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Narrative in Support of Permit Application Eric E. Madson Proposed Irrigation Storage, Irrigation From Storage And Diversion to Storage

Summary

The purpose of this narrative is to document the proposed Irrigation Storage Pond and both the Diversion to Storage and Irrigation from Storage needs of the Madson Ornamental Tree Farm. The Second Permit Application concerns the added acres of irrigation under Water Right 98-7402.

The Water Rights concerned are adjudicated under the "Proposed Finding of Water Rights in the Cow Creek Drainage Basin" Civil Case NO. 5745 (Erickson et ux, vs. Smith et al) as follows:

1. NO. 98- 117A unnamed stream (.32 CFS) Priority Date 1910 - 10 - 26
2. NO. 98- 117B Cow Creek (.67 CFS) Priority Date 1910 - 10 - 26
3. NO. 98- 7402 unnamed stream (1.0 CFS) Priority Date 12/28/81

The proposal does not change any rates of diversion under these rights but establishes a Diversion to Storage and Diversion from Storage at one of three historical points of diversion for Water Right 98-117B. The decreed Period of Use for irrigation is 3/15 to 11/15. There is no proposed change in Period of Use.

The permit application does not enlarge existing rights, injure other rights, and promotes conservation of water resources that economically is in the best regional public interest.

Purpose and Need:

The Statutory Claim, Decree and License is located in Boundary County Idaho in Section 13, TWN 61N, RNG 01E in Paradise Valley South East of Bonners Ferry, Idaho. The irrigation of ornamental trees is currently done by overhead sprinklers which are to be converted to more efficient drip irrigation. The same flow rates are utilized to cover more acres of new tree plantings and existing trees. 1 acre of drip irrigation has 2704 emitters in 26 rows with each using 1/2 gallon per hour. The 24 hr. use of 1CFS could cover up to 20 acres a day.

The current locations of irrigation use are described for the three water rights NO. 98-7402 (1 CFS, priority date is 12/22/81); NO. 98-117A, (0.2 CFS, priority date decreed 1910-10-26) and NO. 98-117B (0.67 CFS priority date decreed 1910-10-26). The last

0.67 CFS is flood irrigation from Cow Creek and the Nature of Use and Place of Use won't change. All of the places of use are in Section 13.

Table #1 Summary of Proposed Modifications

Water Right NO. Rate of Diversion	Section 13 Current Point of Diversion	Existing "Place of Use" All Section 13	Current "Nature Of Use"	Proposed Modification acres Drip IRR. Photo = P#
NO. 98-117A 0.2 CFS 0.12 CFS Dom. P22,23&26	SESE Sec.13	NWNE SWNE	2 irr. 8 irr. & Dom.	Add 3 acres SWNE * Add Diversion from Storage Pond #1 P 1-3 Same irr**
NO. 98-117B 0.62 CFS 0.05 CFS stock Flood Irr. P7,8,1-3	Cow Creek SWNE Sec.13 NWSE Sec.13 SWSE Sec. 13	SWNE NESE NWSE P9,10 SWSE	9 irr Flood. 6 irr. Flood 16 irr. Flood P7,8 Stock water 31 head	Same acres Add 15 P24 ** Add 15 P17 ** Add 5 ** Converted to drip P9,10 same POD
X NO. 98-7402 1.0 CFS P26,29 Overhead & Drip	NENE Sec. 24 USFS	NENE NWNE SWNE NENW NWNW SENW SWNW NESW SESW SENE	15 irr. 25 irr. 10 irr. 26 irr. 22 irr. 2 irr.	Add 15 irr. ** Same irr. ** Same irr. **P13 Same irr. ** Add 8 irr. ** Add 15 P14 ** Add 30 P15 Add 30 irr. P17 Add 10 P16 ** Add 30 irr.P25 **
			Totals - Acres 110 Sprinkler 31 Flood	Total - Drip 176 Acres
Total Irrigation Rate = 1.82			Total Acres	317 drip irr.

* Diversion to Storage Pond #1 SWNE ¼ Section 13. This point of diversion is covered under water right 98-117B Cow Creek in the SESE1/4 Section 13.

** Change nature of use to drip irrigation and add acres in ¼ ¼ sections for new ornamental tree plantings.

Water Right 98-117A

The existing water right is from an unnamed stream which flows subsurface into a ditch in the SESE1/4 & NESE Sec. 13 serving as the flood irrigation system of 98 -117B. The existing place of use is 2 acres irrigation in the NWNE1/4 and 8 acres in the SWNE1/4. The period of use is 3/15 to 11/15 for irrigation as shown in the Proposed Findings.

Proposed Permit

Install a Concrete box with weir and 6" pipe "Diversion to Storage" from the unnamed stream (Photos P22 & P23) to Pond # 1 in NWNE1/4 Sec. 13 (Photos 1, 2 & 3): This diversion point for Water Right NO. 98 -117A is decreed in the SE ¼ of the SE ¼ Sec. 13 for Pond #1. The 2 acres of irrigation in the NWNE1/4 would have 3 acres added for drip irrigation. The 8 acres in the SWNE1/4 would remain the same.

The stream at this point is flowing at the edge of the property line and sinks going subsurface and indirectly feeds the ditch line of Cow Creek Irrigation Right (NO 98-117B).

Pond #1 is located near to the Madson senior's residence in the SW ¼ of the NE ¼ of Section 13, and is to be used as a irrigation storage and point of diversion for drip irrigation at a rate of 22.5 gpm per acre (Photo #1, 2 & 3). The over flow 2 foot diameter culvert drain is 3 feet above the out flow 2' culvert at low flow. The pond is 600 feet long by an average 55 feet wide and average depth of 9 feet. The pond is estimated at .7 acres and capacity of 7.3 acre feet. The pond has active springs and is fed from Pond #2 Cow Creek channel through NW ¼ of SE ¼ Section 13, and intermittent runoff from Cow Creek channel wetlands in the SE ¼ of the NW ¼ Section 13.

- a) Size of Pond = 7.3 acre feet
- b) Evaporation Rate = 6.5 AF per annum
- c) Acres Irrigation x 3 AF/acre

The new acres for Water Right 98-117B = Existing (41) + Proposed (38) = 79 acres
x 3 AF = 237 AF/per annum + 6.5 AF (evaporation) + 7.3 AF (Pond size) = 250.8 acre feet per annum

.02 inches per acre x 38 = 0.76 CFS irrigation rate permissible rate of diversion

Pond #2 is approximately 150' long by 50' wide (.17 acres), and averages 10 feet deep with water storage of 1.7 acre feet at capacity. Cow Creek above Pond #2 is actually a ditch where historically flood irrigation occurs under Water Right 98-117B and this flows into Pond #1 which is one of the original diversion points for this Water Right.

The Diversion to Storage and Diversion from Storage to existing Places of Use (1/4 Sections) do not constitute an enlargement of use or cause injury to downstream water users.

Water Right 98-117B

The existing water right is at a rate of .67 CFS, .62 CFS for irrigation and .05 CFS for stock watering. The priority date is 10/26/1910. The Period of Use for irrigation is 3/15 to 11/15.

The rate of diversion from Cow Creek is decreed at .62 CFS at three points in the SW1/4 of the NE1/4 (Pond #1), the NWSE1/4 and SWSE1/4 of Section 13. The rate under this transfer will remain the same, but will be converted to drip irrigation from flood irrigation. Stock watering will remain the same. The Points of Diversion will remain the same but will have collection boxes feeding into the main drip irrigation system.

Proposed Permit

Irrigation (.25 CFS: 117B) + (.2 CFS: 117A) = .45 CFS

Diversion To Storage = 0.2 CFS

Irrigation Storage = 250.8 Acre Feet per annum

Irrigation From storage = 237 Acre Feet

From the total of .62 CFS for irrigation (.25 CFS) will be diverted from Pond #1 SWNE1/4 and the remaining 0.37 CFS will be diverted from collection boxes at the same points in NWSE1/4 and SWSE1/4 as the original right. These are the three decreed points of diversion that have been used for flood irrigation historically on hay fields and ornamental trees.

A collection box will be set in the channel of flood irrigation POD in the SWSE1/4 and NWSE1/4 Section 13 for diversion to drip irrigation. Five (5) acres of drip irrigation is added to the SWSE1/4, 15 acres is added to the NWSE1/4 and 15 acres is added to the NESE1/4 of Section 13 giving a total of 66 acres with the existing 31 acres.

Based on the premise that "the transfer of the right to use of stored water for irrigation purposes shall not constitute an enlargement in use even though more acres may be irrigated, if no other rights are injured thereby". Title 42, Chapter 2: 42-222 Idaho Code

The proposed modifications do not affect the flow rates in Cow Creek, so that downstream water rights will not be injured. A flow rate of .2 CFS will be added to Cow Creek at the lowest Point of Diversion Pond #1 in the SWSE1/4 of Section 13. The added acres of irrigation are within the boundaries and same ¼ sections of Place of Use of the original right and will not constitute an enlargement of use but more efficient use.

Water Right 98-7402

The existing water right is for diversion of 1 CFS for irrigation purposes on 100 acres in six quarter sections listed in Table I. The existing point of diversion is in the NENE/4

Section 24, TWN61N, RNG 01E, on U.S. Forest Service land. The diversion pond has a 6 inch gravity flow pipe line.

Proposed Permit

The rate of diversion from this Permit will remain the same at 1.0 CFS at the diversion works in the NENE ¼ Section 24 (U.S. Forest Service). The gravity flow system will be piped into drip irrigation lines to cover more acres. The current irrigation acres are 100 acres in the six ¼ sections listed in Table #1. Eight (8) acres would be added to the NWNW1/4 to make 30 acres of irrigation and 15 acres would be added to the existing 2 acres in the SENW1/4 (see Photo P14).

There will be another 138 acres of drip irrigation on four quarter sections listed in Table #1 based on the farmable portion of the quarter sections. This brings the new irrigated acreage to 238 acres that would be irrigated with the same diversion rates from Water Right 98-7402. The Period of Use remains the same at 3/15 to 11/15.

The proposed Places of Use are within the boundaries of the decreed Section 13 general description use area (see attached map) and do not constitute an enlargement of use. The same flow rates are used more efficiently and will not cause injury to downstream water uses.

Change in Acre Feet per Annum Irrigation Volumes:

Historically, the acre feet put to use in flood and sprinkler irrigation was calculated for hay irrigation under older acreage volumes and not for newer ornamental tree acreage considerations. This error resulted in filing of under estimated volumes and acres of use by quarter sections. However, the Adjudication process established by the First Judicial District Court in and for Boundary County "Proposed Finding of Water Rights in the Cow Creek Drainage Basin" Civil Case NO. 5745 on Page 7 Conclusion of Law #2. states:

"The consumptive use of water for irrigation purposes has been determined to be 2.0 acre-feet per annum per acre. Regulation of diversion for irrigation purposes by the department will be on the basis of the diversion rates herein specified rather than by the acre feet allotment." The permit application is for 138 acres at 2 acre feet per annum or 276 acre feet.

Table #2

Water Right Rate	<u>Proposed Acre Feet (Volume)</u>	Diversion points
NO. 98-117A (.2 CFS)		SESE ¼ Sec. 13
.2 & .25 CFS (98-117B)	38 acres drip irrigation	** SWNE ¼ Sec. 13
= .45 AF/day	41 existing irrigation	

Irrigation from Storage Pond #1 (.45 CFS) = 79 acres x 3 Ac.Ft./ Acre = 237 Acre Feet

NO. 98-117B	78 acre feet per annum	SWNE ¼ Sec. 13
.37 CFS	52 acres drip irrigation	NWSE ¼ Sec. 13
		SWSE ¼ Sec. 13

NO. 98-7402	276 acre feet per annum	NENE ¼ Sec. 24
1.0 CFS	138 acres drip irrigation	

** = Irrigation from Storage

Irrigation From Storage: Water Right 98-117A & 98-117B (Photo 1-3)

The conversion of overhead sprinkler volumes to drip irrigation is a more efficient method that achieves less evaporative loss, yet higher total volume covering more acres per day. This is quantified in the "change of location of use". At 22.5 gallons per minute per acre and irrigating 10 acres per day average at a rate of 200 gpm or .45 CFS
And 237 acre feet per annum.

The attached map shows the location of Point of Diversion (POD) and Place of Use (POU) by quarter section. The acre feet will correspond to the acreage described on the map for drip irrigation with the assumed daily use. The Diversion to Storage will be accomplished with a concrete holding tank and a 6 inch gravity flow pipe to Pond #1. The diversion from storage will use a 2 HP submersible pump connected to the drip irrigation lines.

Diversion Volumes Water Right 98-7402 (Photo 26, 27)

The 1 CFS water right of 98-7402 is capable of drip irrigation of 20 acres per day at a maximum rate. 138 acres of drip irrigation are added at 276 acre feet per annum assuming 2 acre feet per acre per annum in the original water right. The irrigation drip rate acres per day also depends on the availability of water during drought periods or extended rain periods.

Diversion Volumes Water Right 98-117B (Photos 7 & 8)

The water right NO. 98-7402 has three diversion points, one at pond #1 and two from the flood irrigation ditch feeding pond #1 and #2 which is Cow Creek (NWSE ¼ Sec. 13). Pond #1 has the combined flow rate of .25 CFS from Cow Creek with the remaining .37 CFS going to drip irrigation at .37 acre feet a day for 210 days and 78 acre feet per annum.

Photo-Log: Water Use (POU) location and Diversion (POD) Photographs

- P1) Diversion to storage location 98-117B Pond #1 from 98-117A SWNE Sec. 13
- P2) Lower outlet culvert Pond #1 Cow Creek
- P3) Upper outlet overflow pipe 3 Ft. above lower outlet Pond #1 (2 ft. culvert)
- P4) Pond #2 below flood irrigation ditch diversion point 98-117B
- P5) Pond #2 6" drain and 2 ft. outlet pipe
- P6) Flood irrigation POU NWSE Sec. 13 and NESW Sec. 13 convert to drip irrigation
- P7) Historic Cow Creek ditch Point of Diversion Water Right 98-117B NWSE Sec. 13 flood irrigation of hay converted to drip irrigation for ornamental trees.
- P8) 18" Culvert on ditch Cow Creek NWSE Sec. 13
- P9) Increase in the NWSE ¼ sec. 13 of 15 acres flood irrigation to 30 acres of drip irrigation
- P10) Flood irrigation from Cow Creek ditch NESE ¼ and NWSE ¼ Sec. 13 converted to drip irrigation.
- P11) Seepage Stream and wetland above Pond #1 POD 98-117B
- P12) Intermittent Cow Creek stream SWNE ¼ Sec. 13 above Pond #1
- P13) SWNE Sec. 13 (POU) 31 acres stays the same acreage but supplied from both Water Right 98-117A (diversion to storage) and 98-117B Pond #1 POD.
- P14) Add 15 acres of drip irrigation to current 2 acres SENE Sec. 13 POU from 98-117B and 117A diversion from storage.
- P15) Add 30 acres new drip irrigation SWNW Sec. 13 from water right 98-7402
- P16) Add 30 acres new drip irrigation in NESW Sec. 13 from water right 98-7402
- P17) Add 20 acres drip irrigation NESW and 10 acres SESW
- P18) Pond #3 unnamed stream tributary to Cow Creek below Water Right 98-117A diversion point
- P19) 6 "drain pipe to stream channel below Pond #3

P20) Potential diversion to storage Pond #1 from below Pond #3 SENE ¼ Sec. 13

P21) POU 30 acres SENE ¼ Sec. 13 convert to drip irrigation

P22) Unnamed stream originating from SESE ¼ Sec. 13 Water Right 98-117A

P23) Proposed POD Water Right 98-117A with concrete collection and 6" gravity flow pipe 117A to Pond #1 diversion to storage above ditch in NESE 1/4 Sec. 13

P24) NESE ¼ Sec. 13 add 15 acres drip irrigation below ditch looking South

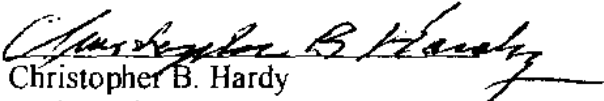
P25) Existing ornamental trees convert to drip - add 30 acres to SENE ¼ Sec. 13

P26) Diversion pond collection: 6 "gravity flow pipe in center Water Right 98-7402, located in the NENE ¼ Sec. 24 U.S. Forest Service Land Special Use Permit

P27) Overflow diversion 98-7402 sinks underground below in SWSE 1/4 Sec. 13

The photographs depict the existing irrigation system acreage and future drip irrigation acreage by ¼/¼ Section. This will fulfill the decreed and licensed flow rates Place of Use and show accurate acre feet per annum consumptive uses from the designated diversion sites shown in the photos.

Respectfully submitted,


Christopher B. Hardy
Hydrologist, Manager
Water Resource Services, LLC

P1 POND 1 AVERAGE WIDTH 600 F5. X 50 FT. 1.4 ACRES



P2 OUTLET PIPE AT LOW WATER SURFACE LEVEL & 6 INCH DRAIN



pg

OUTLET PIPE 2 AT 3 FT. ABOVE LOW WATER SOUTH SIDE



pg

POND 2 LENGTH 150 FT. X 50 AVERAGE WIDTH



pg

POND 2 WITH WITH 2 FT. OUTLET PIPE



SE OF NW SEC.13 ADD 15 ACRES DRIP IRRIGATION



107

FLOOD IRRIGATION DITCH HISTORIC USE ON COW CREEK



108

NWSE SEC 13 WATER RIGHT NO. 98 117B .62 CFS



Photo #9

15 ACRES INCREASE TO 30 NWSE SEC 13 POU



#10

FLOOD IRRIGATION NWSE SEC 13





PHOTO 11 INTERMITTENT SEEP DRAINS TO COW CREEK

PHOTO 13 WEEPING LARCH & 14



PLACE OF USE ADD 15 ACRES DRIP IRRIGATION SENW SEC 13

P14



P15 POU ADD 30 ACRES DRIP IRRIGATION SWNW SEC 13

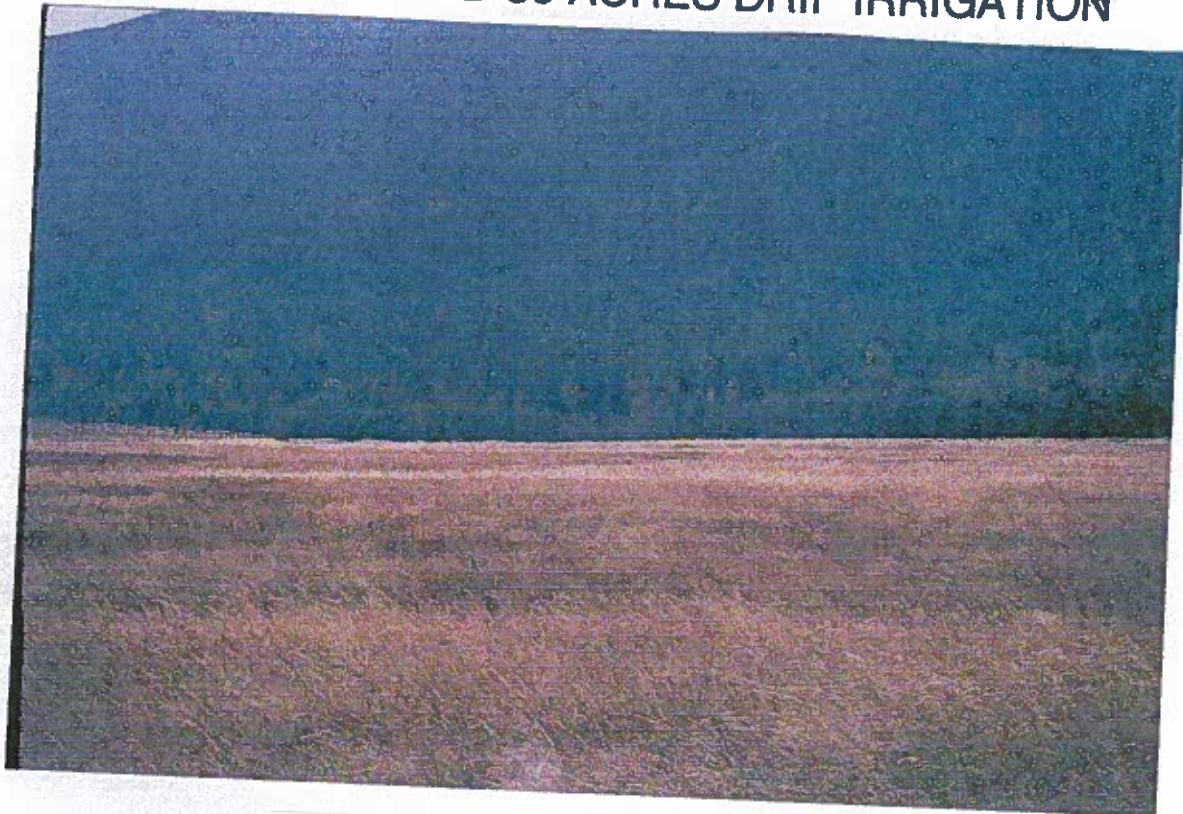


POU ADD 30 ACRES DRIP IRRIGATION NESW SEC. 13

P16



PHOTO 17 POU ADD 30 ACRES DRIP IRRIGATION



NESW SEC. 13

PHOTO 18 POND 3 150 X 50 UNNAMED TRIB COW CREEK



6 INCH DRAIN PIPE CHANNEL 2.7 FT. WIDE .6 FT. DEEP



CHANNEL BELOW POND 3 SENE SEC. 13 P20

EC. 13



PHOTO 21 PLACE OF USE SESE SEC.13 CONVERT TO DRIP



PHOTO 22 NEW DIVERSION TO STORAGE POND 1 TRIB TO POND 3



Pd3 PO DIVERSION UNNAMED TRIB NESE SECTION 13



P24 LOOKING SOUTH PHOTO 24 ADD 15 ACRES DRIP IN NESE S 13

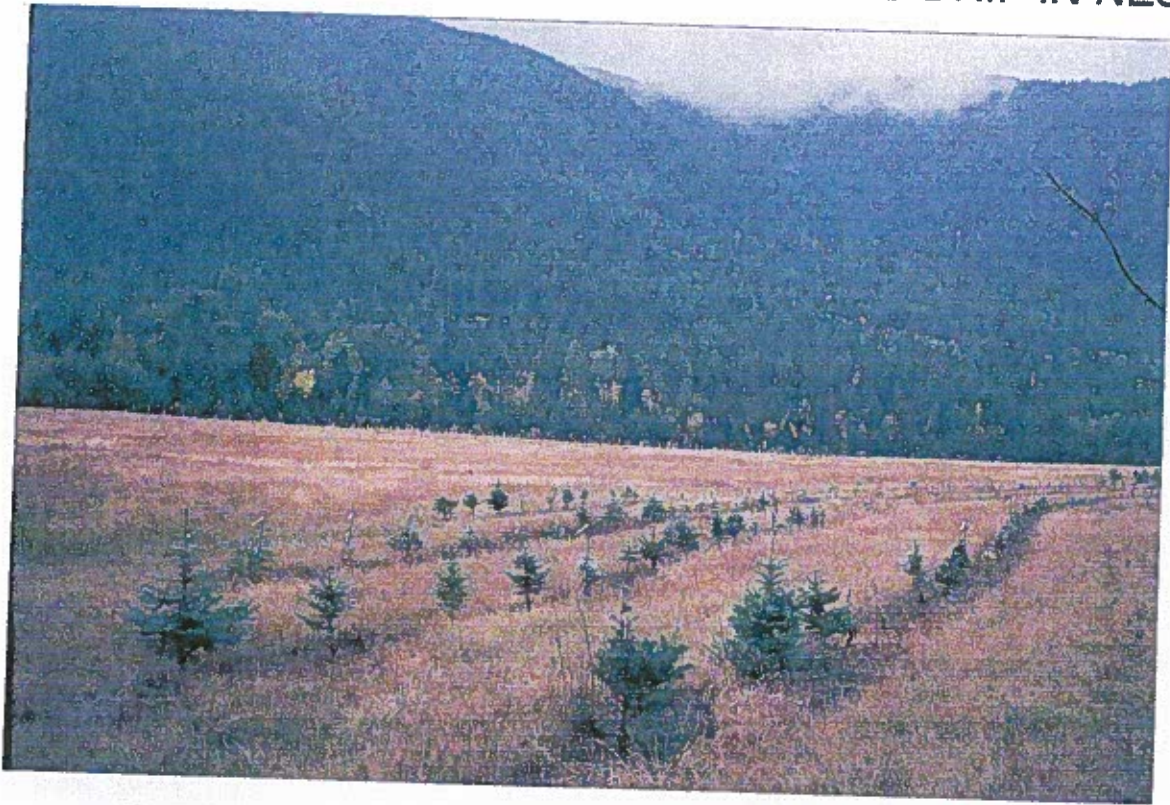
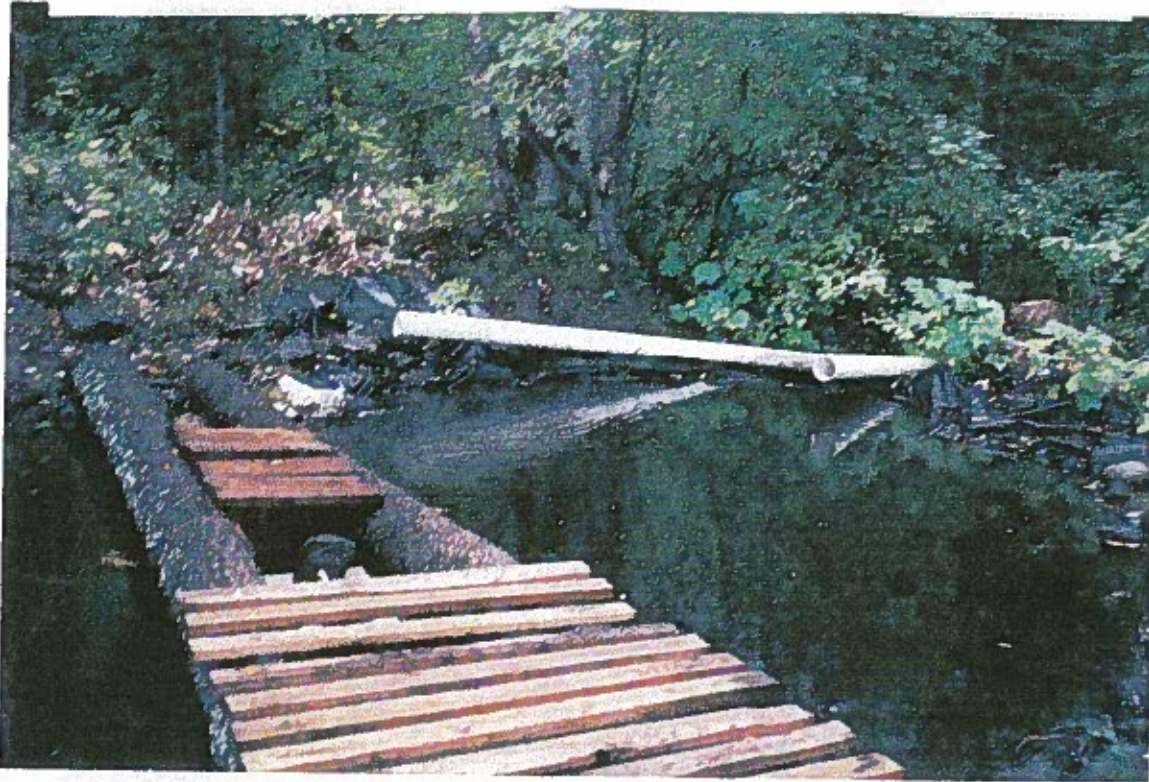


PHOTO 25 ADD 30 ACRES DRIP IRRIGATION SENE SEC. 13



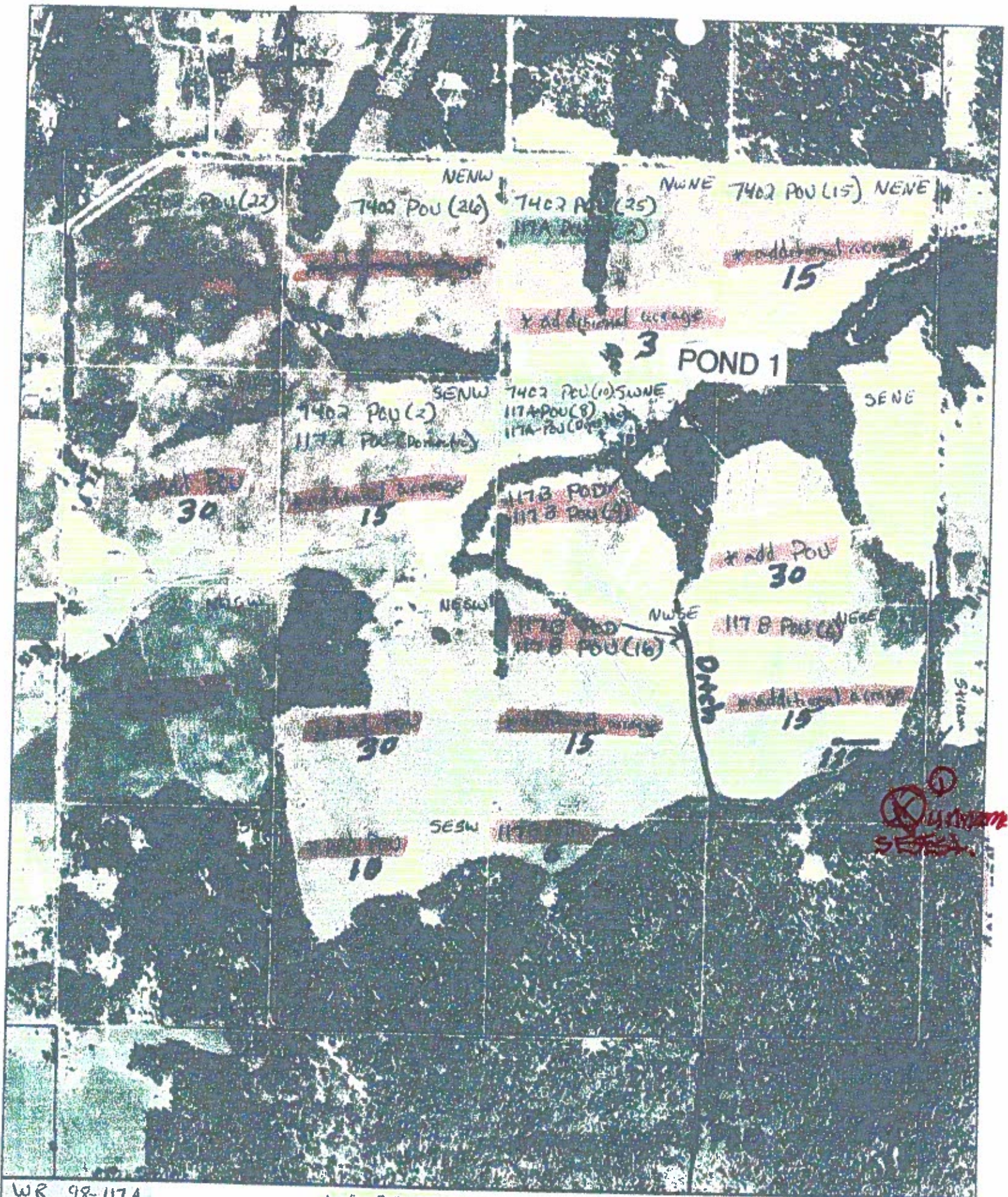
P26

POD WATER RIGHT 98 7402 P26 NENE SEC. 24



POD 6" PIPE 1 CFS CHANGE TO DRIP IRRIGATION





WR 98-117A
 • UNNAMED STREAM
 • 0.32 CFS IRR (10) / DAM
 WR 98-117B
 • COW CREEK
 • 1.67 CFS IRR (31) / STOCK

WR 98-7402
 • UNNAMED STREAMS
 • 1.0 CFS IRR (100)

POD = Point of Diversion
 POU = Place of Use