COMMONWEALTH OF PENNSYLVANIA
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SUBJECT: Walker Run Stream Survey Report

TO: Gene Trowbridge, Water Pollution Biologist
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On 16 June 2009 the Pennsylvania Fish and Boat Commission, (PFBC) Division of Environmental Services, conducted a joint cooperative stream survey with the Department of Environmental Protection, Northeast Regional Office, and the Nuclear Regulatory Commission on Walker Run, Luzerne County, PA. The purpose of the stream survey was to conduct a fish community assessment in response to the proposed siting of the Bell Bend nuclear power plant. The preliminary alternatives analysis revealed a stream segment relocation of Walker Run and a significant loss of wetland habitat in the Walker Run stream corridor.

Walker Run originates on Lee Mountain and flows in a southerly direction for 5.8 km through a mixed landscape of woodlots, single family residences and agricultural land use until it empties into the North Branch Susquehanna River near the village of Beach Haven, PA. Two sampling locations were established on Walker Run to document the fish community. Walker Run 01 was 105 m in length with a mean width of 3.58 m and was located approximately 105 downstream of Moskaluk Road culvert crossing. Walker Run Site 02 was 105 m in length with a mean width of 3.65 m and was located approximately 65 m upstream of the SR 0011 bridge crossing (Figure 1).

Fish Community

Fish were collected using an Appalachian Aquatics AA-24 battery powered electrofishing unit. All fish were identified to species (Table 1). Trout were collected, weighed and measured. Three fish species were collected at Site 01 including five brown trout *Salmo trutta*. Seven fish species were collected at Site 02 including twelve brown trout.

Brown trout ranged in length from 50 mm – 175 mm at site 01 and from 50 mm – 275 at Site 02. Biomass estimates for Site 01 and Site 02 yielded 3.61 kg/ha, and 27.45 kg/ha, respectively (Table 02). A mean of 15.53 kg/ha qualifies Walker Run as a Class C wild trout fish population. The biomass classification is part of the PFBC Stream Resource Categories that include several other criteria that are used to determine appropriate fish management options for flowing and impounded water resources in PA (Marcinko et al. 1986). The fish community was typical of other of cold water fish communities in similar watersheds in central PA. The presence of brown trout less than 150 mm and multiple year classes of brown trout collected at both sites indicated natural reproduction of trout within Walker Run.

Water Quality

Water quality measurements in Walker Run indicated a near neutral chemical profile. Total hardness was measured at 20 ppm at both sites; pH was 6.9 s.u. at Site 01 and 7.0 s.u. at Site 02; and water temperature 62 F at Site 01 and 65 F at Site 02.

Stream Habitat

Physical stream habitat was assessed using the EPA Rapid Bioassessment Protocol Habitat Assessment (Barbour, et al. 1999). The Rapid Bioassessment Protocol is a visual semi-quantitative assessment that scores ten habitat parameters with a scoring range of 0–20. Walker Run Site 01 drains a mixed forested/agricultural landscape. Walker Run flows adjacent to and is crossed by several township and state roadways with gravel and bituminous surfaces. Site 01 had a total habitat parameter score of 149 (Table3). This score falls in the suboptimal range and appeared to adequately describe the stream habitat conditions present during the stream survey.

Walker Run Site 02 was located in the lower watershed approximately ½ mile upstream of the mouth. Land use immediately adjacent to the survey location consisted of residential dwellings, a very narrow riparian corridor, and bedrock substrates within the stream channel. Site 02 scored 125 which fell into the low suboptimal range (Table 3). Physical stream habitat within the stream channel of Walker Run provided adequate habitat conditions to support a moderately diverse stream fish community.

Summary

The results of this stream survey revealed the presence of a naturally reproducing, wild trout population at both survey sites. It is evident from these data that Walker Run has adequate physical and chemical habitat conditions to support a wild trout population throughout the entire stream. Walker Run has been surveyed previously by Wnuk (2006) and recently by Land Studies, Inc (Mark Gutshall – personal communication) Wnuk (2006) collected biological, chemical, physical, and social data at one site located 150 m downstream of North Market Road on Walker Run to examine unasessed aquatic resources in Fisheries Management Area 4. Land Studies surveyed Walker Run to collect baseline data as part of the environmental assessment for the Bell Bend project. Both surveyors also found evidence of natural reproduction of wild trout in Walker Run.

Based upon the findings from the 2006 Wnuk and our 2009 survey, the PFBC plans to include Walker Run on the PA List of Stream Sections that Support Natural Reproduction.

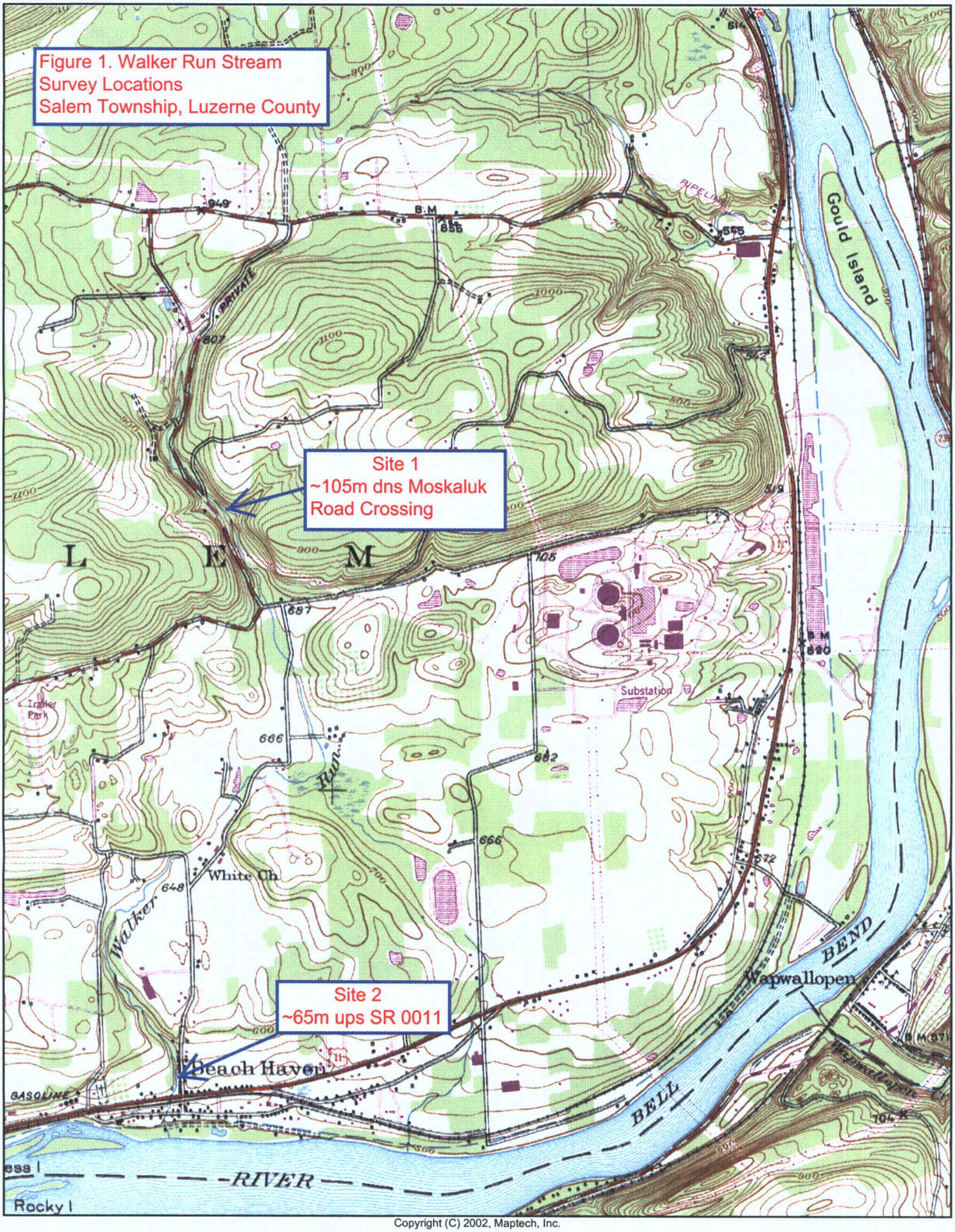

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Table 1. Fish species collected in Walker Run, Luzerne County, 16 June 2009.

Species		Site 01	Site 02
Brown trout	*Salmo trutta*	X	X
Blacknose dace	*Rhinichthys atratulus*	X	X
Longnose dace	*Rhinichthys cataractae*		X
Creek chub	*Semotilus atromaculatus*	X	X
White sucker	*Catostomus commersoni*	X	X
Green sunfish	*Lepomis cyanellus*		X
Sculpin	*Cottus spp.*		X

Table 2. Total number of trout (N) collected, length frequency distribution, and biomass estimates in two sites on Walker Run, Luzerne County, 16 June 2009.

Site 01

Length group (mm)	N	Mean Weight (g)	Kg/ha	N/ha	N/km
50	2	2.5	0.13	53	19
125	1	31	0.82	27	10
150	1	48	1.28	27	10
175	1	52	1.8	27	10
Totals	5		3.61	134	49

Site 02

Length group (mm)	N	Mean Weight (g)	Kg/ha	N/ha	N/km
50	1	1	0.03	26	10
125	4	29	3.03	104	38
150	1	55	1.44	26	10
175	1	79	2.06	26	10
200	1	89	2.32	26	10
225	2	142.5	7.44	26	10
250	1	176	4.6	26	10
275	1	250	6.53	26	10
Totals	12		27.45	312	117

Table 3. Environmental Protection Agency Rapid Bioassessment Protocol habitat assessment scores for Walker Run, Luzerne County, 16 June 2009.

Habitat parameter	Site 01	Site 02
Epifaunal Substrate	18	14
Embeddedness	12	14
Velocity/Depth Regime	10	15
Sediment Deposition	12	14
Channel Flow Status	13	16
Channel Alteration	15	08
Frequency of Riffles	19	18
Bank Stability	16	10
Vegetative Protection	17	10
Riparian Vegetative Zone Width	17	06
Total Score	149	125

Literature Cited

Barbour, M., J. Gerritsen, B. Snyder, and J, Stribling. 1999. Rapid bioassessment protocols for use in wadeable streams and rivers: periphyton, benthic macroinvertebrates, and fish, second edition. EPA 841-B-99-002. U.S. Environmental Protection Agency, office of Water, Washington, D.C.

Marcinko, M., R. Lorson, and R. Hoopes. 1986. Procedures for stream and river inventory information input. Pennsylvania Fish and Boat Commission, Bellefonte, PA.

Wnuk, R. 2006. Walker Run (405B) Fisheries Management Report. Pennsylvania Fish and Boat Commission, Bellefonte, PA.

c: COE - Elliot
NRC - Imboden, Kuntzleman
PFBC - Miko, Wnuk, Greene, Bundy, Kraynak
USFWS - Tibbott
EPA – Davis
Land Studies - Gutshall