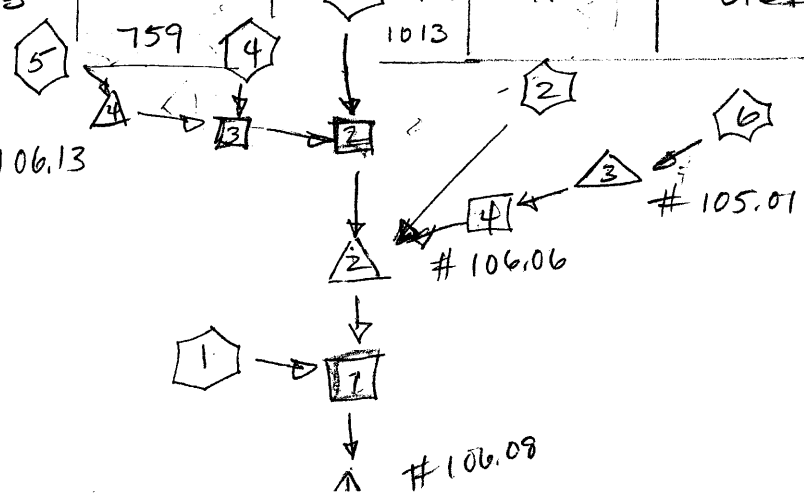
#105.01 AA Car Barn Pond

#106.13 — Taylor River Dam. never built 1986

SUB	1	2	3	4	5	6
DA (AC)	1335	894	1104	1634	1269	529
mi²	2.09	1.4	1.72	2.55	1.98	0.83
Hyd Length	13377	7500	12,800	19,700	10,800	9780
SLOPE	0.0253	0.0161	0.0201	0.0211	0.0214	0.0161
Fp Adj.	0.73	0.63	0.7	0.62		0.61
SOILS (AC)						
A	318 232	85 54	118 83	309 192	358	137 84
B	205 150	203 128	310 217	241 149	116	66 40
C	701 512	548 345	628 440	897 556	686	135 82
D	8 6	35 22	28 20	144 89	98	39 24
A/D	30 22	8 5		43 27	11	67 41
Wetlands	15	55	58	111	101	60
Ponds	4 + 37	51		107		4
TOTAC	1262	879	1084	1634	1269	444
%wet	56/1262 4.4%	106/879 12.1%	58/1084 5.3%	218/1634 13.3%	—	64/444 14.4%
Fp	0.73	0.63	0.70	0.62	1.0	0.61
Adj Area	921		759	1013		

50yr 24hr Rainfall

Type III Storm



Taylor River Dam #106.08 12-1-04 GSC

REACH	1	2	3	4
LENGTH	5900	4700	19,850	6300
ELEV UP	16.0	20.0	149.0	39.0
ELEV DOWN	8.0	16.0	20.0	16.0

Dam #106.13

HT = 5'

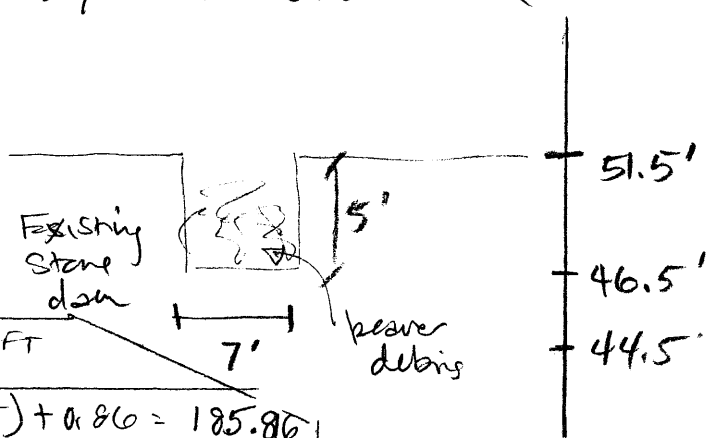
SA = 1.3AC

Q_{10} = 225 cfs

Proposed dam – 7' high – 37Ac pond never built – plans submitted in 1986

There is a beaver dam at the site of an old stone dam U/S of Drinkwater Rd (Counts)

24" culvert under road



STORAGE	ELEV	SA	AC-FT
MAX	51.5	37	37(5) + 0.86 = 185.86
P&RM	46.5	1.3	0.33(2) 1.3 = 0.86
BOT	44.5		

Carbarn Pond Dam # 105.01 11-24-04 GEC

ARCVIEW

LINSP 8/30/96
Old River
d/s of Rte 101

DA = 1.8 mi²

SA = 3.7AC 2.7AC

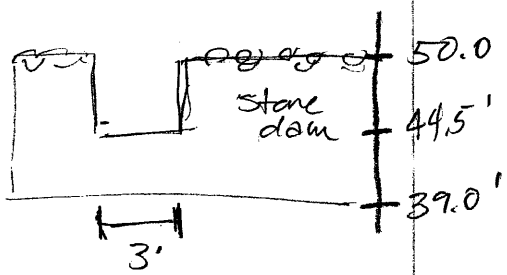
HT = 11 ft

LENGTH = 180 ft

Q50 = 70cfs (USGS & NEHC)

OUTLETS

1 - 3'w x 5.5'h stop log bay



STORAGE	ELEV	SA	AC-FT
MAX	50	3.7	5.5(3.7)+4.46 = 24.8
PERM	44.5	2.7	0.33(5.0)2.7 = 4.46
BOT	39.0	0	

Taylor River Road Dam #106.06 — 11-24-04 GSC

	FILE	AREVIEW
DA =	9.75 mi²	8.47 mi²
HT =	14 ft	
LENGTH =	125 ft	
SA =	6.3 AC	6.3 AC

Wastel10.apr

AO issued 10/28/92

COO issued 6/3/98

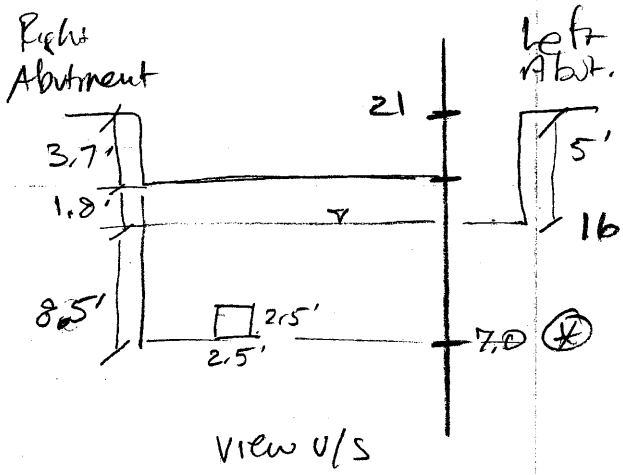
Q50 = 903 cfs
432 cfs → Potters

Qdesch = 2165 cfs

HydroCAD ver 6.0
492 cfs in
463 cfs out
pkelev = 18.17'

OUTLETS

1- 52' w x 5' h spillway
1- 10' w x 3.7' h spillway
1- 2.5' x 2.5' low level gate



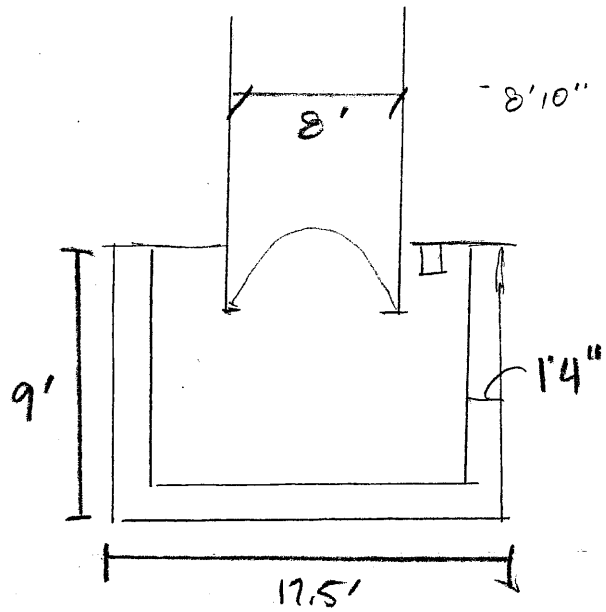
STORAGE	ELEV	SA	AC-FT	FILE
MAX	21	10	10(5) + 18.7 = 68.7	60.8
PERM	16	6.3	0.33(9) 6.3 = 18.7	20.8
BOT	7	0		

Brown Rd D/S Bridge — 250' d/s — 2 - 12' w x 12.5' h openings, INV = 14'

* BA = 6.5 m — USGS map = 21.3'

Taylor River Pond Dike # 106.09 GEC 12-1-04

Relief Structure for #106.08
Emergency Spillway

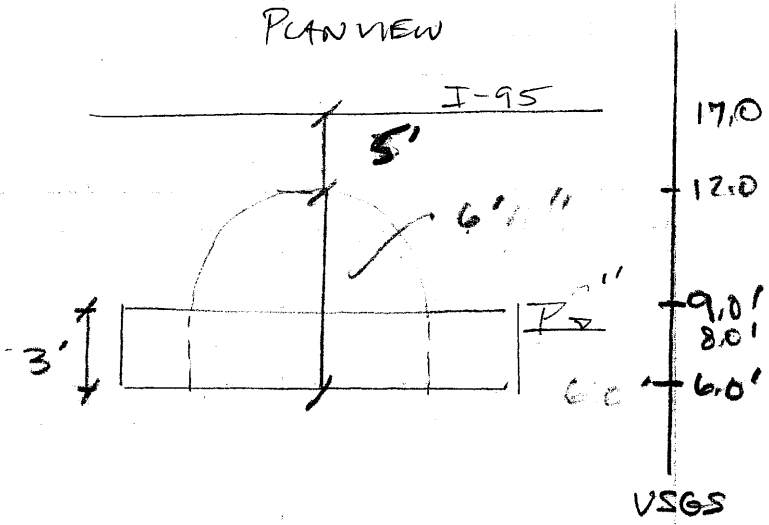


PLAN VIEW

Outlets

1- 35.5' long x 1.5' wide
units

Q discharge = 506 cfs



Pond 1P: Taylor Pond Dam #106.08

[61] Hint: Submerged 53% of Reach 1R bottom

Inflow	=	805.89 cfs @	17.19 hrs, Volume=	313.540 af	
Outflow	=	540.32 cfs @	20.00 hrs, Volume=	121.430 af,	Atten= 33%, Lag= 168.4 min
Primary	=	540.32 cfs @	20.00 hrs, Volume=	121.430 af	

100 yr storm Run w/ no emergency spillway

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Starting Elev= 8.00' Storage= 98.000 af
Peak Elev= 12.26' Storage= 289.758 af (191.758 af above starting storage)
Flood Elev= 17.00' Storage= 503.000 af (405.000 af above starting storage)
Plug-Flow detention time= 306.2 min calculated for 23.430 af (7% of inflow)

not less

Elevation (feet)	Cum.Store (acre-feet)
0.00	0.000
8.00	98.000
17.00	503.000

Primary OutFlow (Free Discharge)
└─1=Culvert
  ├─2=Broad-Crested Rectangular Weir
  └─3=Broad-Crested Rectangular Weir

#	Routing	Invert	Outlet Devices
1	Primary	0.50'	**15.00' x 10.00' x 100.0' long Culvert** Box, headwall w/3 square edges, Ke= 0.500 Outlet Invert= 0.00' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Device 1	8.00'	**15.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
3	Device 1	8.00'	**3.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32

100yr storm

Pond 1P: Taylor Pond Dam #106.08

[61] Hint: Submerged 50% of Reach 1R bottom

Inflow	=	805.89 cfs @	17.19 hrs, Volume=	313.540 af	
Outflow	=	580.98 cfs @	20.00 hrs, Volume=	132.399 af,	Atten= 28%, Lag= 168.4 min
Primary	=	495.01 cfs @	20.00 hrs, Volume=	115.733 af	
Secondary	=	85.97 cfs @	20.00 hrs, Volume=	16.666 af	

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Starting Elev= 8.00' Storage= 98.000 af
Peak Elev= 12.02' Storage= 278.872 af (180.872 af above starting storage)
Flood Elev= 17.00' Storage= 503.000 af (405.000 af above starting storage)
Plug-Flow detention time= 288.4 min calculated for 34.285 af (11% of inflow)

Elevation (feet)	Cum.Store (acre-feet)
0.00	0.000
8.00	98.000
17.00	503.000

Primary OutFlow (Free Discharge)
- 1=Culvert
  - 2=Broad-Crested Rectangular Weir
  - 3=Broad-Crested Rectangular Weir

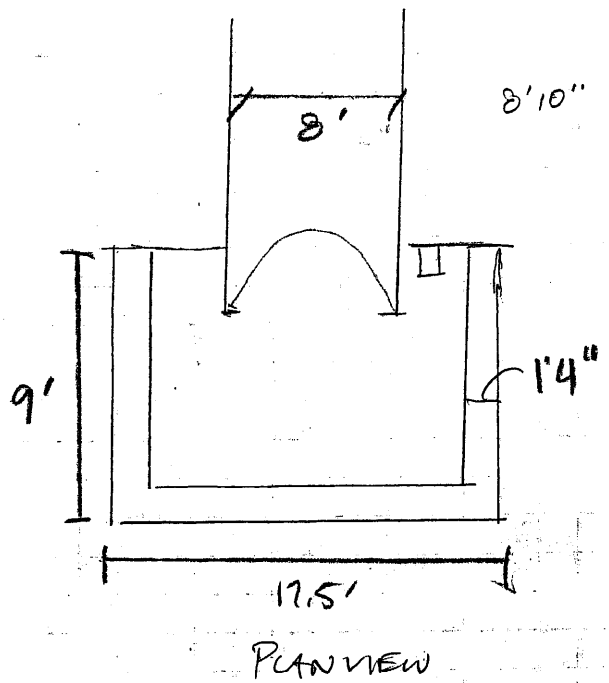
Secondary OutFlow (Free Discharge)
- 4=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.50'	**15.00' x 10.00' x 100.0' long Culvert** Box, headwall w/3 square edges, Ke= 0.500 Outlet Invert= 0.00' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Device 1	8.00'	**15.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
3	Device 1	8.00'	**3.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
4	Secondary	9.00'	**8.00' x 6.00' x 100.0' long Culvert** CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 8.95' S= 0.0005 '/' n= 0.015 Cc= 0.900

Taylor River Pond Dike #106.09 GSL 12-1-04

Relief Structure per #106.08

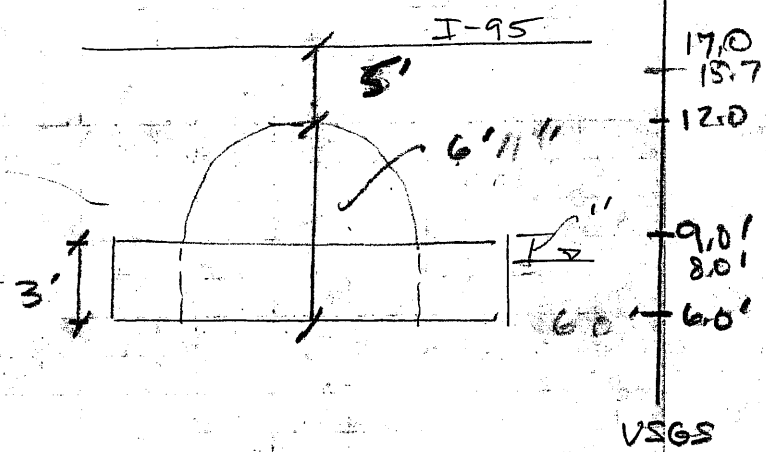
Emergency Spillway



Outlets

1 - 35.5' long x 1.5' wide
units

Q discharge = 506 cfs



1974 Plans Elev top of road = 15.7'

Pond 1P: Taylor Pond Dam #106.08

Inflow	=	625.75 cfs @	17.32 hrs,	Volume=	236.893 af
Outflow	=	418.33 cfs @	20.00 hrs,	Volume=	89.537 af, Atten= 33%, Lag= 160.9 min
Primary	=	363.12 cfs @	20.00 hrs,	Volume=	80.075 af
Secondary	=	55.21 cfs @	20.00 hrs,	Volume=	9.462 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Starting Elev= 8.00' Storage= 98.000 af
Peak Elev= 11.27' Storage= 245.112 af (147.112 af above starting storage)
Flood Elev= 17.00' Storage= 503.000 af (405.000 af above starting storage)
Plug-Flow detention time= (not calculated)

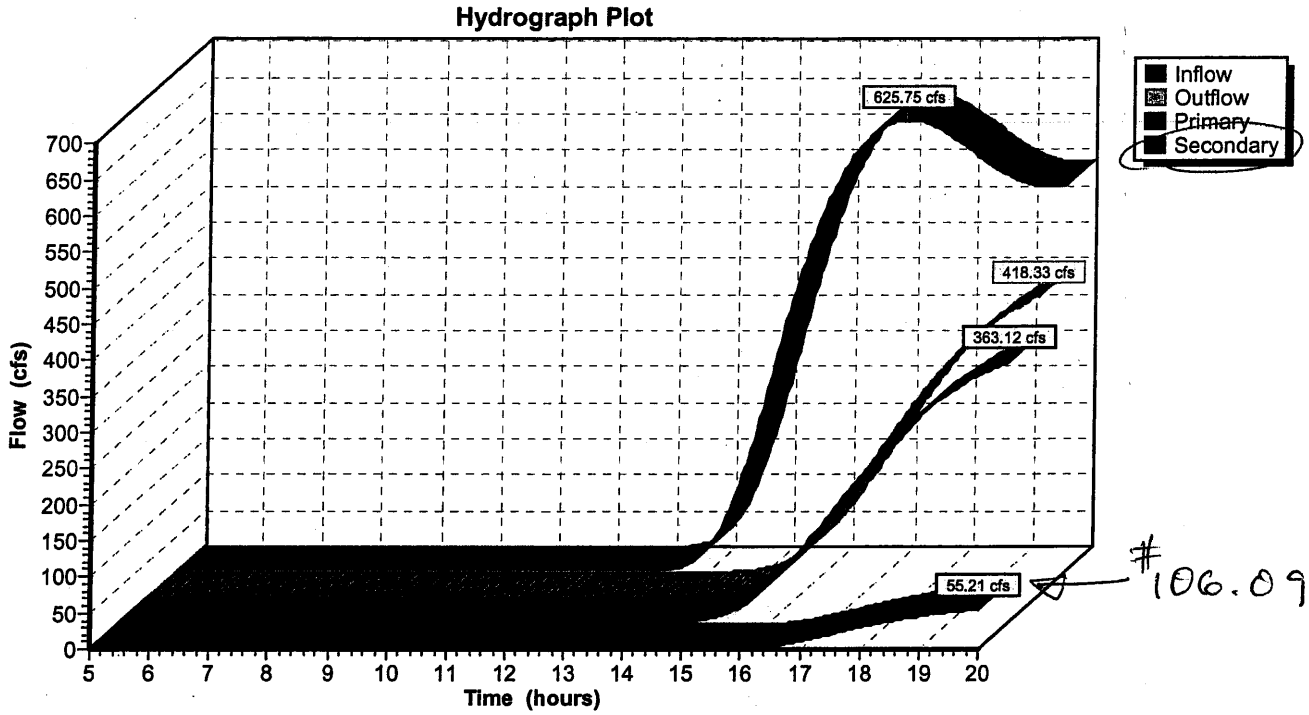
Elevation (feet)	Cum.Store (acre-feet)
0.00	0.000
8.00	98.000
17.00	503.000

Primary OutFlow (Free Discharge)
└─1=Culvert
  ├─2=Broad-Crested Rectangular Weir
  └─3=Broad-Crested Rectangular Weir

Secondary OutFlow (Free Discharge) ← #106.09
└─4=Culvert

#	Routing	Invert	Outlet Devices
1	Primary	0.50'	**15.00' x 10.00' x 100.0' long Culvert** Box, headwall w/3 square edges, Ke= 0.500 Outlet Invert= 0.00' S= 0.0050 '/' n= 0.013 Cc= 0.900
2	Device 1	8.00'	**15.5' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
3	Device 1	8.00'	**3.0' long x 0.5' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 Coef. (English) 2.80 2.92 3.08 3.30 3.32
4	Secondary	9.00'	**8.00' x 6.00' x 100.0' long Culvert** CMP, projecting, no headwall, Ke= 0.900 Outlet Invert= 8.95' S= 0.0005 '/' n= 0.015 Cc= 0.900

Pond 1P: Taylor Pond Dam #106.08



Pond 1P: Taylor Pond Dam #106.08

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
0.00	0.00	0.00	0.00
0.20	0.00	0.00	0.00
0.40	0.00	0.00	0.00
0.60	0.00	0.00	0.00
0.80	0.00	0.00	0.00
1.00	0.00	0.00	0.00
1.20	0.00	0.00	0.00
1.40	0.00	0.00	0.00
1.60	0.00	0.00	0.00
1.80	0.00	0.00	0.00
2.00	0.00	0.00	0.00
2.20	0.00	0.00	0.00
2.40	0.00	0.00	0.00
2.60	0.00	0.00	0.00
2.80	0.00	0.00	0.00
3.00	0.00	0.00	0.00
3.20	0.00	0.00	0.00
3.40	0.00	0.00	0.00
3.60	0.00	0.00	0.00
3.80	0.00	0.00	0.00
4.00	0.00	0.00	0.00
4.20	0.00	0.00	0.00
4.40	0.00	0.00	0.00
4.60	0.00	0.00	0.00
4.80	0.00	0.00	0.00
5.00	0.00	0.00	0.00
5.20	0.00	0.00	0.00
5.40	0.00	0.00	0.00
5.60	0.00	0.00	0.00
5.80	0.00	0.00	0.00
6.00	0.00	0.00	0.00
6.20	0.00	0.00	0.00
6.40	0.00	0.00	0.00
6.60	0.00	0.00	0.00
6.80	0.00	0.00	0.00
7.00	0.00	0.00	0.00
7.20	0.00	0.00	0.00
7.40	0.00	0.00	0.00
7.60	0.00	0.00	0.00
7.80	0.00	0.00	0.00
8.00	0.00	0.00	0.00
8.20	4.63	4.63	0.00
8.40	13.67	13.67	0.00
8.60	26.48	26.48	0.00
8.80	43.68	43.68	0.00
9.00	61.42	61.42	0.00
9.20	81.68	80.74	0.94
9.40	104.92	101.74	3.18
9.60	130.69	124.31	6.38
9.80	158.67	148.33	10.34
10.00	188.66	173.72	14.94
10.20	220.52	200.42	20.10
10.40	254.11	228.36	25.75
10.60	289.35	257.50	31.85
10.80	326.14	287.77	38.37
11.00	364.44	319.15	45.29
11.20	404.17	351.59	52.58
11.40	445.28	385.06	60.22
11.60	487.72	419.53	68.19
11.80	531.46	454.97	76.49
12.00	576.46	491.36	85.10
12.20	622.67	528.67	94.00
12.40	670.07	566.88	103.20
12.60	718.63	605.96	112.67
12.80	768.32	645.91	122.42
13.00	819.12	686.70	132.42
13.20	871.00	728.31	142.69
13.40	923.93	770.73	153.21
13.60	977.91	813.94	163.97
13.80	1,032.90	857.93	174.97
14.00	1,088.89	902.69	186.21
14.20	1,145.87	948.19	197.67
14.40	1,203.80	994.44	209.36
14.60	1,262.69	1,041.42	221.27
14.80	1,322.51	1,089.11	233.40
15.00	1,383.25	1,137.51	245.74
15.20	1,444.90	1,186.61	258.29
15.40	1,507.44	1,236.40	271.04
15.60	1,570.86	1,286.86	284.00
15.80	1,635.15	1,337.99	297.16
16.00	1,700.29	1,389.78	310.51
16.20	1,766.28	1,442.22	324.06
16.40	1,833.10	1,495.30	337.80
16.60	1,900.74	1,549.02	351.72
16.80	1,969.20	1,603.37	365.83
17.00	**2,038.47**	**1,658.34**	**380.13**

106.09